



Induction Array Log

Company Creco Operating, LLC.
Well Voegele 1-28
Field Gibson
County Cowley **State Kansas**

Company: Creco Operating, LLC.
 Well: Voegele 1-28
 Field: Gibson
 County: Cowley
 State: Kansas

Location: 650' FNL & 330' FWL
 SEC 28 TWP 34S RGE 3E
 API #: 35-24383--0000

Permanent Datum: G.L. Elevation 1134 ft.
 Log Measured From: K.B. 10 ft. above perm. datum
 Drilling Measured From: K.B.
 Other Services: IAT, LDT, CNL, MEL, GR
 Elevation: K.B. 1144 ft., D.F. 1143 ft., G.L. 1134 ft.

Date	6/29/2011
Run Number	One
Depth Driller	3840 ft
Depth Logger	3837 ft
Bottom Logged Interval	3836 ft
Top Log Interval	330 ft
Casing Driller	9.625" @ 330 ft
Casing Logger	330 ft
Bit Size	8.75"
Type Fluid in Hole	WBM
Density / Viscosity	9.2 / 56
pH / Fluid Loss	9.6 / 9.2
Source of Sample	Flowline
Rm @ Meas. Temp	3.15 @ 80 degF
Rmt @ Meas. Temp	2.7 @ 84 degF
Rmc @ Meas. Temp	3.3 @ 84 degF
Source of Rmt / Rmc	Measured
Rm @ BHT	2.42 @ 106 degF
Time Circulation Stopped	2045
Time Logger on Bottom	1300
Maximum Recorded Temperature	106 degF
Equipment Number	10001
Location	OKC
Recorded By	J. Brownawell
Witnessed By	J. Allen

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Equipment and Log Data

Service Order:

Gamma		Density		Neutron		Sonic		IAT	
Run No.	One	Run No.	One	Run No.	One	Run No.	One	Run No.	One
Serial No.	082	Serial No.	110	Serial No.	088	Serial No.		Serial No.	107
O.D.	3.375 in.	Source No.	129B	Source No.	05	Centralizers		Standoffs	2 @ 1.5"
		O.D.	4.5 in.	O.D.	3.375 in.	O.D.	3.375 in.	O.D.	3.875 in.

Logging Pass Data

General		Gamma Scales		Density Scales		Neutron Scales			Sonic Scales			IAT Scales		
Run	Depths	Left	Right	Left	Right	Matrix	Left	Right	Matrix	Left	Right	Matrix	Left	Right
One	3837 330	0	150	30%	-10%	2.71	30%	-10%	Lime				0.2	2000

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 interpretation, 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 set out in our current Price Schedule.

Comments

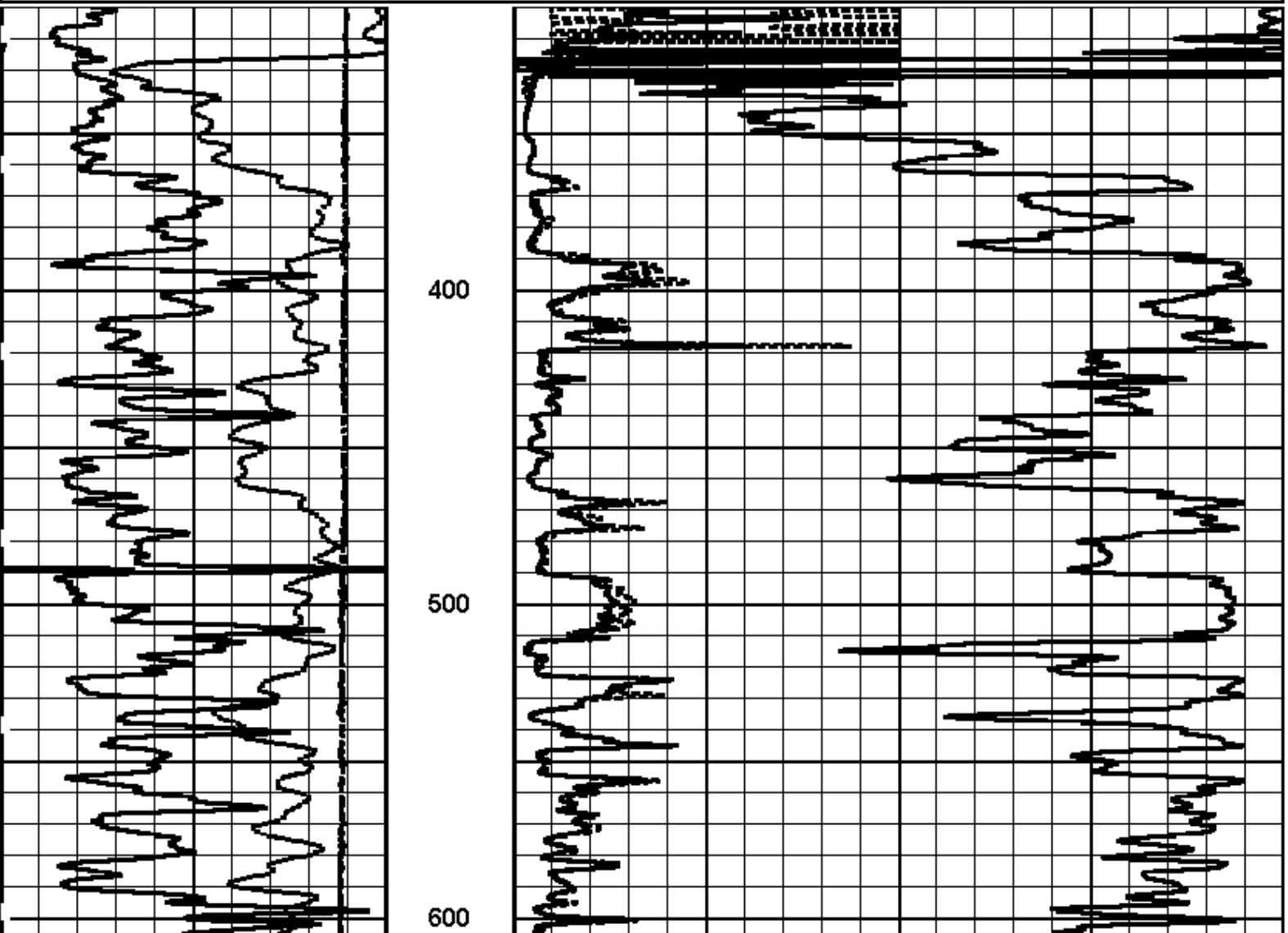
GPT, MEL, CNL, LDT, AND IAT WERE RUN IN COMBINATION.
 CHLORIDES REPORTED AT 1400 MG/L.
 LCM REPORTED AT 6lbs / bbl.

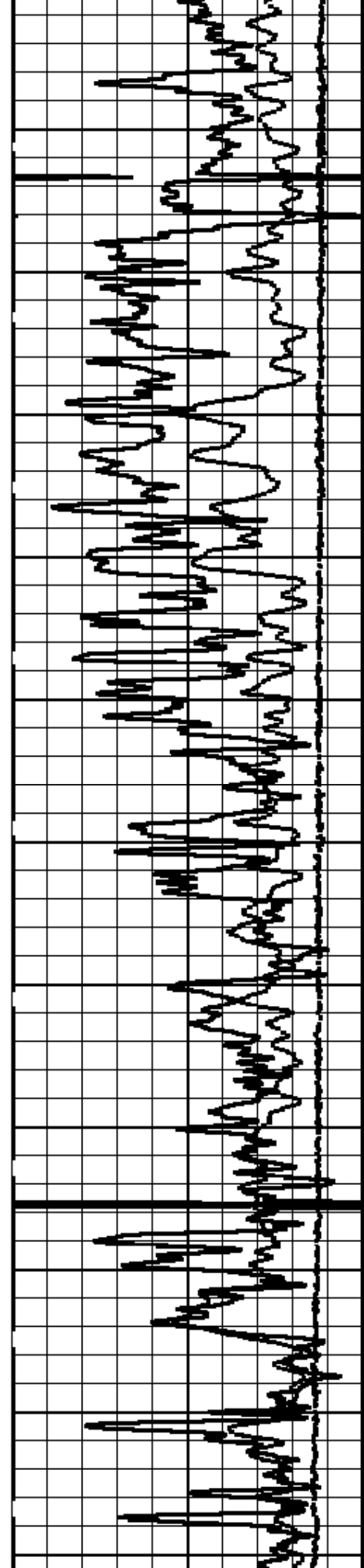
NEUTRON DECENTRALIZED WITH BOWSPRING.
 ANNULAR BOREHOLE VOLUME CALCULATED FOR 7" CASING.
 BOTTOM NOSE HOLE FINDER RAN AT CUSTOMERS REQUEST.
 INDUCTION ANOMALY AT 3460 FT.
 GR ANOMALYS NOT REPEATED AT 2981, 3183 AND 3200, NOTED BY COMPANY MAN.

