



Weatherford

**CML MESSENGER SHUTTLE
ARRAY INDUCTION**

COMPANY	Sandridge Energy		
WELL	Gabriel 3120 1-12H		
FIELD	Six Moons		
PROVINCE/COUNTY	Comanche		
COUNTRY/STATE	U.S.A. / Kansas		
LOCATION	330' FNL & 660' FEL		
SEC	TWP	RGE	Other Services
13	31S	20W	MDNMMPD
API Number	15-033-21693		
Permit Number			
Permanent Datum G.L., Elevation 2042 feet			Elevations: feet
Log Measured From KB			KB 2060.00
Drilling Measured From K.B. @ 18 feet			DF 2060.00
			GL 2042.00
Date	15-MAR-2013		
Run Number	One		
Service Order	3540322		
Depth Driller	10314.00		
Depth Logger	10314.00		
First Reading	10289.00		
Last Reading	5517.00		
Casing Driller	5517.00		
Casing Logger	5517.00		
Bit Size	6.125		
Hole Fluid Type	WBM		
Density / Viscosity	9.00	lb/USg	35.00 CP
PH / Fluid Loss	10.50		10.50
Sample Source	Flowline		
Rm @ Measured Temp	0.84 @ 71.0 ohm-m		
Rmf @ Measured Temp	0.67 @ 71.0 ohm-m		
Rmc @ Measured Temp	1.01 @ 71.0 ohm-m		
Source Rmf / Rmc	Calc		Calc
Rm @ BHT	0.46 @130.0		ohm-m
Time Since Circulation	1 hour		
Max Recorded Temp	130.00		deg F
Equipment / Base	18077		okc
Recorded By	Steven Tolley		
Witnessed By	J Hileman		
AFE	DC11857		

BOREHOLE RECORD				Last Edited: 15-MAR-2013 16:38
Bit Size inches	Depth From feet		Depth To feet	
8.750	0.00		5517.00	
6.125	5517.00		10314.00	
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
inter	7.000	0.00	5517.00	24.00

REMARKS
LOGGED WITH WLS 13.04.8492
LOGGED USING MESSENGER SHUTTLE METHOD OF DEPLOYMENT
TOOLS RAN: SRT-69,,200V MBS-114,MMSE133,MTI-076, MGS-142,MCL-063,SKJ-472,SHA-438,MIS-608, MDN-391, MPD-394,MIS-607, SHA-167, SKJ-479,, MAI-170 RAN IN COMBINATION
HARDWARE: MAI: MIS-B 0.5" STANDOFF USED ABOVE MAI, ISA STAND-OFF RAN BELOW MAI
MFE: MIS-B 0.5" STANDOFF USED ABOVE MFE
MDN: MIS-A DOUBLE BOWSPRING USED ABOVE MDN.
MPD: 4INCH PROFILE PLATE USED, MIS-A SINGLE BOWSPRING USED BELOW MPD
2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY
ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST
DRILL PIPE DEPTH DURING DEPLOYMENT: 10209

DRILL FILE DEPTH AFTER DEPLOYMENT: 10292

OPERATORS: Drew Turner and Ryan Bradshaw

RIG: LARIAT #45

LOG RESPONSES EFFECTED BY HOLE RUGOSITY

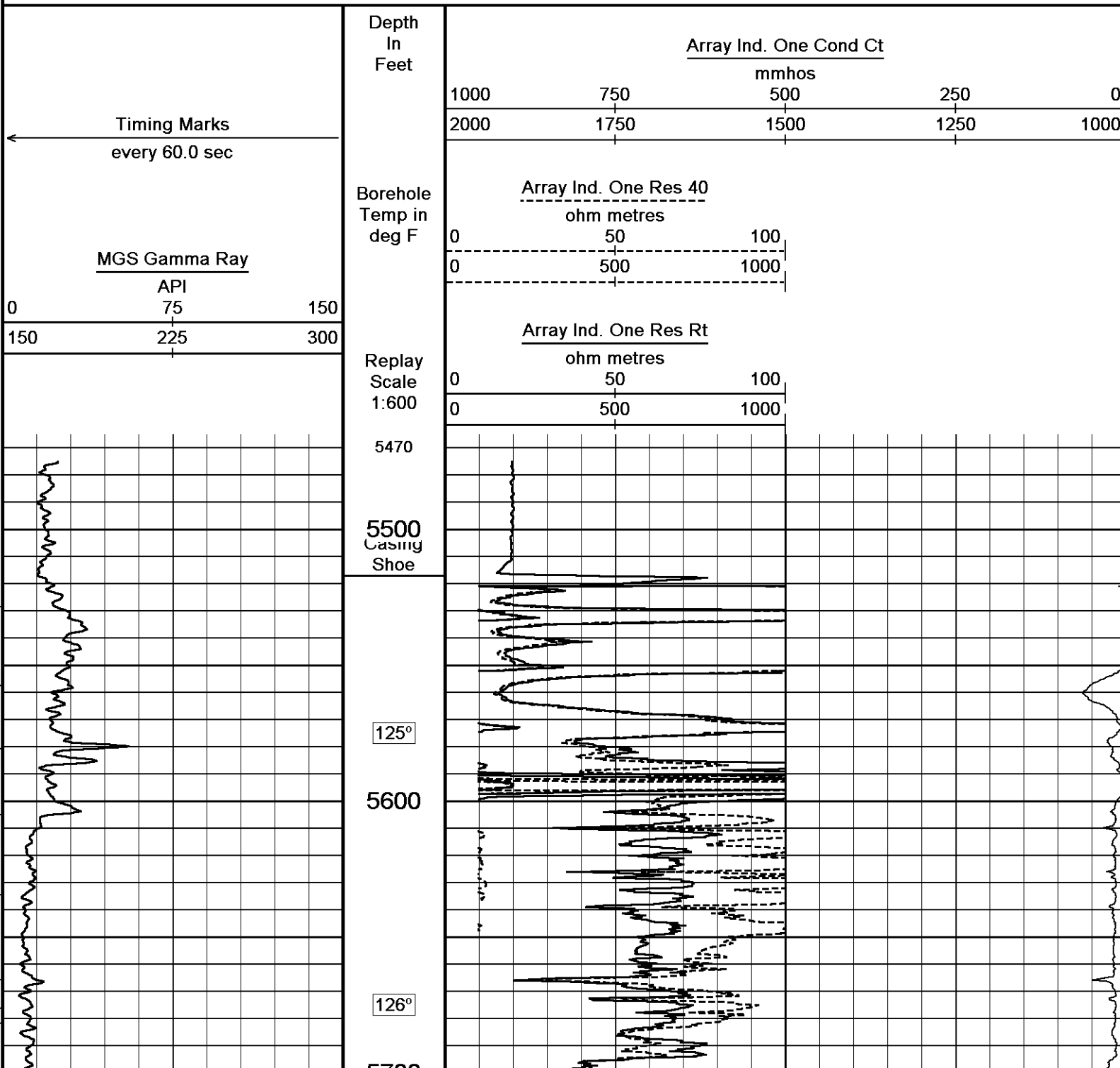
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, 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 in our price schedule.

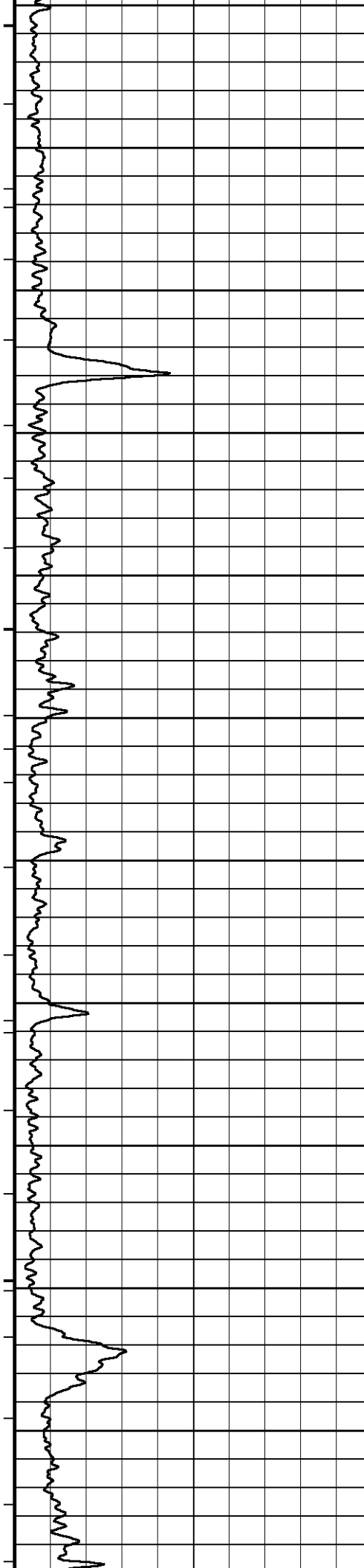
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Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DATA_13_04_8492\Sandridge Gabriel 3120 1-12H\Gabriel 3120 1-12H rtap depth.dta
System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

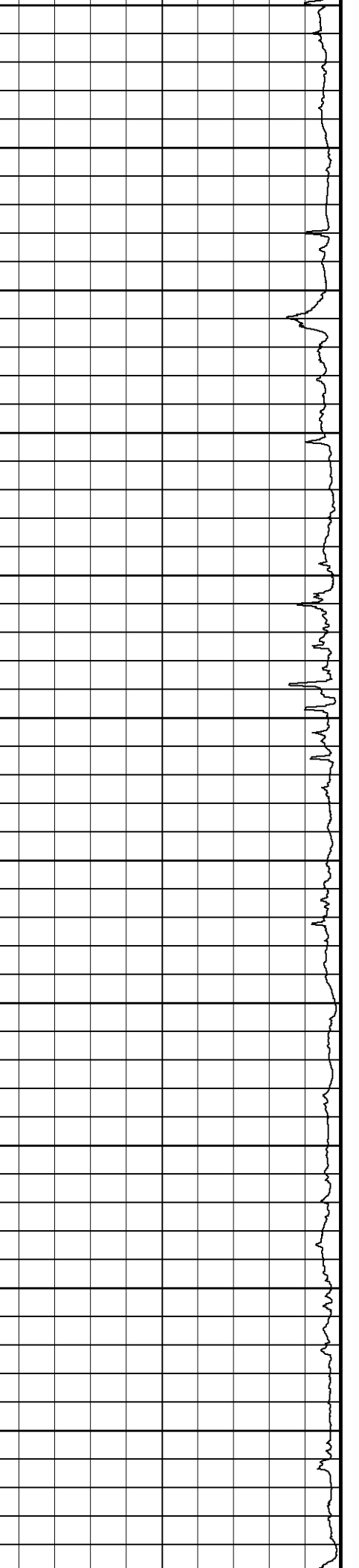
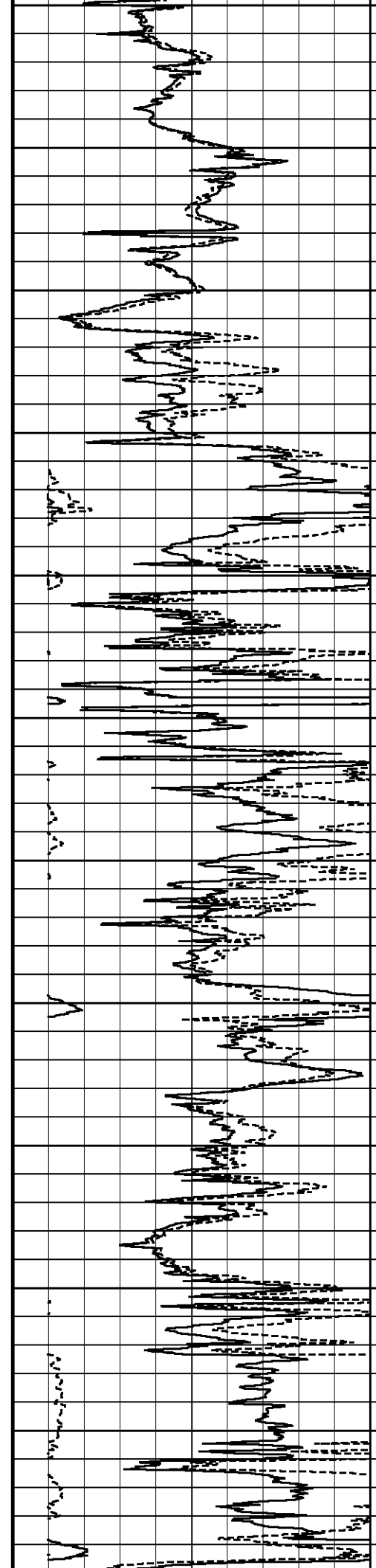
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Recorded on 15-MAR-2013 16:21

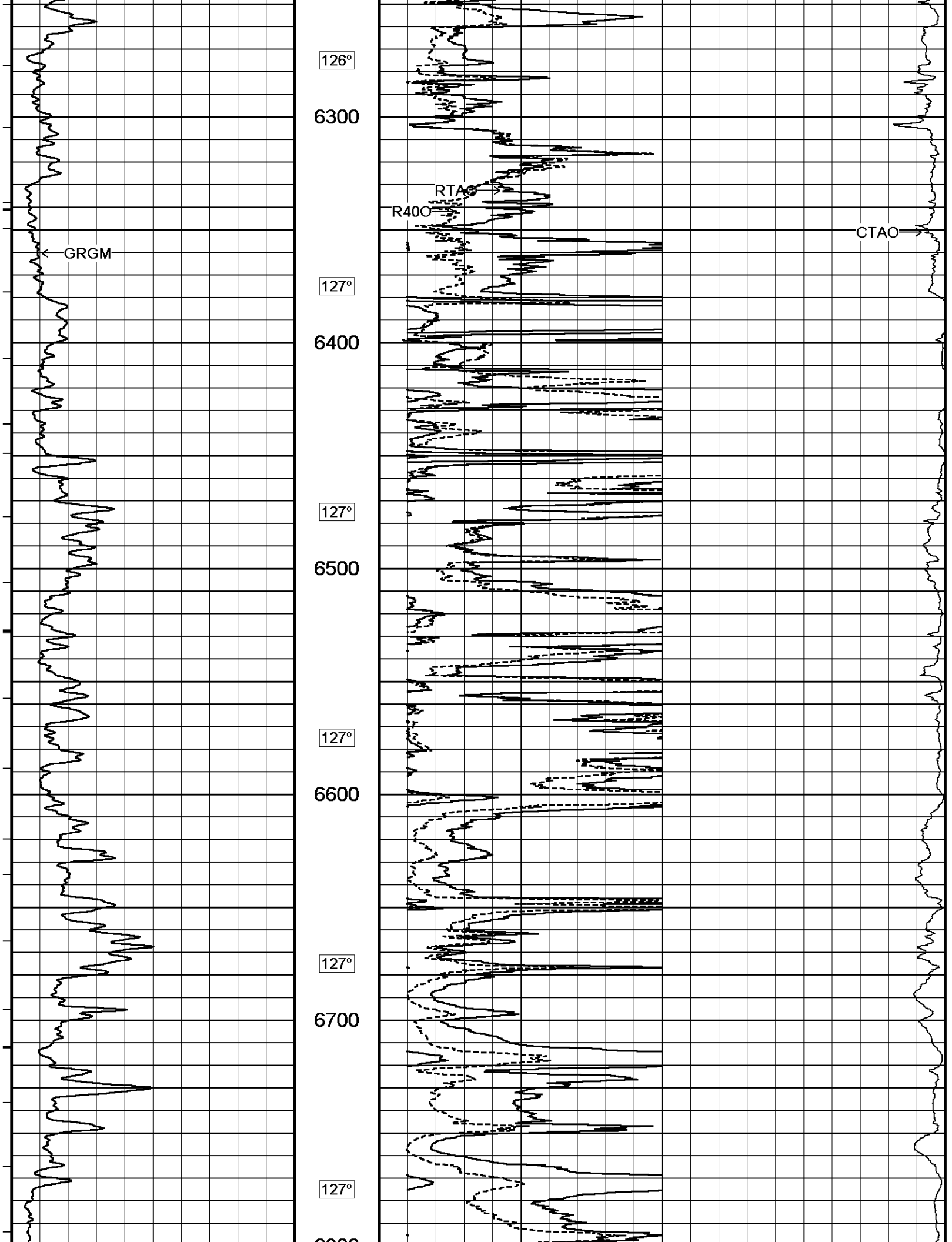
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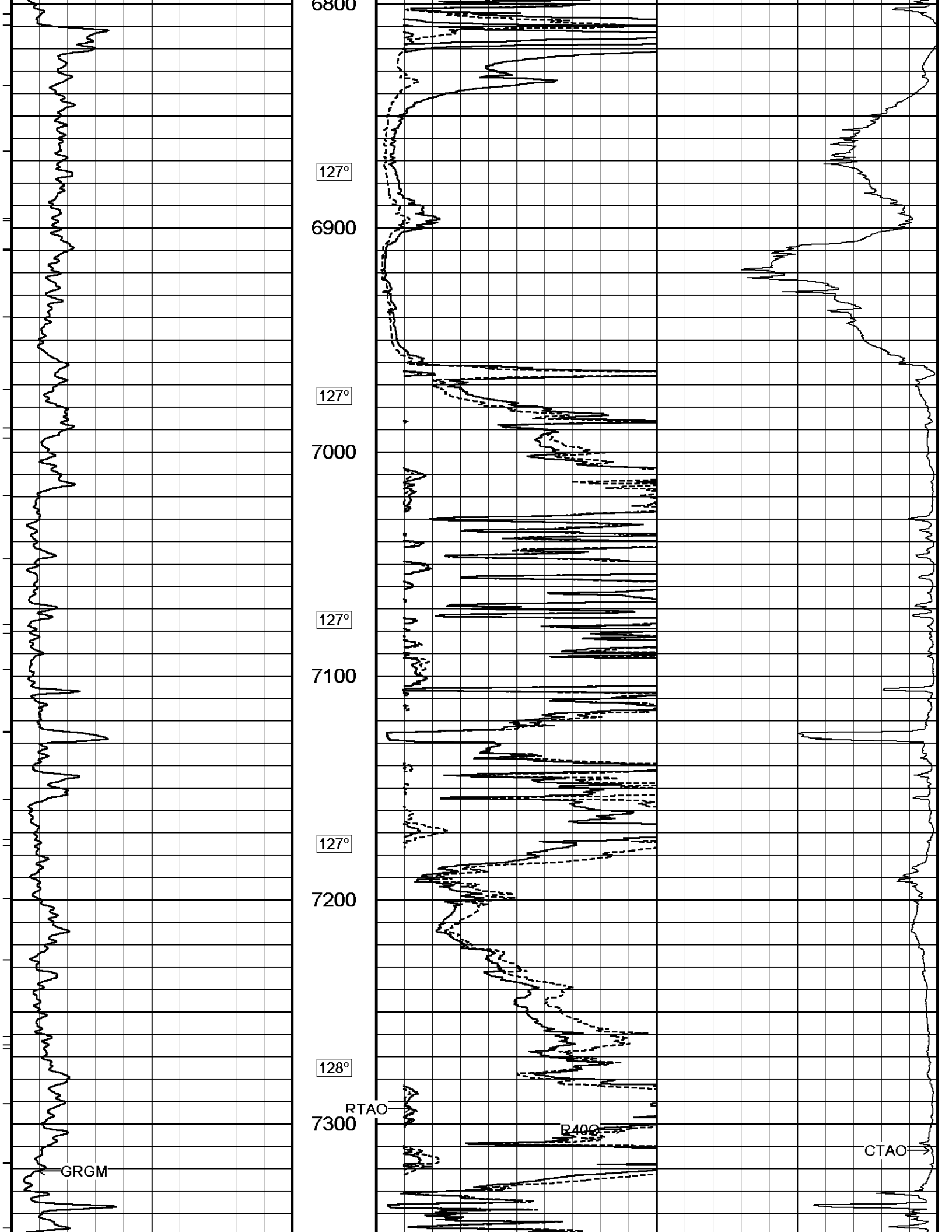


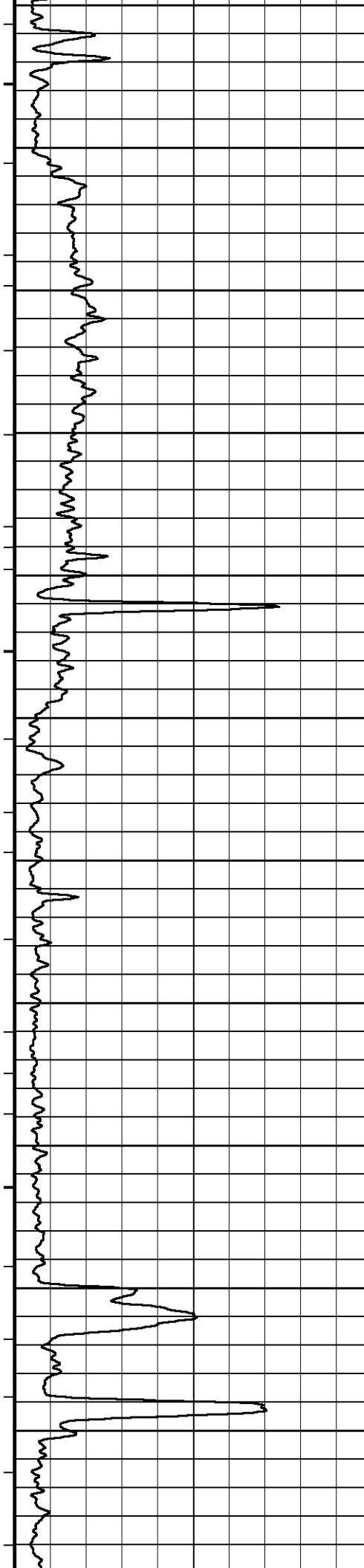


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126°
5800
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6000
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6100
126°
6200









