Schlumberger

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

Well: **BMA A20A**
Field: **Bream A**
Rig: **ISDL 453** State: **Victoria**

Rig: ISDL 453
Field: Bream A
Location: Bass Strait
Well: BMA A20A
Company: ESSO Australia Pty. Ltd.

Gamma Ray Service
1:200 Measured Depth
Real Time Log

Location

Total depth:	2326.0 m
Spud date:	12−October−2005
Runs:	1 To 2

Elevation

K.B.	Top Drive
G.L.	−59.40 m
D.F.	32.82 m

Permanent datum: Mean Sea Level Elev.: 0 m
Log measured from: Drill Floor 32.82 m above Perm. datum
Depth reference: Driller's Depth

Service Order no.	Y = 5738458.02 m	Longitude Latitude
ASQ−05−15	X = 567338.25 m	E147° 46' 20.056" S38° 29' 58.899"

Depth logged: 1123.0 m To 2326.0 m	Mag decl: 13.06 deg.	Other services:
Date logged: 12−Oct−05 To 17−Oct−05	Mag dip: −69.03 deg.	Directional Drilling, D&I

Bore hole record

Hole size	from	to
8−1/2 in.	1123.0 m	2326.0 m

Casing record

Size	Density	from	to
10−3/4 in.	40.5 lb/ft	Surface	1123.0 m

Mud record

Type	from	to
KCl/PHPA/Glycol	1123.0 m	2326.0 m

Borehole deviation record

Min	Max	from	to
29.31 deg	50.12 deg.	1123.0 m	1320.0 m
5.03 deg.	25.98 deg.	1320.0 m	2100.0 m
5.37 deg.	6.58 deg.	2100.0 m	2326.0 m

Surface equipment

Unit	OLU−FB−924
Depth system	DES−CA−ASQ04−01

Software record

IDEAL Wis	ID10_2C_01		
SPM	HSPM10_1C_05		
LWD	N/A		
MWD	V8.0B96		

Bit Run Summary

Run number		1	2
Bit size	in.	8.5	8.5
Bit start depth	m	1123.0	1123.0
Bit end depth	m	1193.0	2326.0
Top interval logged	m	1123.0	1123.0
Bottom interval logged	m	1174.1	2307.1
Begin log: time		12:50	15:05
Begin log: date		12−Oct−05	14−Oct−05
End log: time		15:20	16:55
End log: date		12−Oct−05	17−Oct −05
Mud data			
Depth	m	1193.0	2326.0
Type		KCl/PHPA/Gly	KCl/PHPA/Gly
Mud weight	ppg	9.6	10.10
Solids	%	4.9	7.4
Chlorides	mg/l	38,500	56,000
Rm		N/A	N/A
Rmf		N/A	N/A
Rmc		N/A	N/A

Potassium	%	1.1	1.2								
Environmental data											
GR											
Mud weight	ppg	9.6	10.10								
Bit size	in.	8.5	8.5								
Resistivity											
Neutron porosity											
Hole Size		N/A	N/A								
Mud weight		N/A	N/A								
Temperature		N/A	N/A								
Mud salinity		N/A	N/A								
Formation salinity		N/A	N/A								
Recording rate 1	SEC	3.83	3.83								
Recording rate 2	SEC	N/A	N/A								
Filtering GR		3 pt.	3 pt.								
Filtering density		N/A	N/A								
Filtering Neutron		N/A	N/A								
Company representative		B. Davis	W. Westman	G. Campbell							
Schlumberger D&M Personnel		R. Borjas	B. Pattarakorn	C. Soper	L. Muskett						

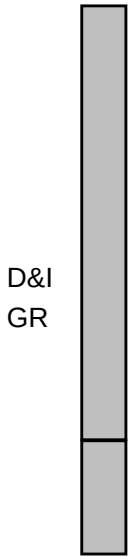
OTHER SERVICES FOR RUN1	OTHER SERVICES FOR RUN2	OTHER SERVICES FOR RUN
Directional Drilling Directional Surveys D&I	Directional Drilling Directional Surveys D&I	

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2	REMARKS: RUN NUMBER
Depth is referenced to driller's depth Gamma Ray corrected for Tool Size, Bit Size and Mud weight Gamma Ray not corrected for Potasium Mud type is KCl/PHPA/Glycol. 8−1/2 in. hole was drilled from 1123.0m to 1193.0m POOH due to bad cement condition.	Depth is referenced to driller's depth Gamma Ray corrected for Tool Size, Bit Size and Mud weight Gamma Ray not corrected for Potasium Mud type is KCl/PHPA/Glycol. 8−1/2 in. hole was drilled from 1123.0m to 2326.0m POOH due to TD of BMA A20A	

EQUIPMENT DESCRIPTION

RUN1	RUN2	RUN
DOWNHOLE EC	DOWNHOLE EC	

DOWNHOLE EC



6−3/4 in. Pov 23.8

MDC: 4C
MEC: 1
MDI: 1!
MGR: :
DHS: V8.

D&I — 19.5
GR — 18.9

6−5/8 in. NI 15.4
S/N: ASS:

6−5/8 in. NI 13.9
S/N: ANA−

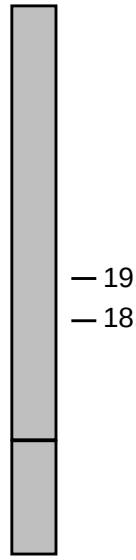
6−5/8 in. NM Ro 11.3
S/N: GU

7 in. PowerPa 9.2(
A700GT
S/N: N0:
1.5 deg. Bent
8−3/8 in. Mot(

Smith PD
OD: 8−1 — 0.0(
0.2:
S73PX S/N: .

Maximum string diar
All lengths in

DOWNHOLE EC



6−3/4 in. Pov 23.8

MDC: 4C
MEC: 1
MDI: 1!
MGR: :
DHS: V8.

D&I — 19.5
GR — 18.9

6−5/8 in. NI 15.4
S/N: ASS:

6−5/8 in. NI 13.9
S/N: ANA−

6−5/8 in. NM Ro 11.3
S/N: GU

7 in. PowerPa 9.2(
A700GT
S/N: N0:
1.5 deg. Bent
8−3/8 in. Mot(

Smith PD
OD: 8−1 — 0.0(
0.2:
S73PX S/N: .

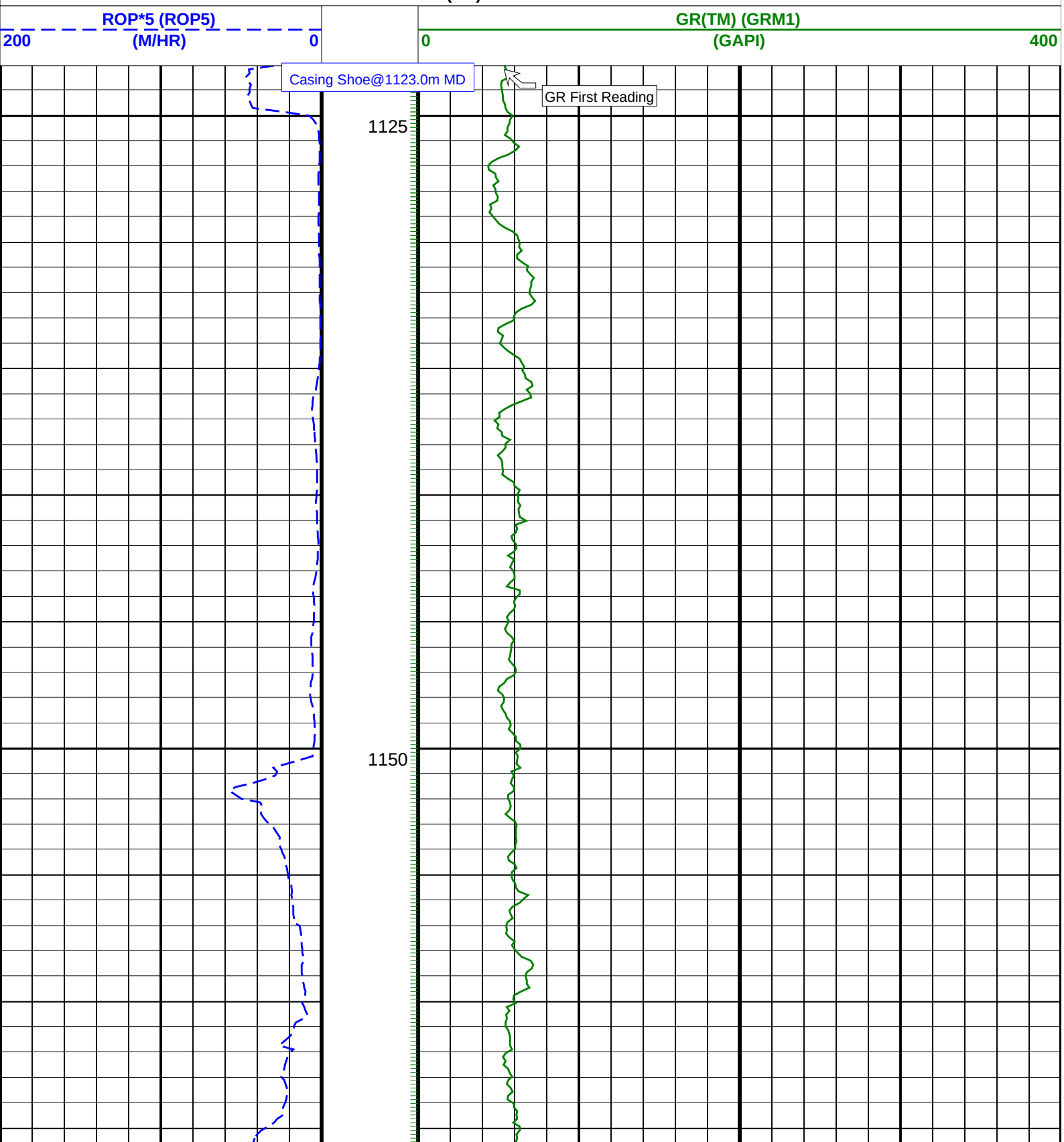
Maximum string diar
All lengths in

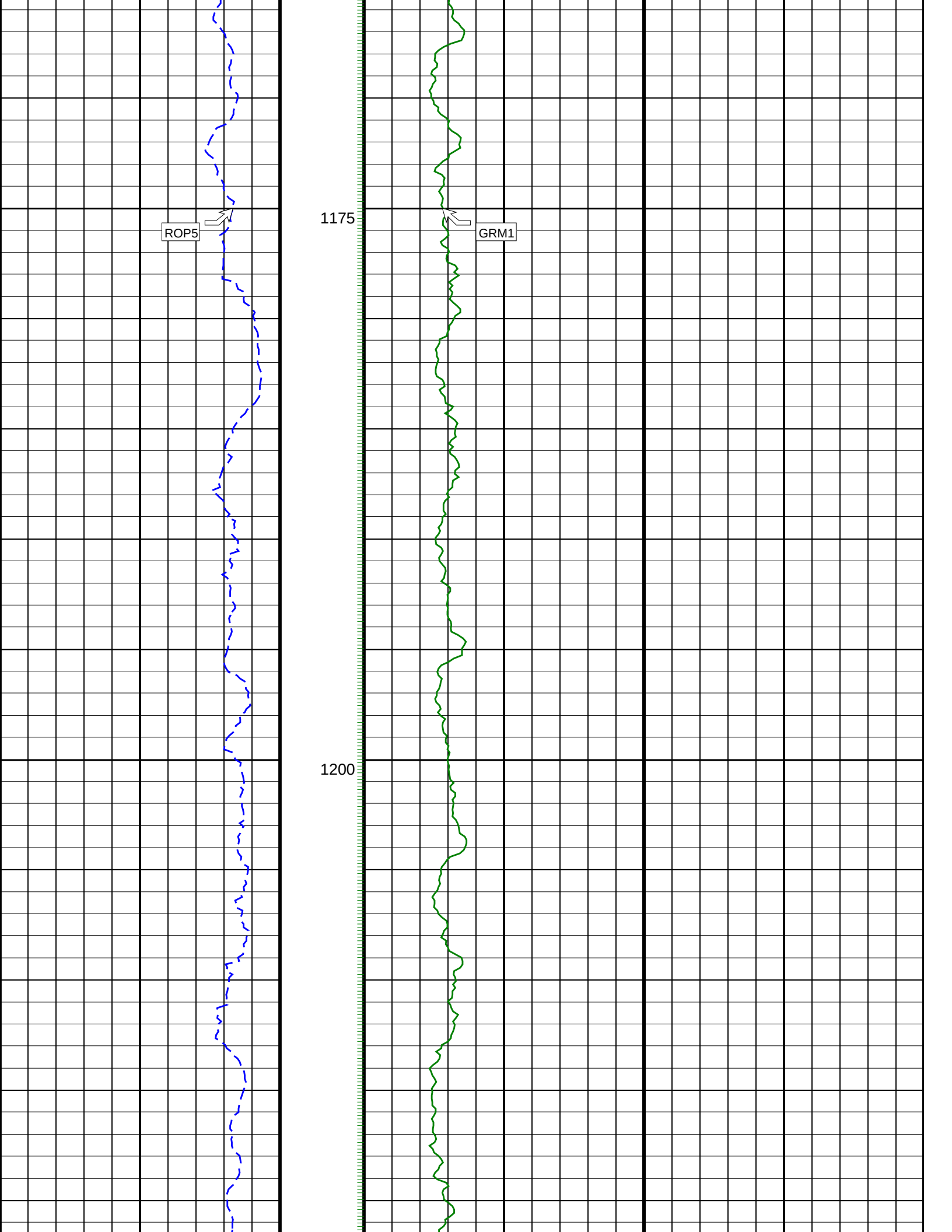
BMA A20A RT 1:200 MD

IDEAL Version: ID10_2C_01 <MD > Vertical Scale: 1:200 Graphics File Created: 17−Oct−2005 19:22