YOUR CREW TODAY: J. Sheets, K. Patton
 THANK YOU FOR CHOOSING ALLIED WIPELINE. OKLAHOMA CITY, OK. (405) 445-7135.

Database File: voegele_1_28.db
 Dataset Pathname: main
 Presentation Format: acond2
 Dataset Creation: Wed Jun 29 14:43:03 2011 by Calc Sondex V7.03
 Charted by: Depth in Feet scaled 1:600

0	GAMMA RAY (GAPI)	150	1000	90 IN CONDUCTIVITY (mmho/m)	0
SP (-20 mV+)			SHALLOW RESISTIVITY		
TENSION			0 (Ohm-m) 50		
5000 (lb) 0			DEEP RESISTIVITY		
			0 (Ohm-m) 50		





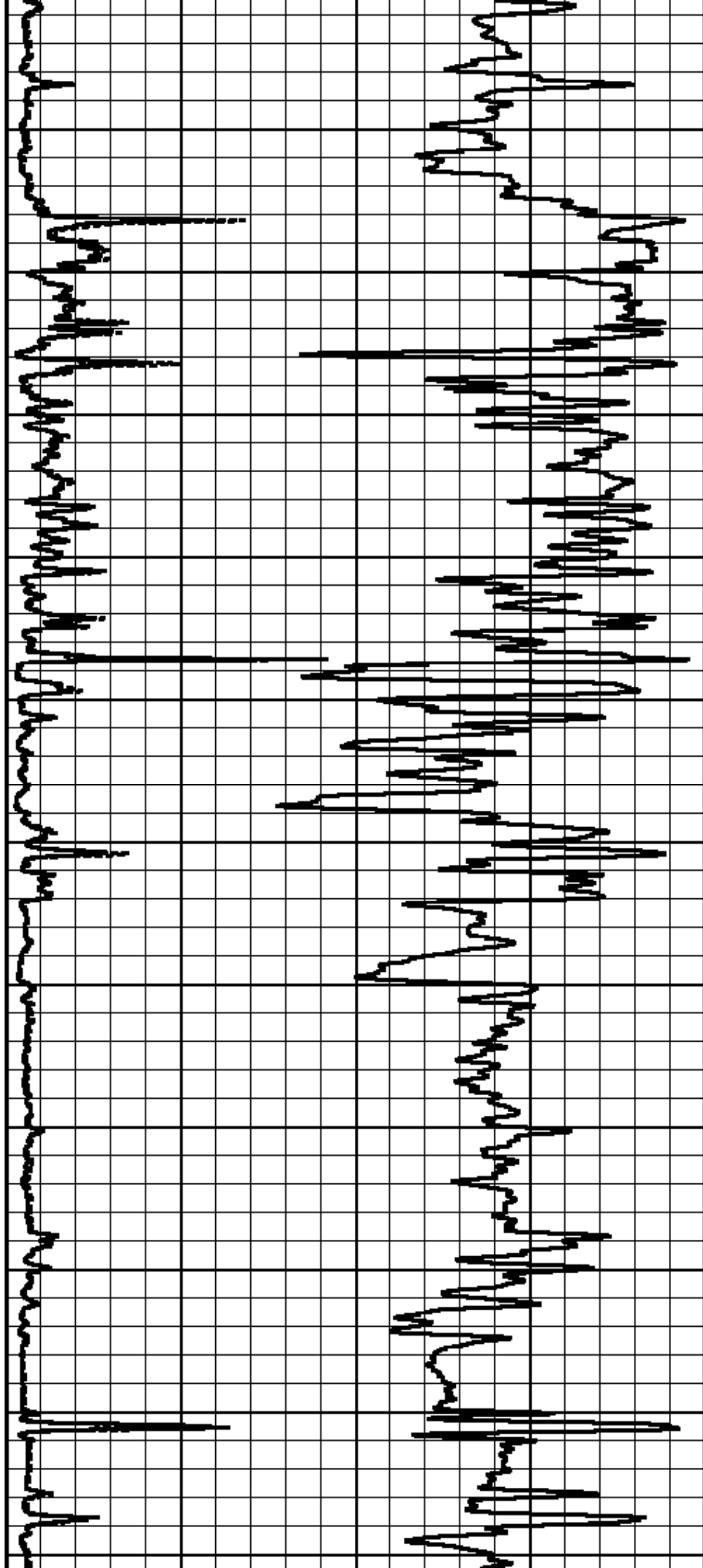
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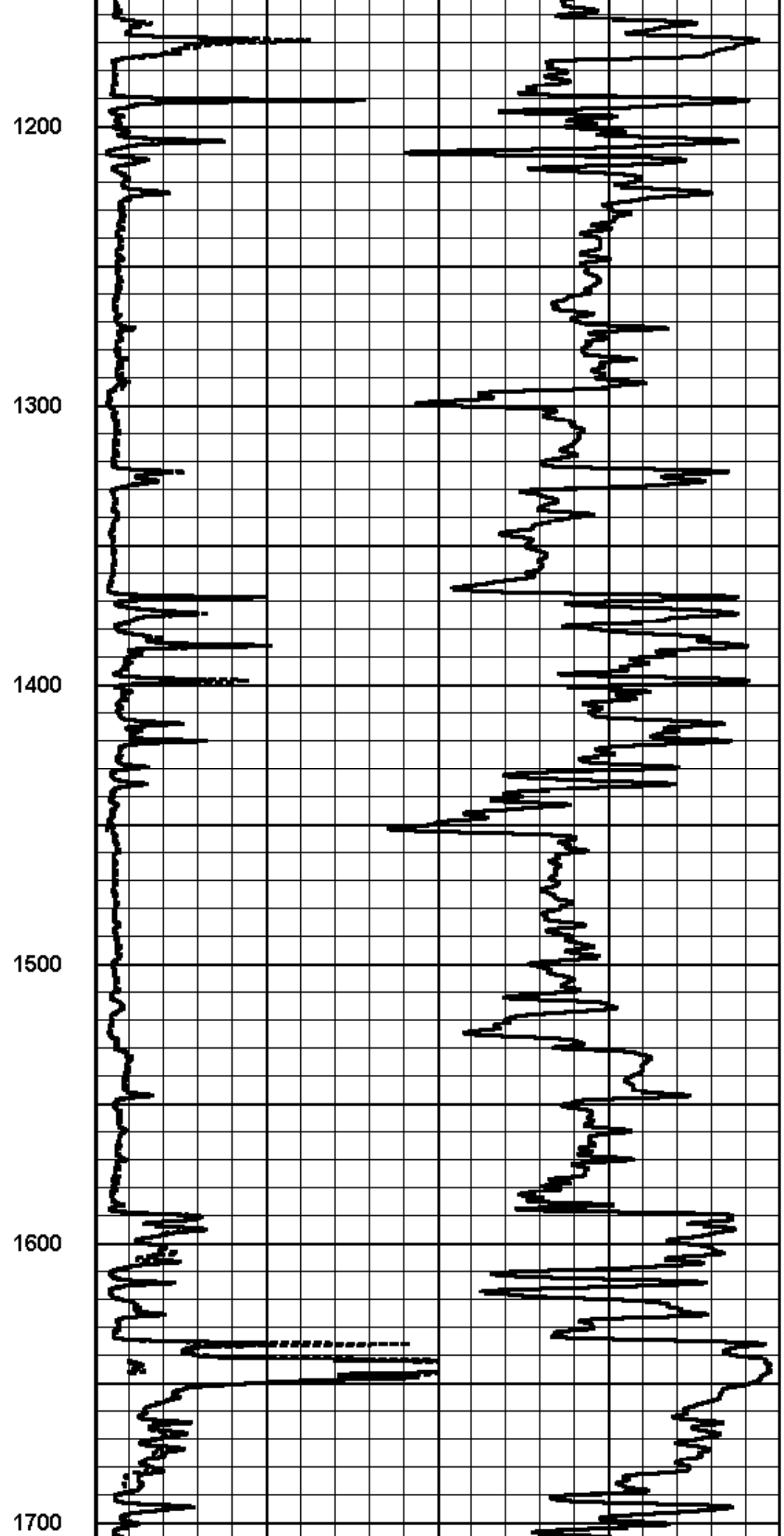
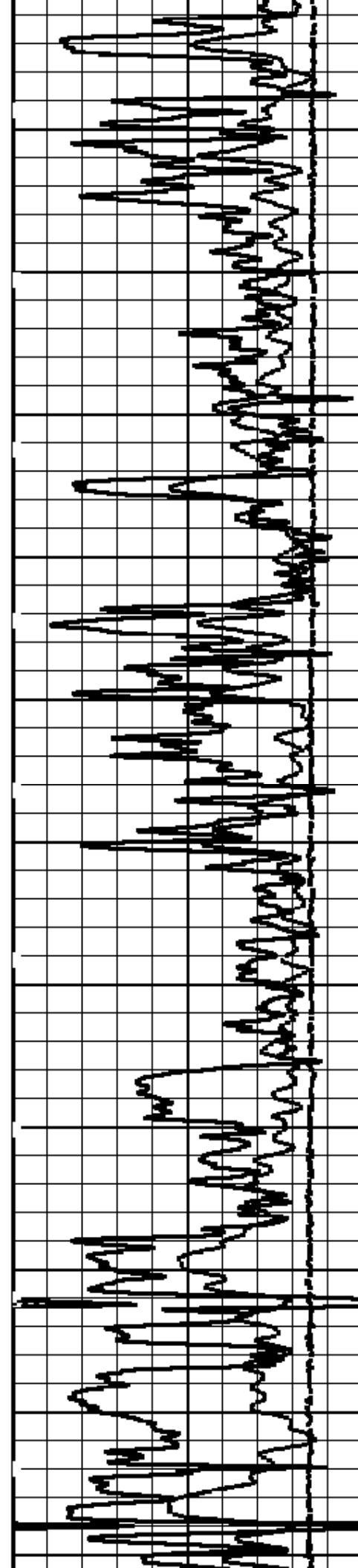
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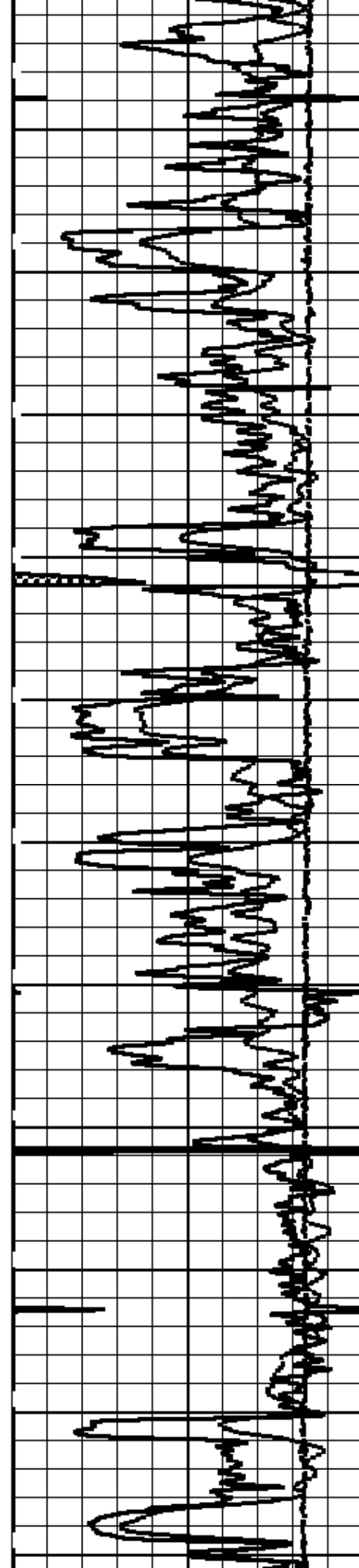
900