128°

7400

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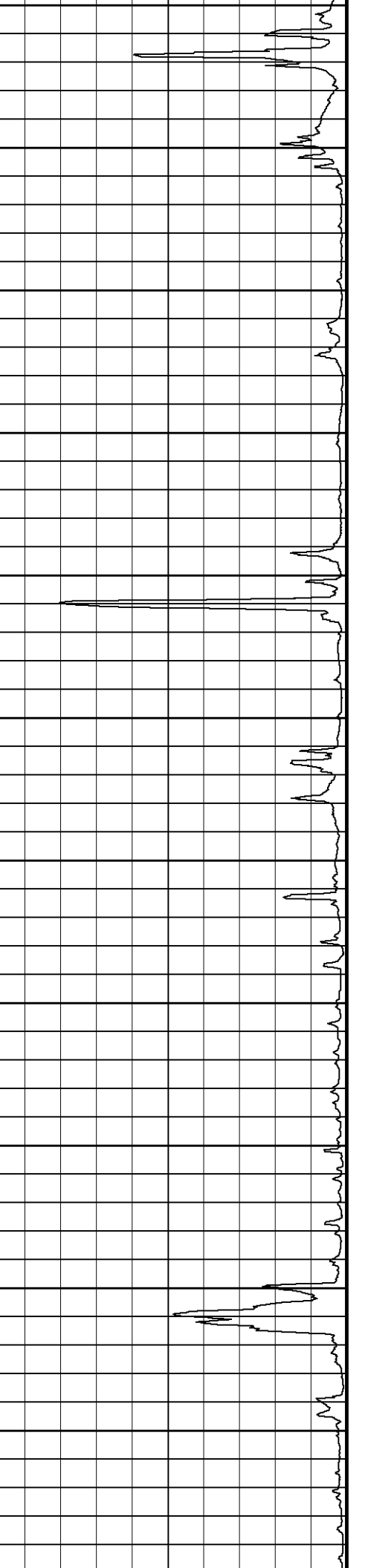
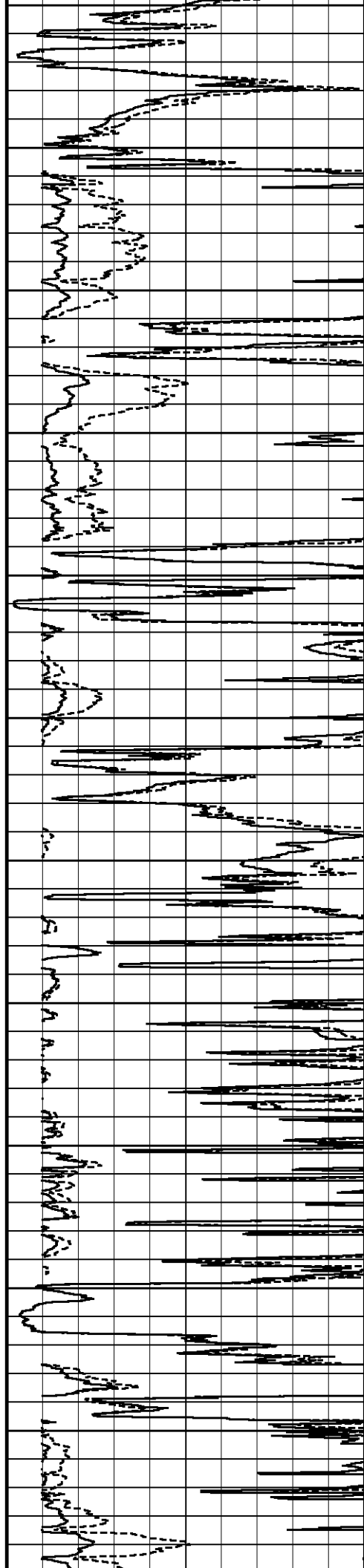
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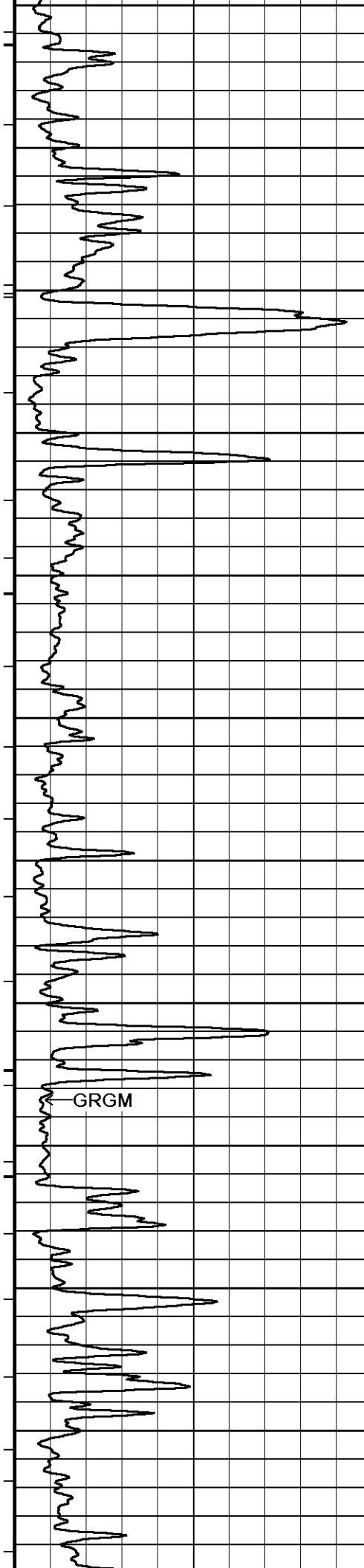
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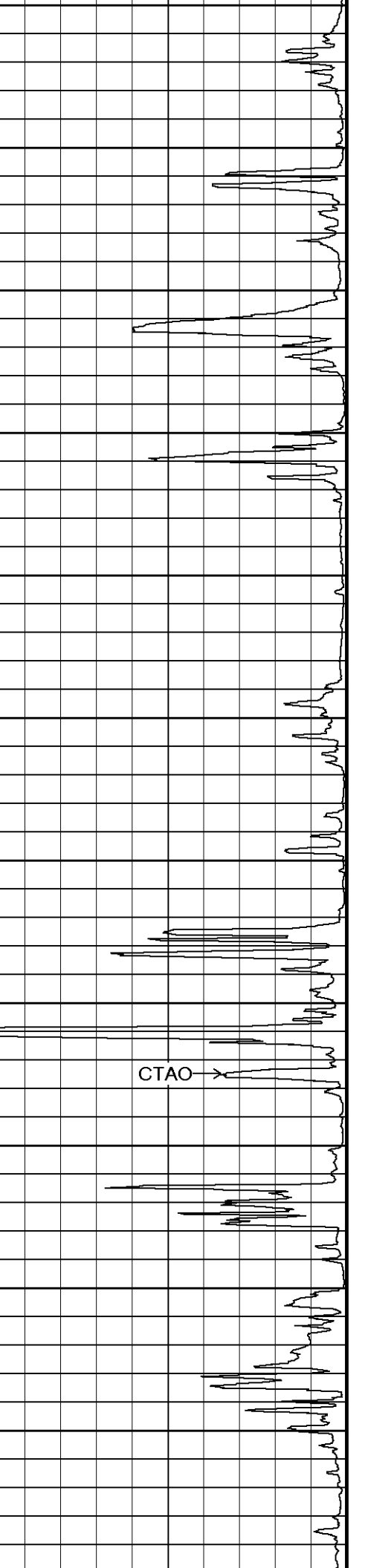
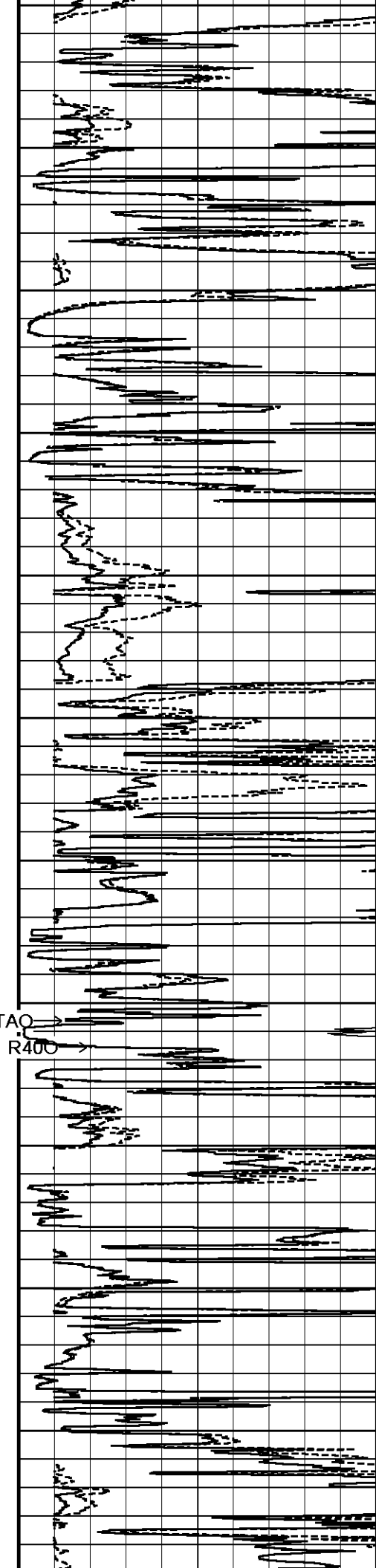
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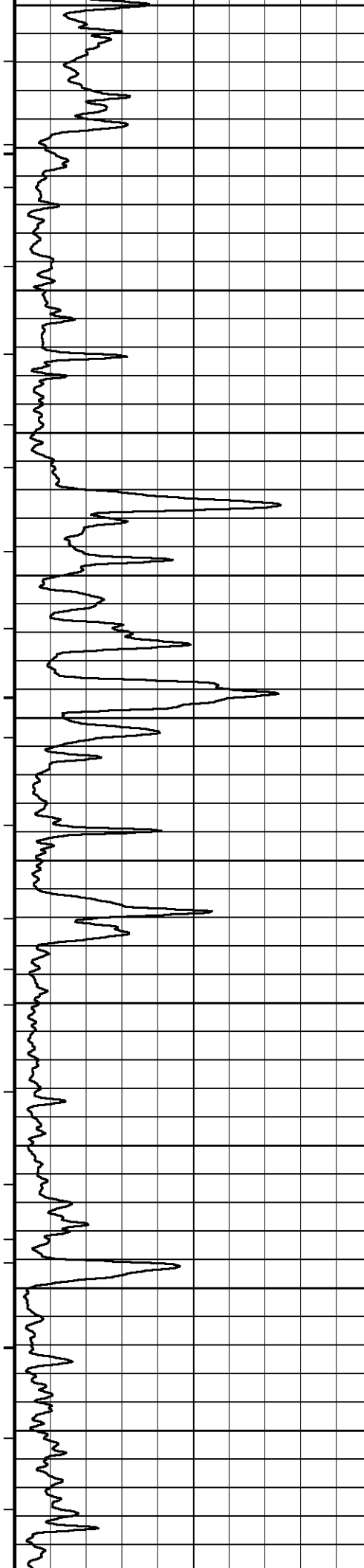
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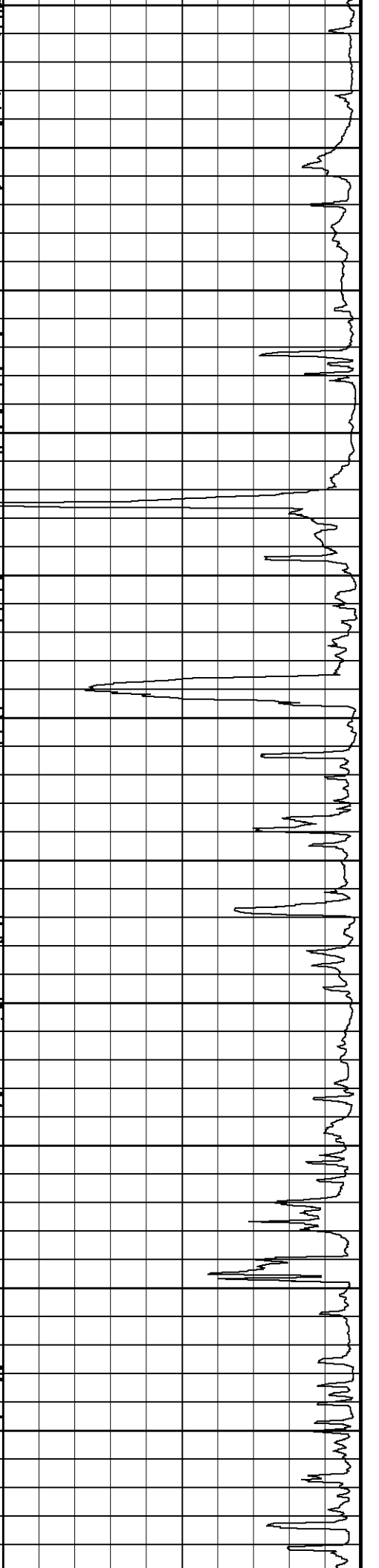
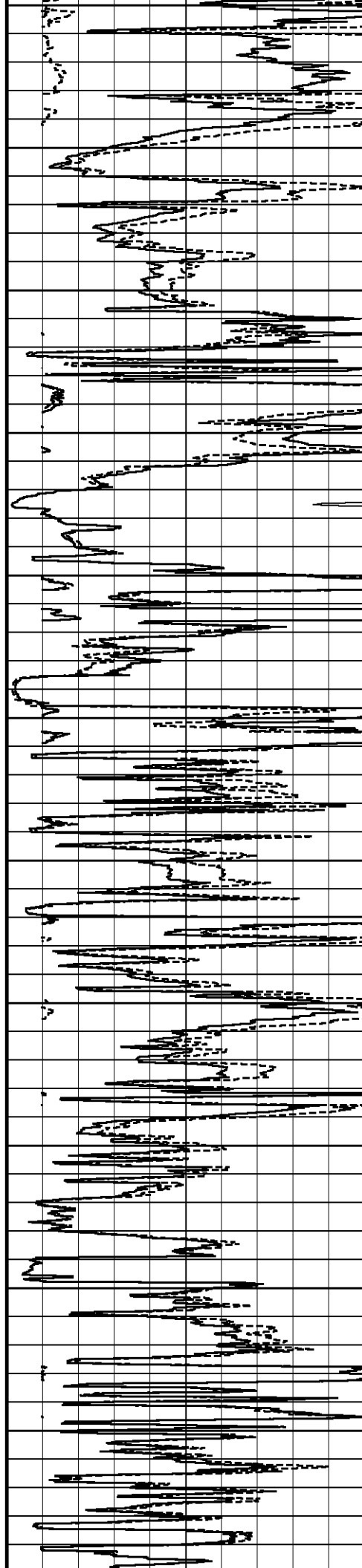
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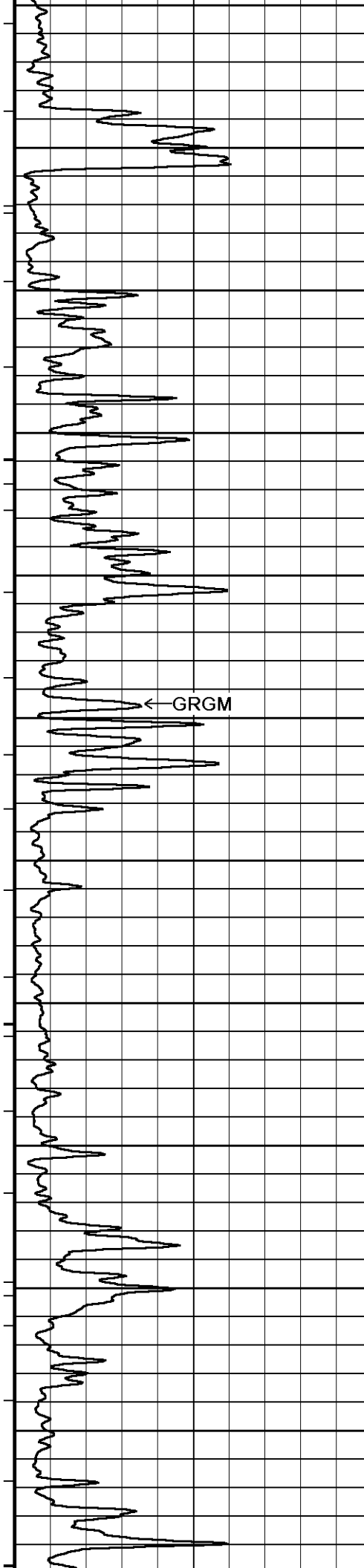
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9200

RTAO

CTAO

129°

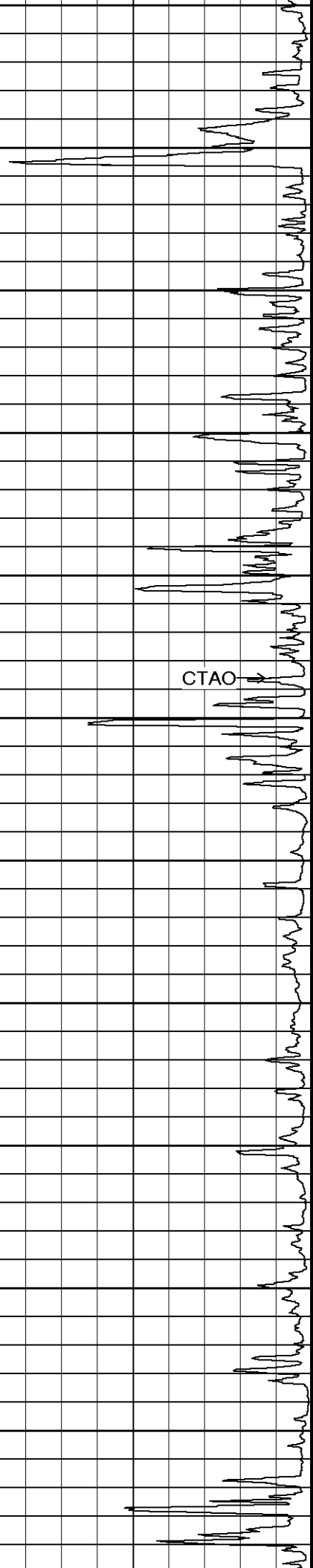
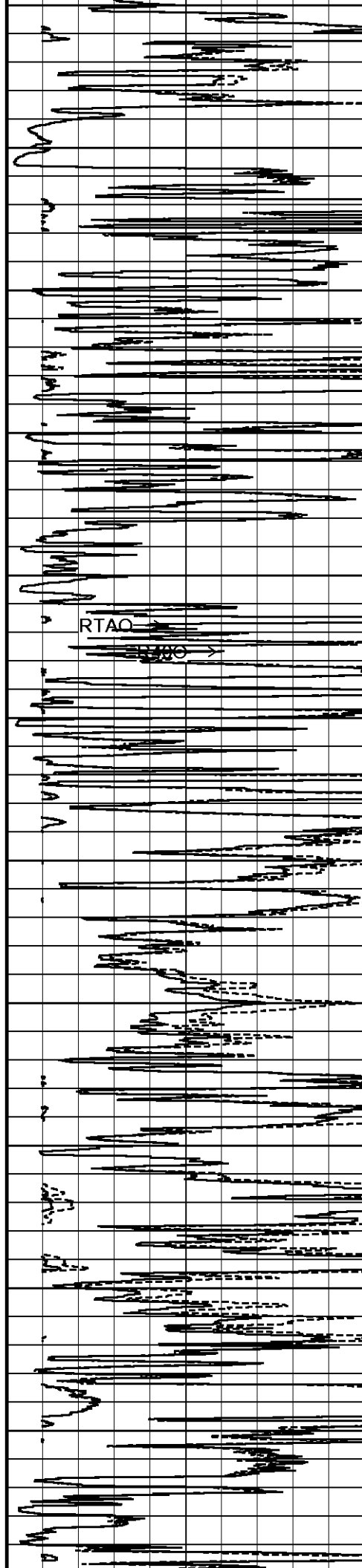
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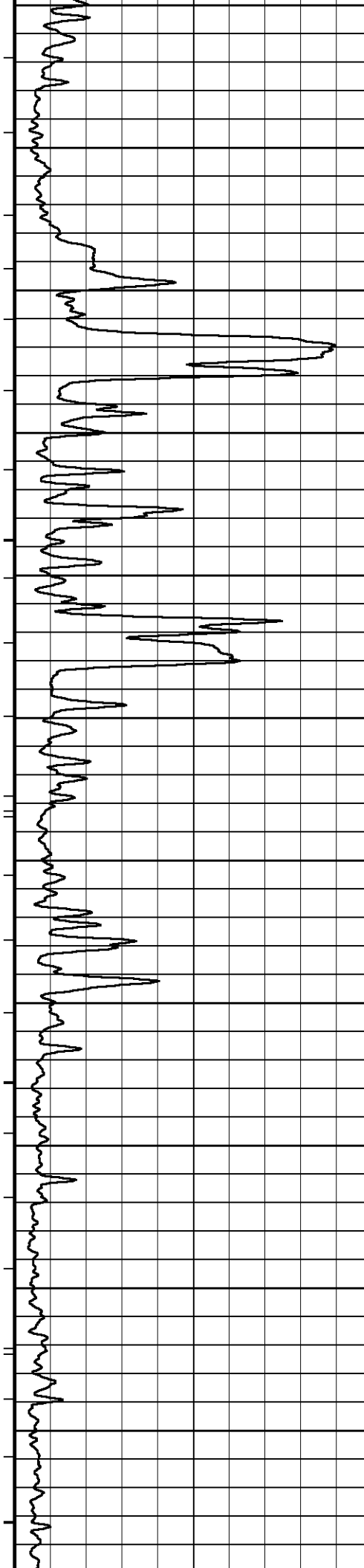
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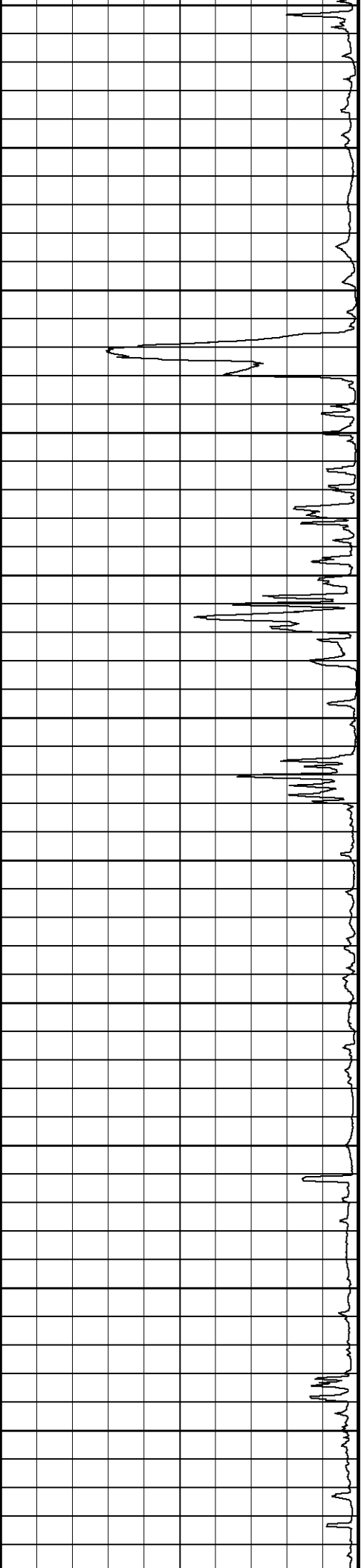
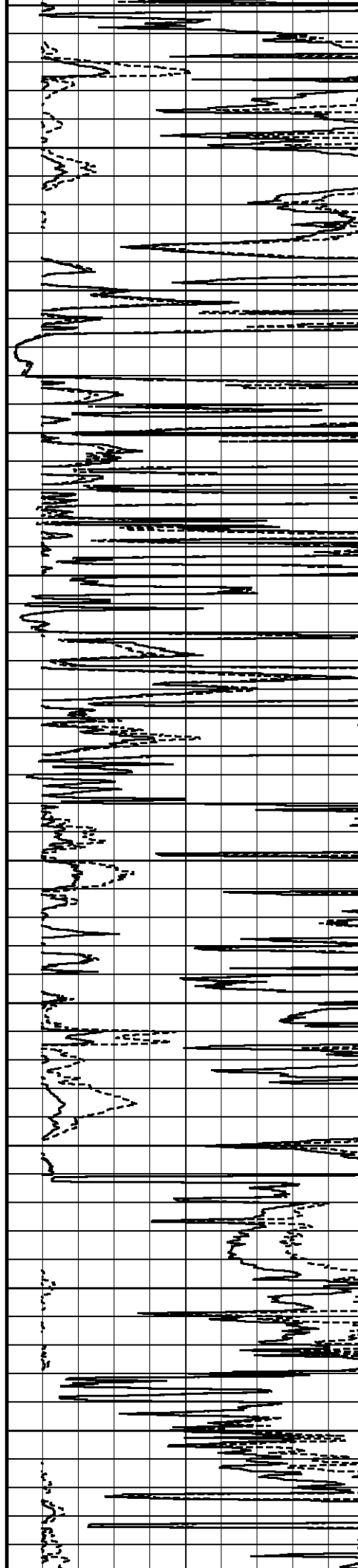
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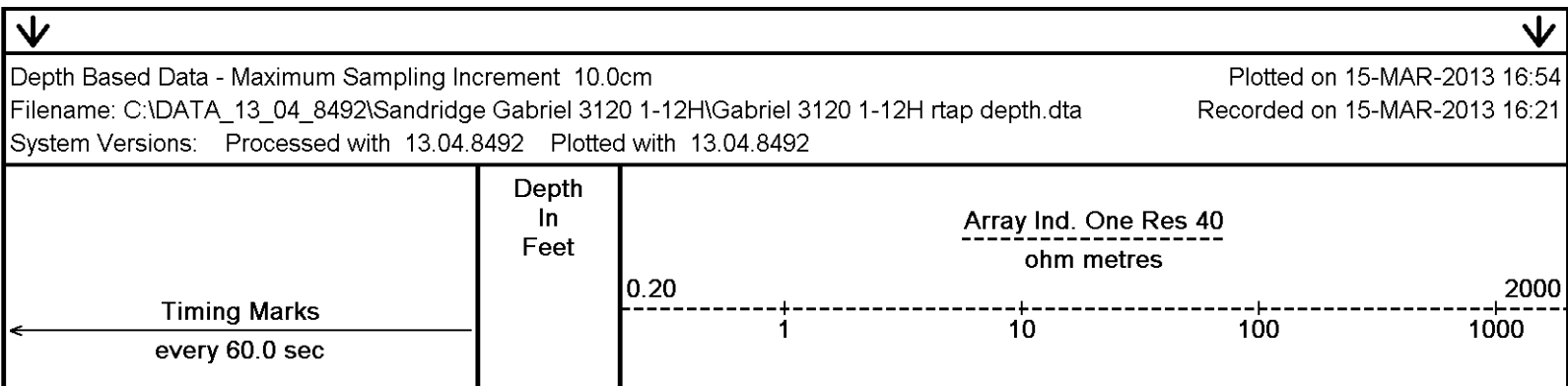
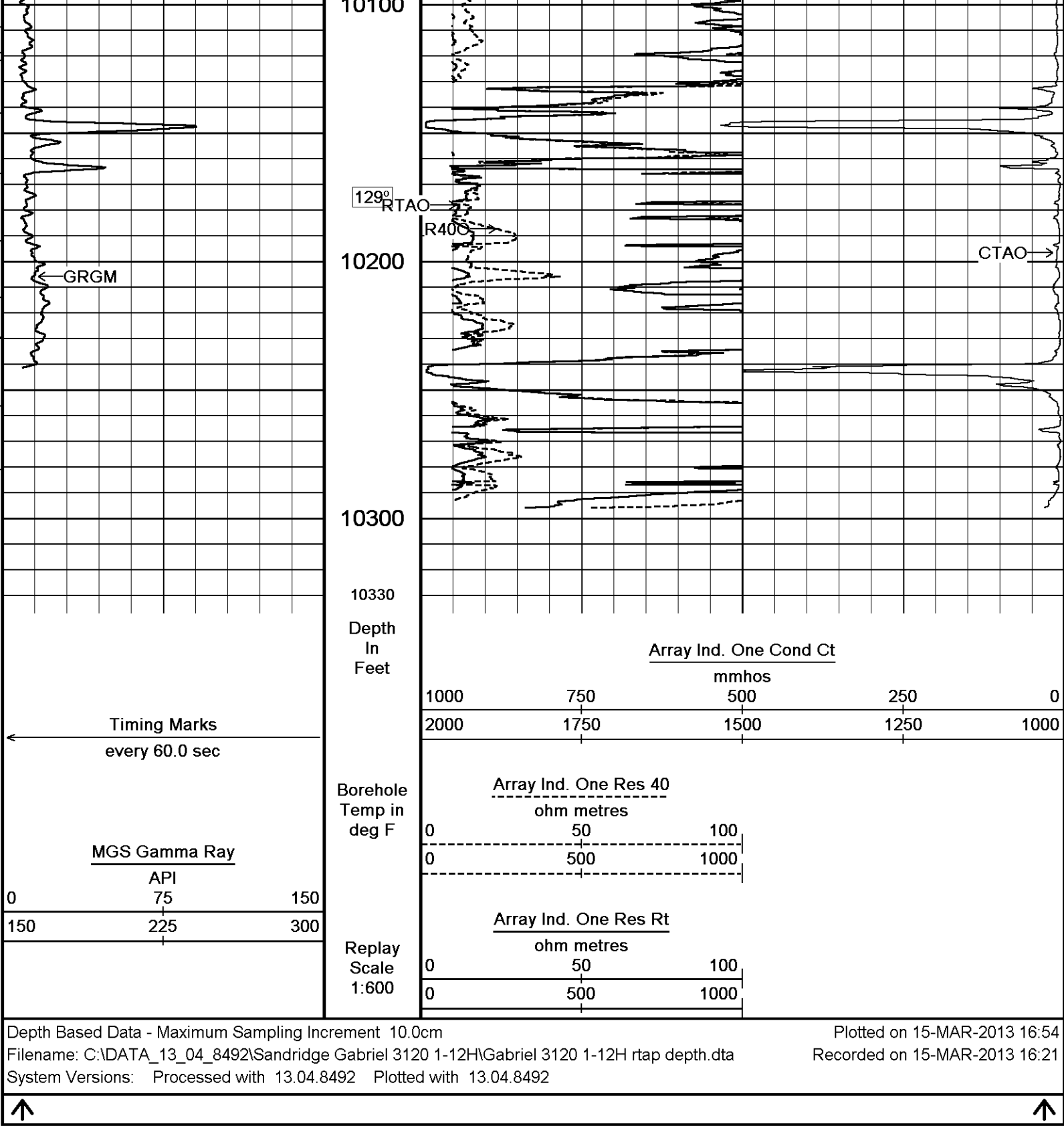
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10000