PIP SUMMARY

GR(TM) PIP

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GRM1
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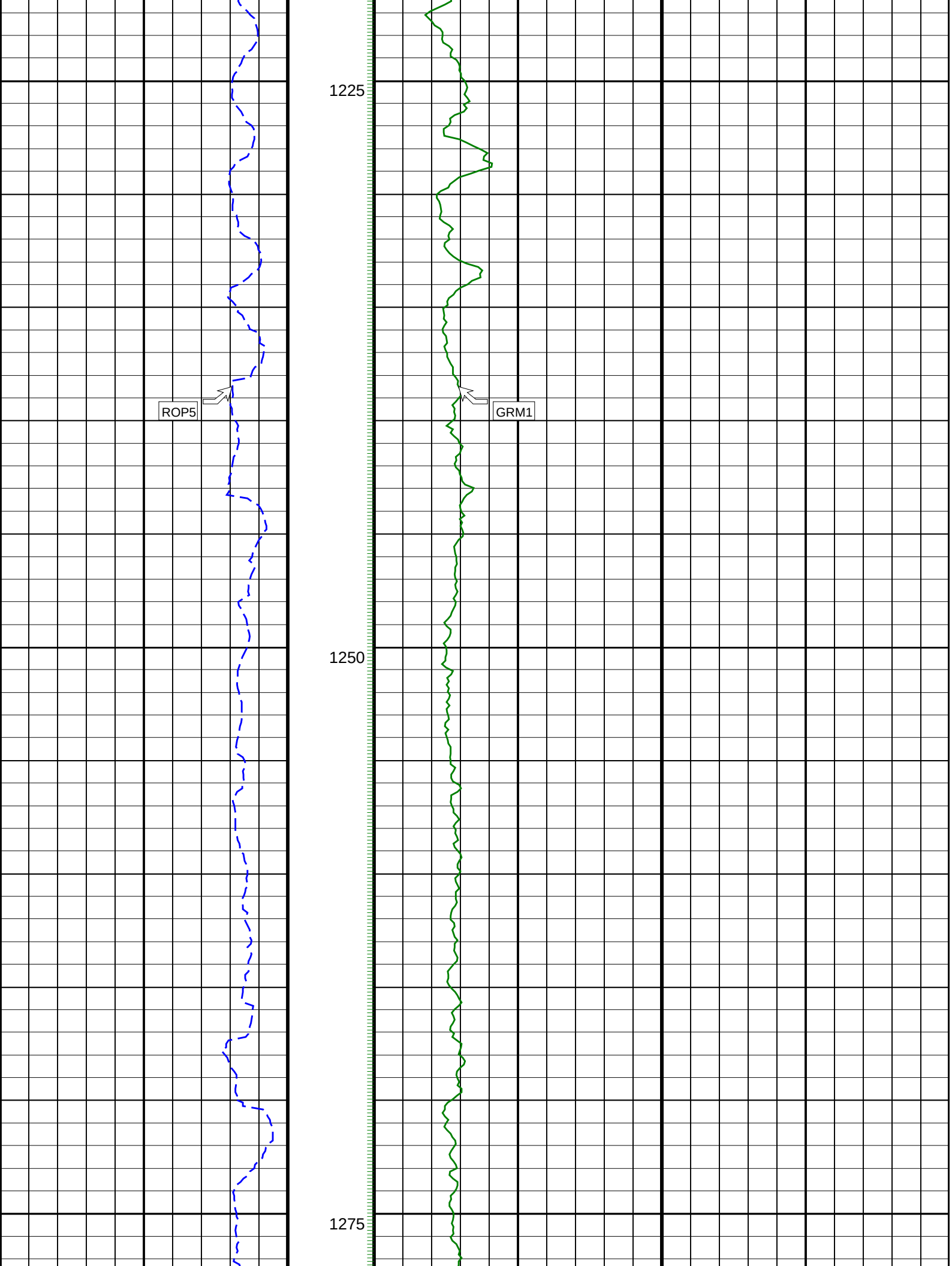
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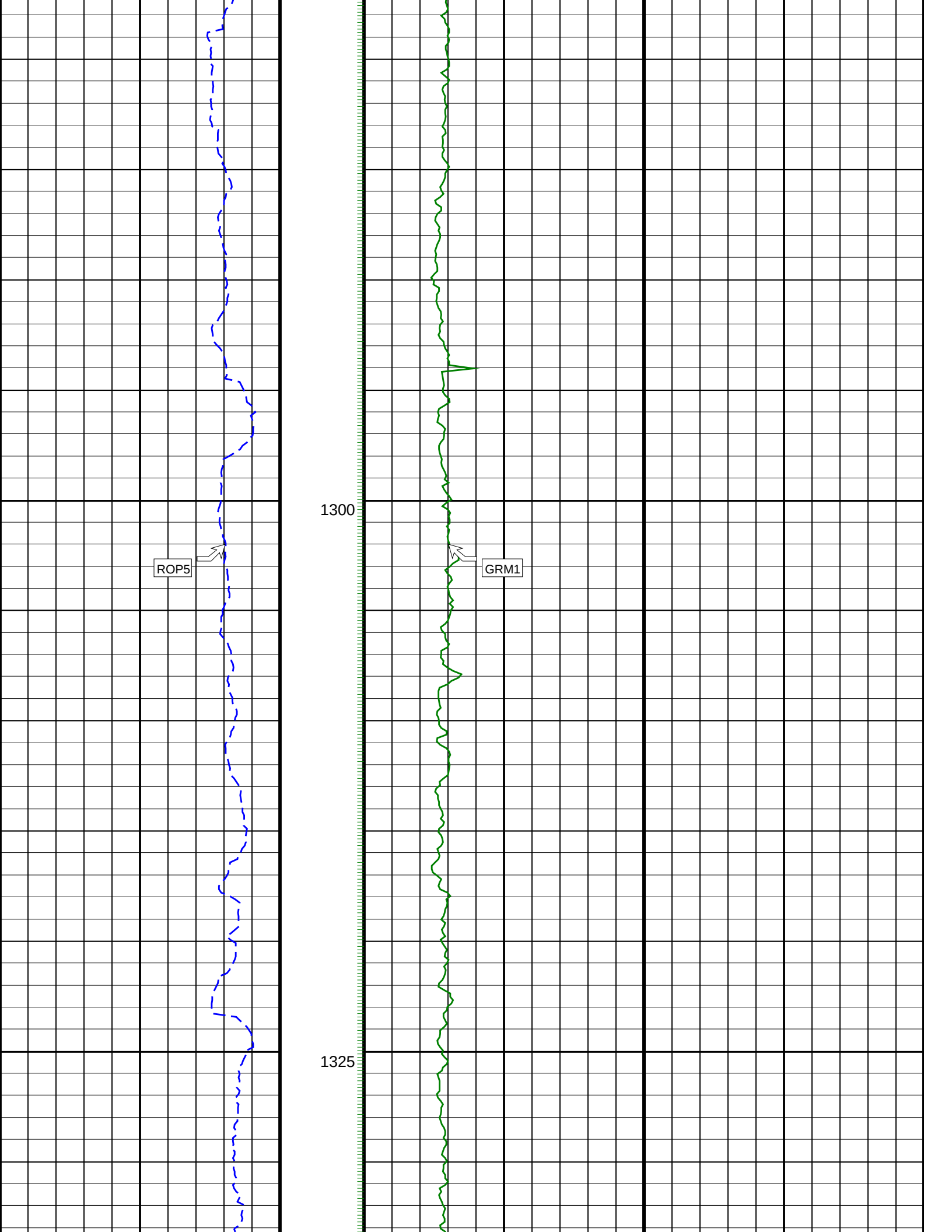
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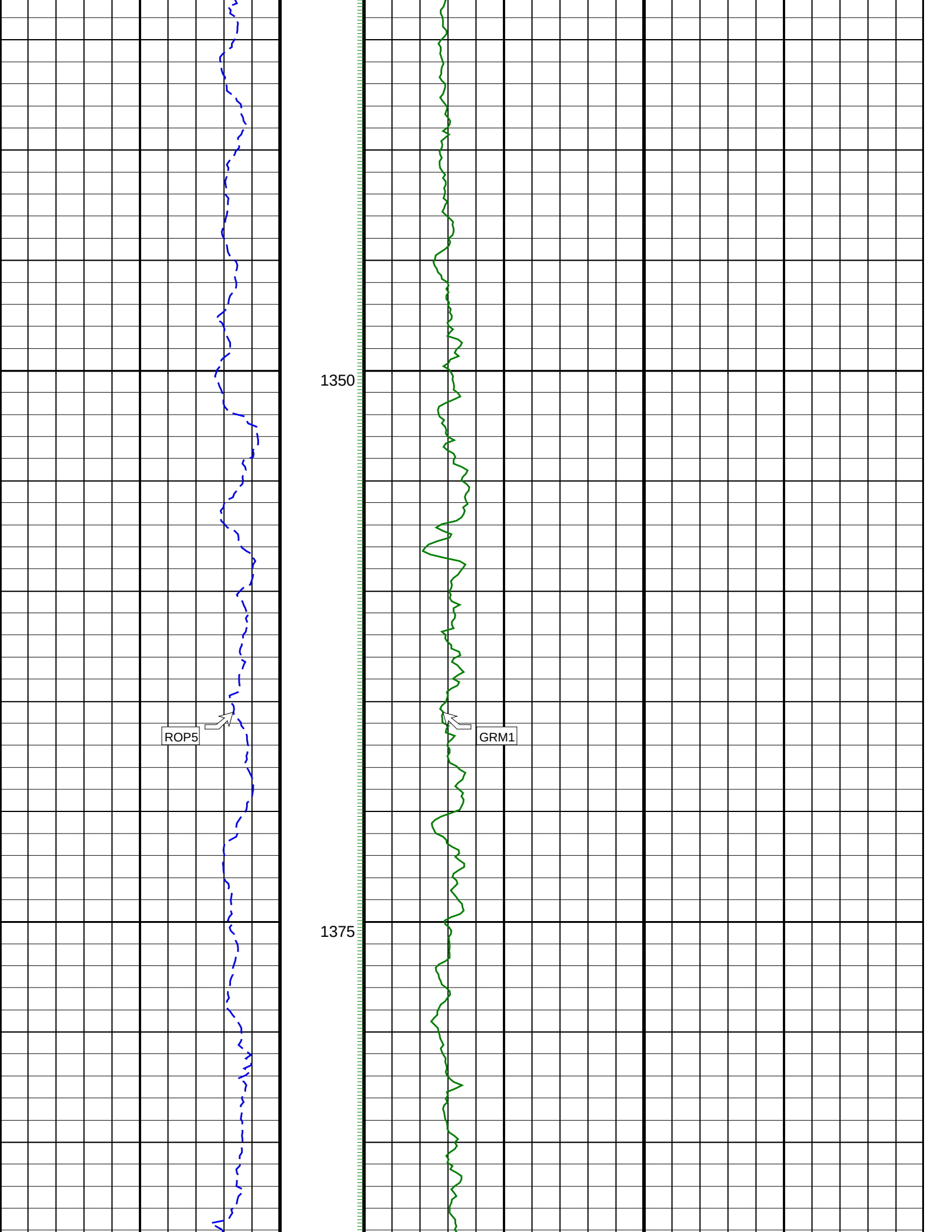