1000

1100







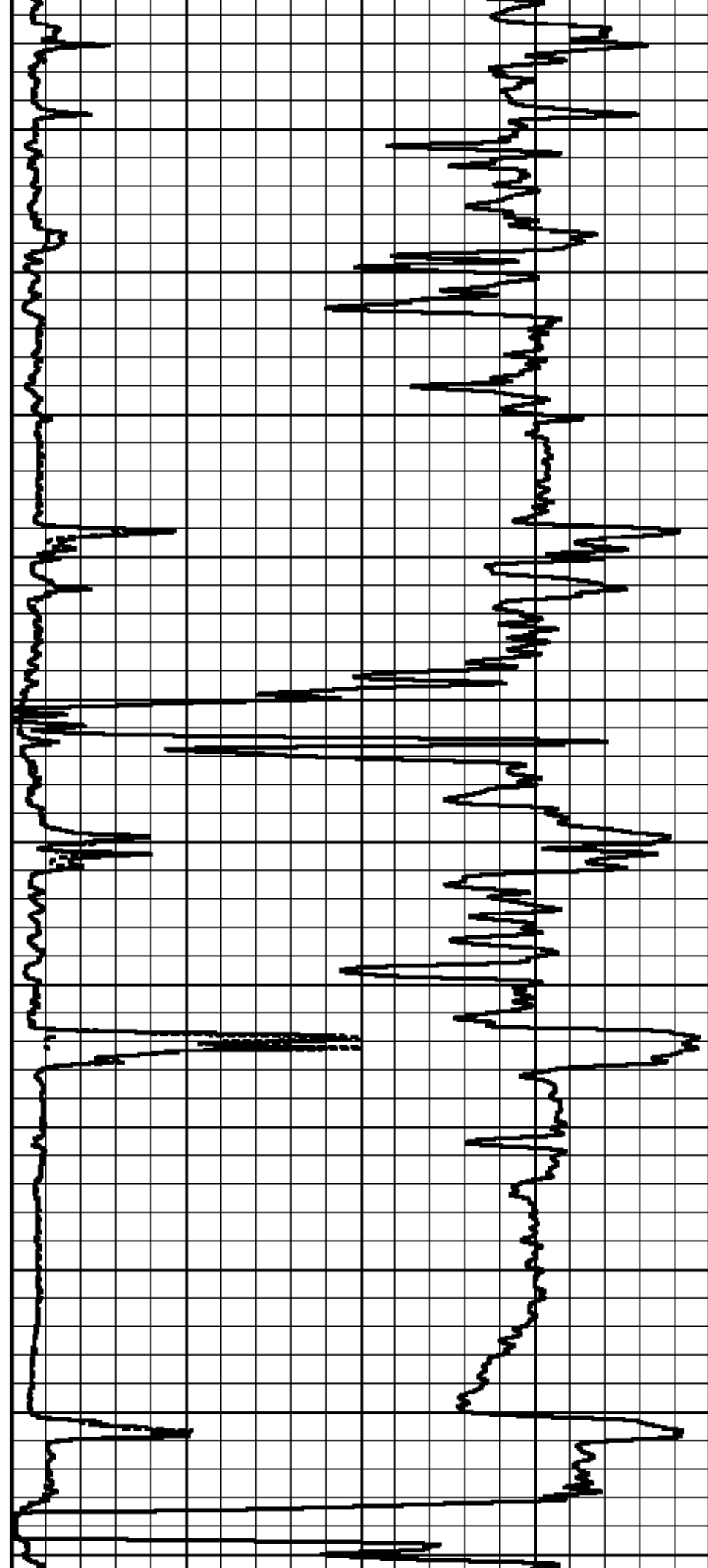
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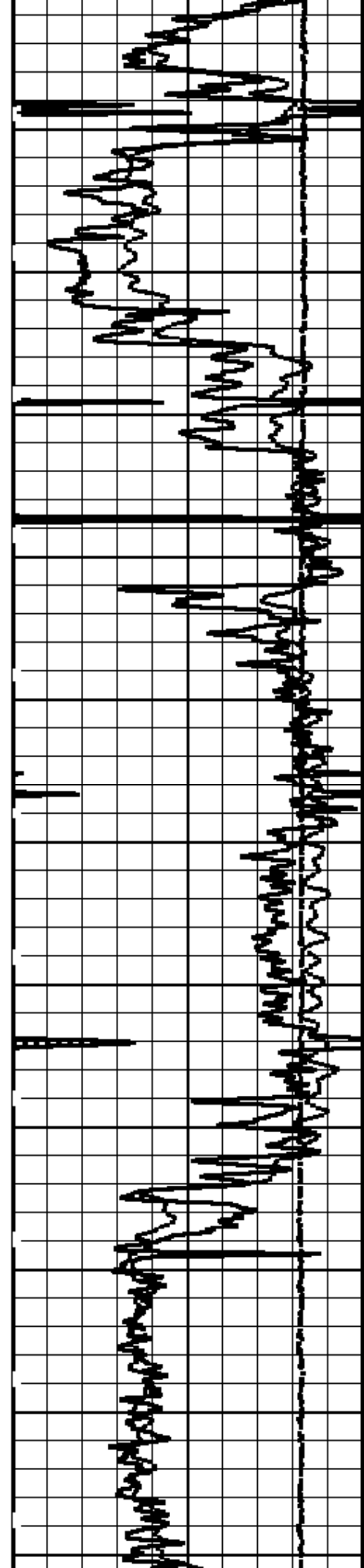
1900