129°

10100







Borehole
Temp in
deg F

Replay
Scale
1:240

5474

5500

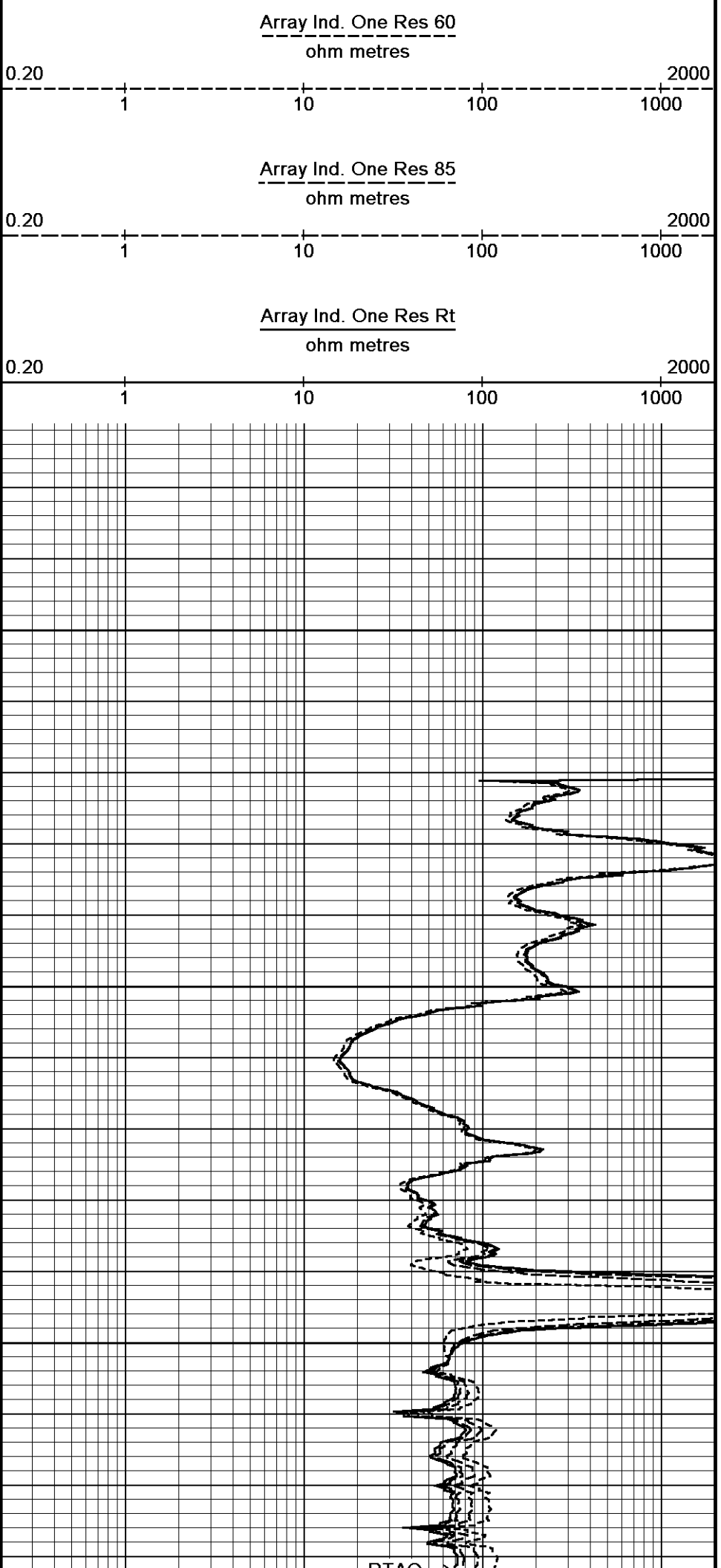
Casing
Shoe

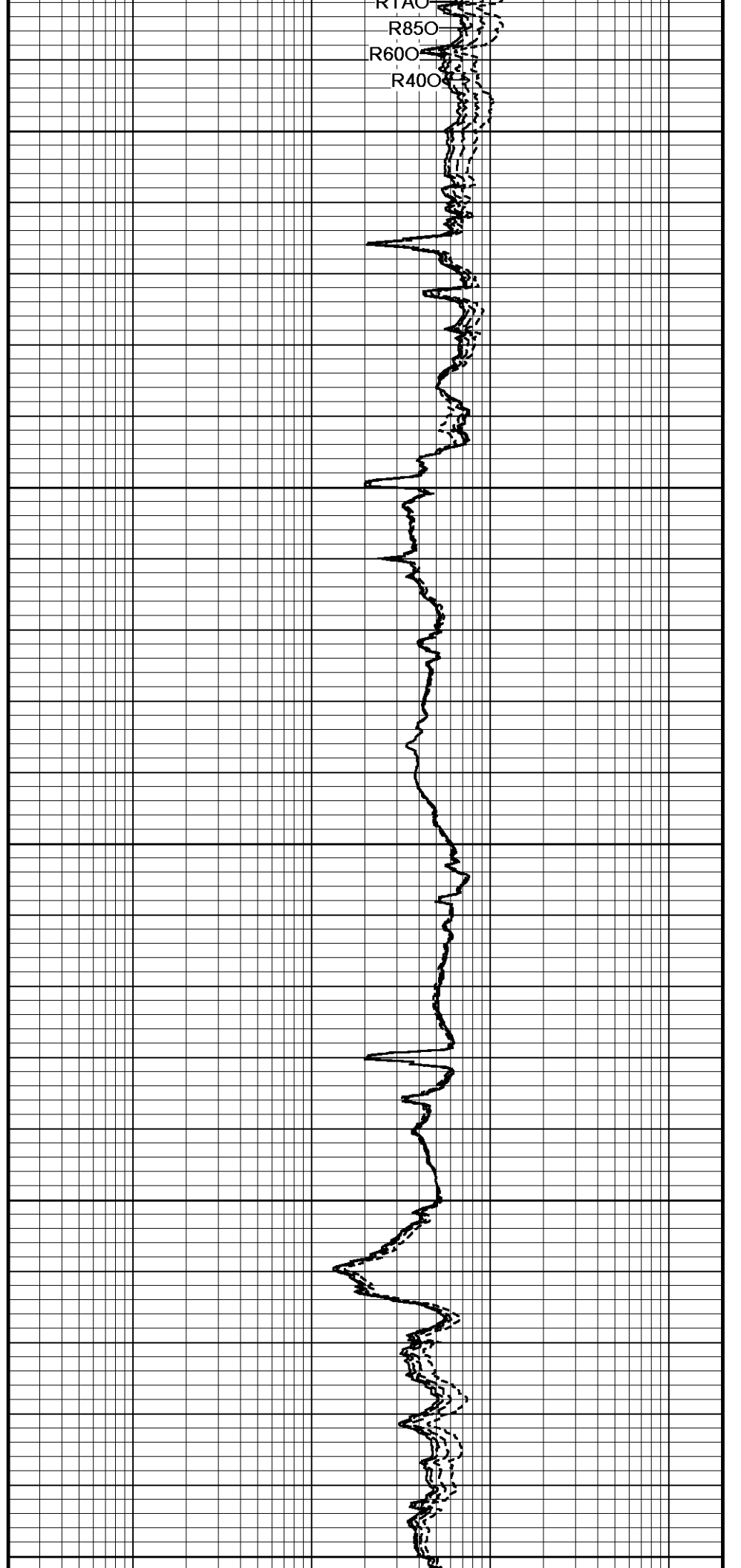
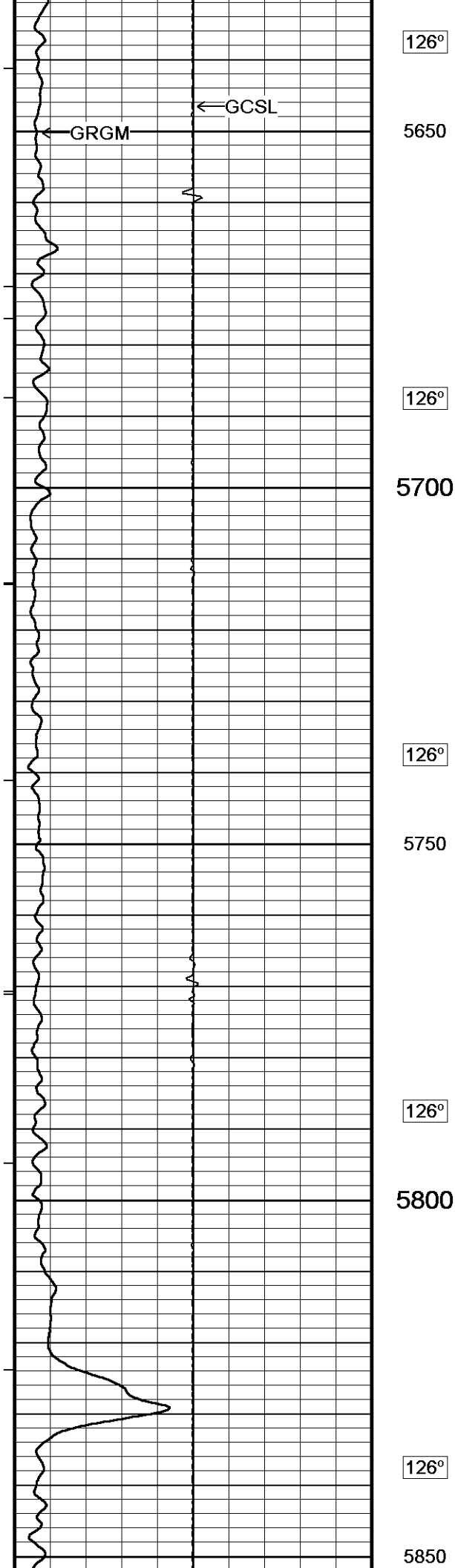
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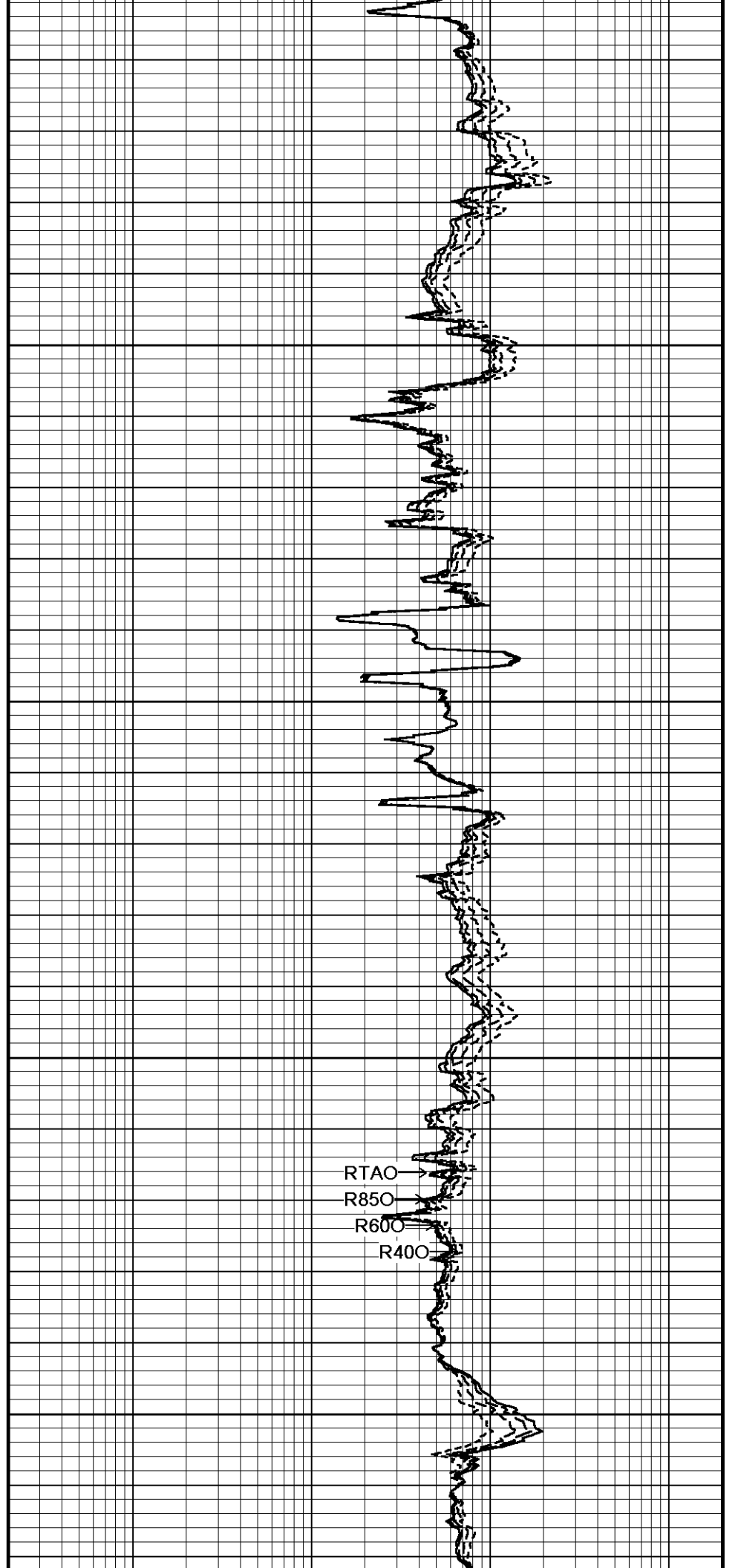
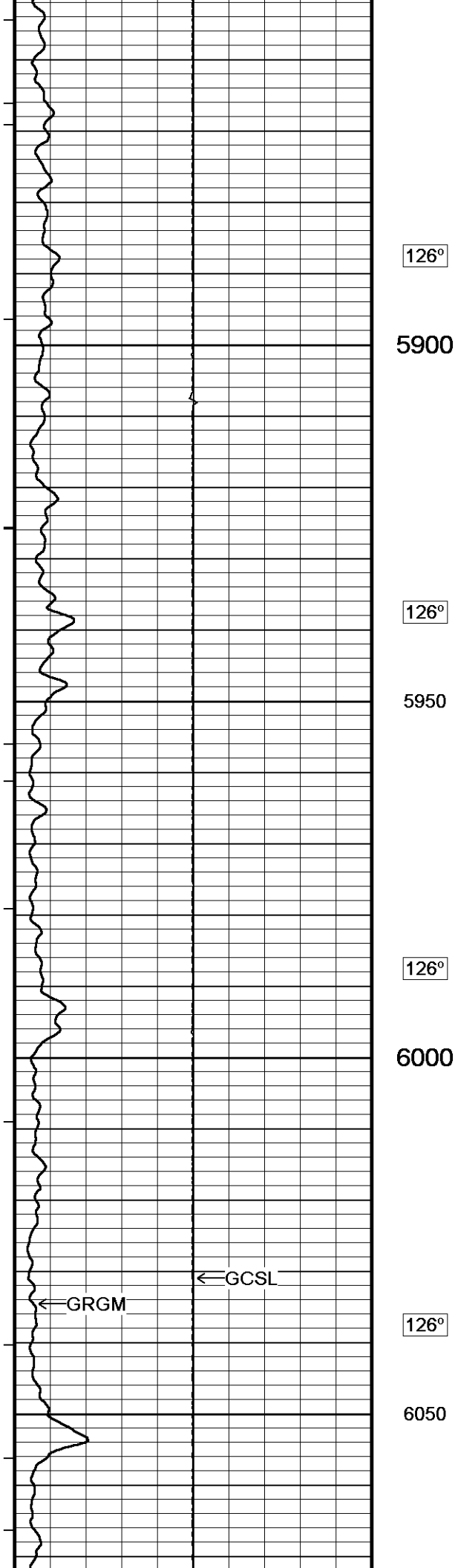
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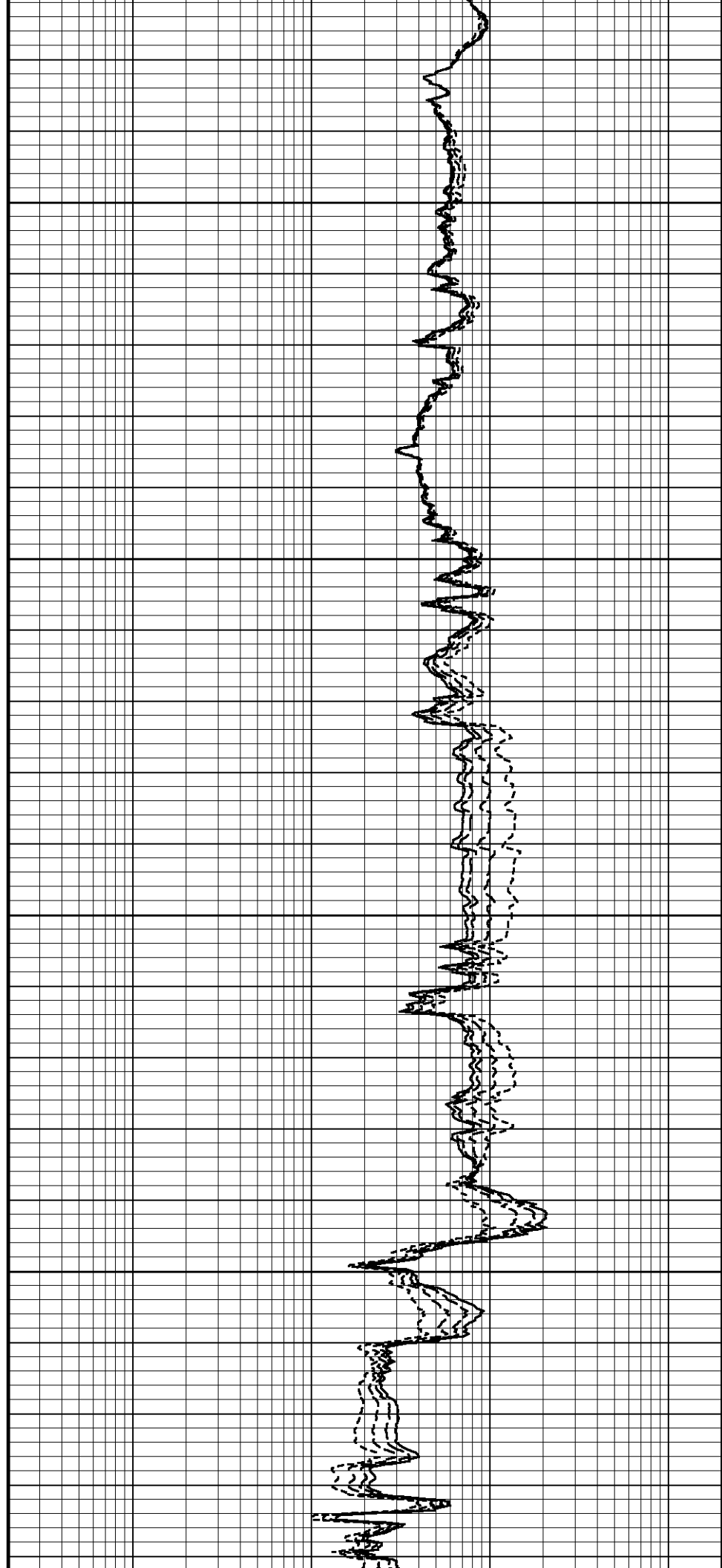
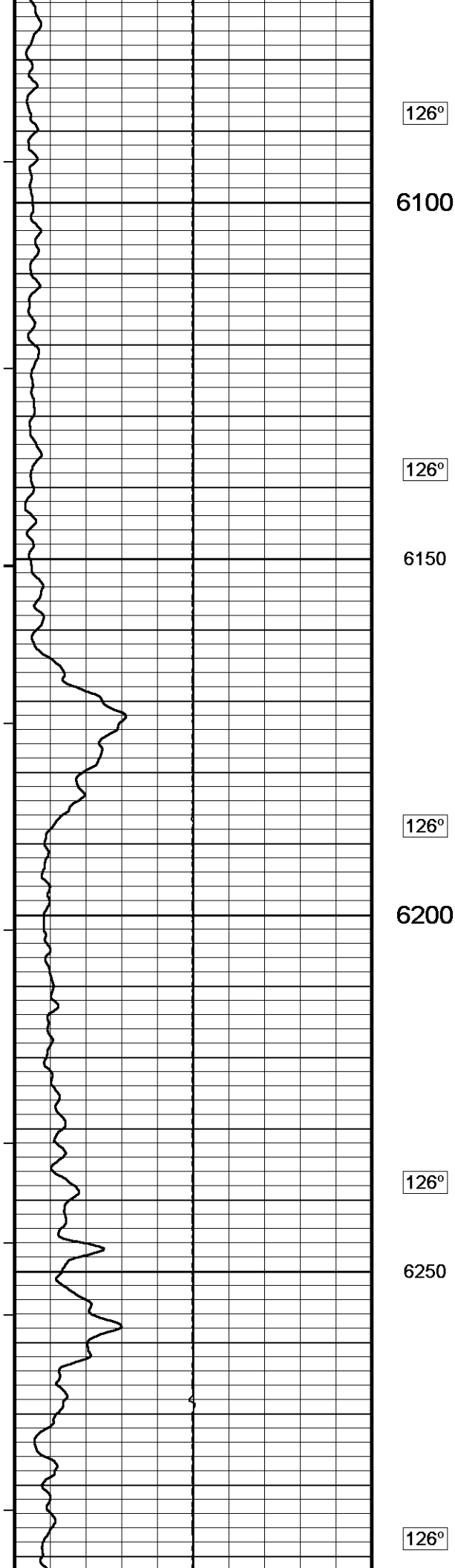
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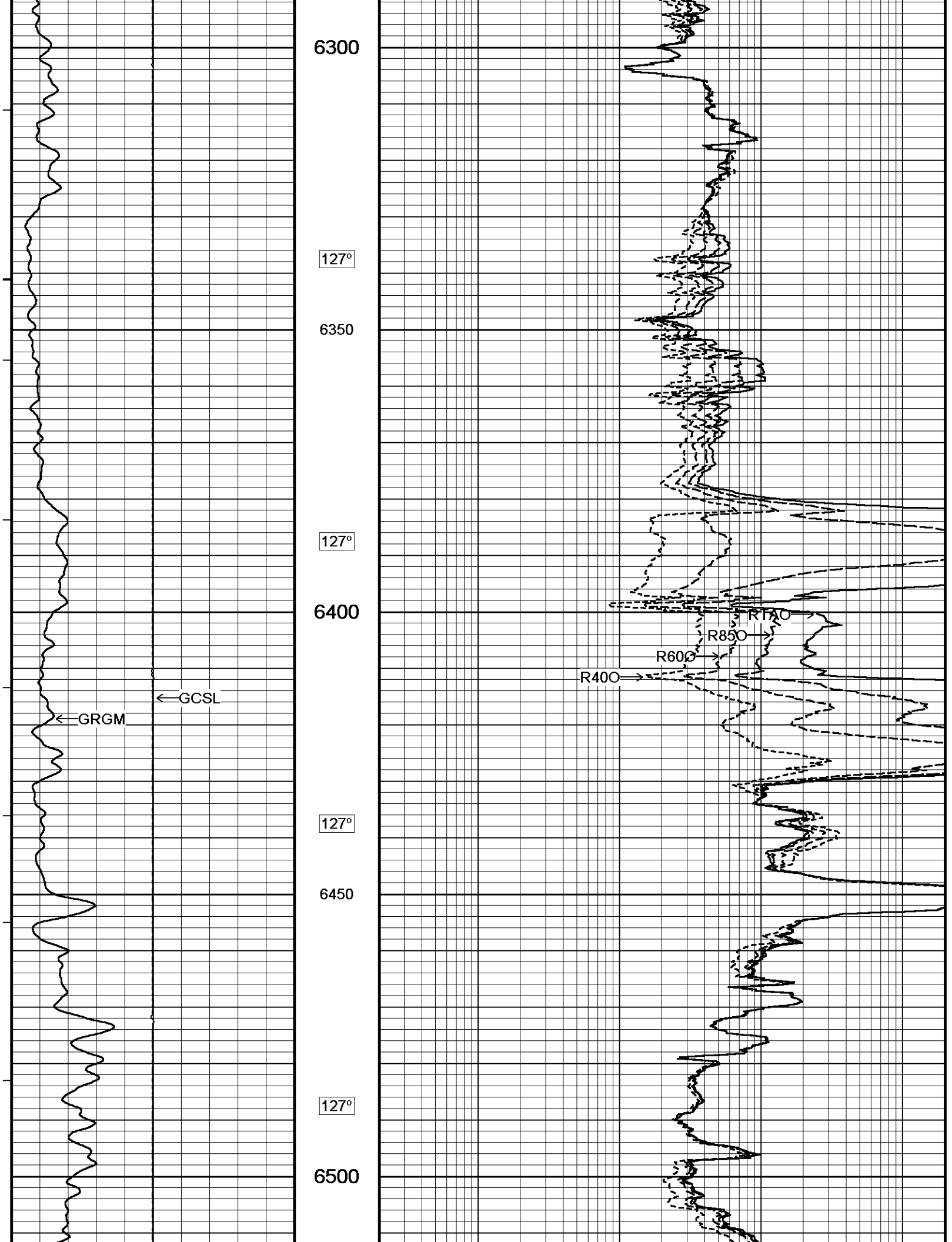
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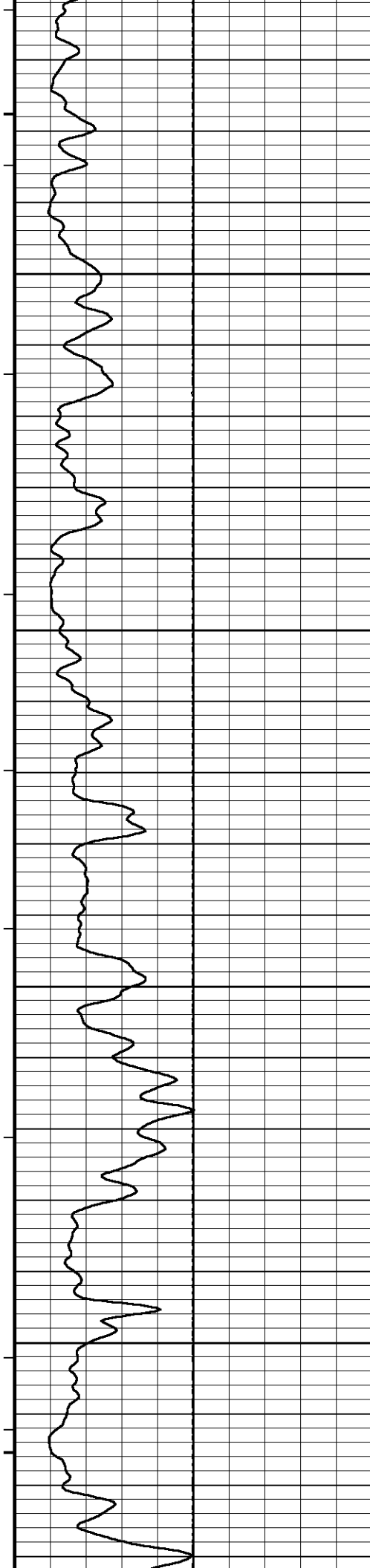