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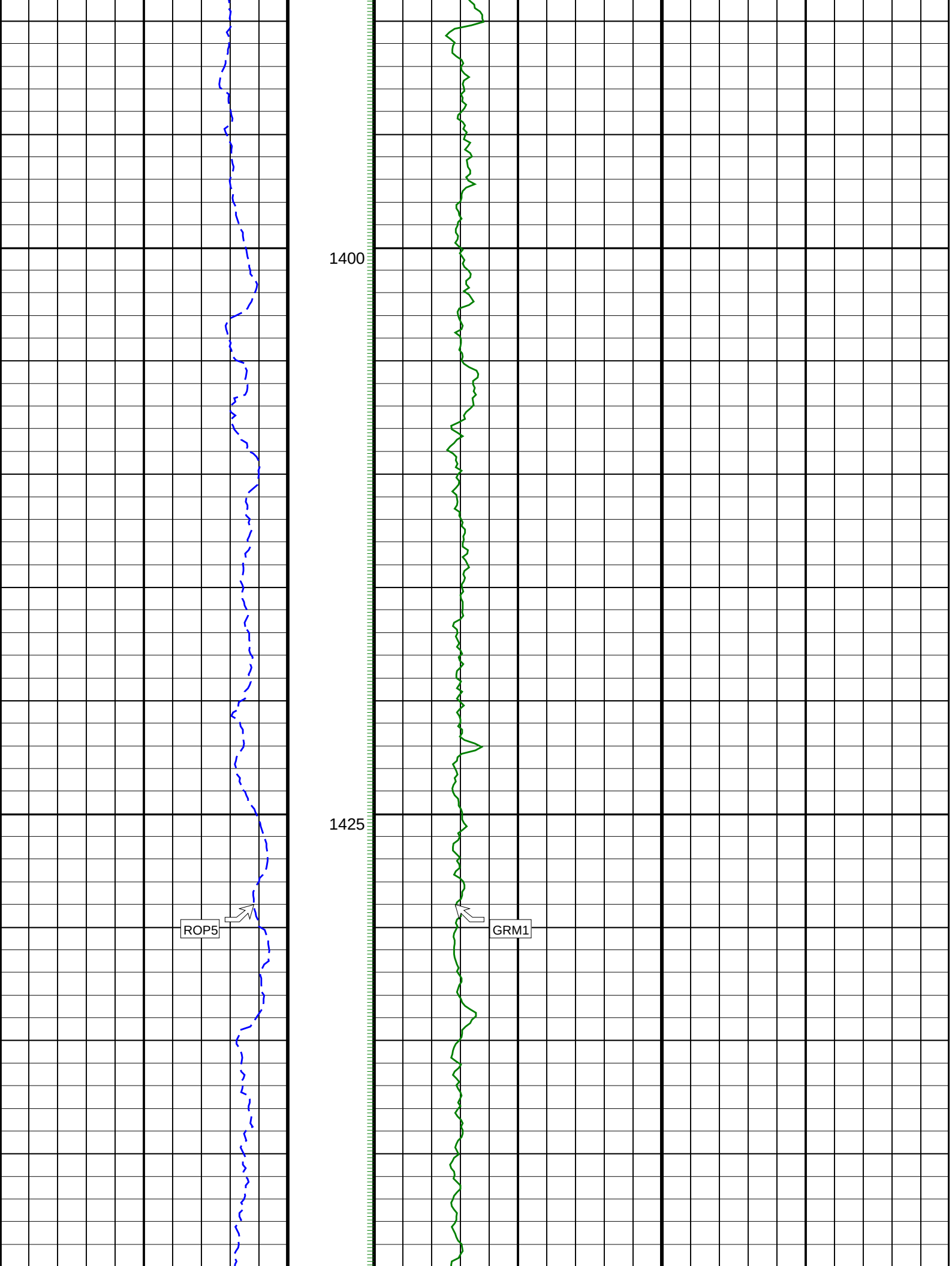
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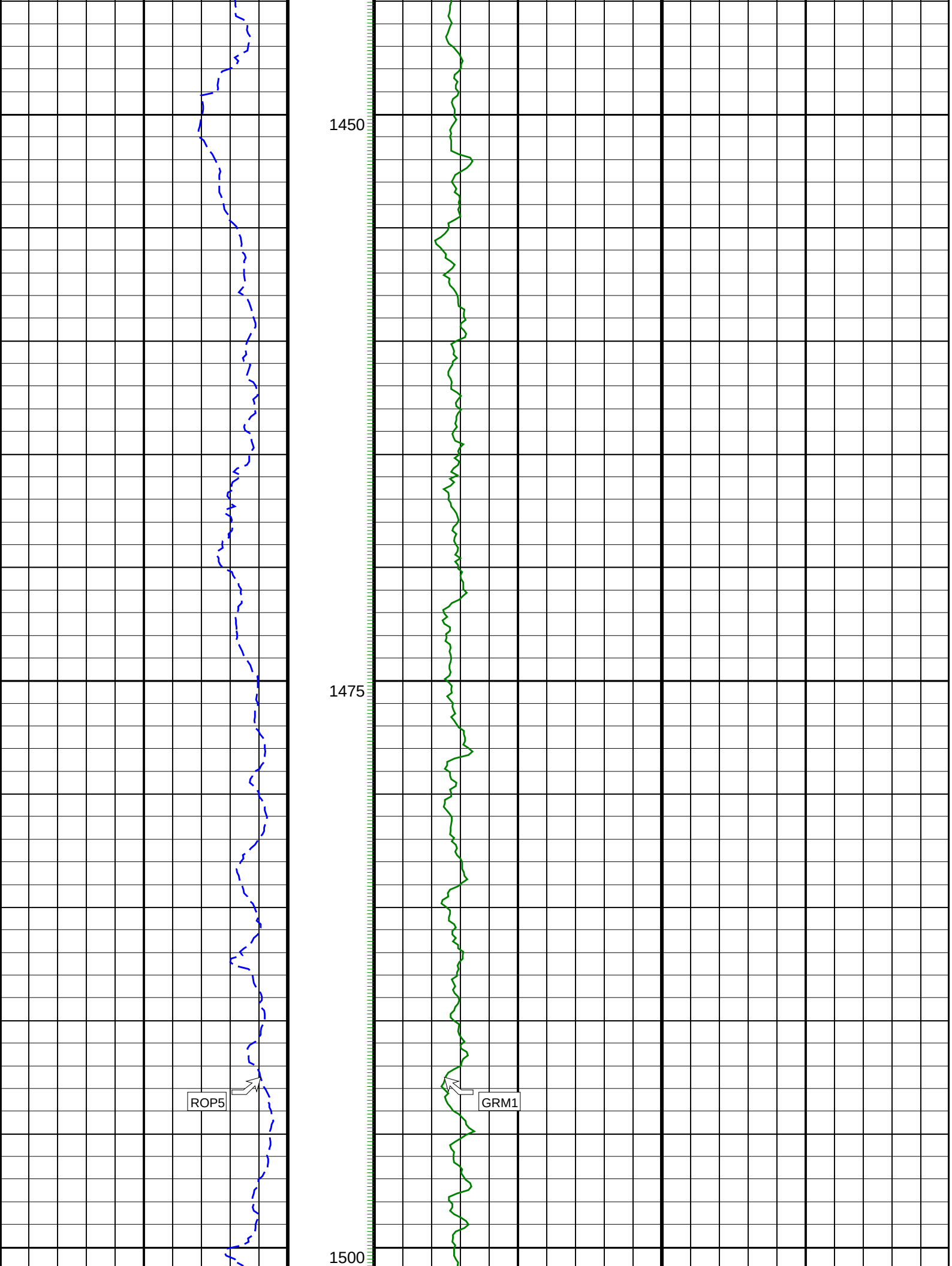
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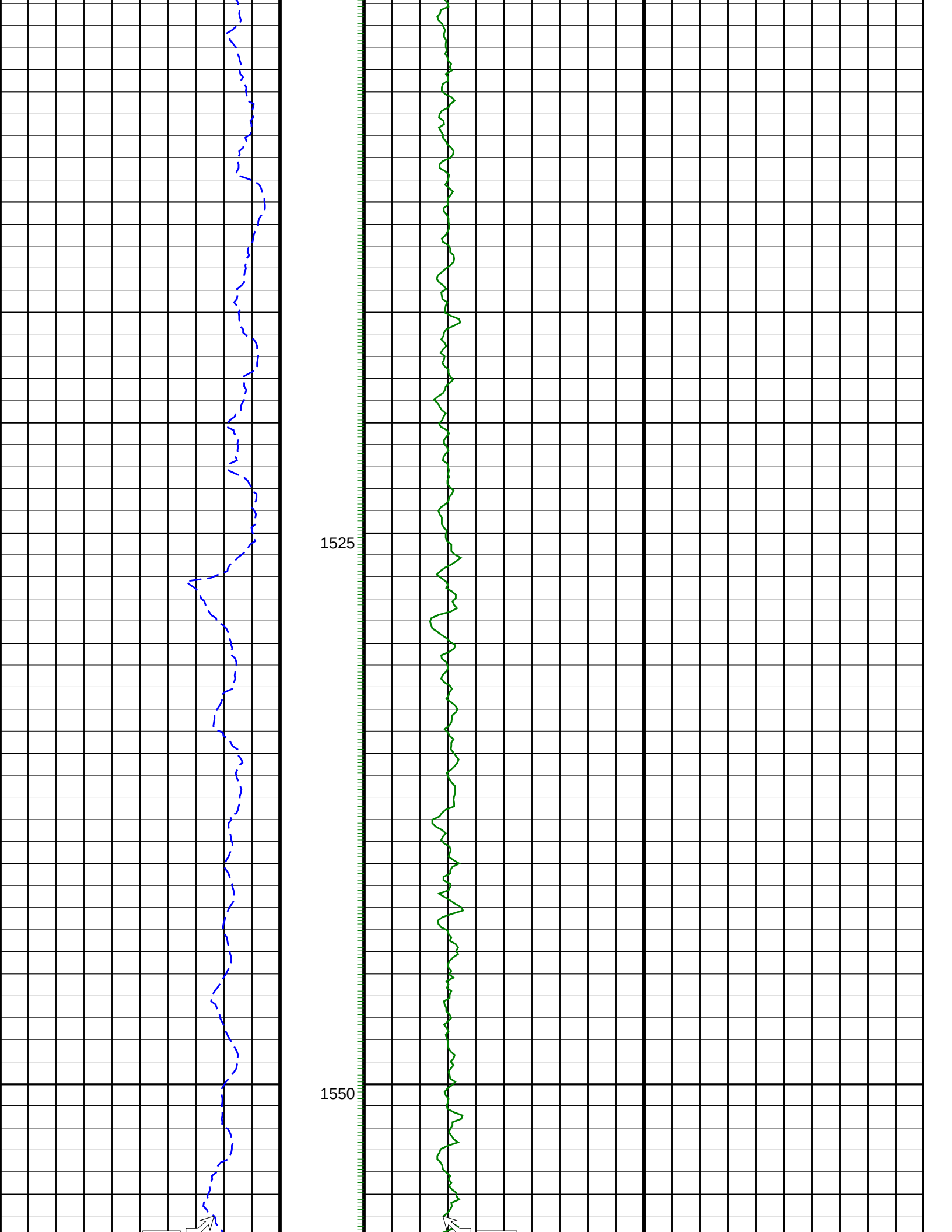
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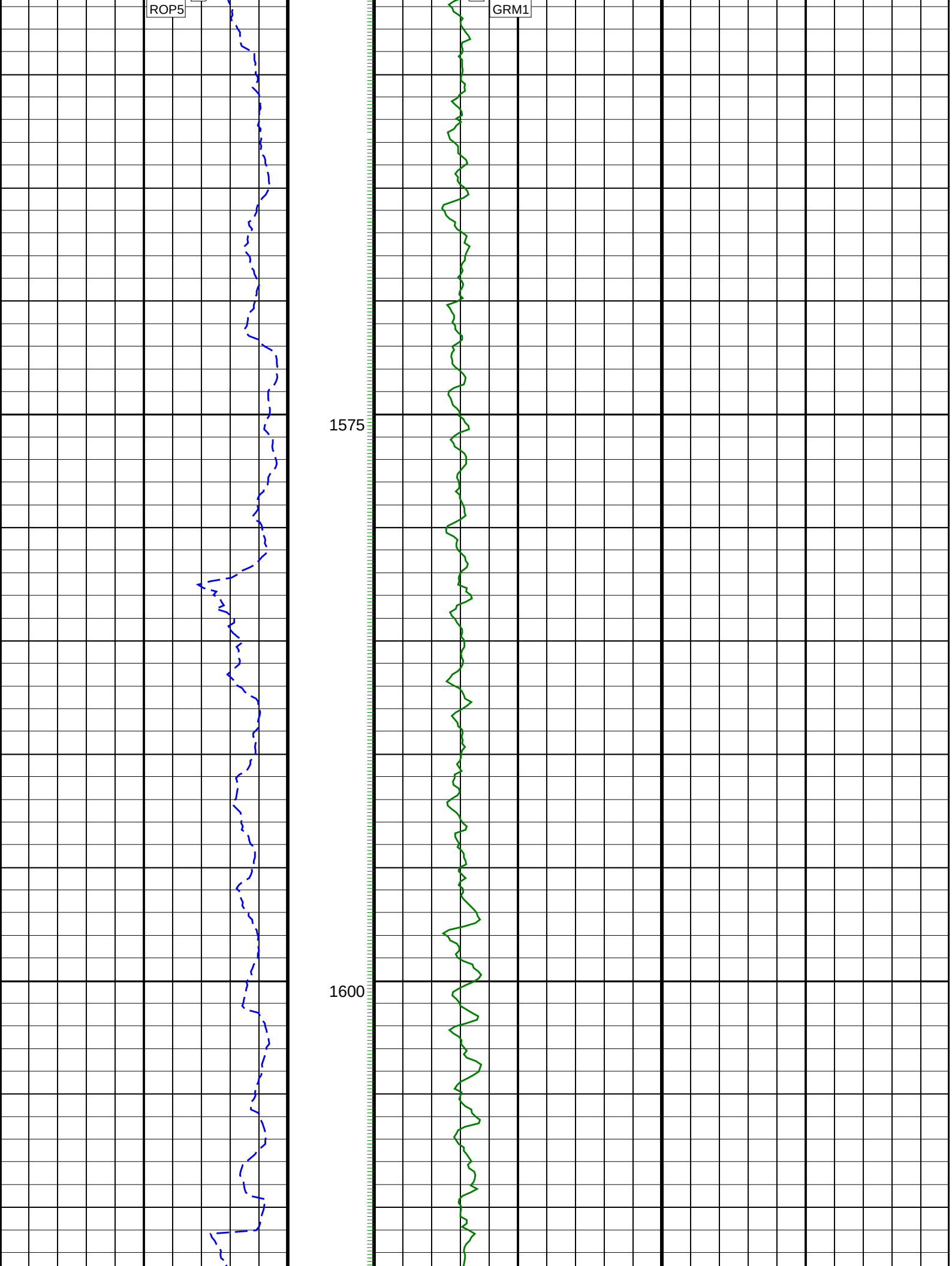