2000

2100

2200





2300

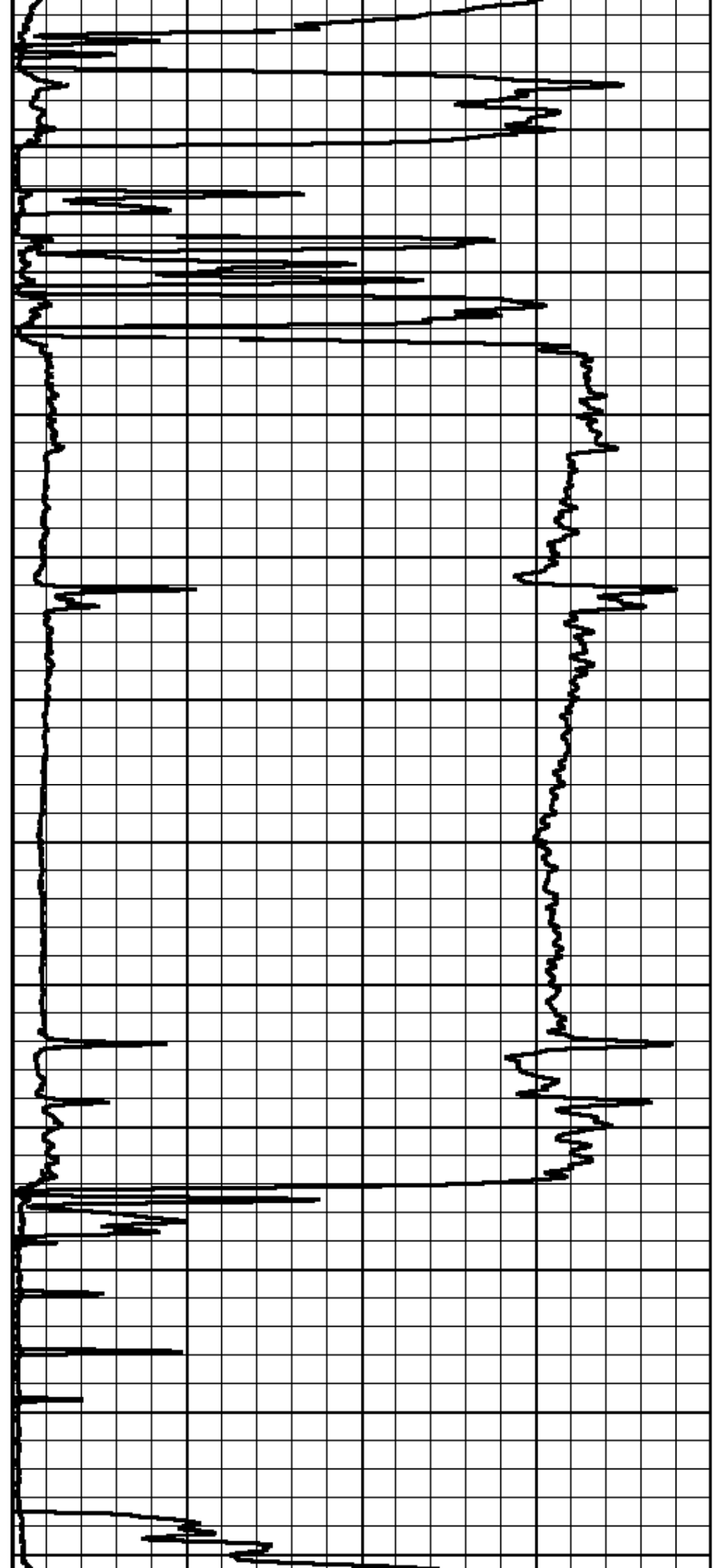
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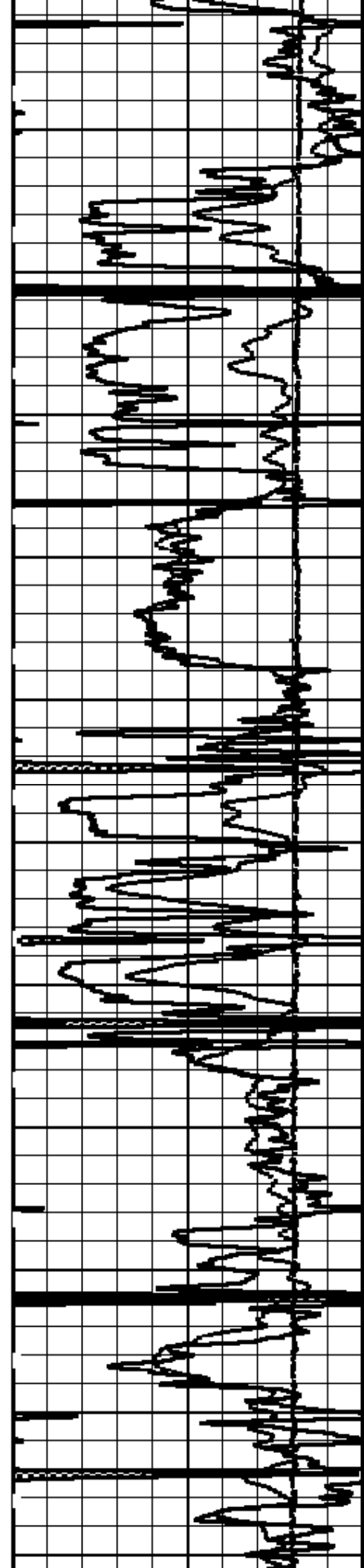
2500