127°

6550

127°

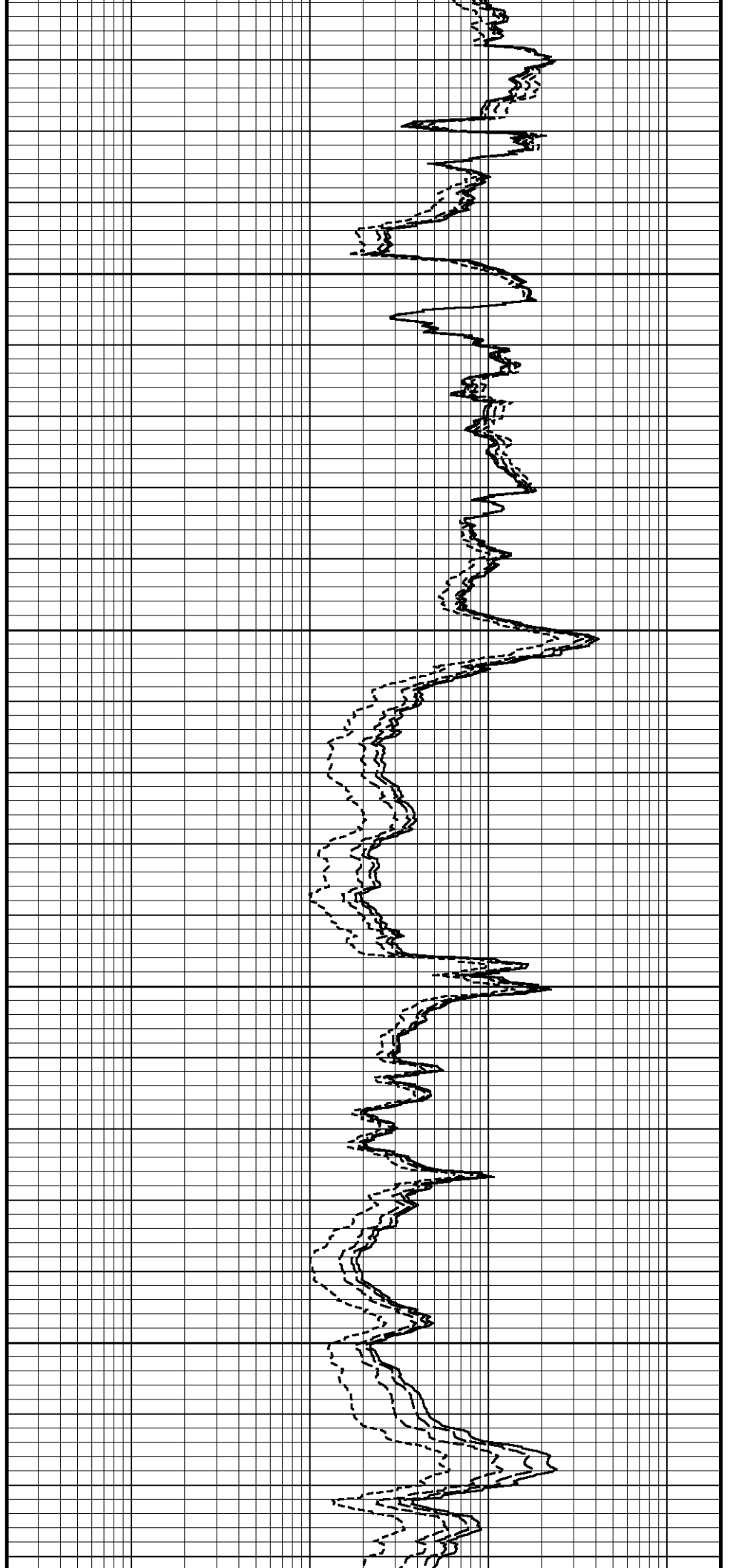
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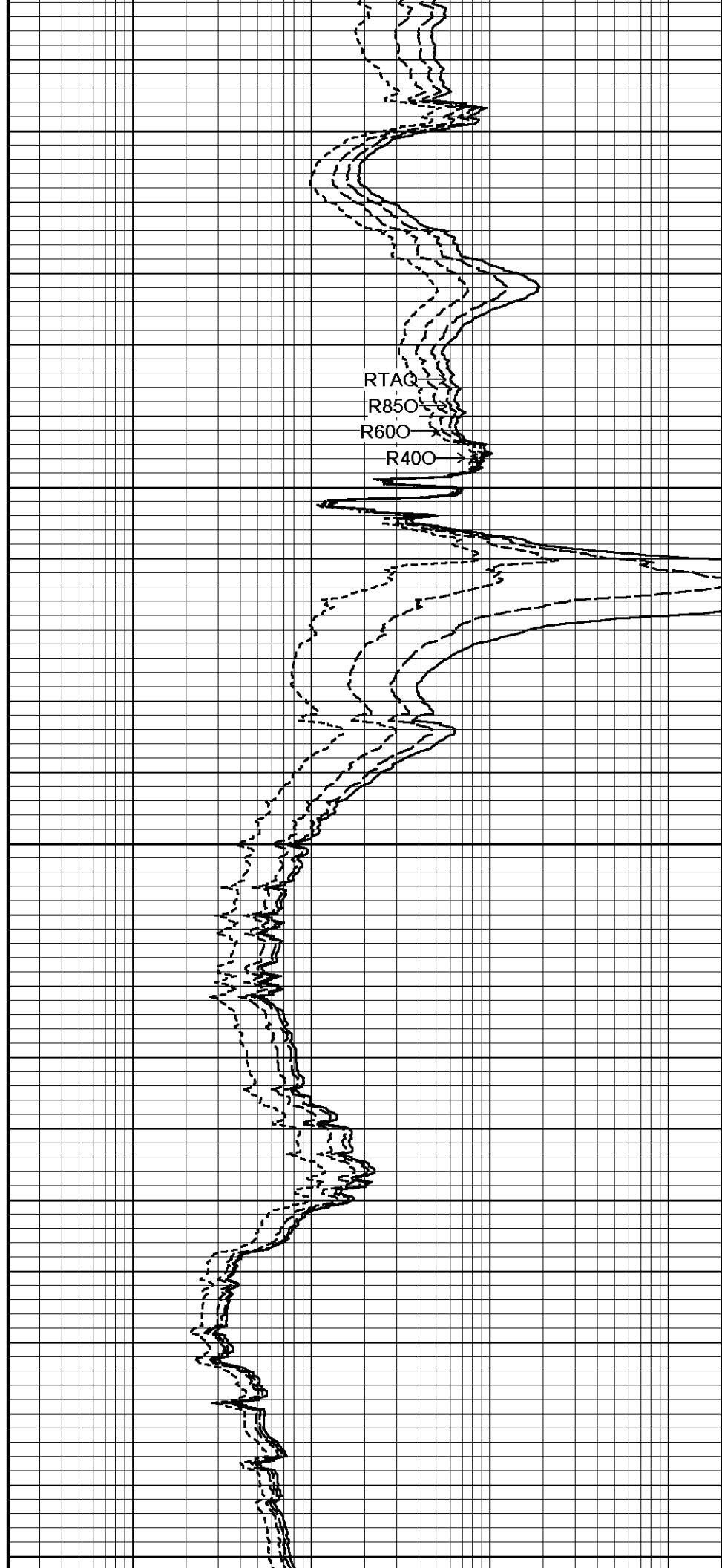
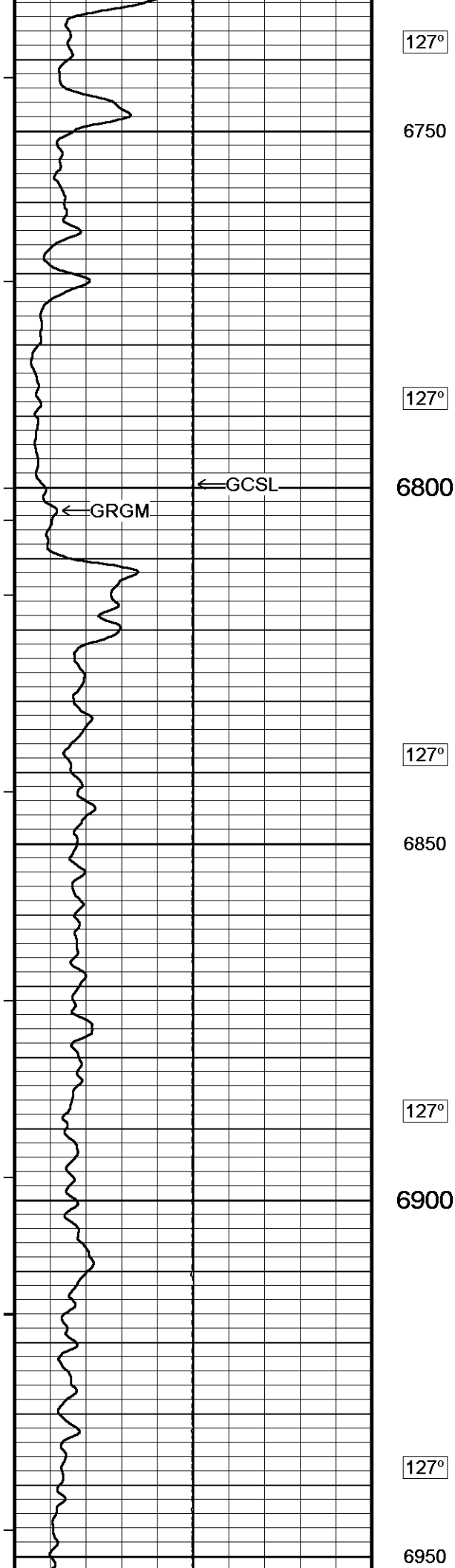
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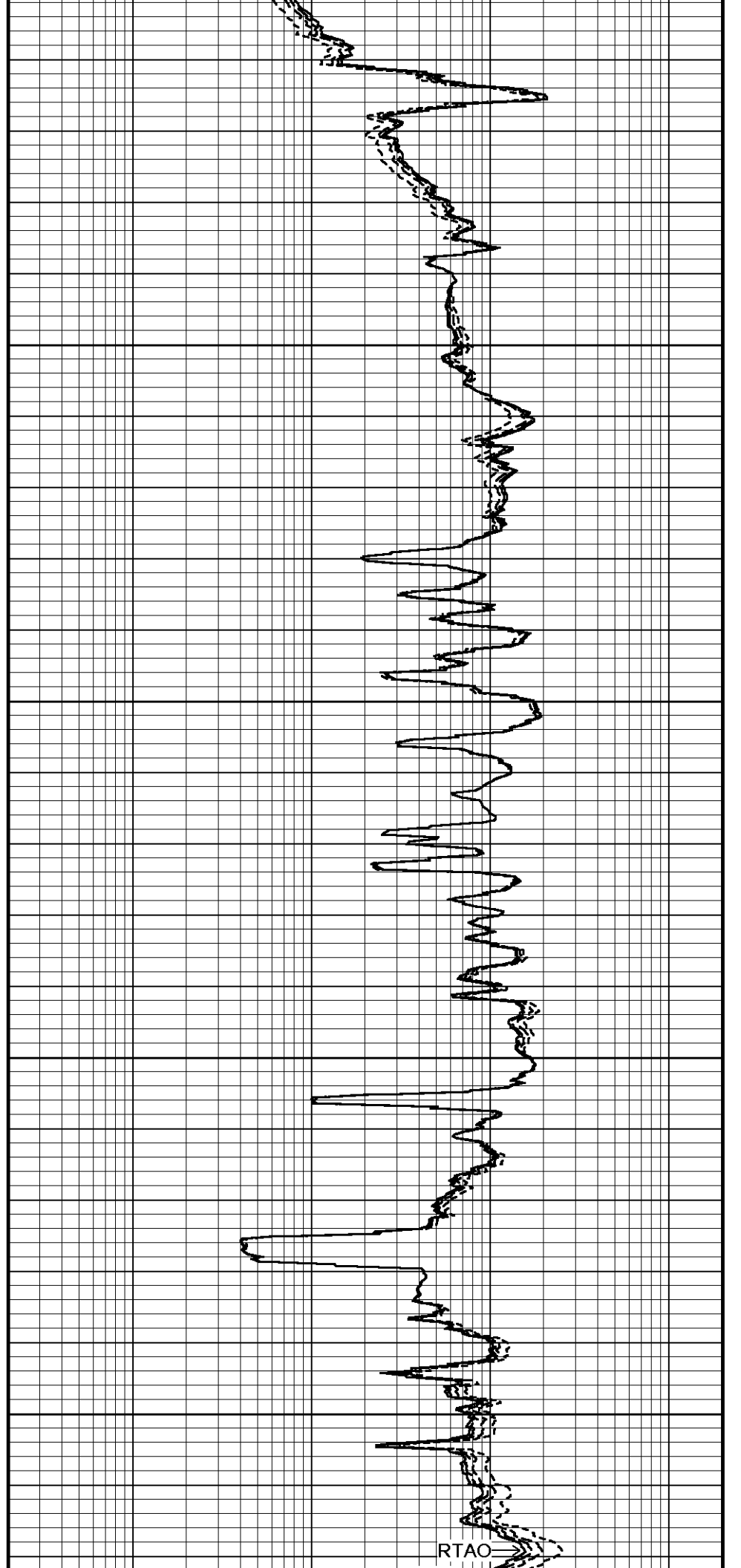
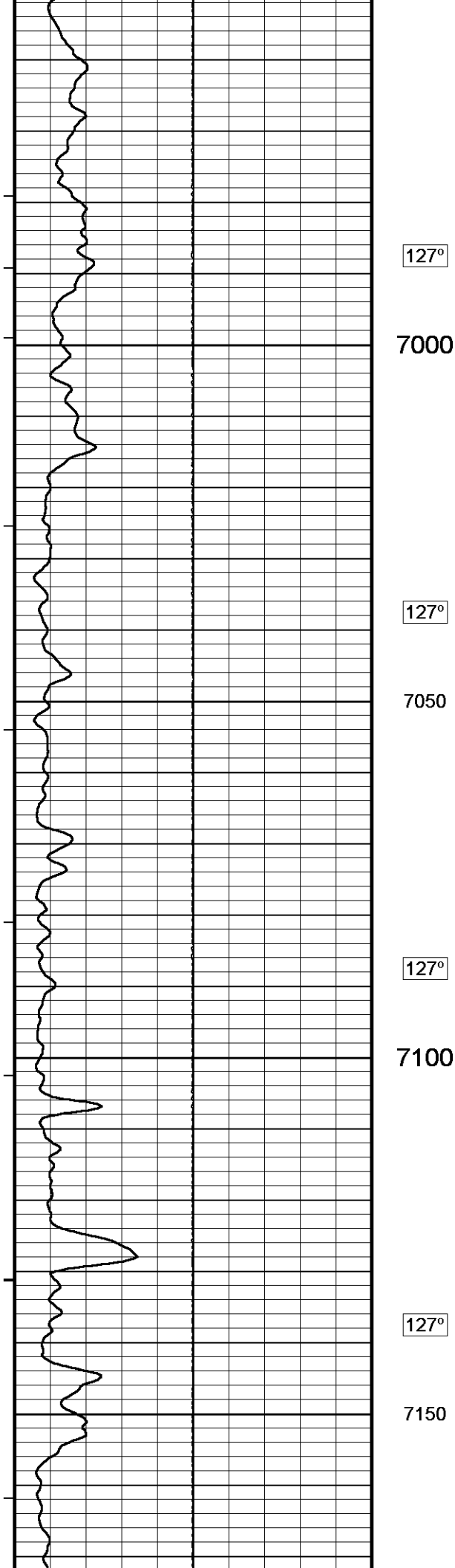
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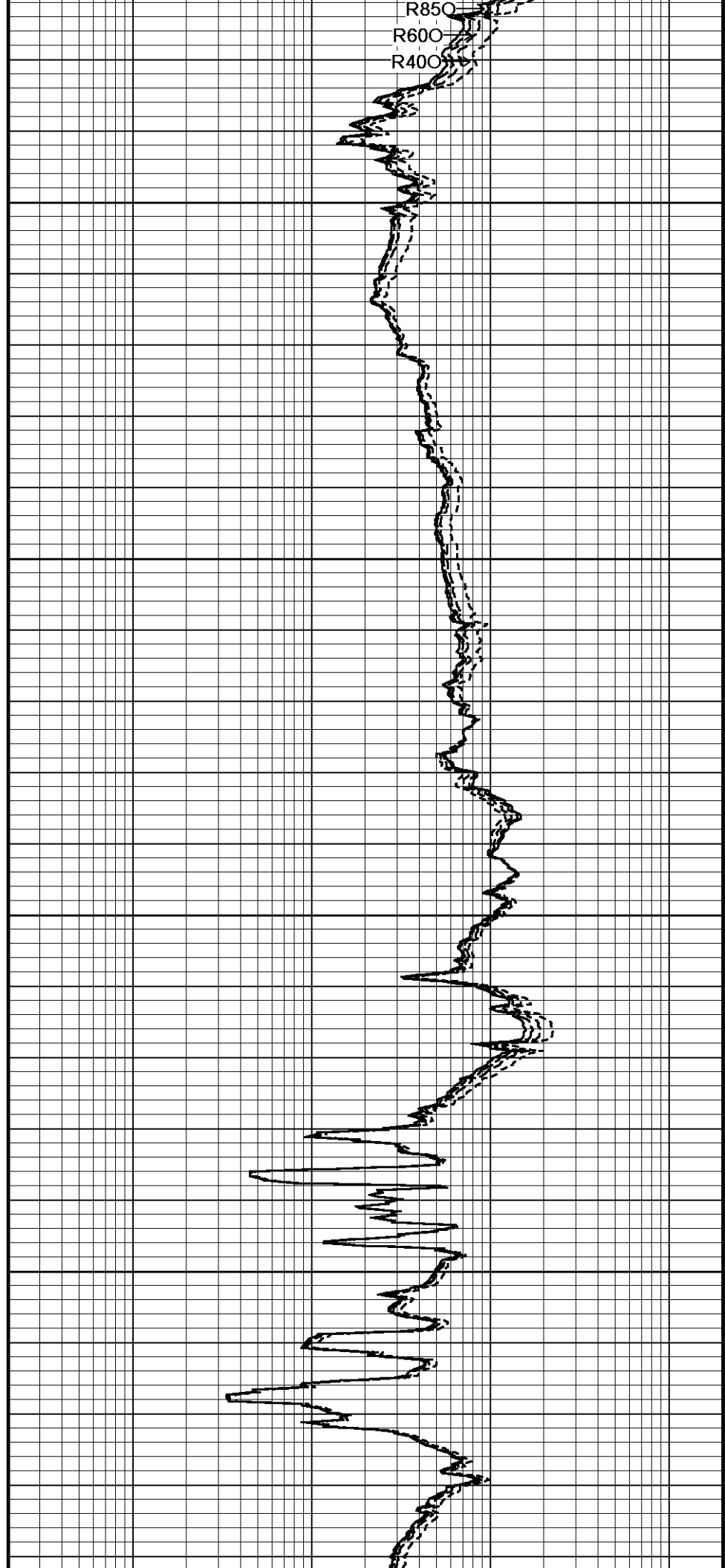
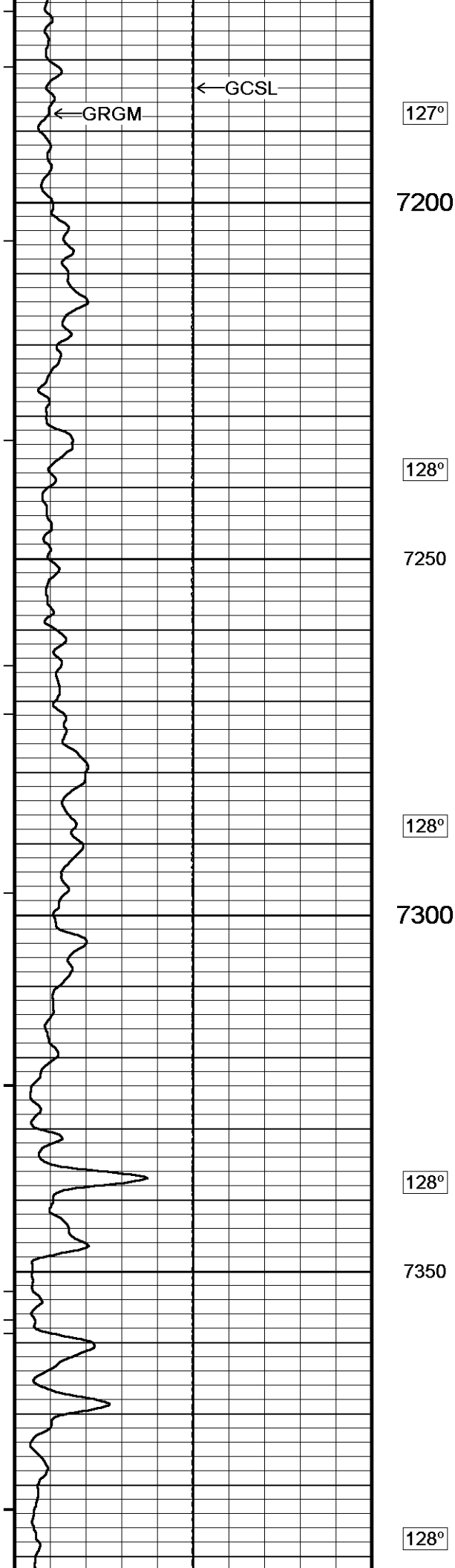
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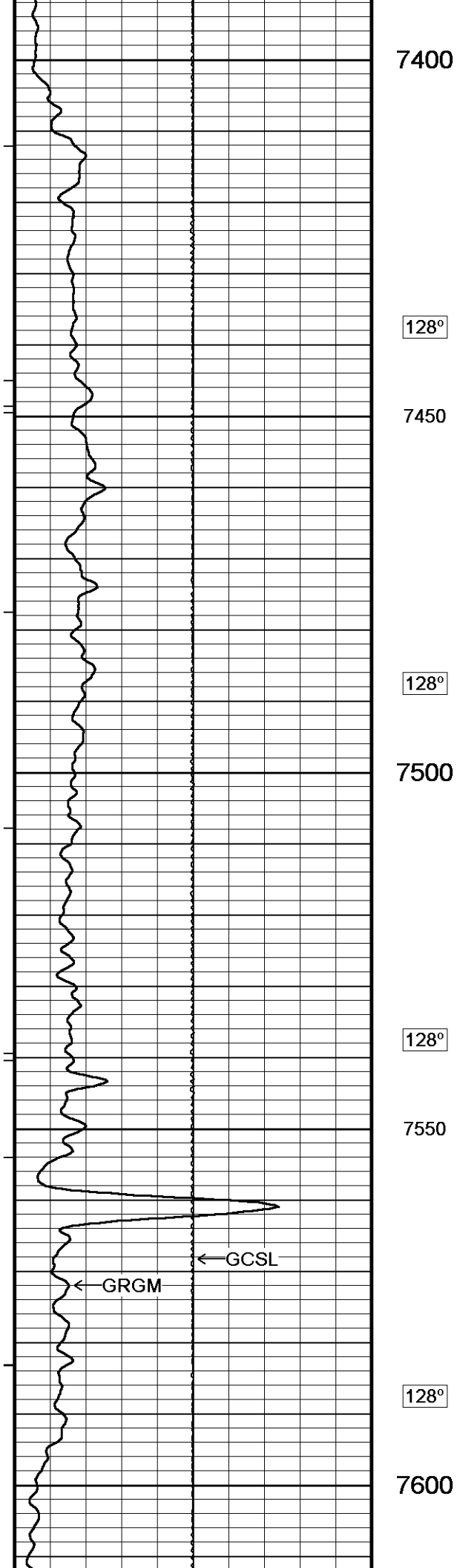
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7400