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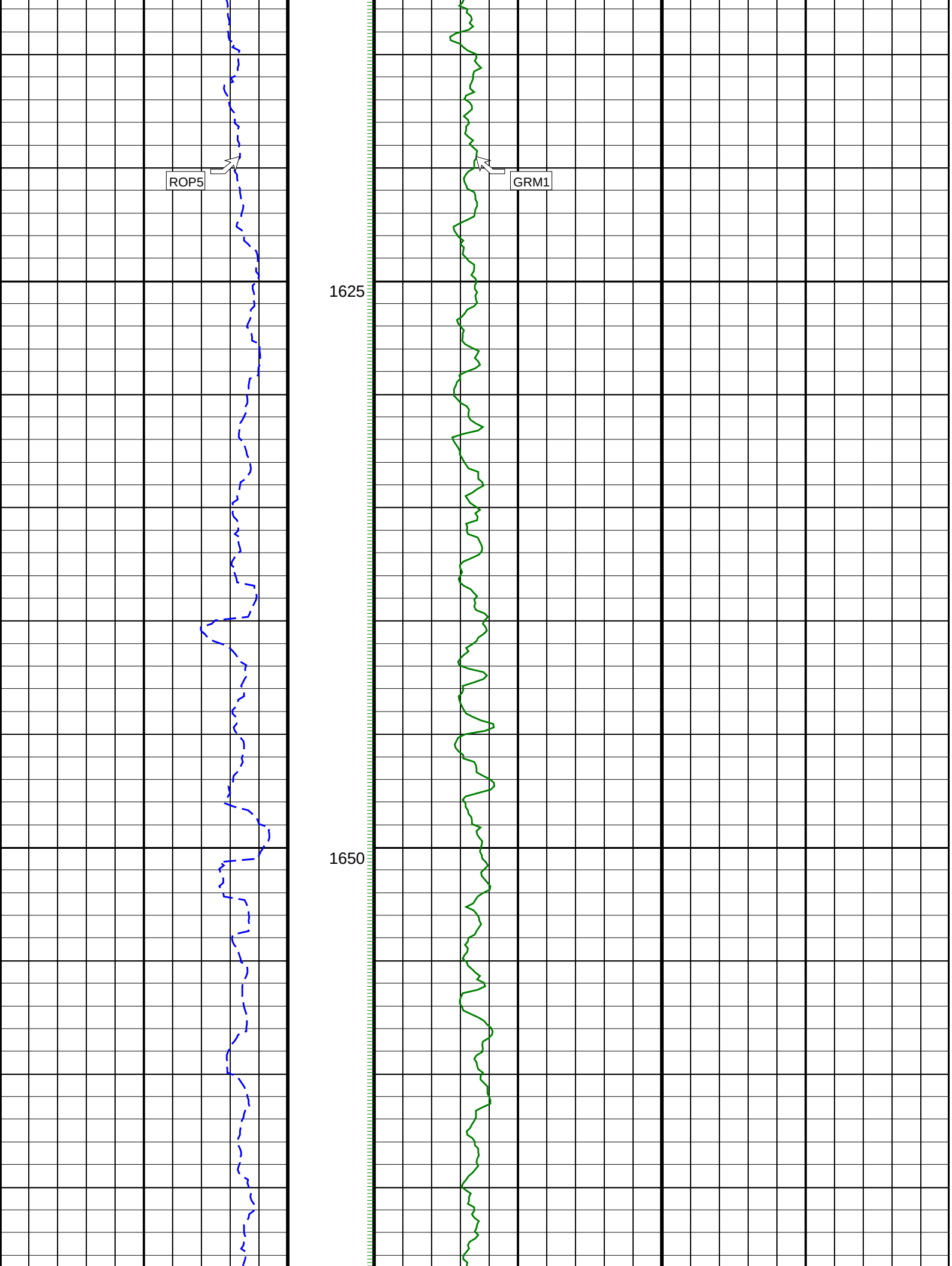
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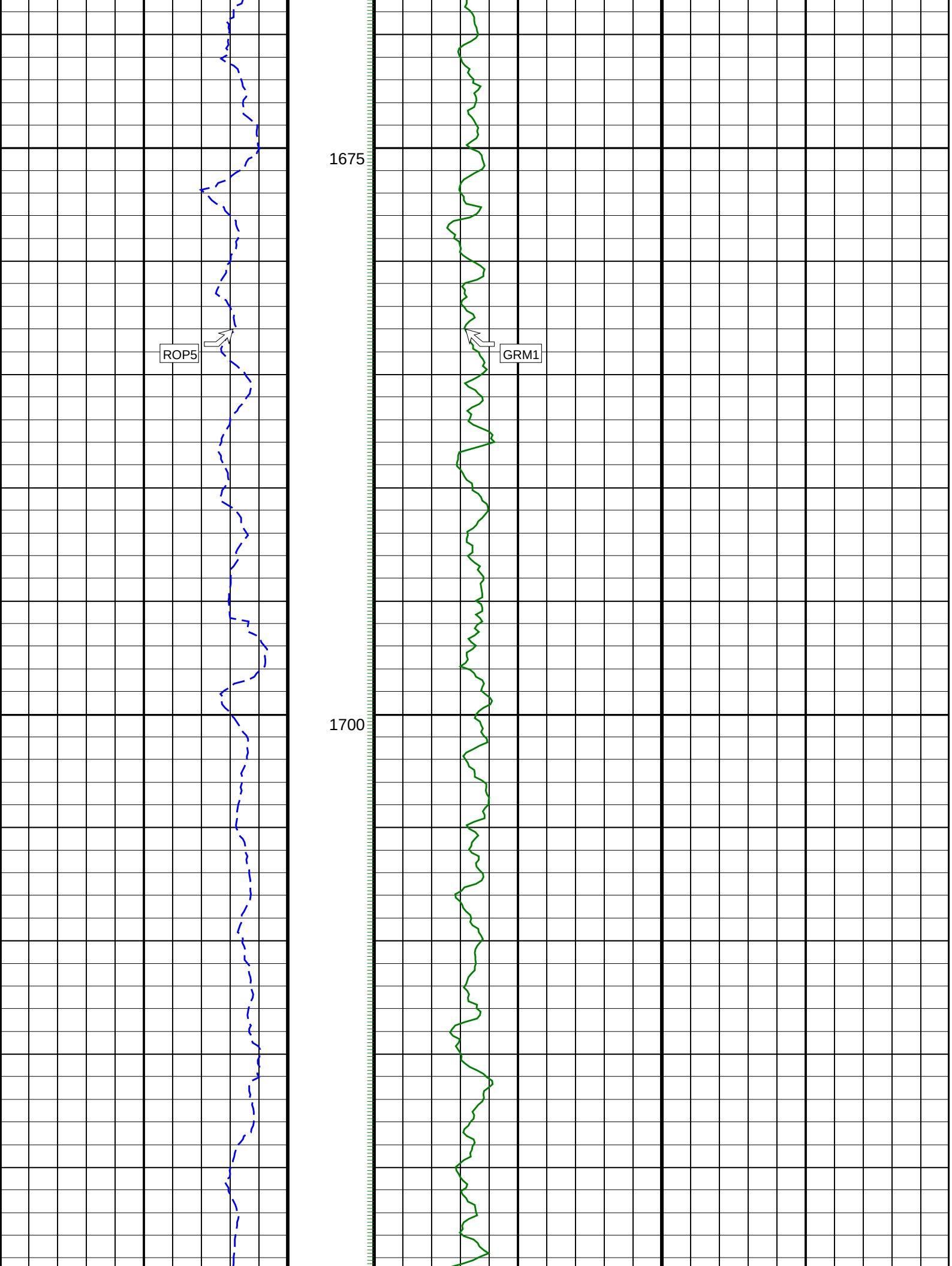
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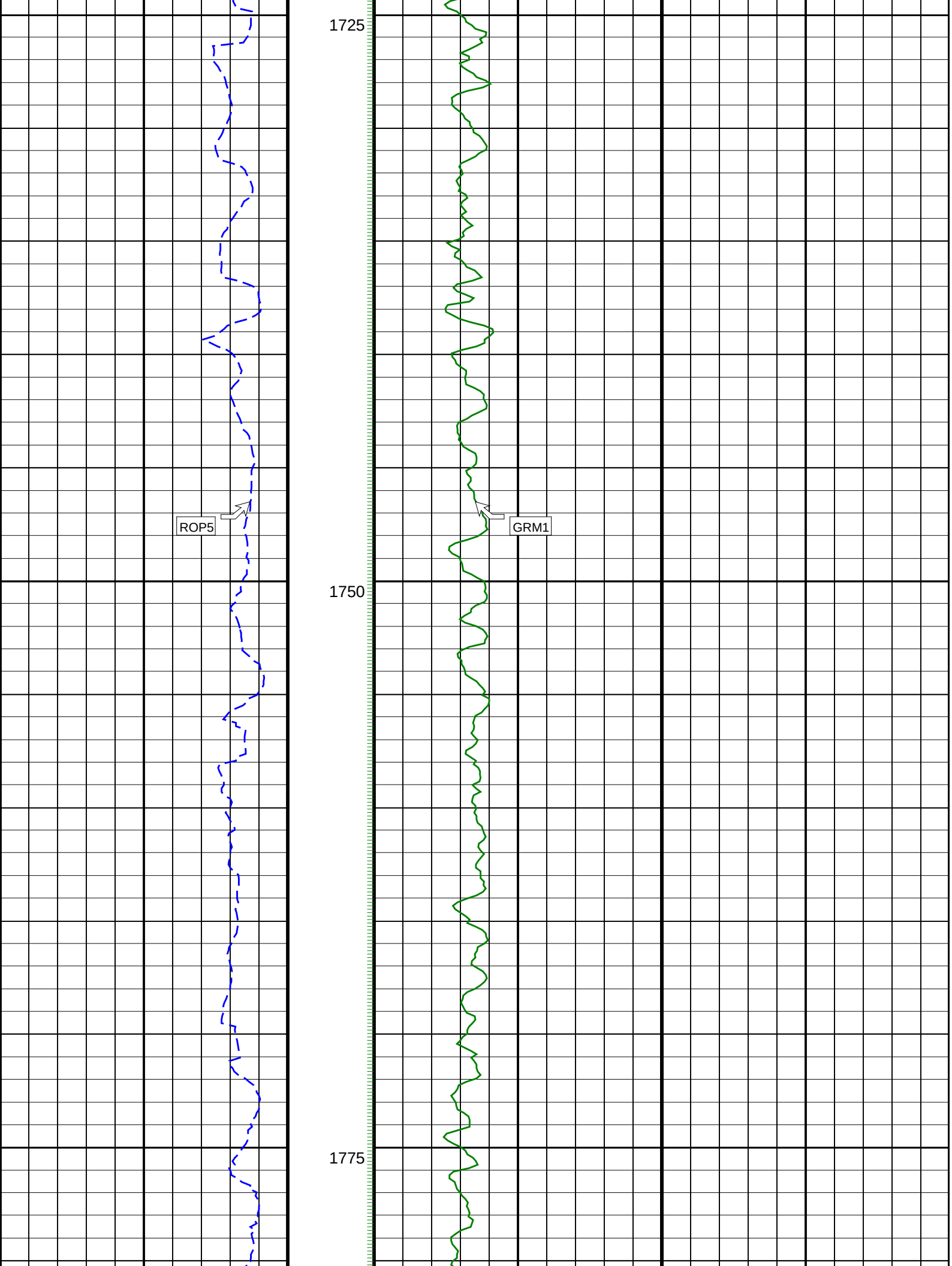