2600

2700

2800





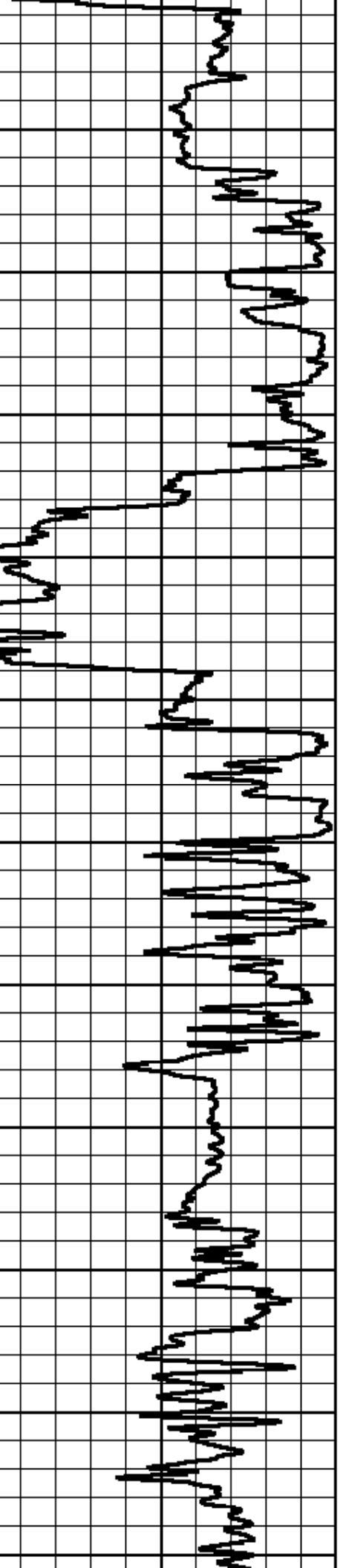
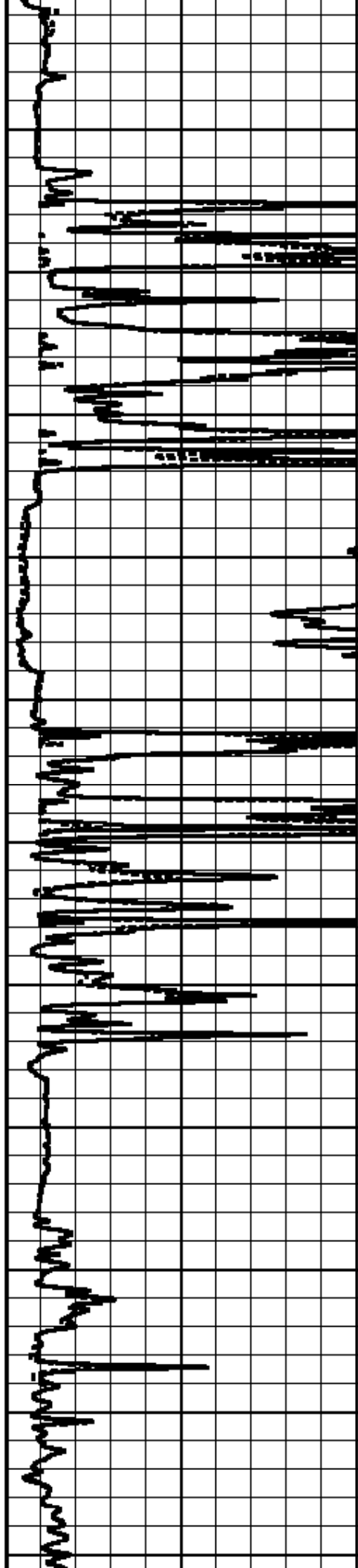
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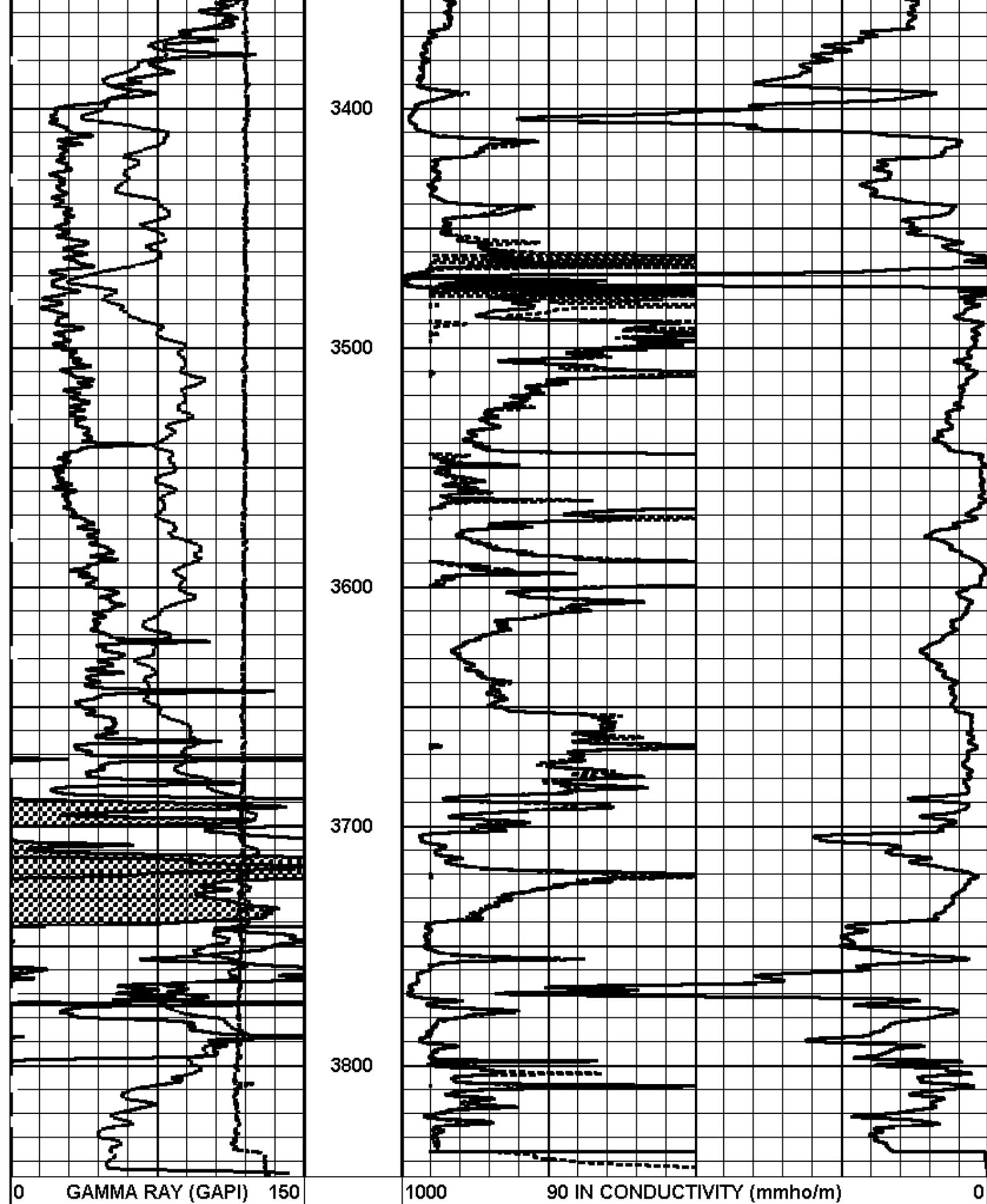
3000

3100

3200

3300





0 GAMMA RAY (GAPI) 150

SP (-20 mV+)