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7450

128°

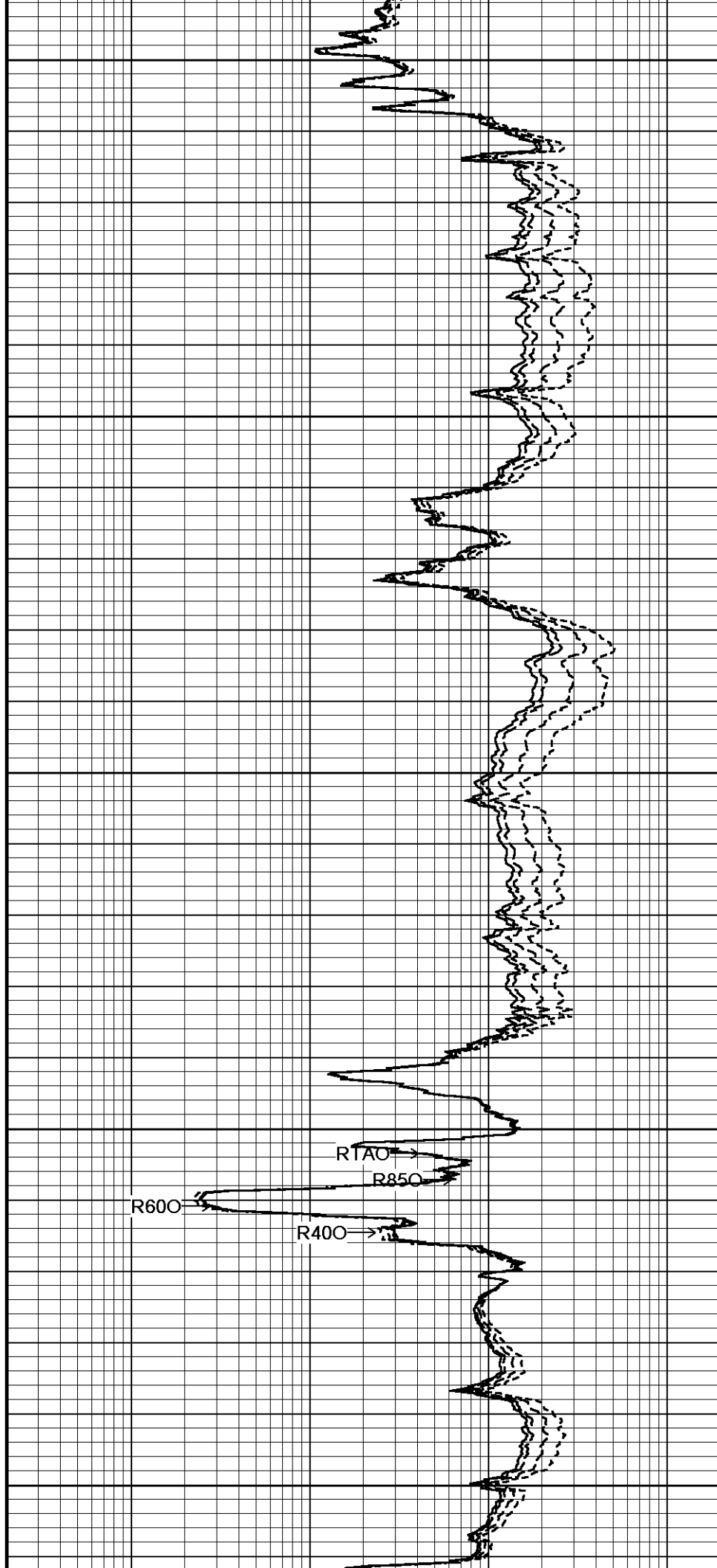
7500

128°

7550

128°

7600

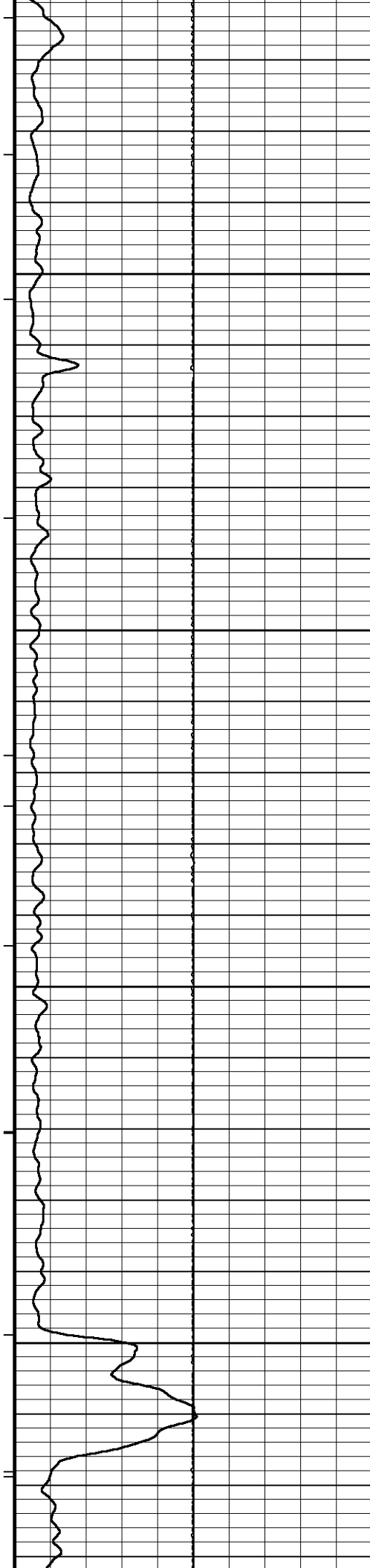


R600

R400

RTA0

R850



128°

7650

128°

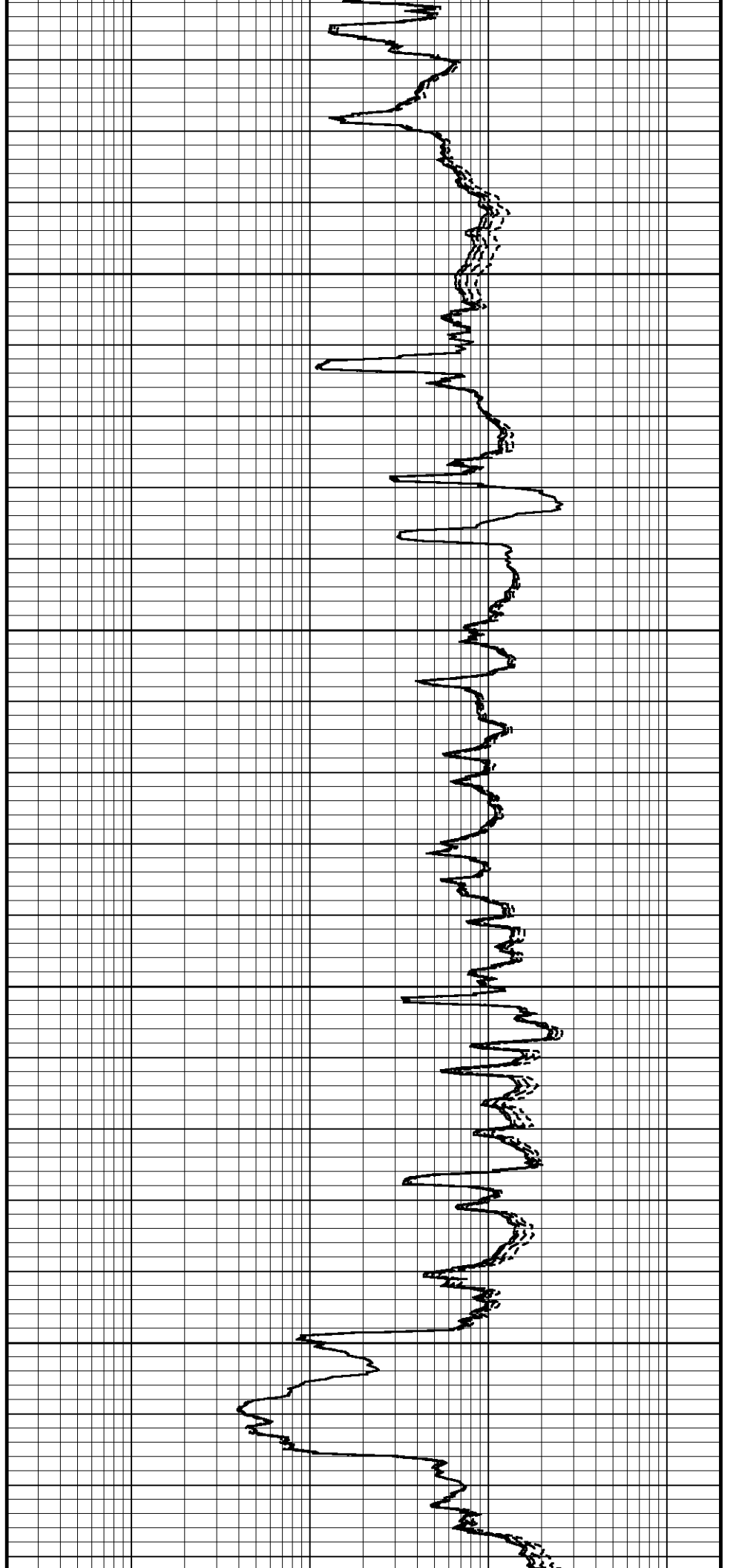
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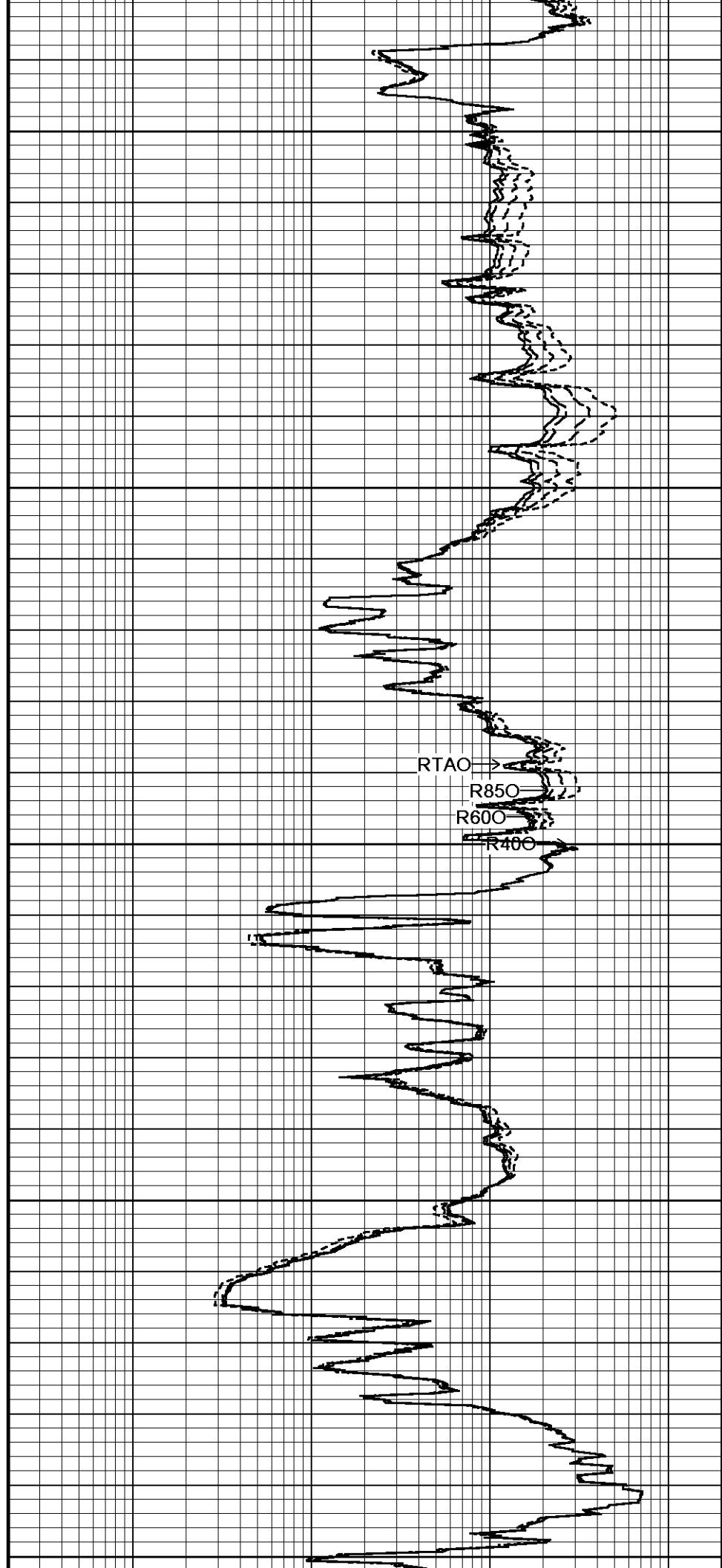
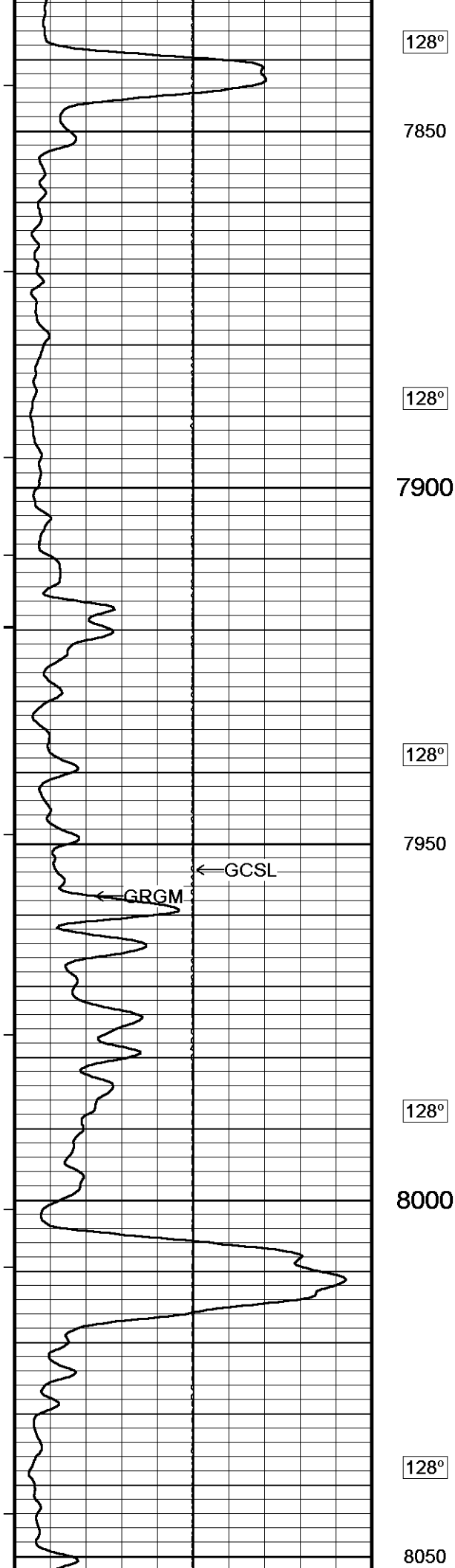
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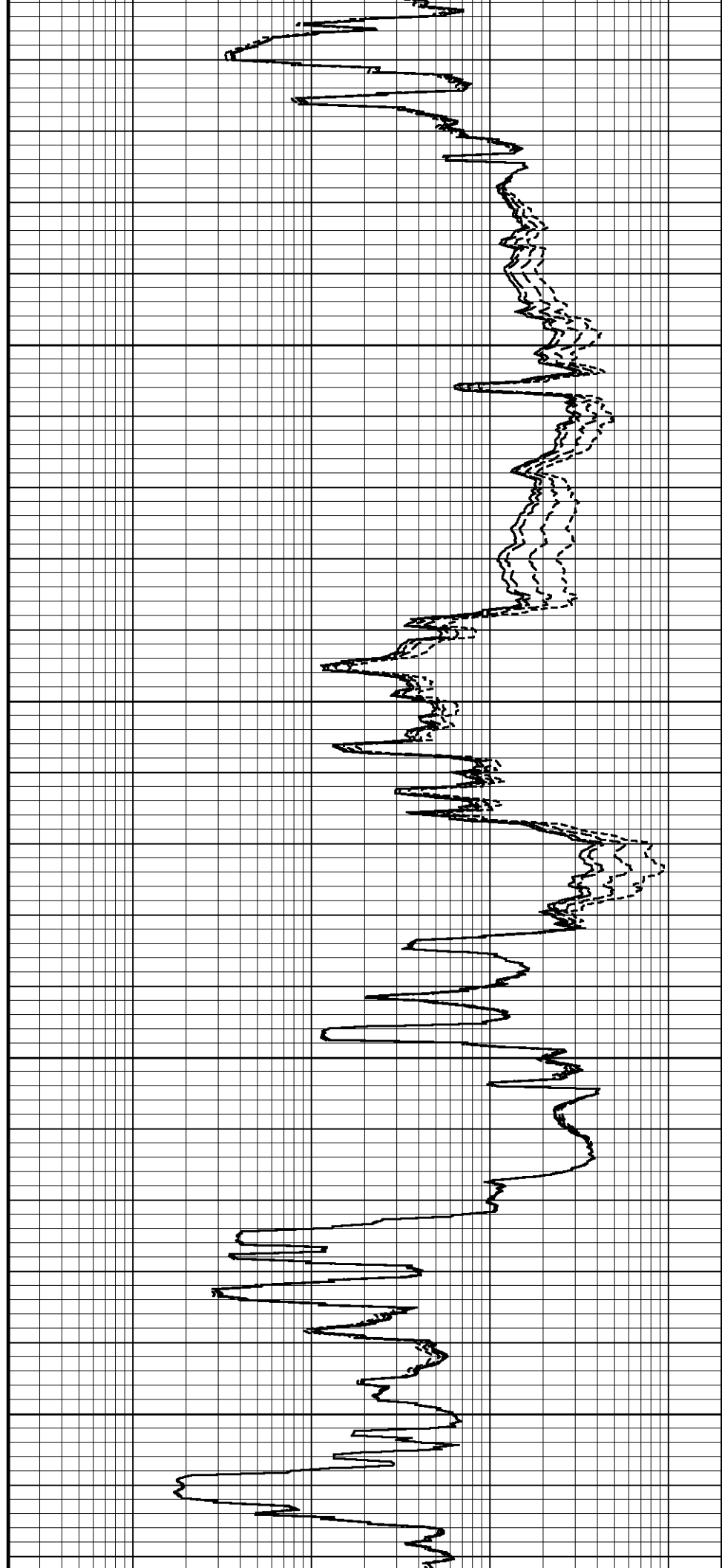
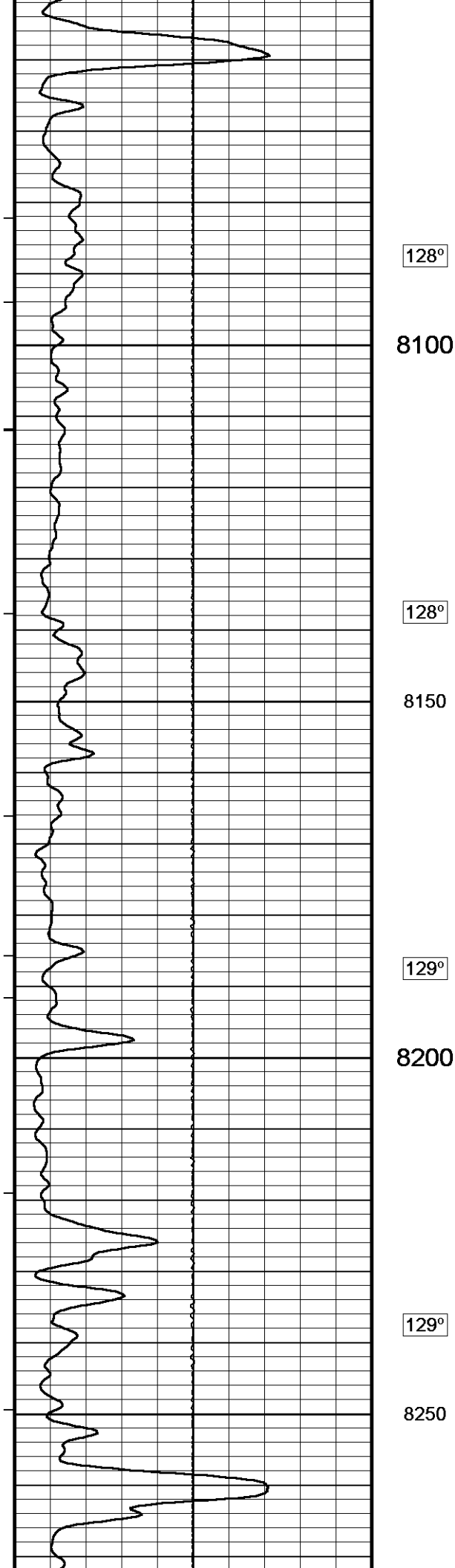
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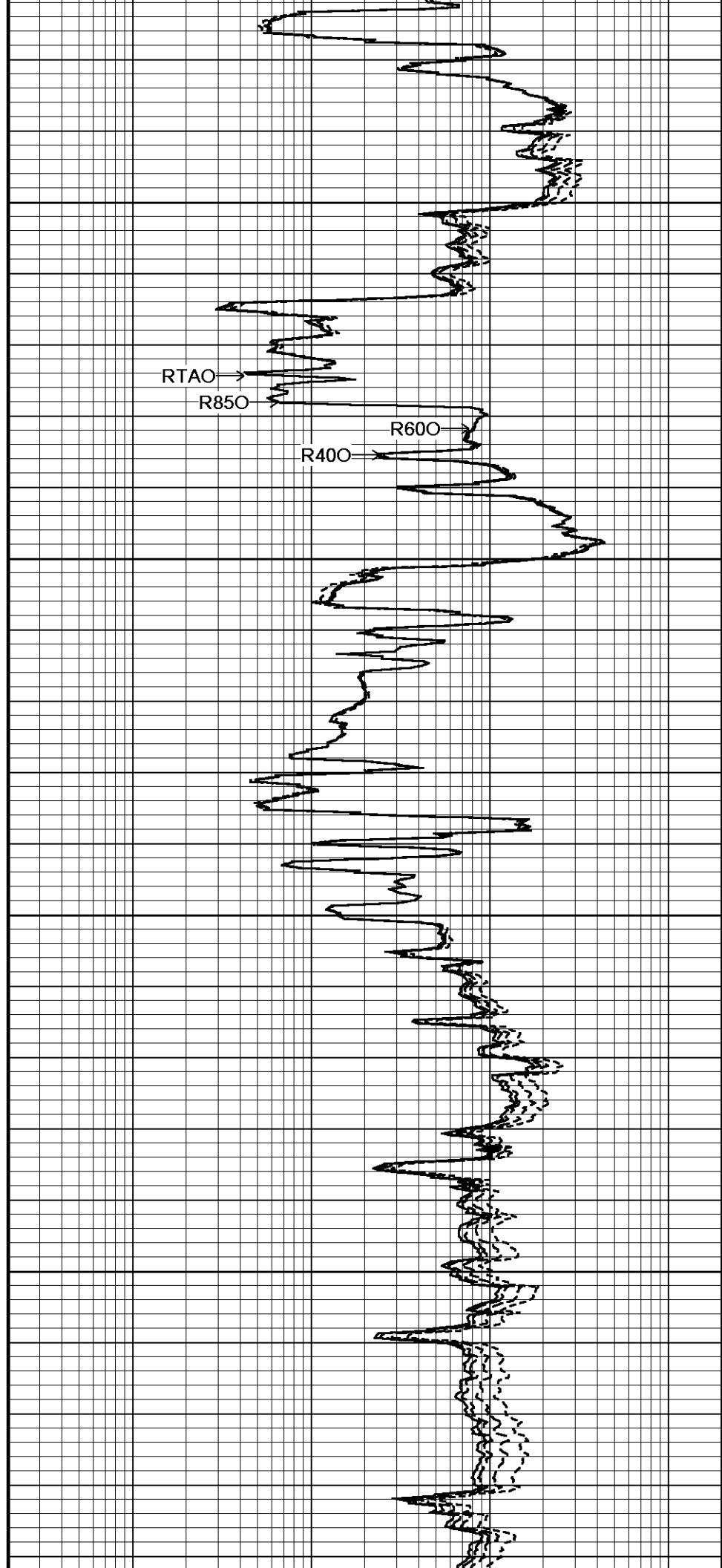
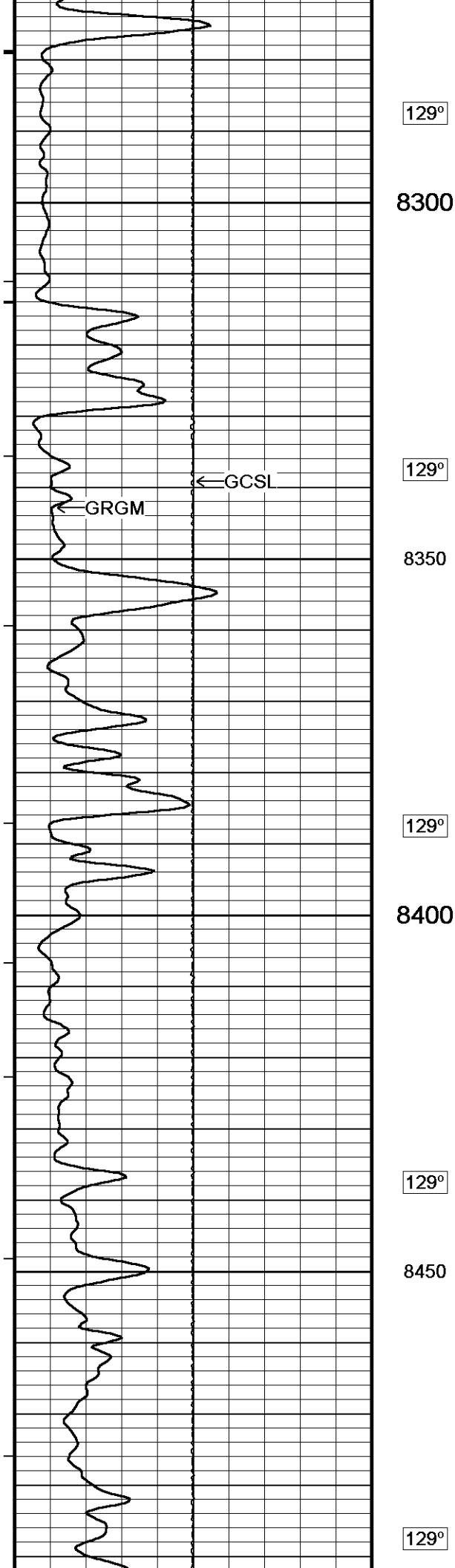
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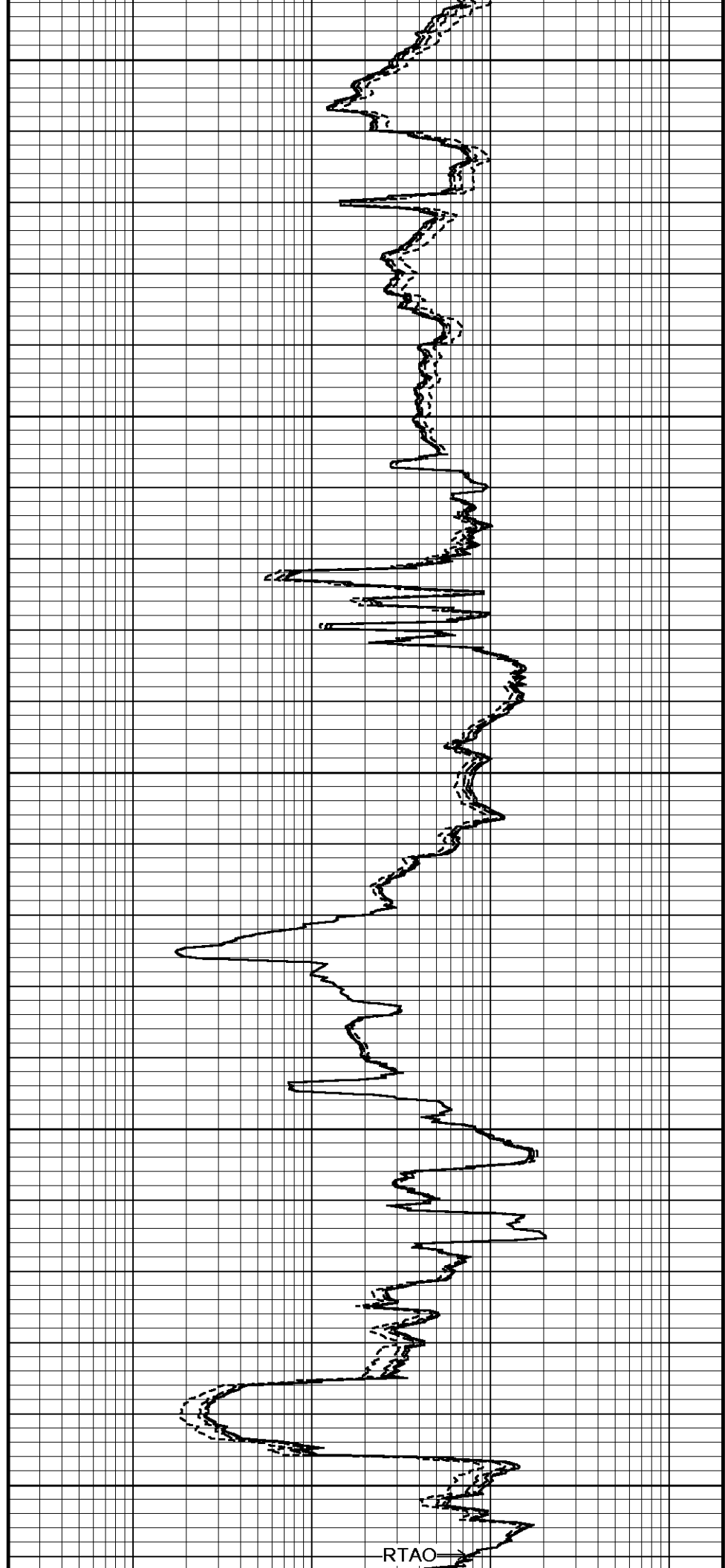
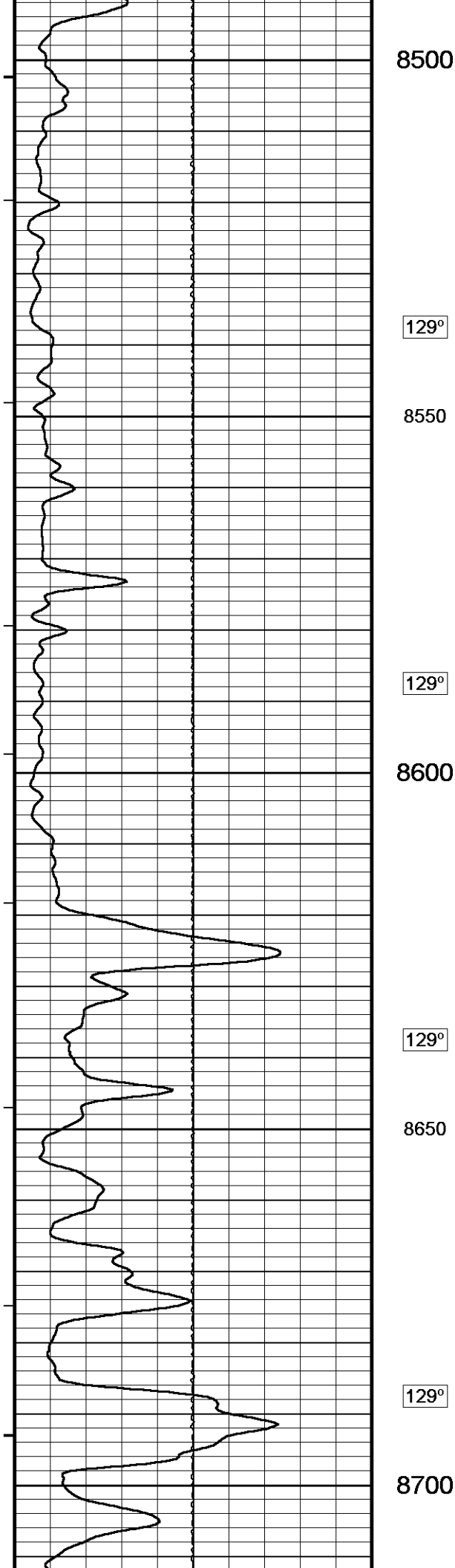
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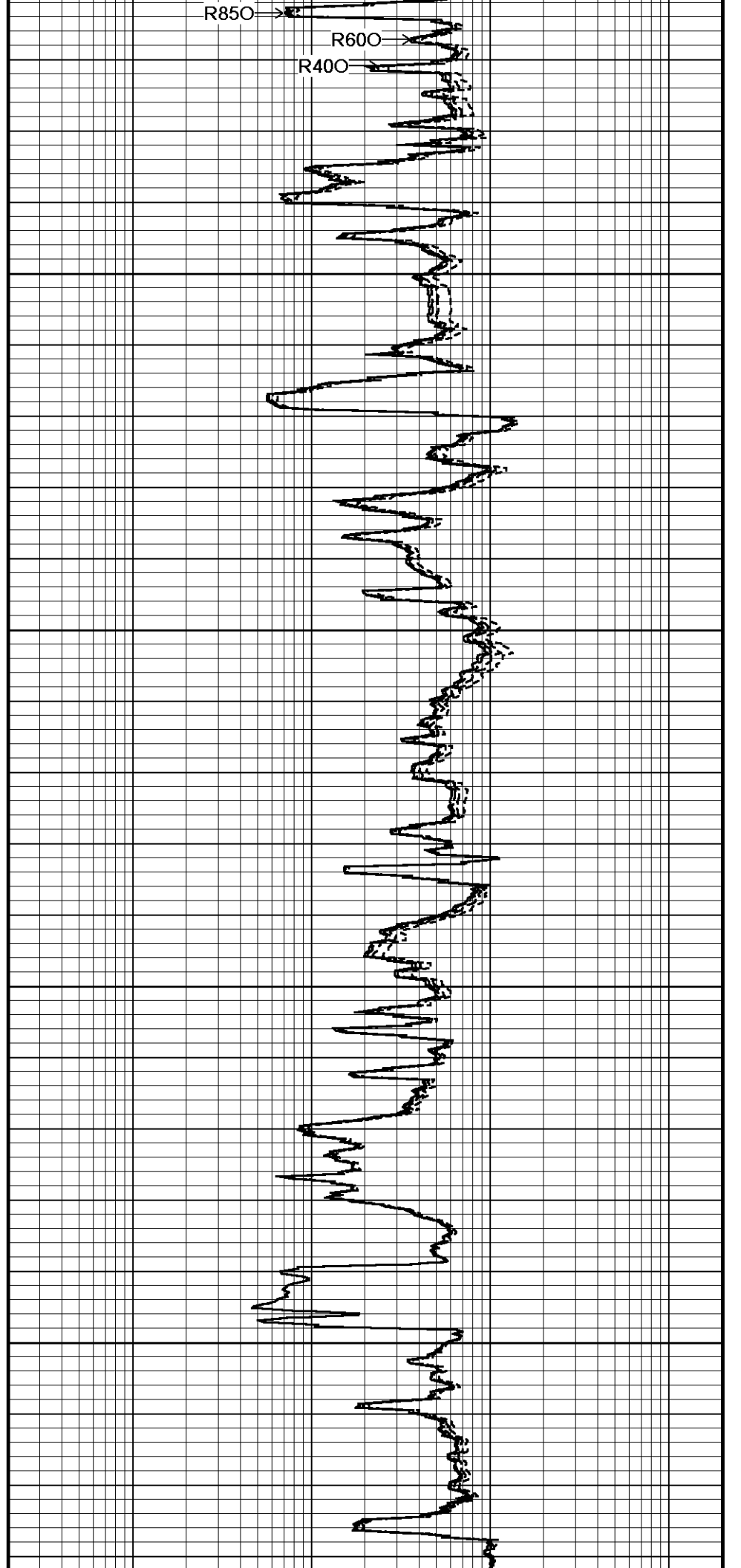
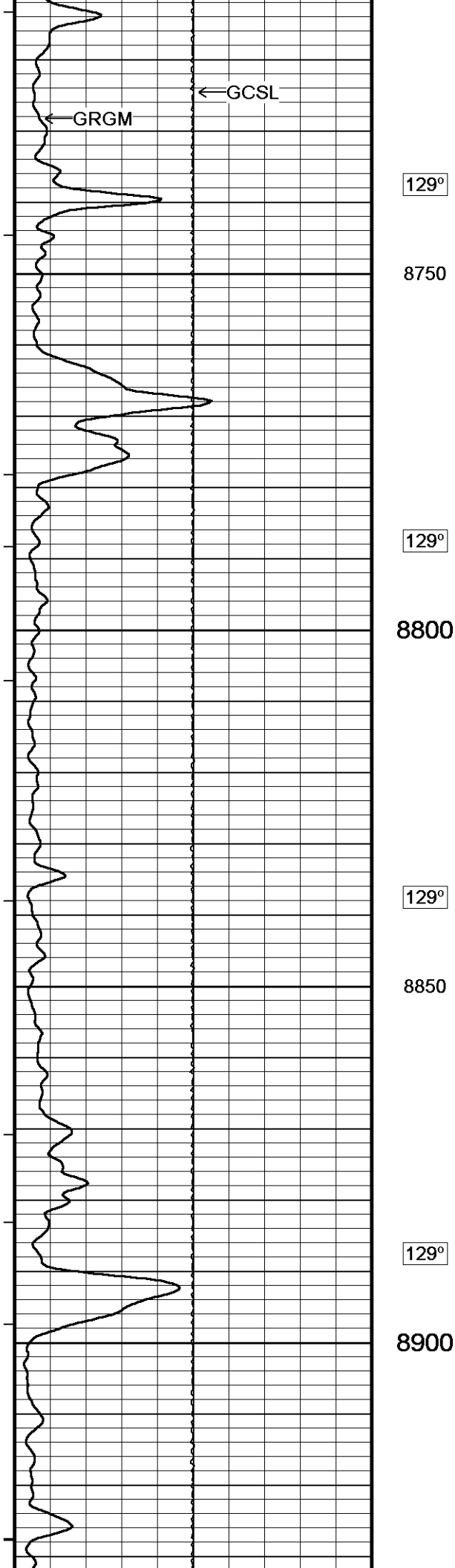