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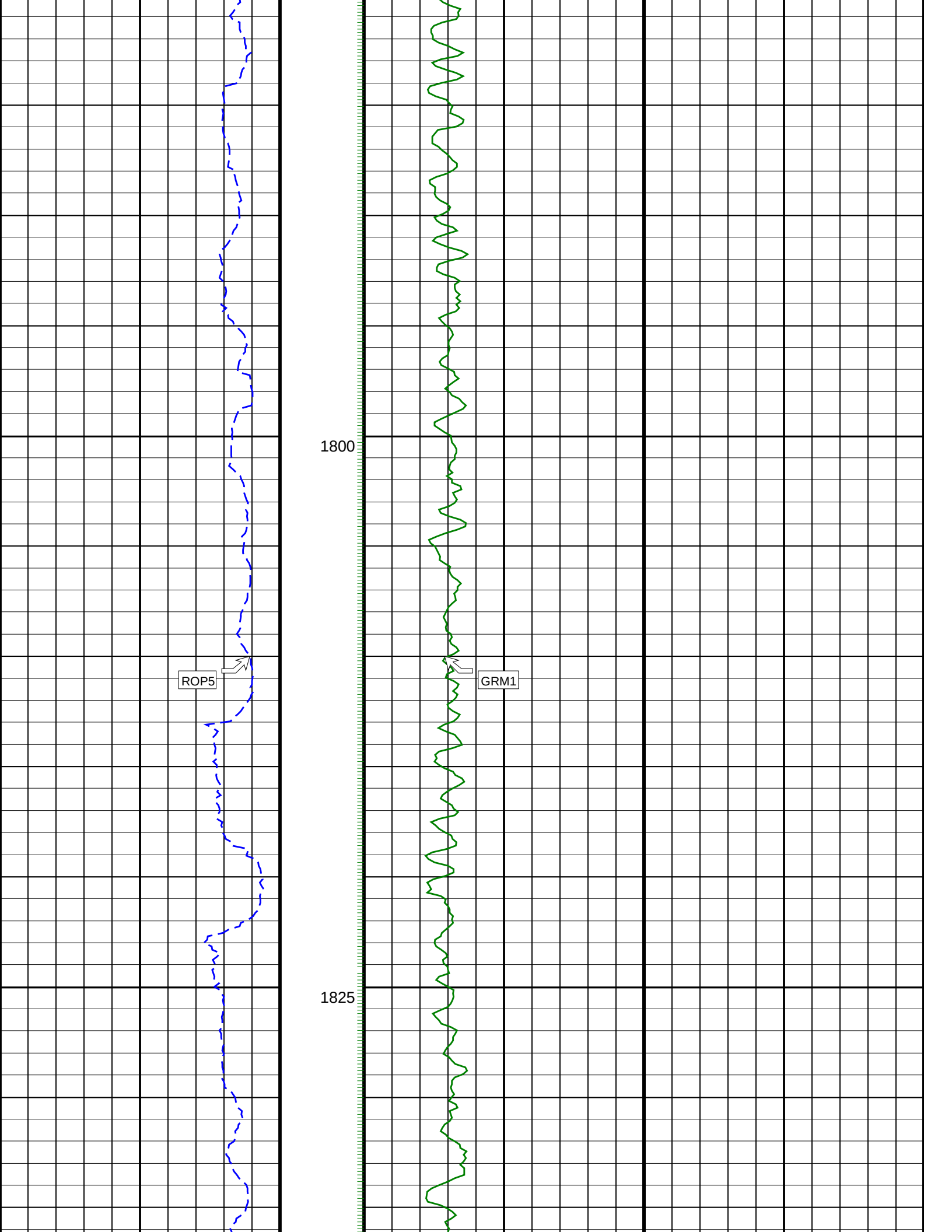
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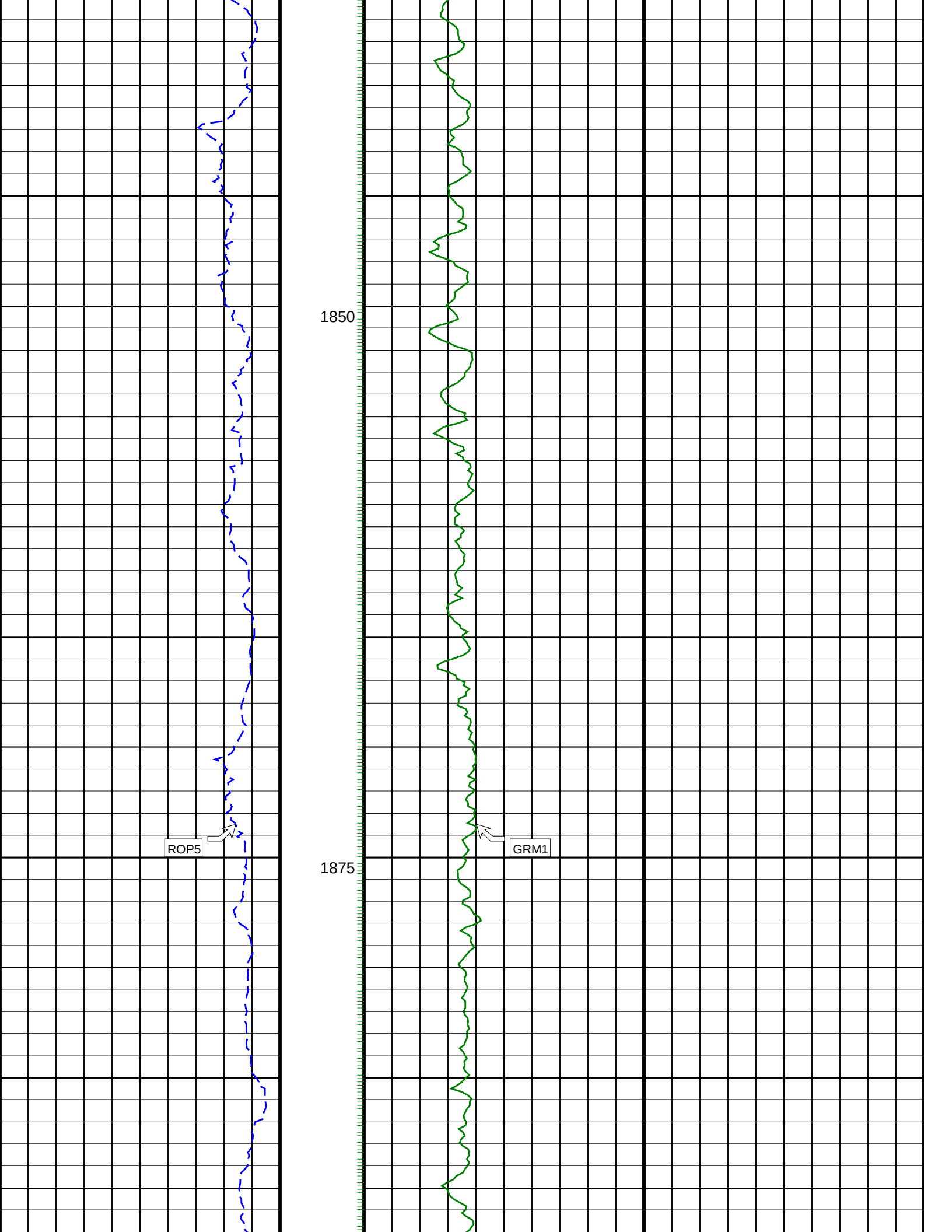
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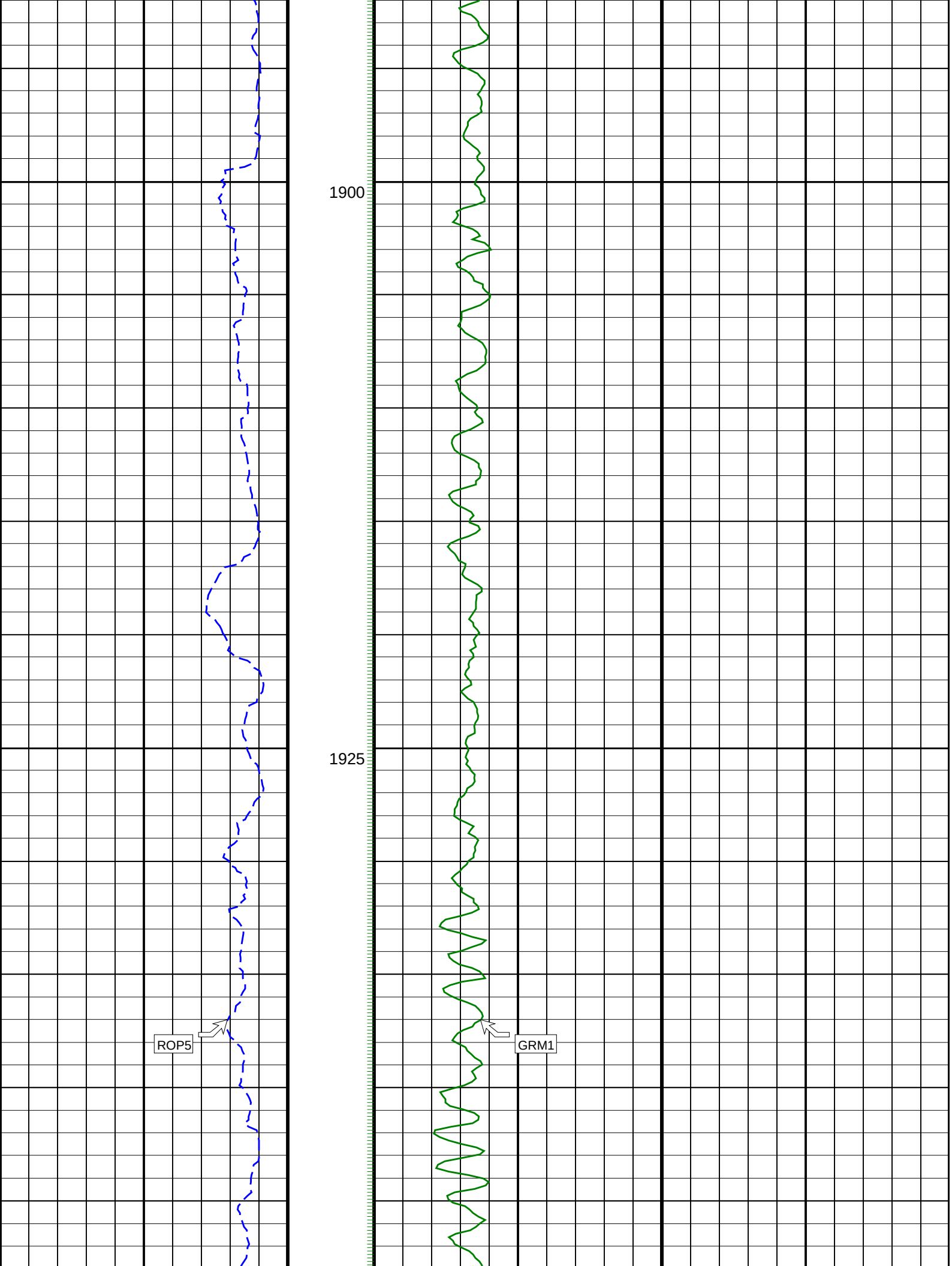
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1925