TENSION
5000 (lb) 0

3400

3500

3600

3700

3800

1000 90 IN CONDUCTIVITY (mmho/m) 0

SHALLOW RESISTIVITY

0 (Ohm-m) 50

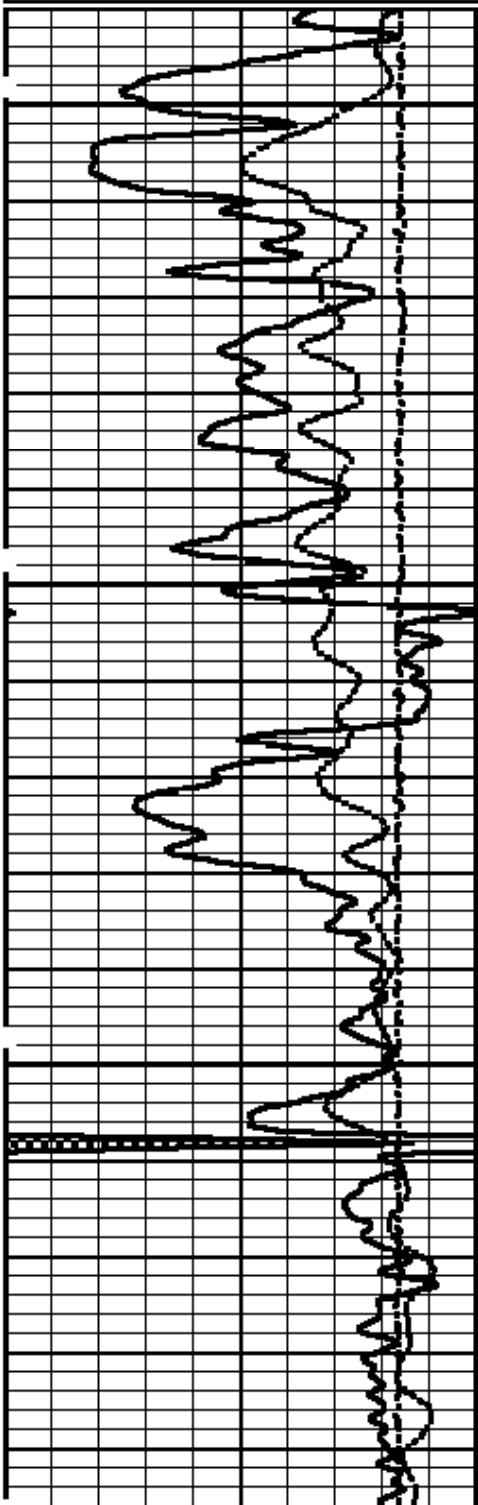
DEEP RESISTIVITY

0 (Ohm-m) 50

Database File: voegele_1_28.db
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 Dataset Creation: Wed Jun 29 14:43:03 2011 by Calc Sondex V7.03
 Charted by: Depth in Feet scaled 1:240

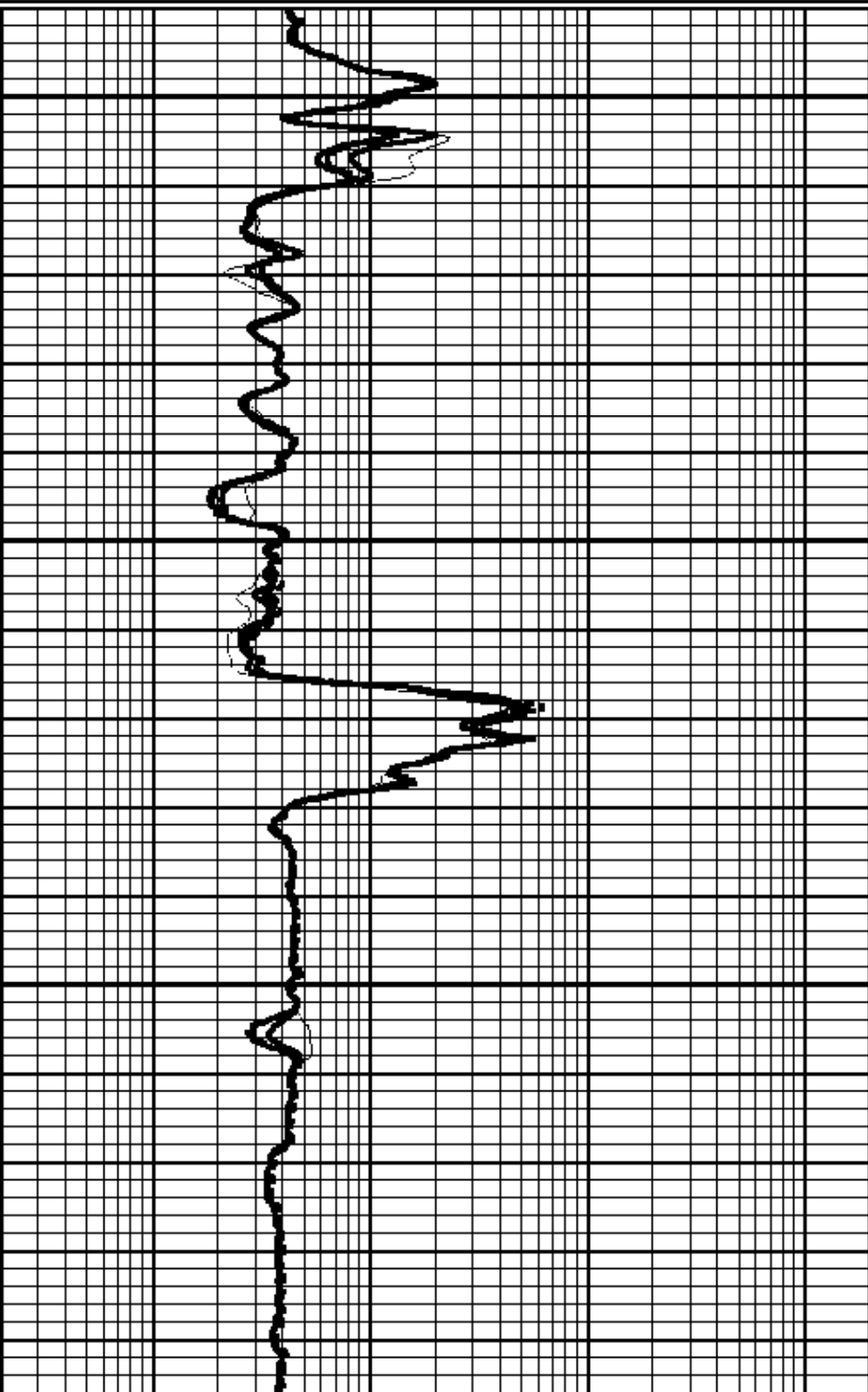
0	GAMMA RAY (GAPI)	150
-30	SP (mV)	170
	TENSION	
	5000 (lb)	0

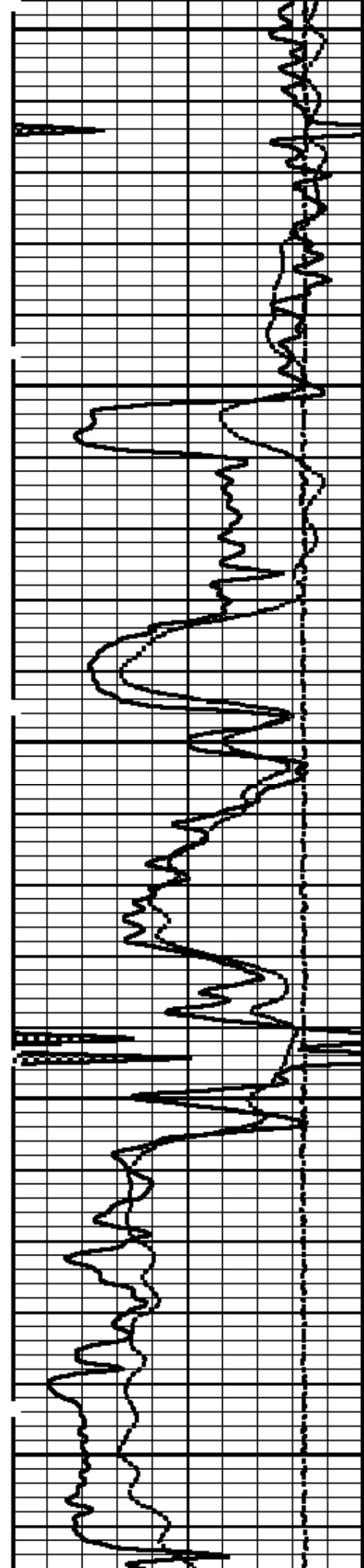
0.2	20 IN RESISTIVITY (Ohm-m)	2000
0.2	30 IN RESISTIVITY (Ohm-m)	2000
0.2	60 IN RESISTIVITY (Ohm-m)	2000
0.2	90 IN RESISTIVITY (Ohm-m)	2000
0.2	10 IN RESISTIVITY (Ohm-m)	2000