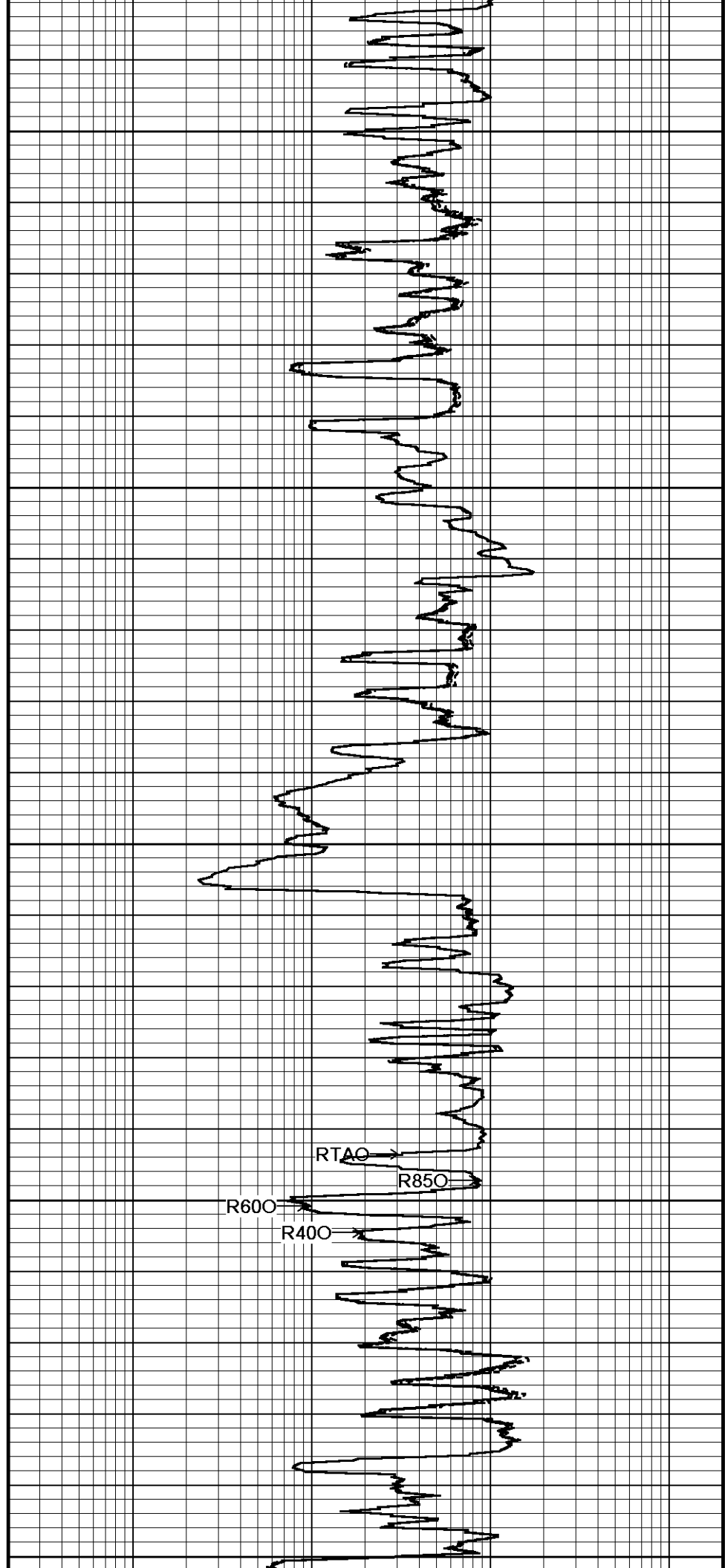
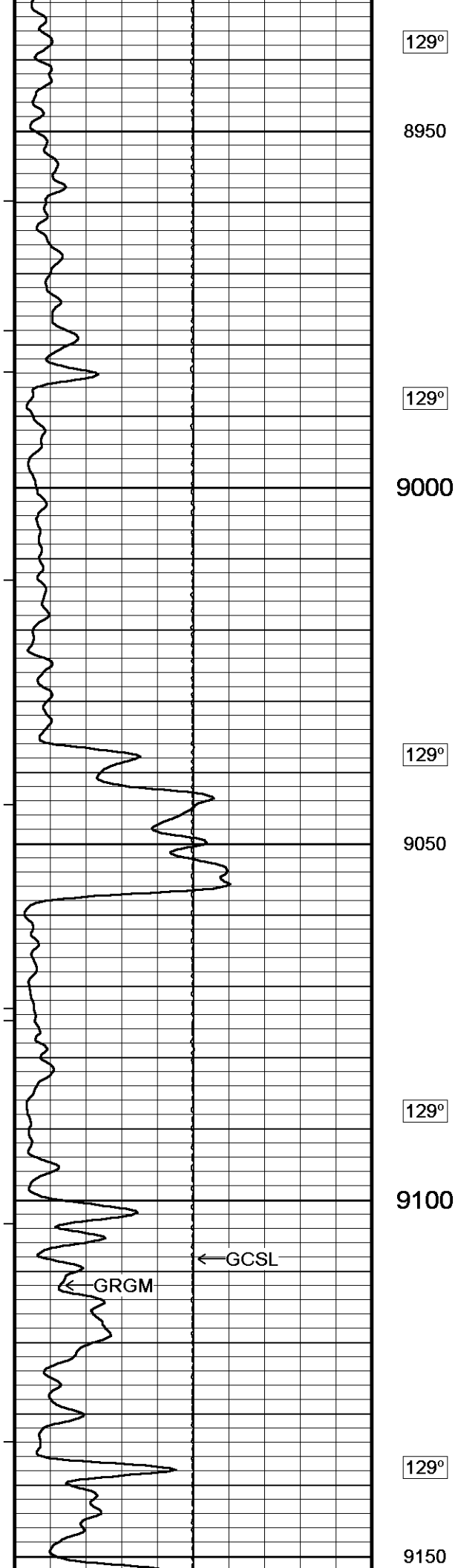


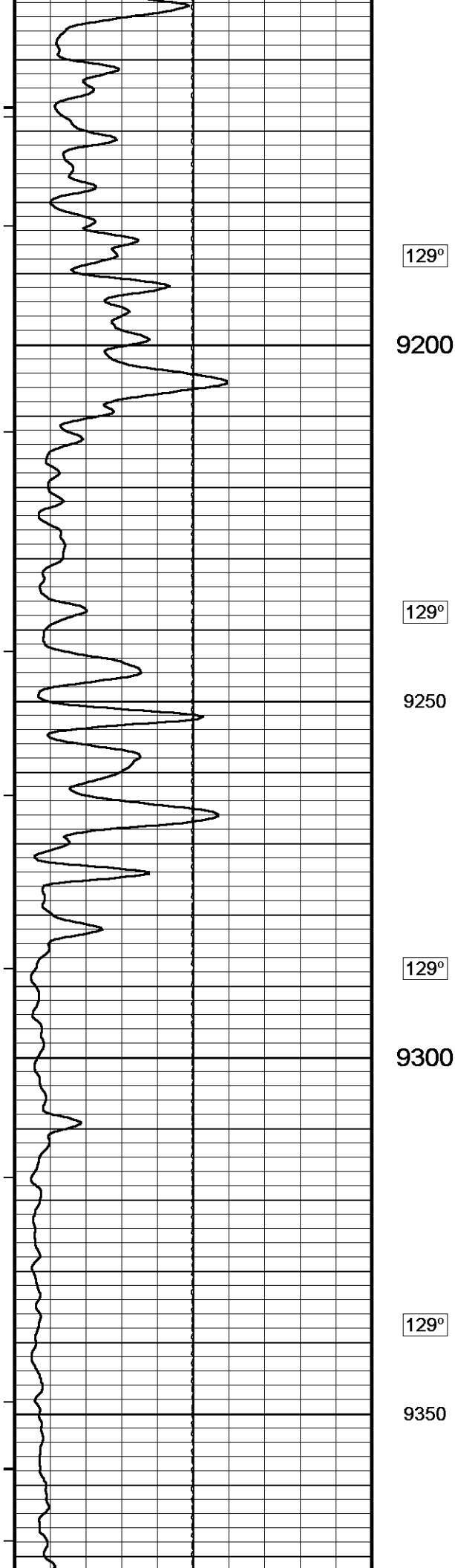












129°

9200

129°

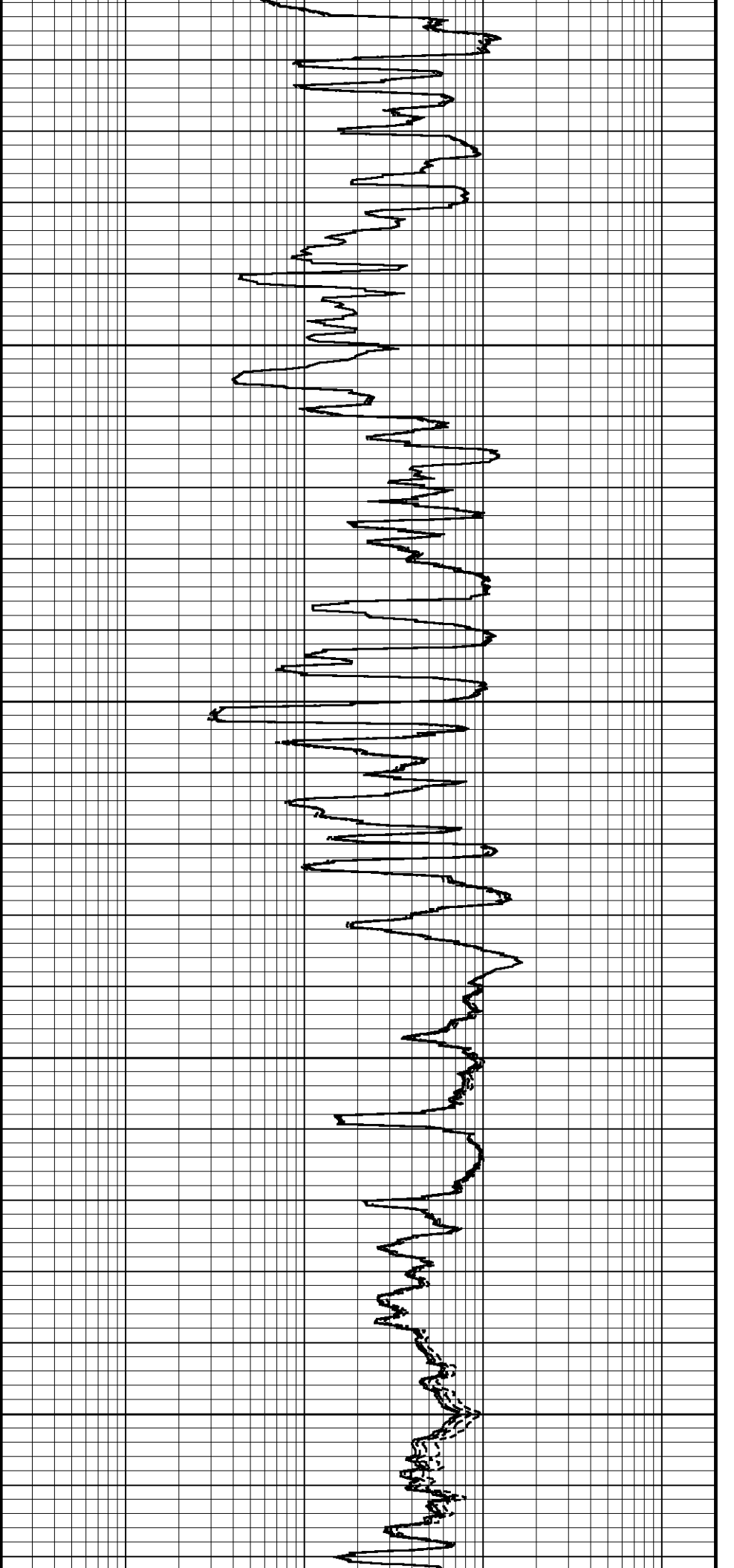
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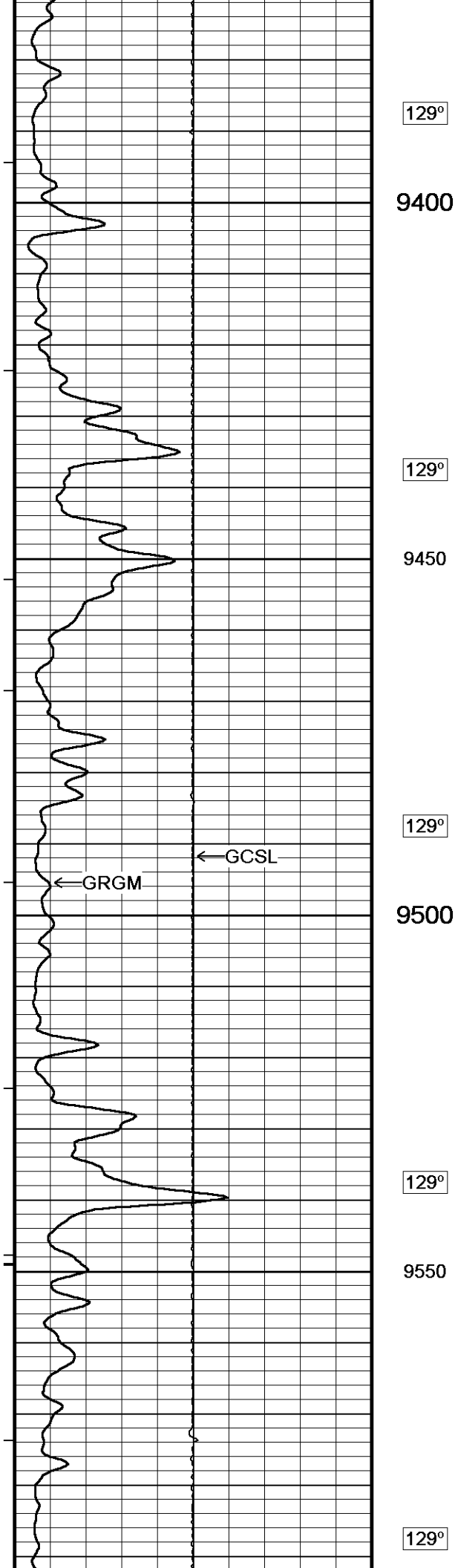
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9300