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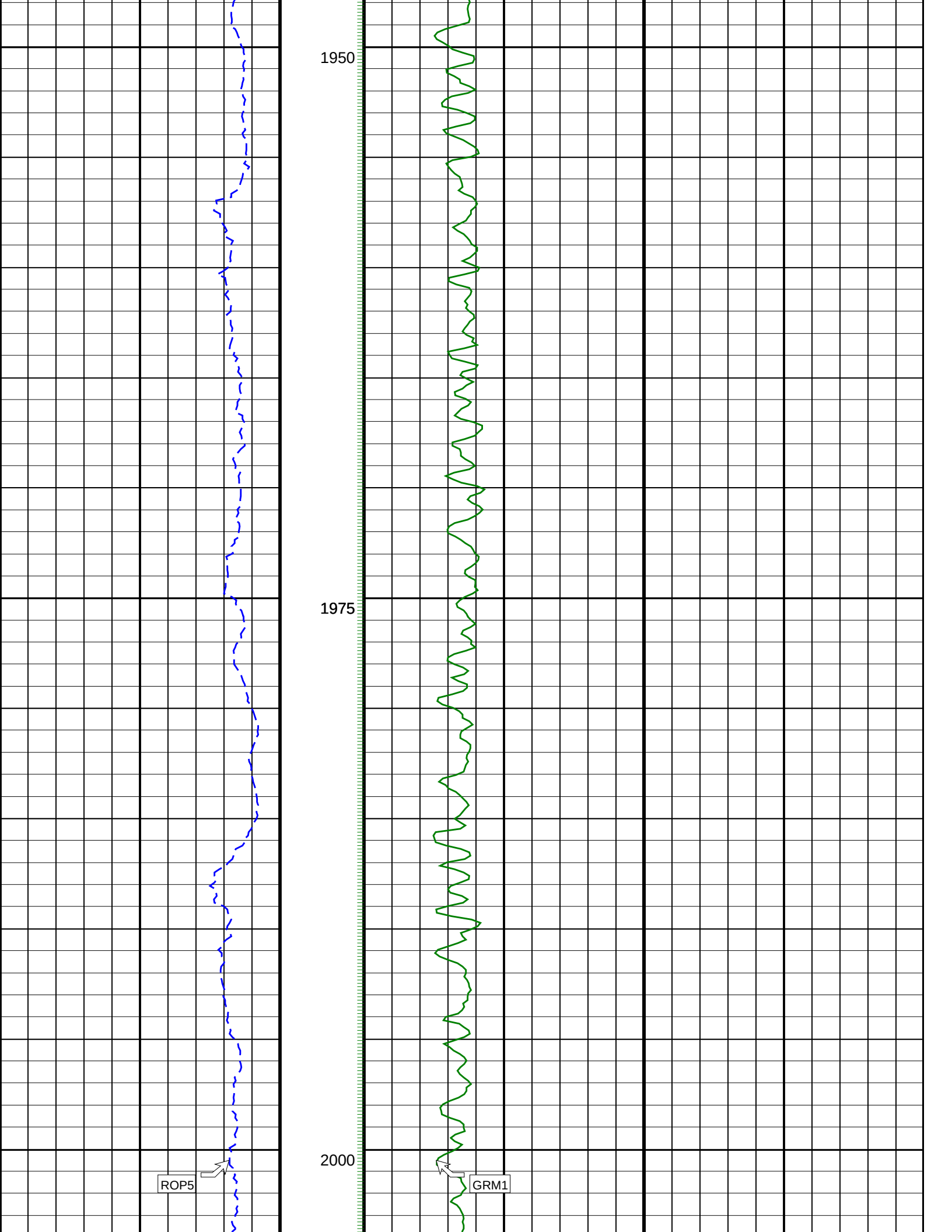
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1975
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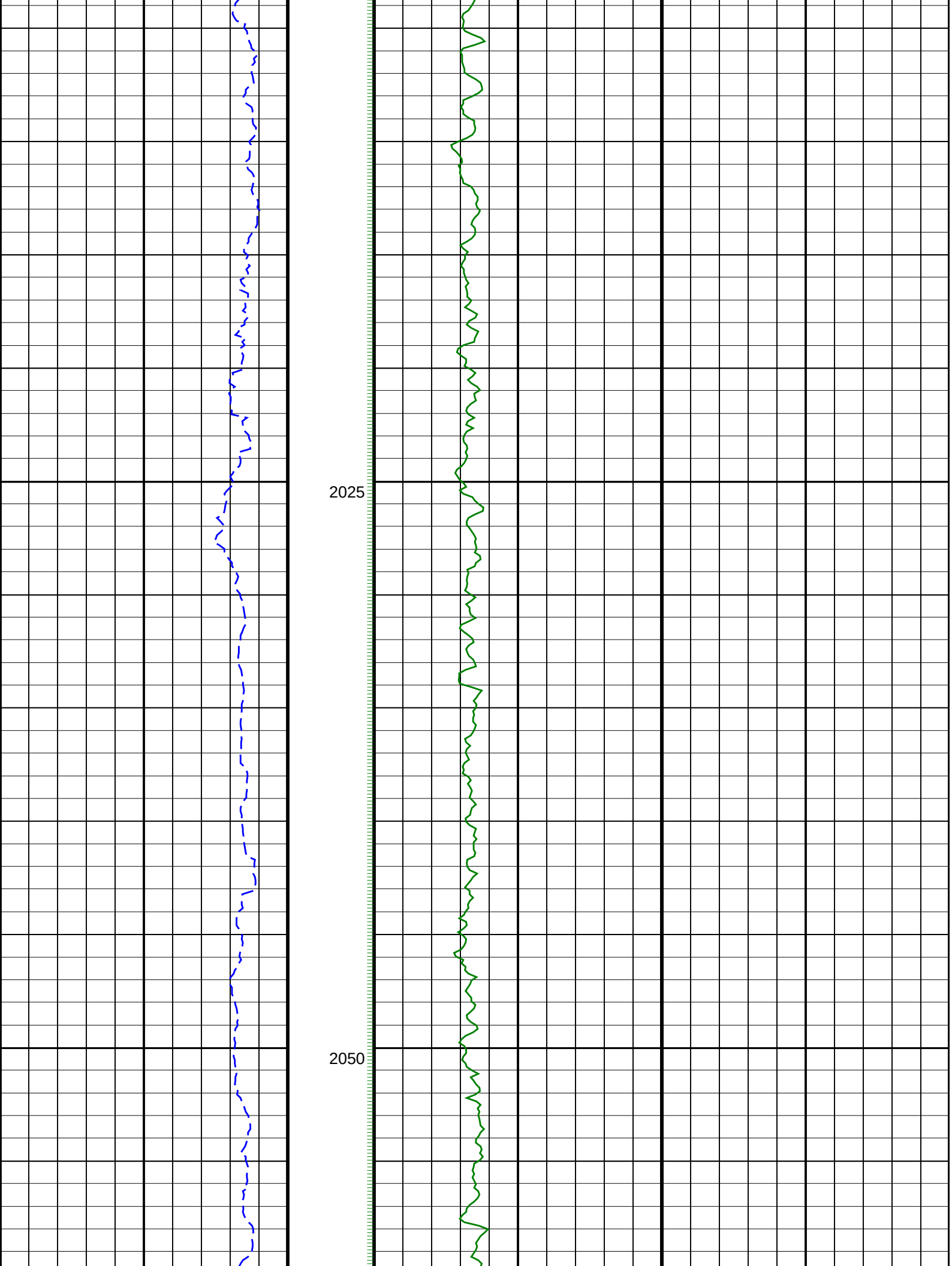
ROP5
GRM1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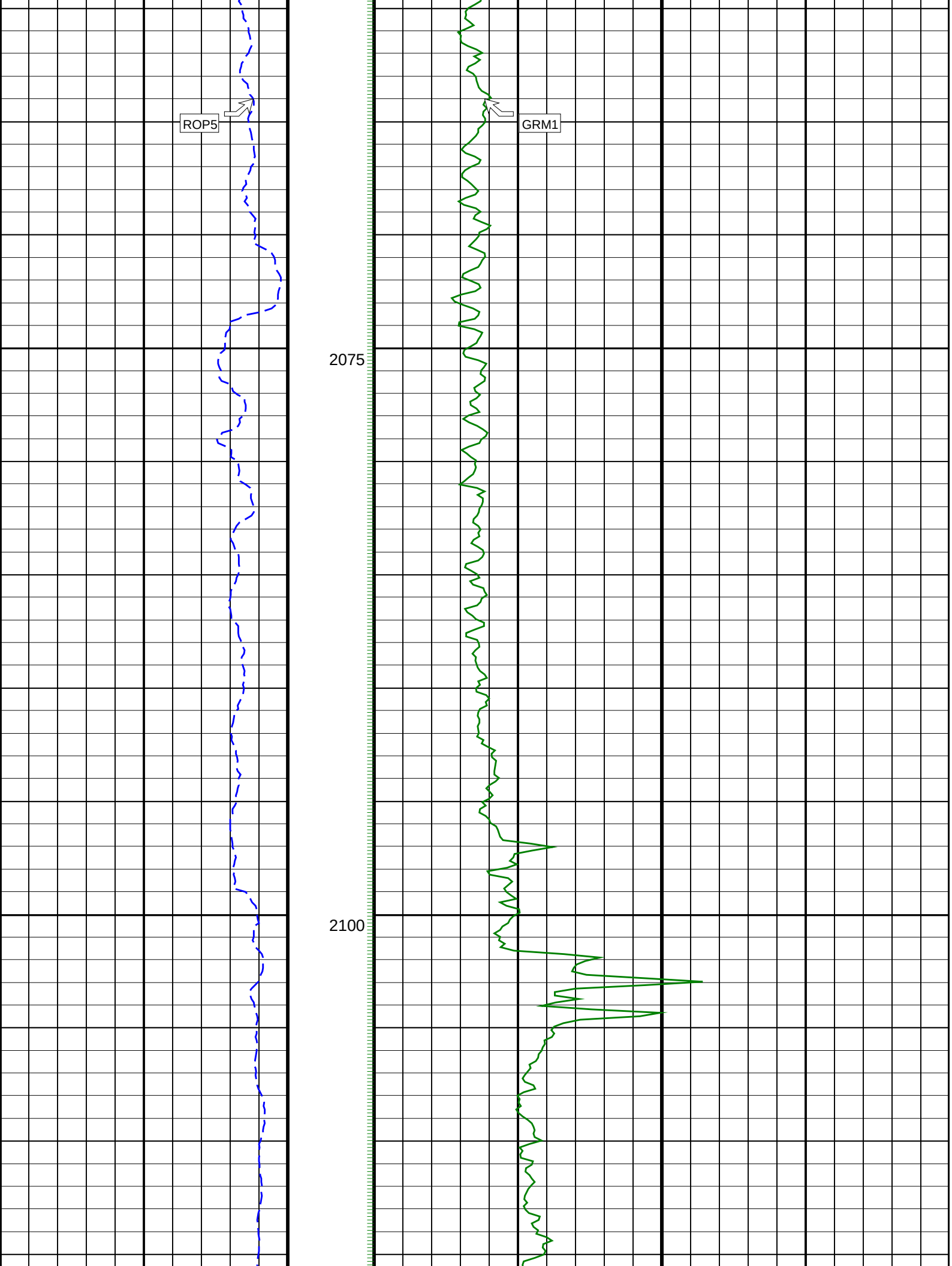