2000

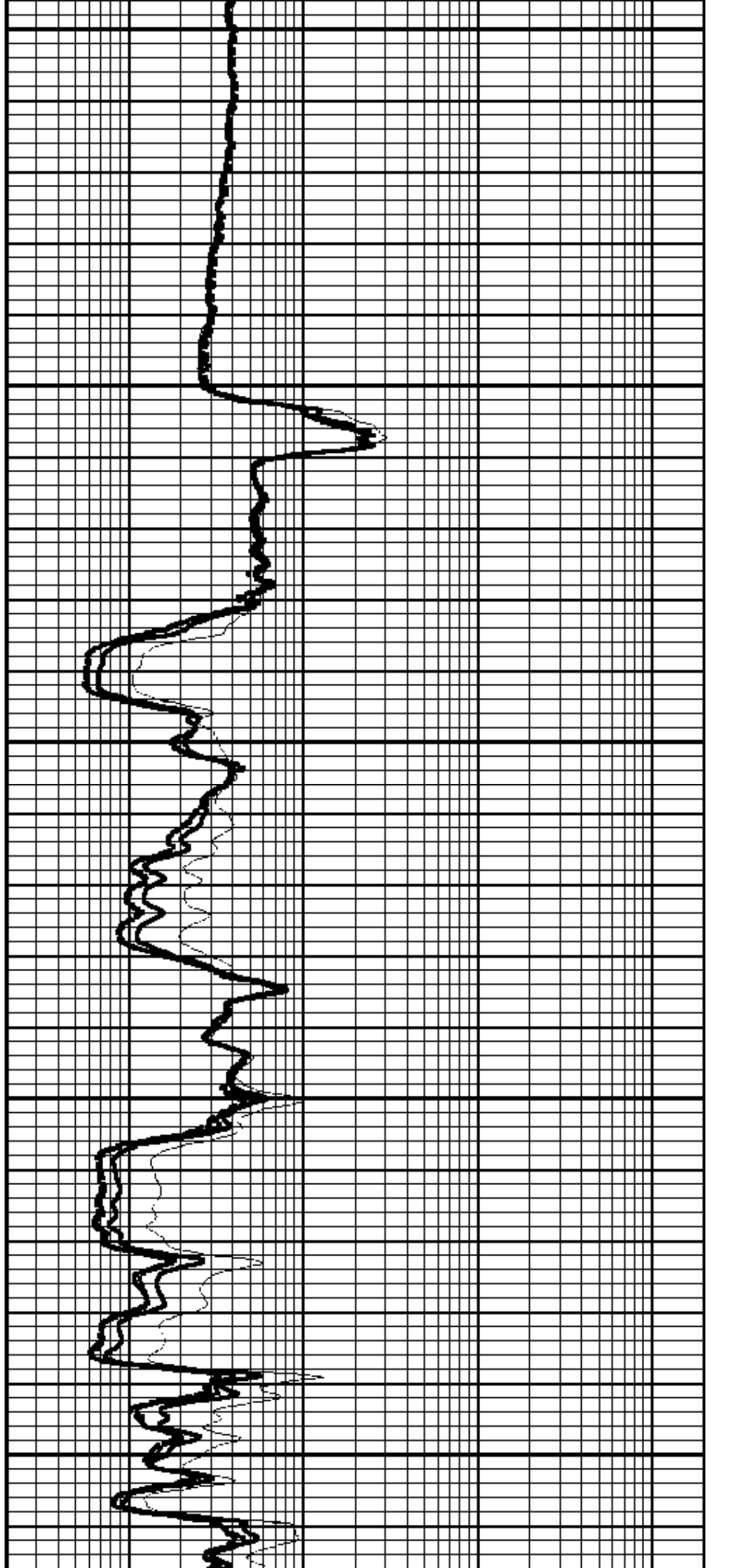
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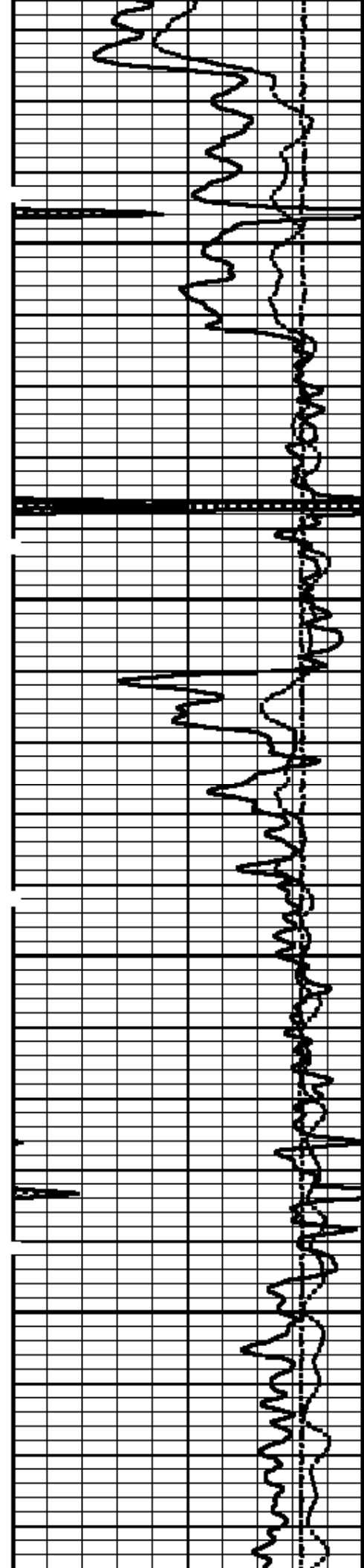