129°

9350





129°

9400

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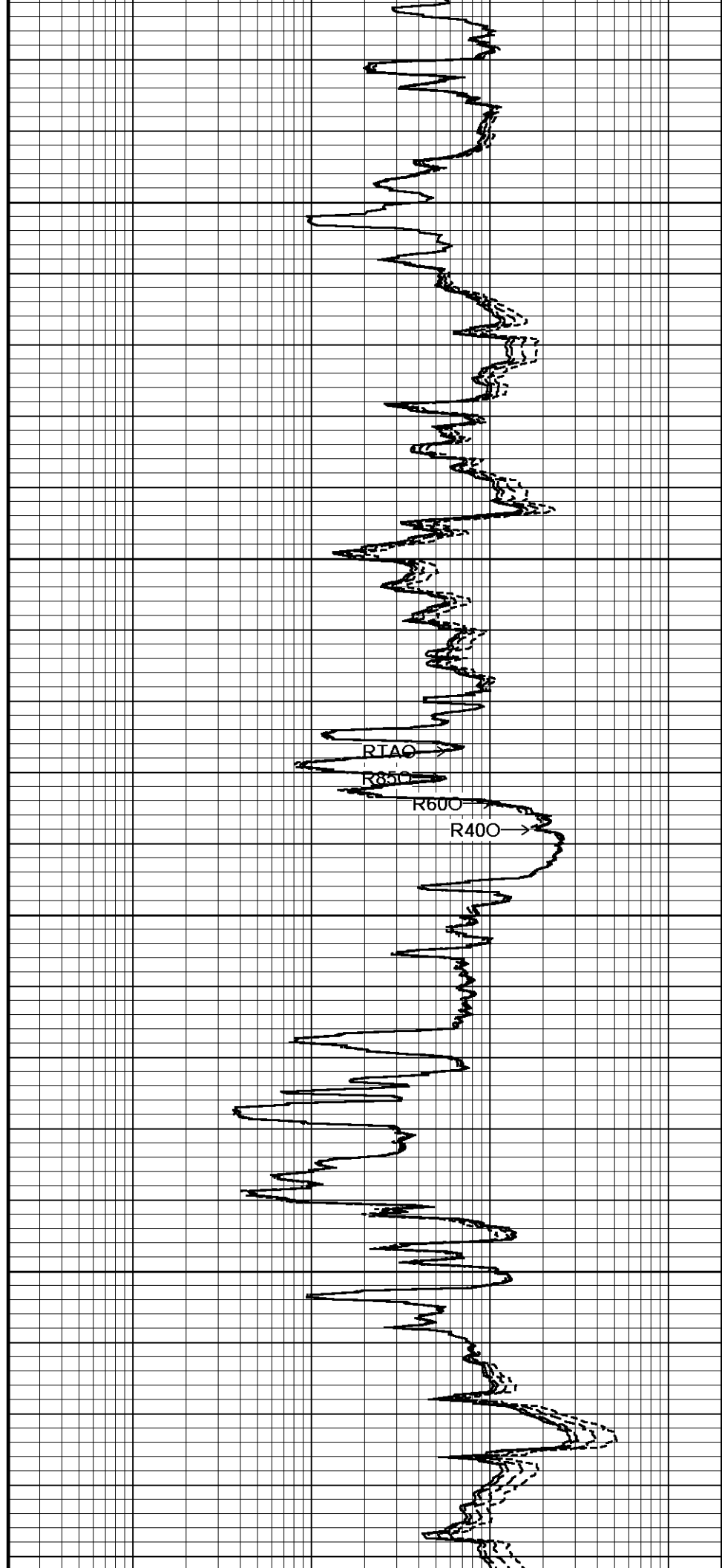
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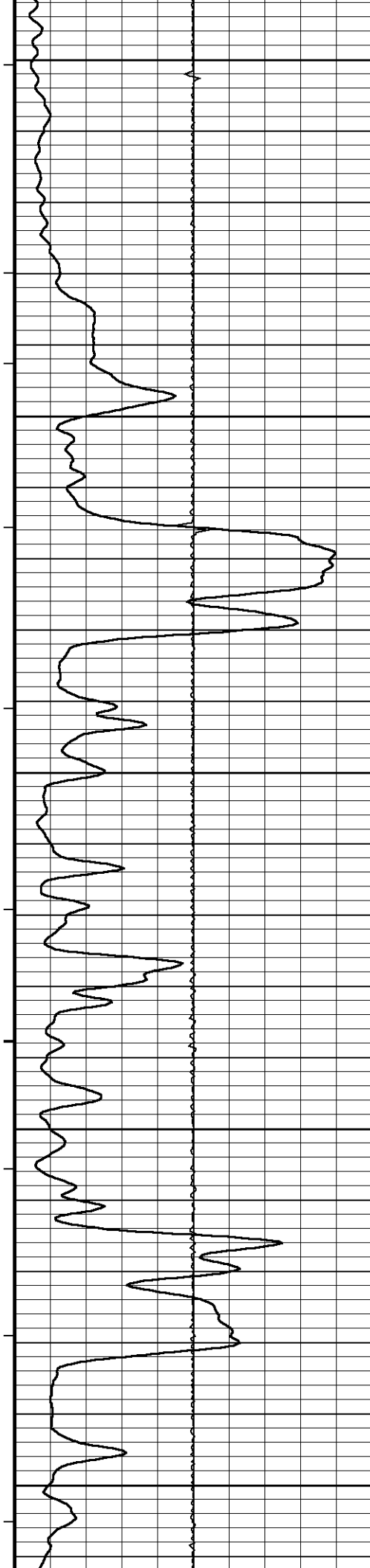
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9550

129°





9600

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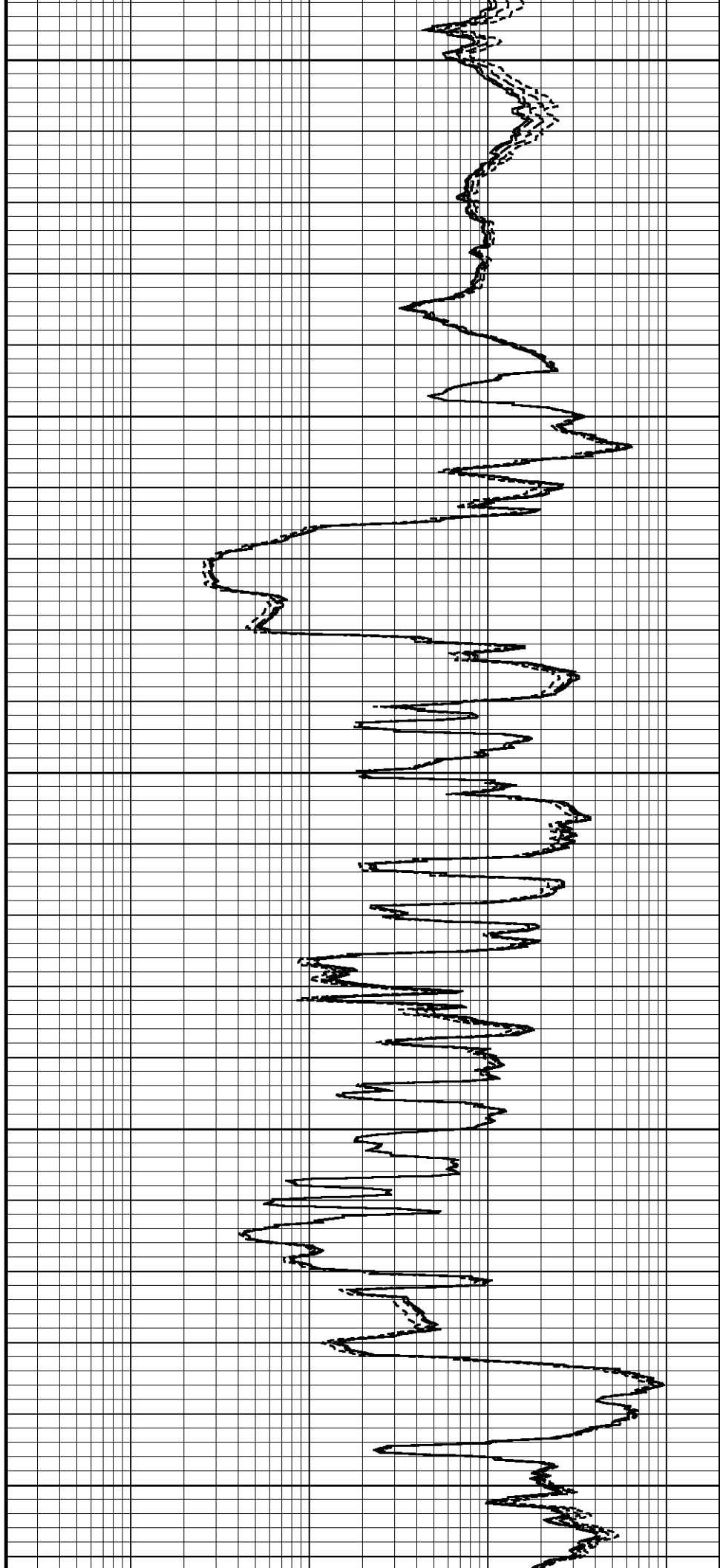
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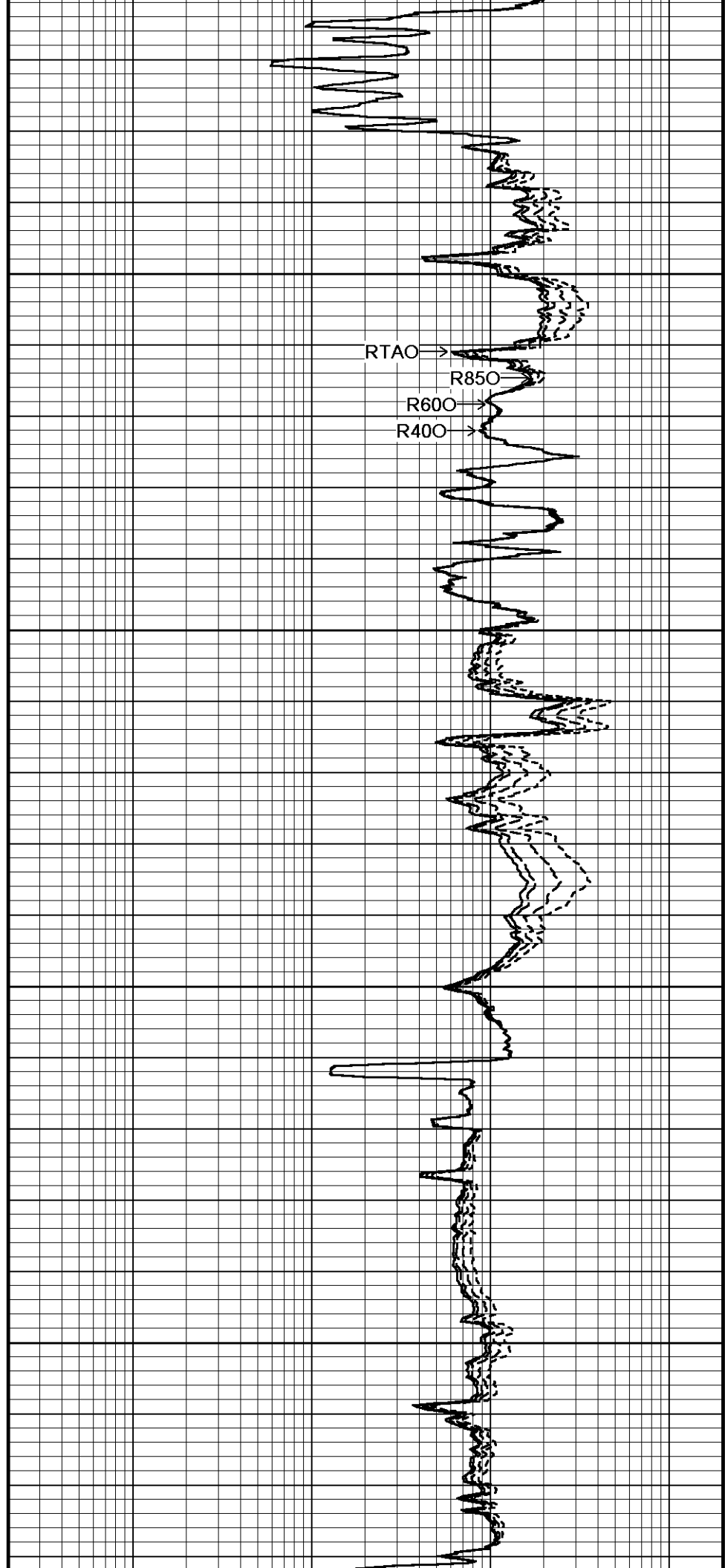
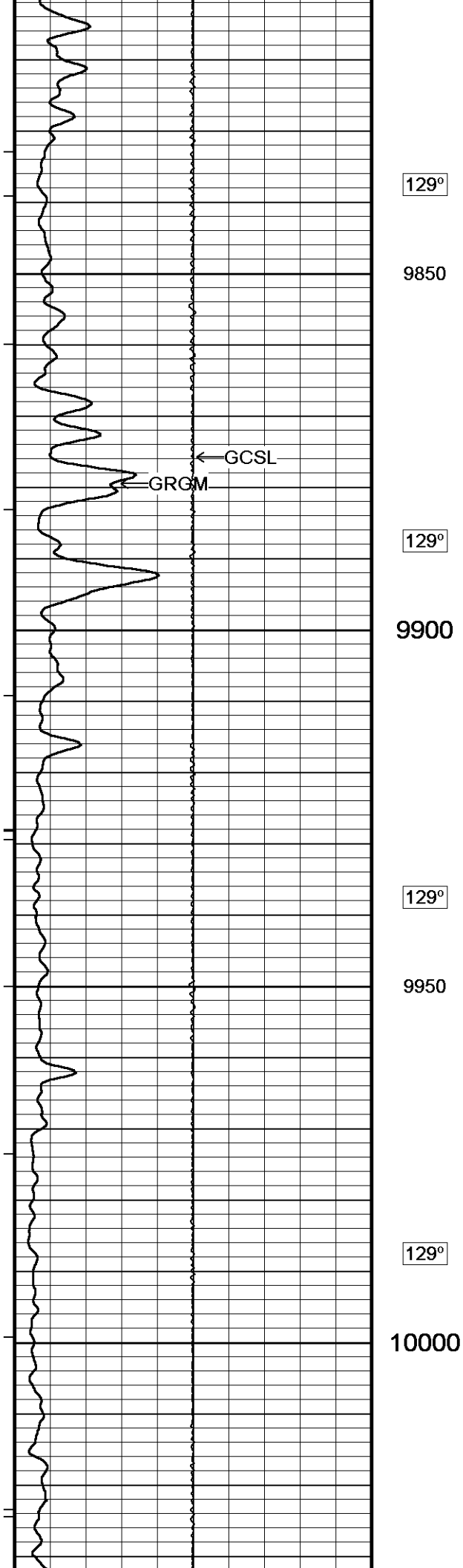
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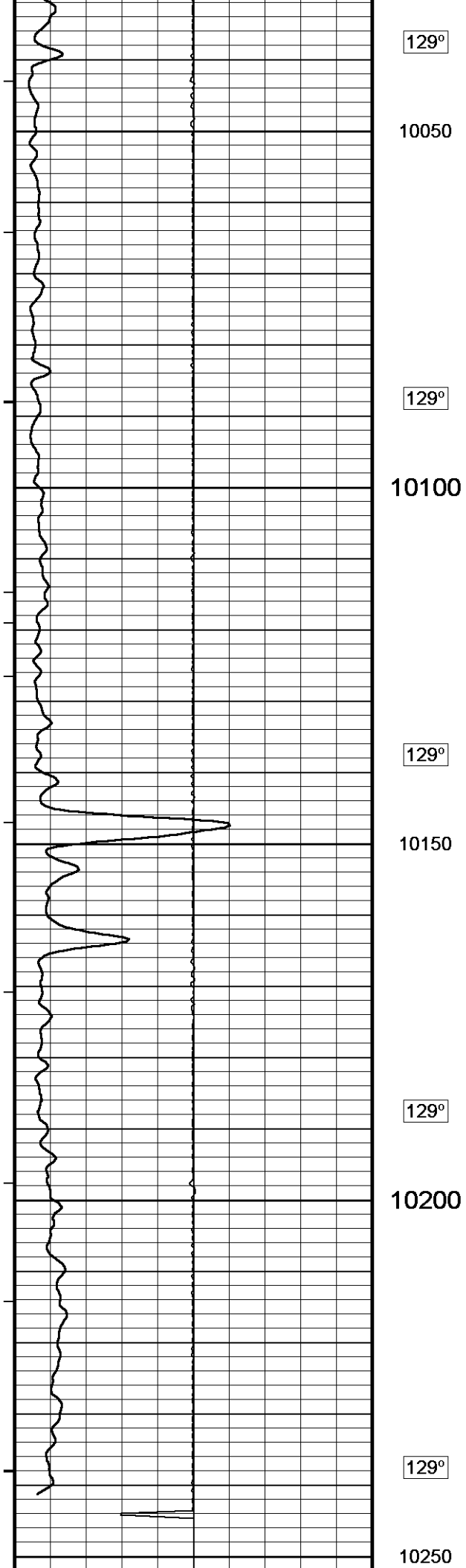
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129°

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129°

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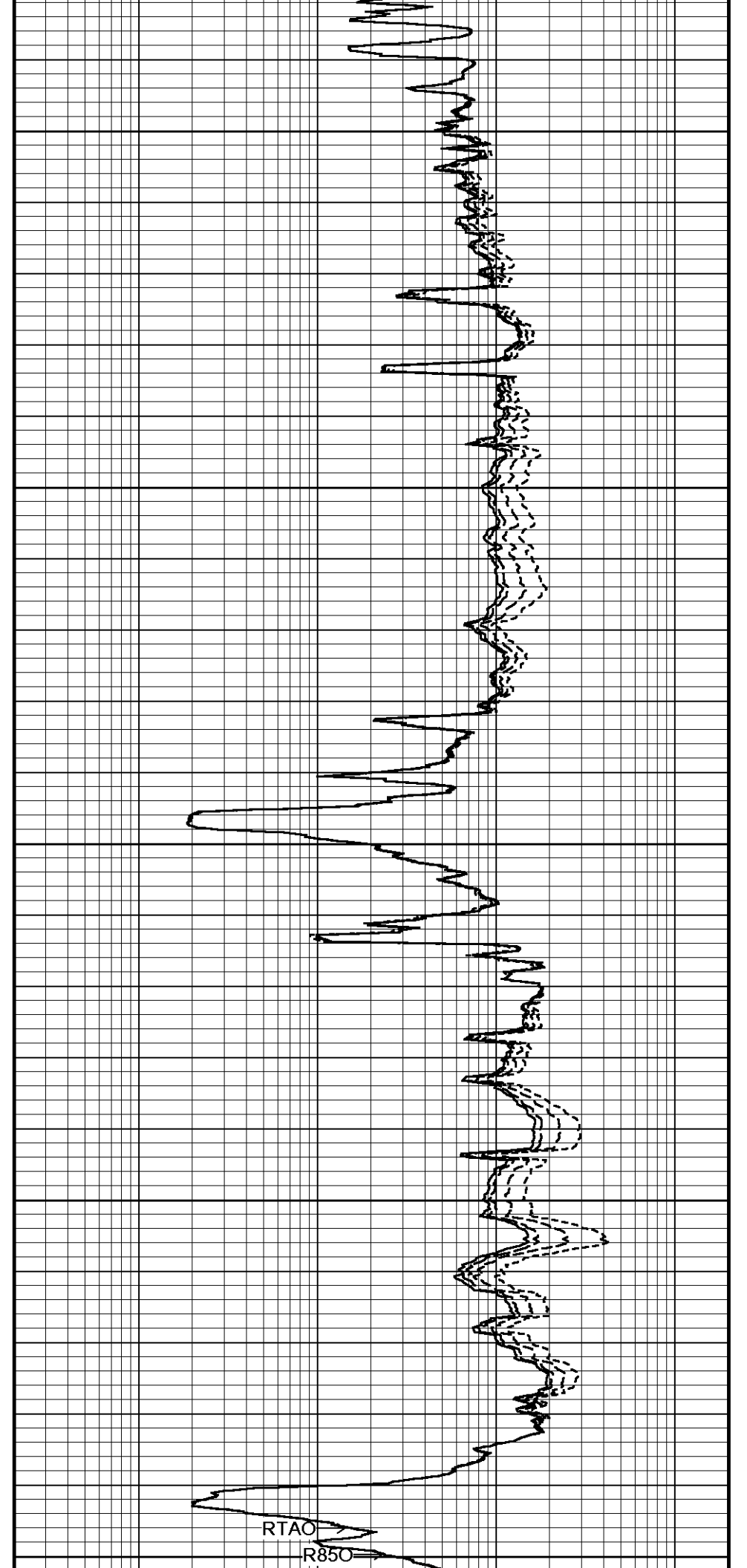
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129°

10200

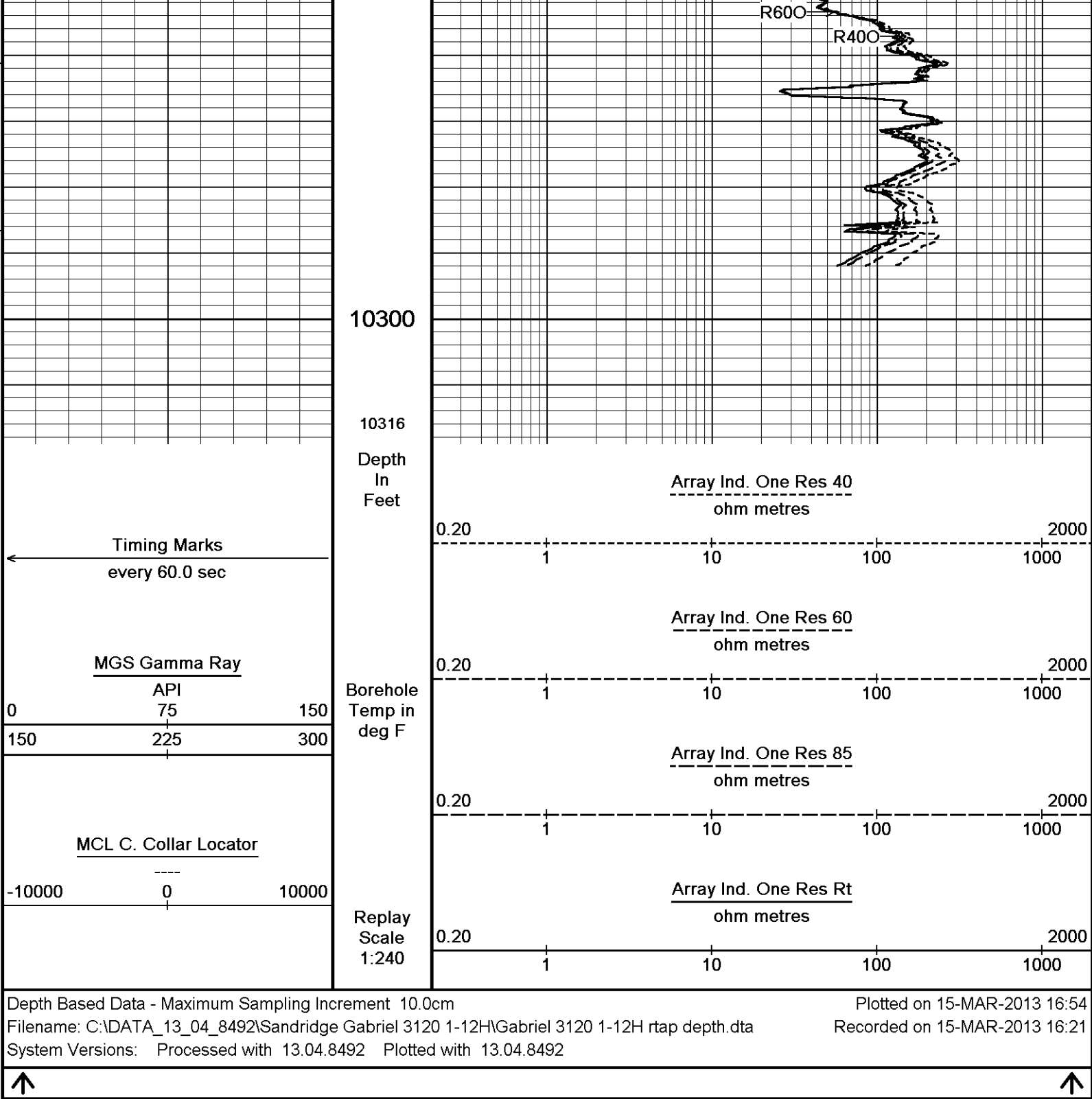
129°

10250



RTAO

R850



BEFORE SURVEY CALIBRATION		
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General Constants All 000		Last Edited on 13-MAR-2013,14:18
General Parameters		
Mud Resistivity	2.400	ohm-metres
Mud Resistivity Temperature	50.000	degrees F
Water Level	0.000	feet
Borehole Fluid Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	