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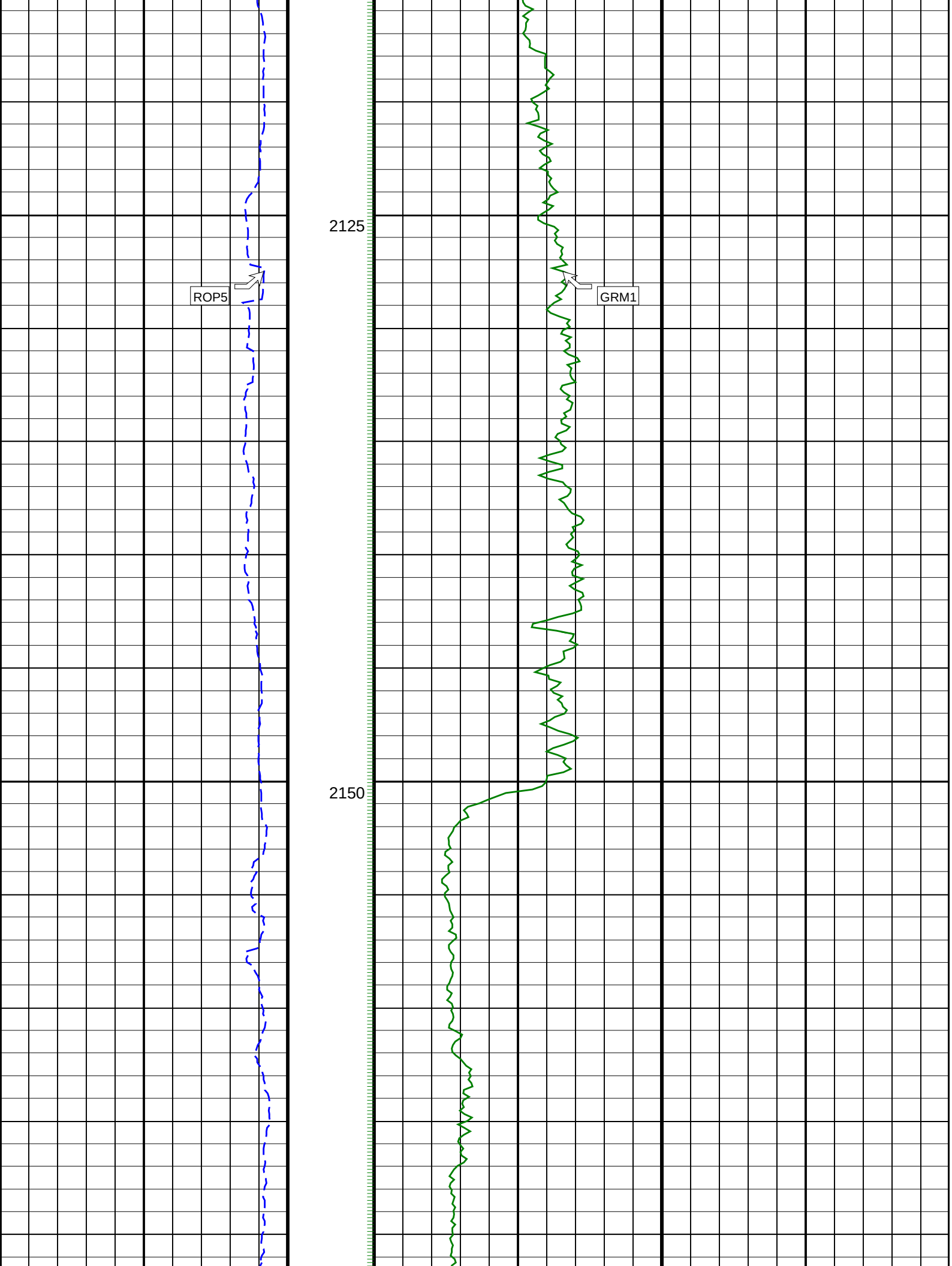
2100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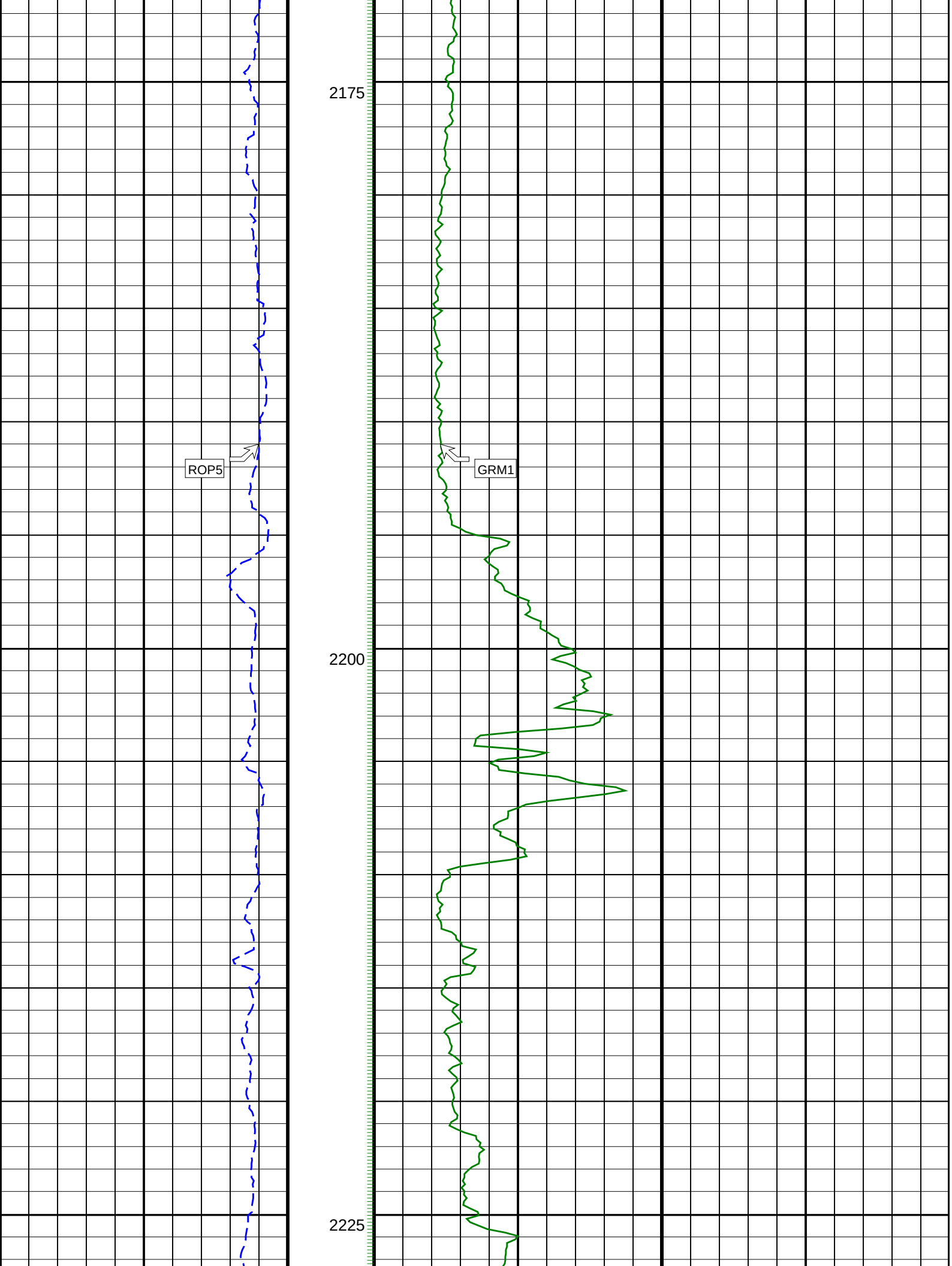
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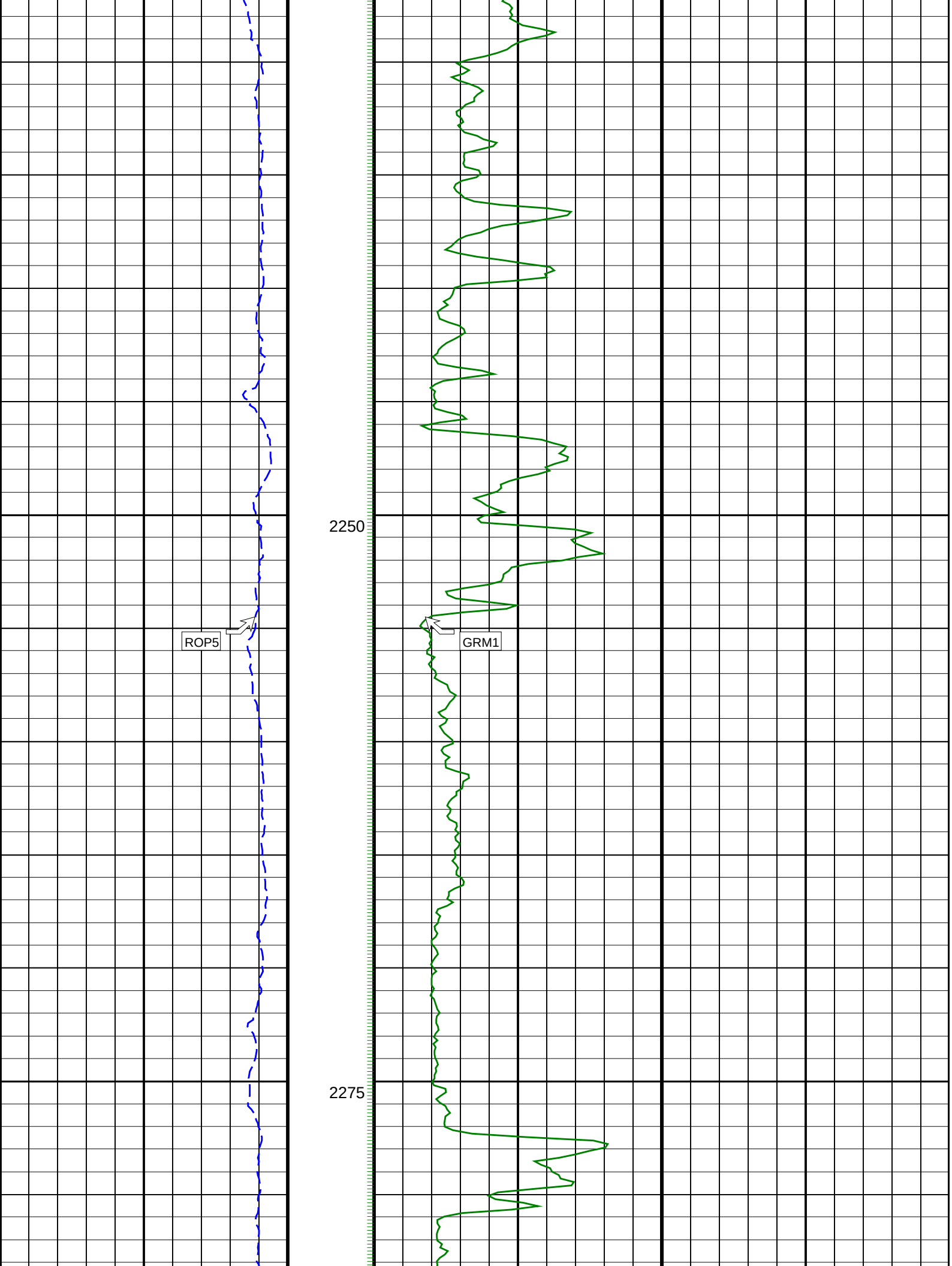
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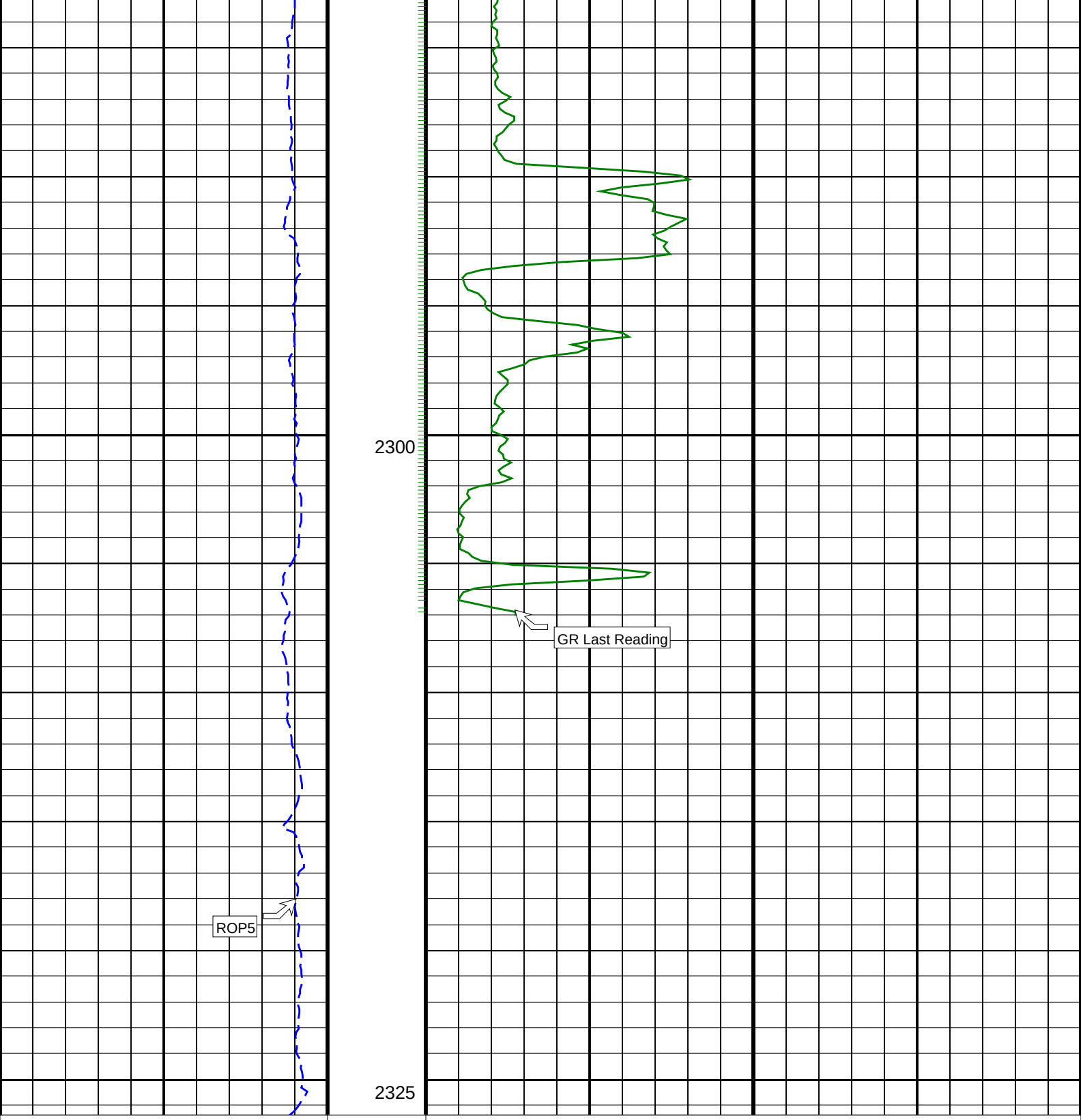

PIP SUMMARY

GR(TM) PIP

SCHLUMBERGER

Survey report 18-Oct-2005 05:08:33 Page 1 of 3

Client.....: ESSO Australia Pty. Ltd.
Field.....: Bream A

Well.....: BMA A20A
API number.....:
Engineer.....: R. Borjas, B. Pattarakorn

Spud date.....: 12-Oct-05
Last survey date.....: 17-Oct-05
Total accepted surveys...: 44
MD of first survey.....: 1123.20 m

Rig:.....: ISDL 453
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.....: -59.40 m
KB above permanent.....: 32.82 m
DF above permanent.....: 32.82 m

----- Vertical section origin----------
Latitude (+N/S-).....: -4.44 m
Departure (+E/W-).....: 1.75 m

Azimuth from Vsect Origin to target: 230.92 degrees

MD of last survey.....: 2326.00 m

----- Geomagnetic data ----------
Magnetic model.....: BGGM version 2005
Magnetic date.....: 10-Oct-2005
Magnetic field strength..: 1202.80 HCNT
Magnetic dec (+E/W-).....: 13.06 degrees
Magnetic dip.....: -69.03 degrees

----- MWD survey Reference Criteria ---------
Reference G.....: 1000.05 mGal
Reference H.....: 1202.80 HCNT
Reference Dip.....: -69.03 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections ----------
Magnetic dec (+E/W-).....: 13.06 degrees
Grid convergence (+E/W-).: -0.48 degrees
Total az corr (+E/W-)....: 13.54 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

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)	Total displ (m)	At Azim (deg)	DLS (deg/ 100f)	Srvy tool type	Tool Corr (deg)
1	1123.20	50.12	222.56	0.00	877.72	592.09	-407.56	-433.62	595.09	226.77	0.00	TIP	None
2	1130.05	47.49	222.04	6.85	882.23	597.19	-411.37	-437.09	600.23	226.74	0.39	MWD	None
3	1158.55	41.35	225.01	28.50	902.58	616.95	-425.84	-450.80	620.13	226.63	0.23	MWD	None
4	1186.68	36.10	227.21	28.13	924.52	634.48	-438.05	-463.46	637.72	226.61	0.19	MWD	None
5	1215.77	35.19	227.08	29.09	948.16	651.39	-449.58	-475.89	654.67	226.63	0.03	MWD	None
6	1244.76	33.70	227.07	28.99	972.06	667.75	-460.75	-487.89	671.07	226.64	0.05	MWD	None
7	1273.63	30.94	226.91	28.87	996.46	683.15	-471.28	-499.18	686.50	226.65	0.10	MWD	None
8	1302.40	29.31	226.75	28.77	1021.34	697.55	-481.15	-509.71	700.94	226.65	0.06	MWD	None
9	1331.20	25.98	228.95	28.80	1046.85	710.89	-490.13	-519.60	714.29	226.67	0.12	MWD	None
10	1359.76	21.86	230.77	28.56	1072.95	722.47	-497.60	-528.44	725.85	226.72	0.15	MWD	None
11	1388.77	19.17	232.97	29.01	1100.12	732.63	-503.89	-536.43	735.98	226.79	0.10	MWD	None
12	**1417.01**	**15.02**	**239.52**	**28.24**	**1127.11**	**740.88**	**-508.54**	**-543.29**	**744.16**	**226.89**	**0.16**	**MWD**	**None**
13	**1445.36**	**10.81**	**249.92**	**28.35**	**1154.74**	**747.03**	**-511.32**	**-548.96**	**750.20**	**227.03**	**0.17**	**MWD**	**None**
14	1474.78	9.02	260.03	29.42	1183.72	751.66	-512.66	-553.82	754.68	227.21	0.08	MWD	None
15	1502.94	7.99	258.30	28.16	1211.57	755.32	-513.44	-557.91	758.21	227.38	0.04	MWD	None
16	1531.72	7.61	252.76	28.78	1240.09	758.87	-514.41	-561.69	761.65	227.52	0.03	MWD	None
17	1560.64	7.50	256.14	28.92	1268.76	762.35	-515.43	-565.35	765.05	227.64	0.02	MWD	None
18	1588.81	7.68	254.24	28.17	1296.68	765.75	-516.39	-568.95	768.35	227.77	0.01	MWD	None
19	1617.61	7.60	252.84	28.80	1325.22	769.28	-517.47	-572.62	771.80	227.90	0.01	MWD	None
20	1646.36	7.28	251.97	28.75	1353.73	772.74	-518.59	-576.17	775.18	228.01	0.01	MWD	None
21	1675.14	7.18	253.68	28.78	1382.28	776.10	-519.66	-579.63	778.47	228.12	0.01	MWD	None
22	1703.77	6.89	255.33	28.63	1410.70	779.32	-520.60	-583.01	781.62	228.24	0.01	MWD	None
23	1733.18	6.64	254.42	29.41	1439.90	782.48	-521.51	-586.35	784.71	228.35	0.01	MWD	None
24	1761.59	6.22	258.30	28.41	1468.13	785.36	-522.26	-589.44	787.52	228.46	0.02	MWD	None
25	1790.90	6.07	260.30	29.31	1497.28	788.12	-522.84	-592.52	790.22	228.57	0.01	MWD	None
26	1819.91	5.75	257.97	29.01	1526.13	790.75	-523.40	-595.46	792.79	228.68	0.01	MWD	None
27	1848.48	5.62	256.99	28.57	1554.56	793.28	-524.02	-598.22	795.27	228.78	0.01	MWD	None
28	1877.30	5.53	257.37	28.82	1583.24	795.79	-524.64	-600.95	797.74	228.88	0.00	MWD	None
29	1906.02	5.55	256.59	28.72	1611.83	798.28	-525.26	-603.65	800.18	228.97	0.00	MWD	None
30	1934.96	5.39	257.55	28.94	1640.64	800.76	-525.88	-606.34	802.62	229.06	0.01	MWD	None

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)	Total displ (m)	At Azim (deg)	DLS (deg/ 100f)	Srvy tool type	Tool Corr (deg)
31	1963.74	5.23	257.27	28.78	1669.29	803.14	-526.46	-608.94	804.96	229.15	0.01	MWD	None
32	1993.31	5.19	255.69	29.57	1698.74	805.56	-527.09	-611.55	807.35	229.24	0.01	MWD	None
33	2020.70	5.03	254.63	27.39	1726.02	807.79	-527.71	-613.91	809.54	229.32	0.01	MWD	None
34	2049.27	5.09	254.20	28.57	1754.48	810.10	-528.39	-616.33	811.83	229.39	0.00	MWD	None
35	2077.81	5.37	254.60	28.54	1782.90	812.48	-529.09	-618.84	814.19	229.47	0.01	MWD	None
36	2106.43	5.47	255.61	28.62	1811.40	814.95	-529.78	-621.45	816.62	229.55	0.00	MWD	None
37	2134.94	5.59	253.27	28.51	1839.77	817.47	-530.52	-624.10	819.12	229.63	0.01	MWD	None
38	2163.87	5.60	251.38	28.93	1868.57	820.09	-531.38	-626.79	821.72	229.71	0.01	MWD	None
39	2192.89	6.08	250.96	29.02	1897.43	822.87	-532.33	-629.58	824.47	229.78	0.02	MWD	None
40	2221.62	6.23	249.36	28.73	1926.00	825.77	-533.38	-632.48	827.36	229.86	0.01	MWD	None
41	2250.35	6.42	249.94	28.73	1954.55	828.77	-534.48	-635.44	830.33	229.93	0.01	MWD	None
42	2278.98	6.58	249.35	28.63	1983.00	831.84	-535.60	-638.48	833.39	230.01	0.01	MWD	None
43	2305.83	6.41	248.34	26.85	2009.68	834.73	-536.70	-641.32	836.26	230.07	0.01	MWD	None
44	2326.00	6.35	248.00	20.17	2029.72	836.87	-537.53	-643.40	838.39	230.12	0.00	Proj. to TD	

Company:	**ESSO Australia Pty. Ltd.**
Well:	**BMA A20A**
Field:	**Bream A**
Rig:	**ISDL 453**
State:	**Victoria**

Schlumberger

Gamma Ray Service
1:200 Measured Depth
Real Time Log