Annular Volume Diameter	4.500	inches
Caliper for Differential Caliper	None	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Deep Induction	
RWA Constant A	0.610	
RWA Constant M	2.150	

Strain Gauge Constants MMS-E.B 158					Last Edited on 02-MAR-2013,15:44			
Atmospheric Pressure	14.70	psi						
Serial Number	261995							
Calibration Date	13-Nov-2010							
Base Check Date								
Dead Weight Serial Number	0							
Dead Weight Gravitational Correction	1.0							
Temperature	75.0	150.0	250.0	350.0	degrees F			
Pressure psia	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.
0.0	-0.116	-0.116	-0.105	-0.106	-0.097	-0.097	-0.095	-0.095
3000.0	5.065	5.068	5.080	5.083	5.094	5.097	5.101	5.103
6000.0	10.257	10.263	10.277	10.282	10.296	10.301	10.307	10.313
9000.0	15.460	15.466	15.484	15.490	15.509	15.515	15.526	15.533
12000.0	20.673	20.678	20.703	20.707	20.734	20.739	20.757	20.762
15000.0	25.900		25.935		25.973		26.002	

SP Calibration MGS-C.J 142					Field Calibration on 02-MAR-2013,15:32			
	Measured	Calibrated (mV)						
Reference 1	100.0	100.0						
Reference 2	-100.0	-100.0						

High Resolution Temperature Calibration MGS-C.J 142					Field Calibration on 02-MAR-2013,15:32			
	Measured	Calibrated(Deg F)						
Lower	0.00	0.00						
Upper	0.00	0.00						

High Resolution Temperature Constants MGS-C.J 142					Last Edited on 02-MAR-2013,15:32			
Pre-filter Length	11							

Gamma Calibration MGS-C.J 142					Field Calibration on 14-MAR-2013,13:03			
	Measured	Calibrated (API)						
Background	44	29						
Calibrator (Gross)	1099	725						
Calibrator (Net)	1055	696						

Gamma Constants MGS-C.J 142					Last Edited on 06-MAR-2013,19:41			
Gamma Calibrator Number	036							
Mud Density	1.00	gm/cc						
Caliper Source for Processing	Density Caliper							
Tool Position	Eccentred							
Concentration of KCl	0.00	kppm						

Neutron Calibration MDN-B.J 391					Base Calibration on 04-FEB-2013 09:37 Field Check on 14-MAR-2013,13:03			
Base Calibration								
	Measured	Calibrated (cps)						
	Near	Far	Near	Far				
	3127	94	3714	110				
Ratio	33.324		33.764					
Field Calibrator at Base								
		Calibrated (cps)						
		2292	3445					
Ratio		0.665						
Field Check								
		Calibrated (cps)						
		2101	3158					
Ratio		0.668						

Neutron Source Id	N1055	
Neutron Jig Number	N639	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	N/A	kpsi
Temperature Source	MGS External Temperature	
Temperature	N/A	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-C.A 395

Base Calibration on 09-MAR-2013,23:07

Field Check on 14-MAR-2013 12:58

Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	972.5	126.8
Base Check		279.1
Field Check		278.9

FE Constants MFE-C.A 395

Last Edited on

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Bit Size	
Caliper Value for FE correction	2.25	inches
Rm Source for FE correction	Constant Value	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	Centred	inches

Induction Calibration MAI-A.A 166

Base Calibration on 01-MAR-2013,14:03

Field Check on 14-MAR-2013 12:57

Base Calibration				
Test Loop Calibration		Measured		Calibrated (mmho/m)
Channel	Low	High	Low	High
1	17.4	475.9	9.3	966.2
2	6.7	390.1	7.6	821.4
3	3.6	261.4	5.2	566.0
4	2.0	135.3	2.6	279.2
Array Temperature		0.0		Deg F
Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	13.0	3816.9	13.1	3817.3
2	29.0	3457.6	29.0	3457.6
3	28.5	3027.8	28.5	3027.4
4	19.4	2043.9	19.4	2043.5
Deep	18.3	2009.1	18.3	2008.5
Medium	41.3	3980.2	41.3	3979.7
Shallow	42.0	5057.4	42.1	5058.0
Array Temperature		71.0		72.3 Deg F

Induction Constants MAI-A.A 166

Last Edited on 15-MAR-2013,16:42

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Bit Size	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
Stand-off Time	Five	

Stand-off Type	Fins	0.00	inches
Number of Fins on Stand-off		6.0000	
Stand-off Fin Angle		60.00	degrees
Stand-off Fin Width		0.5000	inches
Borehole Corr. Rm Source	Temperature Corr		
Temp. for Rm Corr.	MGS External Temperature		
Squasher Start		0.0020	mhos/metre
Squasher Offset		N/A	mhos/metre

Borehole Normalisation			
DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections			
Channel 1		0.00	mmhos/metre
Channel 2		0.00	mmhos/metre
Channel 3		0.00	mmhos/metre
Channel 4		0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants			
Archie Constant (A)		1.00	
Cementation Exponent (M)		2.00	
Saturation Exponent (N)		2.00	
Saturation of Water for Apor		100.00	percent
Resistivity of Water for Apor and Sw		0.05	ohm-m
Resistivity of Mud Filtrate for Sw		0.00	ohm-m
Source for Rt		0.00	
Source for Rxo		0.00	

High Resolution Temperature Calibration MAI-A.A 166

Field Calibration on 01-MAR-2013,06:39

	Measured	Calibrated(Deg F)
Lower	0.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-A.A 166

Last Edited on 02-MAR-2013,15:30

Pre-filter Length	11
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Photo Density Calibration MPD-C.J 394

Base Calibration on 12-MAR-2013 13:01

Field Check on 14-MAR-2013 13:02

Density Calibration				
Base Calibration		Measured		Calibrated (sdu)
	Near	Far	Near	Far
Reference 1	50748	25116	59869	31110
Reference 2	21401	2759	24557	2522
Field Check at Base				
	1256.5	1578.1		
Field Check				
	1260.6	1584.9		

PE Calibration				
Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	230	1122		
Reference 1	22100	50552	0.442	0.369
Reference 2	6194	21257	0.296	0.271
Field Check at Base				
	230.3	1122.1		
Field Check				
	231.0	1128.2		

Density Constants MPD-C.J 394

Last Edited on 20-JAN-2013,18:20

Density Source Id	236	
Nylon Calibrator Number	633	
Aluminium Calibrator Number	633	
Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.02	gm/cc
Mud Density Z/A Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	

Matrix Density (gm/cc)	Depth (ft)
2.71	
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

Caliper Calibration MPD-C.J 394

Base Calibration on 12-MAR-2013 10:53

Field Calibration on 12-MAR-2013 10:55

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	17108	4.02
2	25354	6.00
3	33780	8.03
4	42352	10.02
5	51152	12.01
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.99	6.00

DOWNHOLE EQUIPMENT

C:\DATA_13_04_8492\Sandridge Gabriel 3120 1-12H\Gabriel 3120 1-12H rtap depth.dta

Shuttle Running Tool 3.5")
SRT-A.A 69 LG: 6.62 ft WT: 37.5 lb OD: 2.52 in

MBS-G.A 200v Compact Battery Sub
MBS-G.A 115 LG: 10.61 ft WT: 70.5 lb OD: 2.24 in

Compact Memory Sub E.B
MMS-E.B 158 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in

Compact Tool Isolator sub.
MTI-B.A 76 LG: 1.54 ft WT: 13.2 lb OD: 2.24 in

Compact Short Gamma
MGS-C.J 142 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in

Compact Collar Locator
MCL-B.J 63 LG: 3.17 ft WT: 26.5 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 479 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor
SHA-J.A 451 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in



61.76 ft

GRGM - MGS Gamma Ray

59.77 ft

GSXT - MGS External Temperature

COMPANY	Sandridge
	Gabriel
WELL	Six Moon
	Comanche
FIELD	U.S.A. /
	330 FNL
CONTRACT/LEASE	
LOCATION	
SEG	13
TEMP	315
ROE	2098
Well Number	15-033-21083
Permanant Dablin 6 L, Elevation 20	
Lbs Measured From 14B	
Drilling Measured From 14B @ 18 1/4	
Date	15-MAY
Run Number	35403
Service Order	1031.44
Depth Driller	1028.88
Logging Logger	5557.7
Fast Reading	5572.7
Casing Driller	6.25
Casing Logger	
Hole Size	
Hole Fluid Type	WBHM
Density Viscosity	9.00
FH / Fluid Loss	
Sample Source	Powell
Run @ Measured Temp	0.54
Run @ Measured Temp	0.67
Run @ Measured Temp	1.01
Source Ref / Rmc	Catic
Run @ BHT	0.46
Time Spent Circulation	130.00
Max Recorded Temp	
Equipment Base	18077
Recorded By	Steven
Entered By	JHester
DC/TT	

ARRAY INDUCTION

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aa	aa

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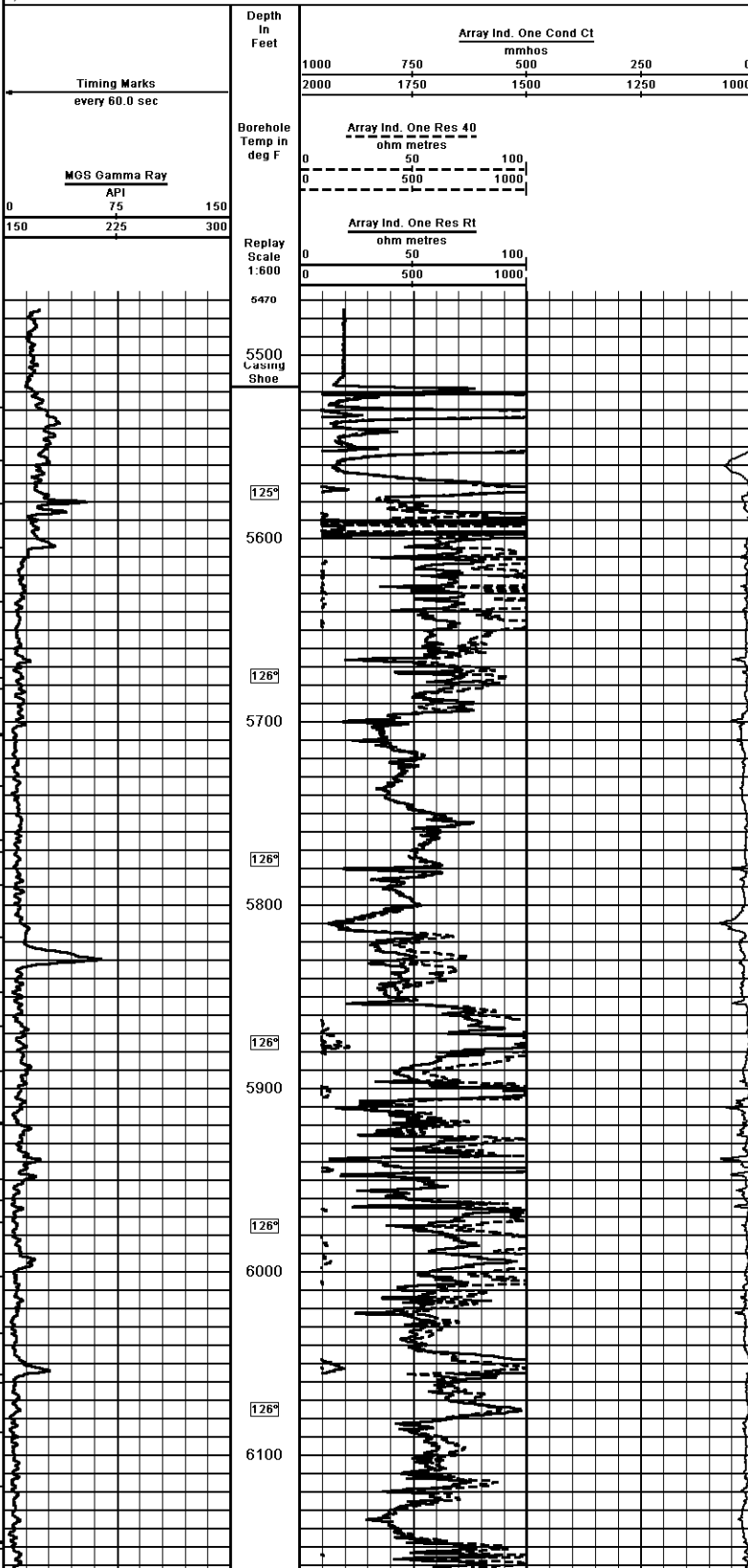
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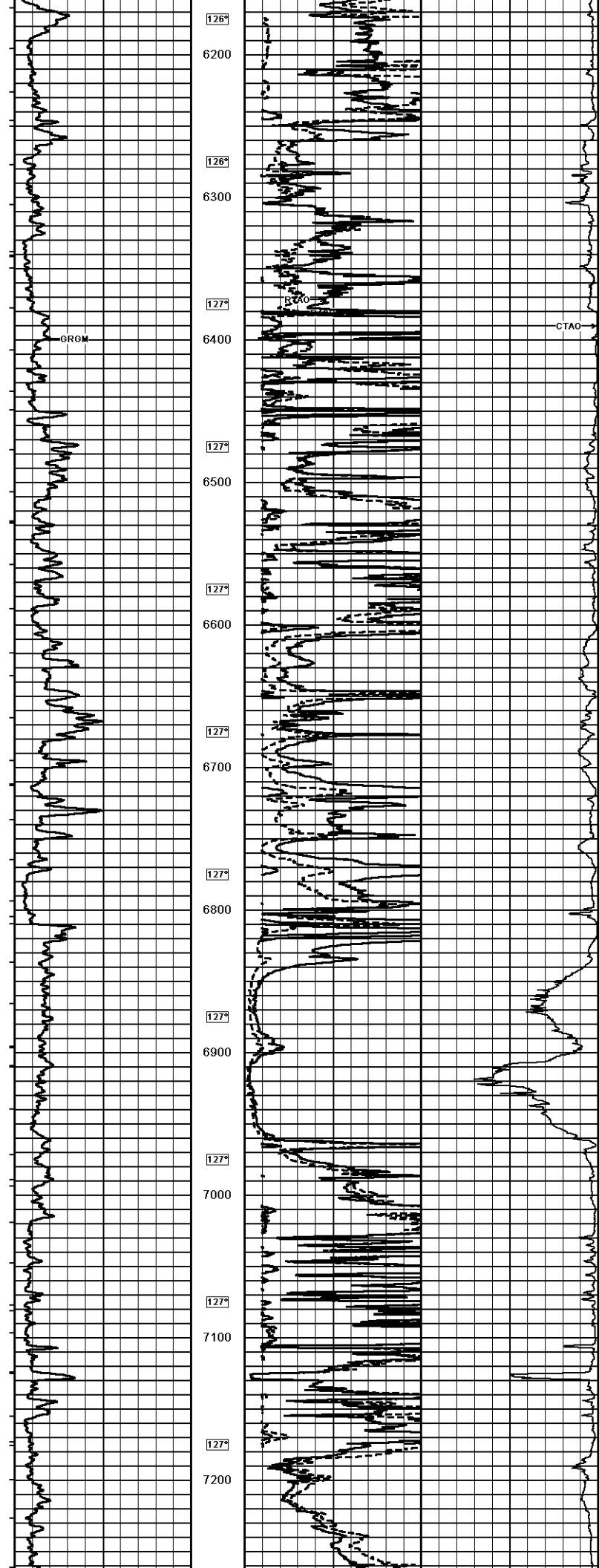
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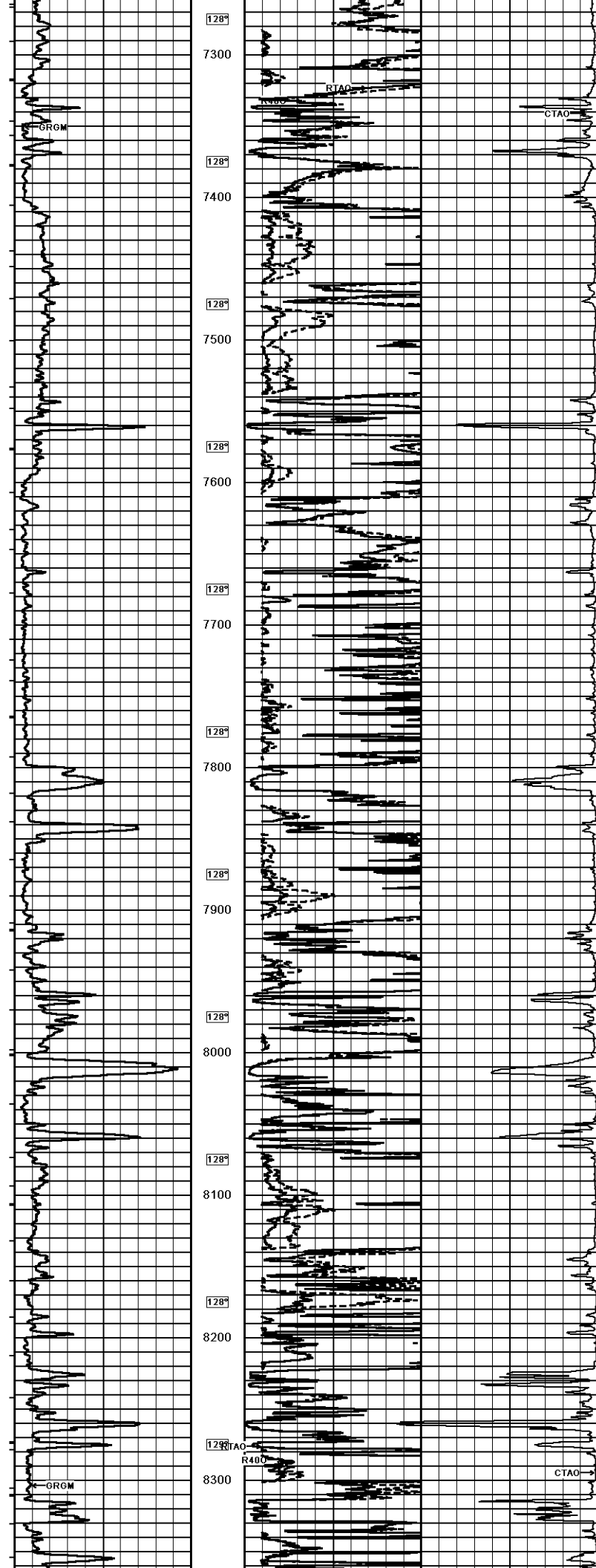
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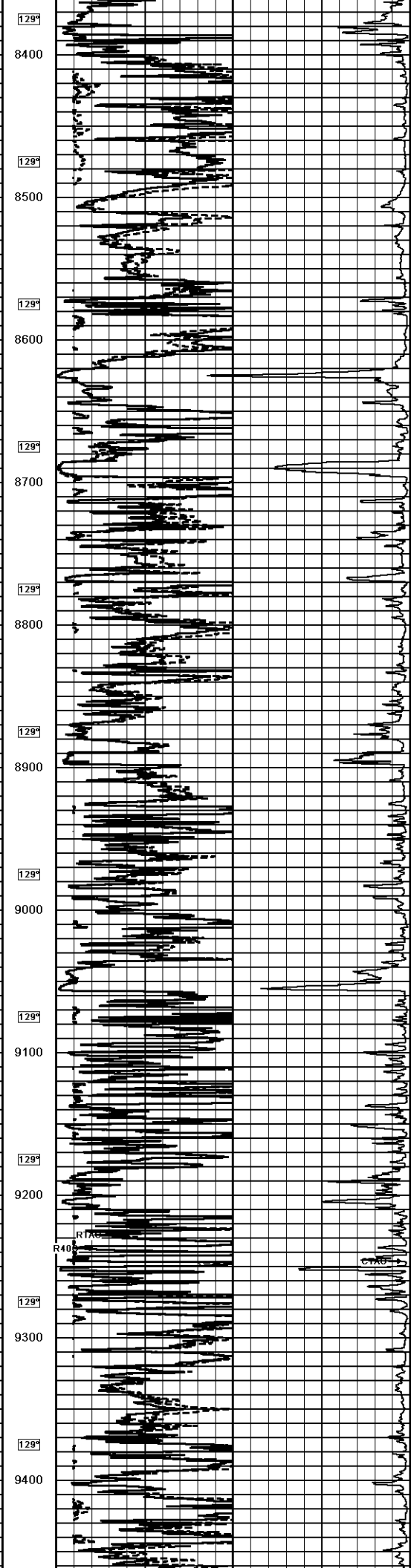
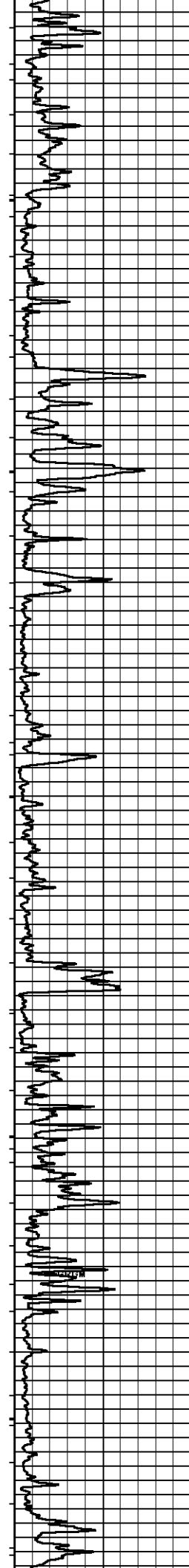
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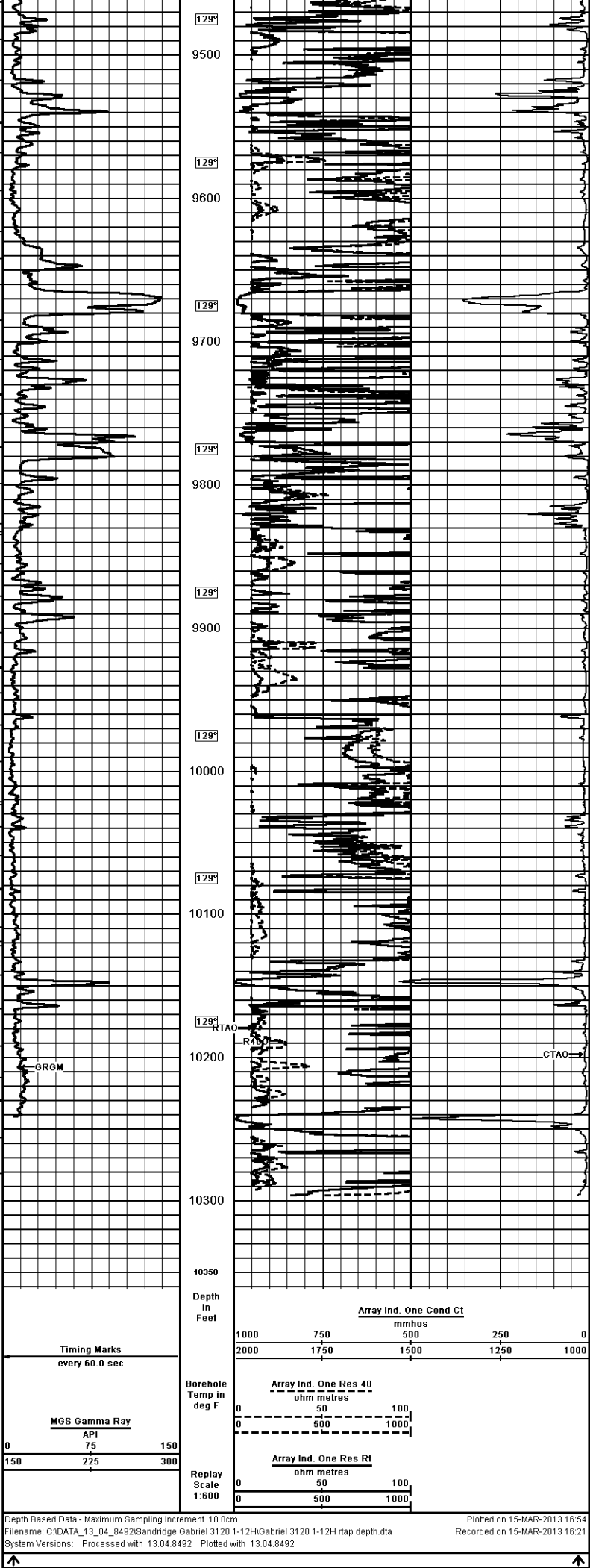
Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 15-MAR-2013 16:54
 Filename: C:\DATA_13_04_8492\Sandridge Gabriel 3120 1-12HGabriel 3120 1-12H rtap depth.dta
 Recorded on 15-MAR-2013 16:21
 System Versions: Processed with 13.04.8492 Plotted with 13.04.8492











COMPANY	Sandridge Energy				
WELL	Gabriel 3120 1-12H				
FIELD	Six Moons				
PROVINCE/COUNTY	Comanche				
COUNTRY/STATE	U.S.A. / Kansas				

Elevation Kelly Bushing	2080.00	feet	First Reading	10289.00	feet
Elevation Drill Floor	2060.00	feet	Depth Driller	10314.00	feet
Elevation Ground Level	2042.00	feet	Depth Logger	10314.00	feet



CML MESSENGER SHUTTLE
ARRAY INDUCTION