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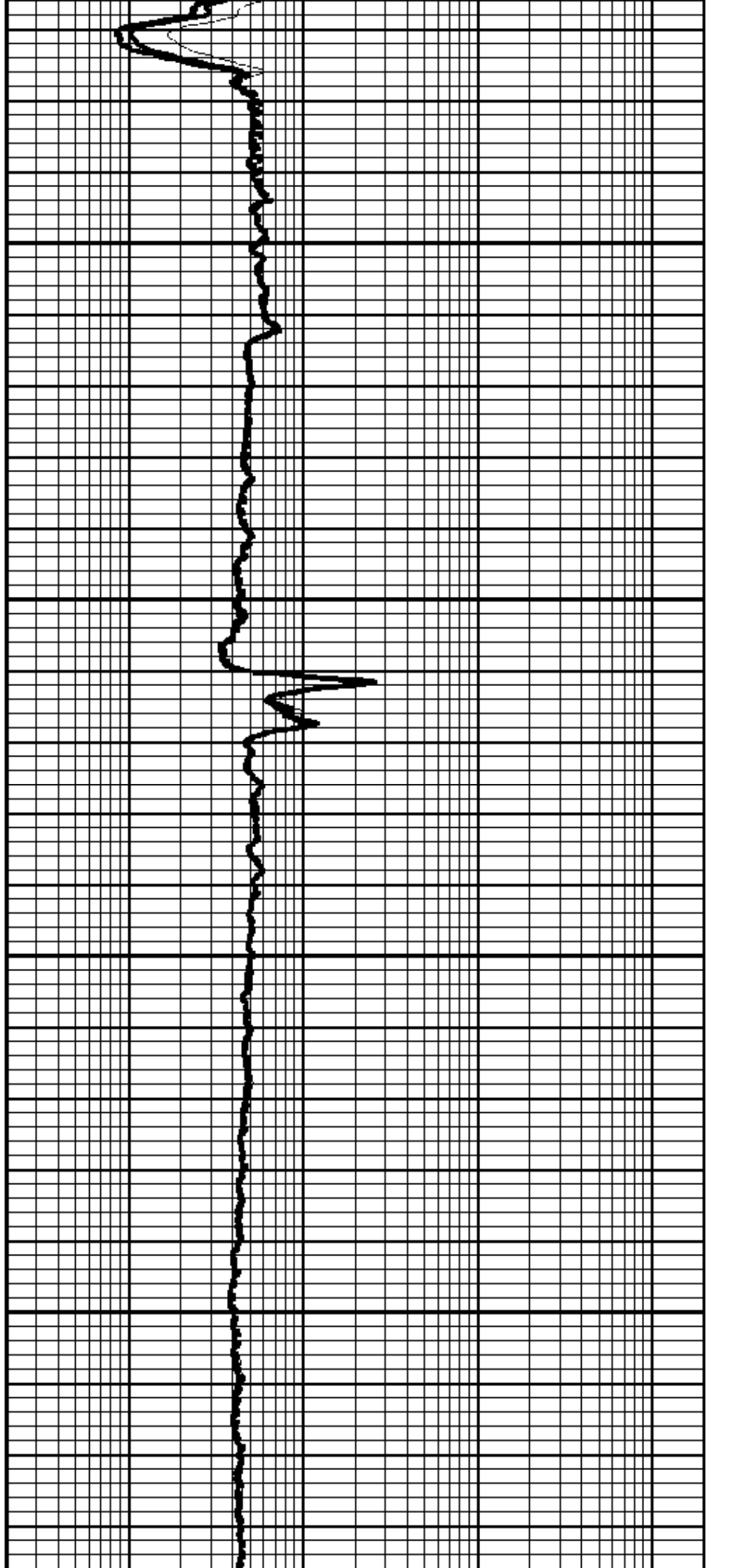
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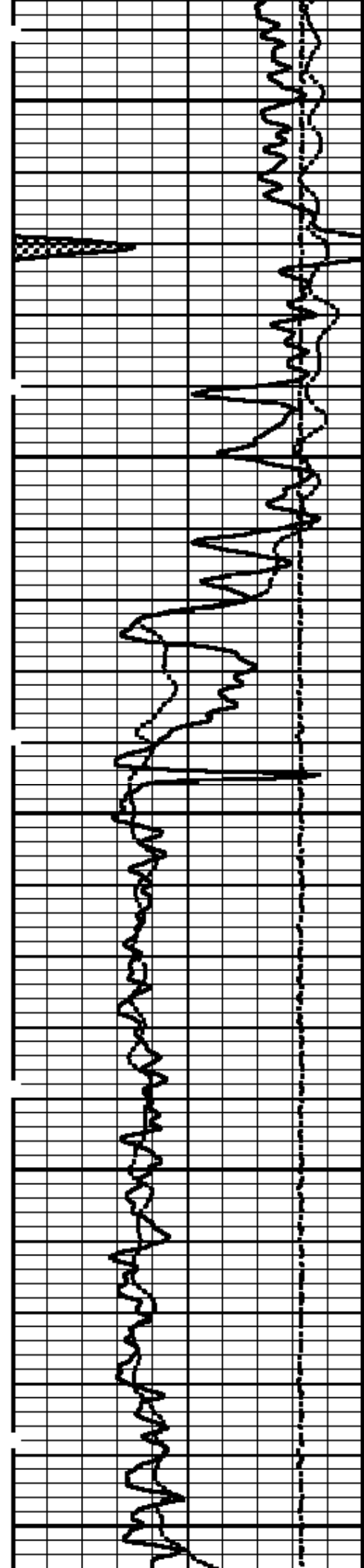




2400

2500

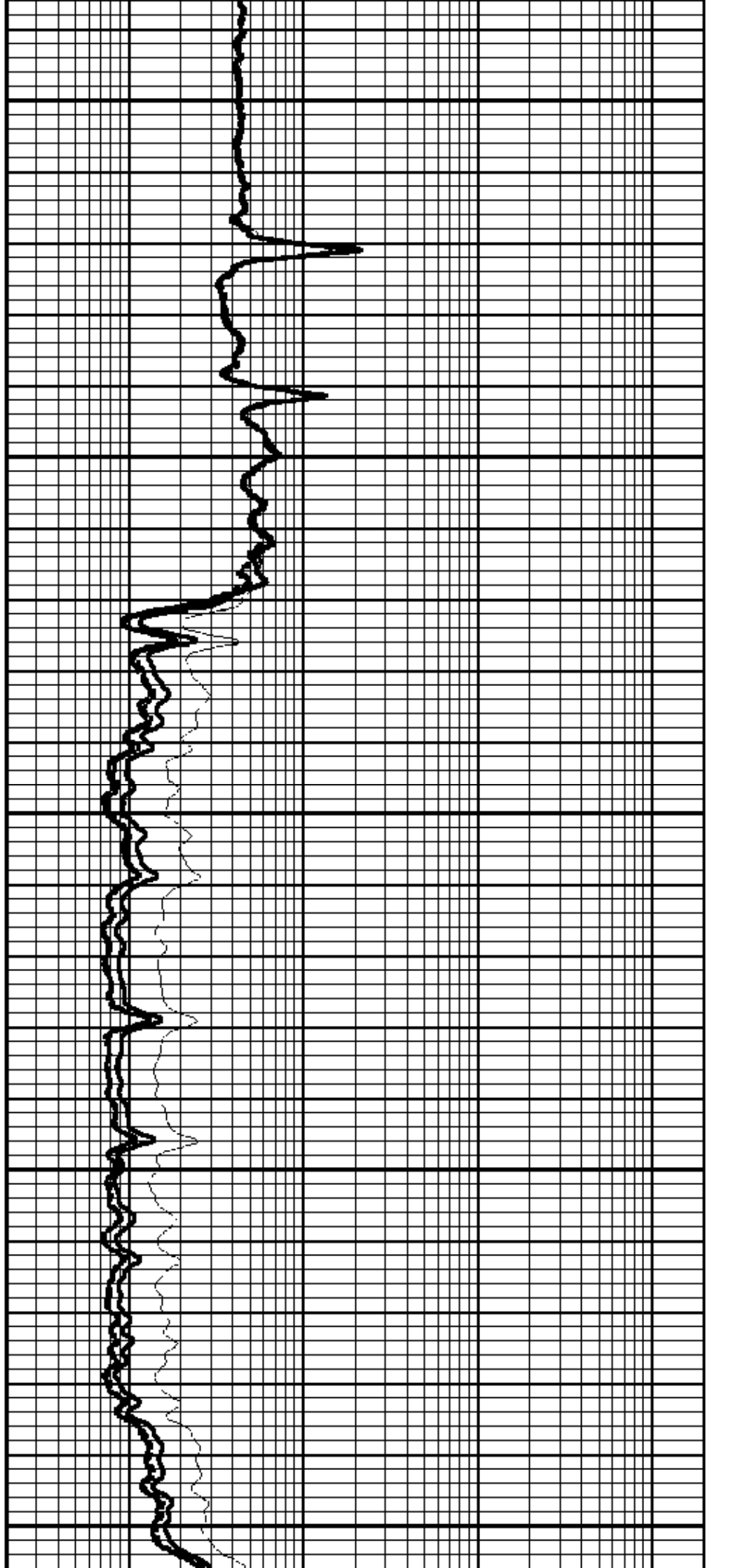


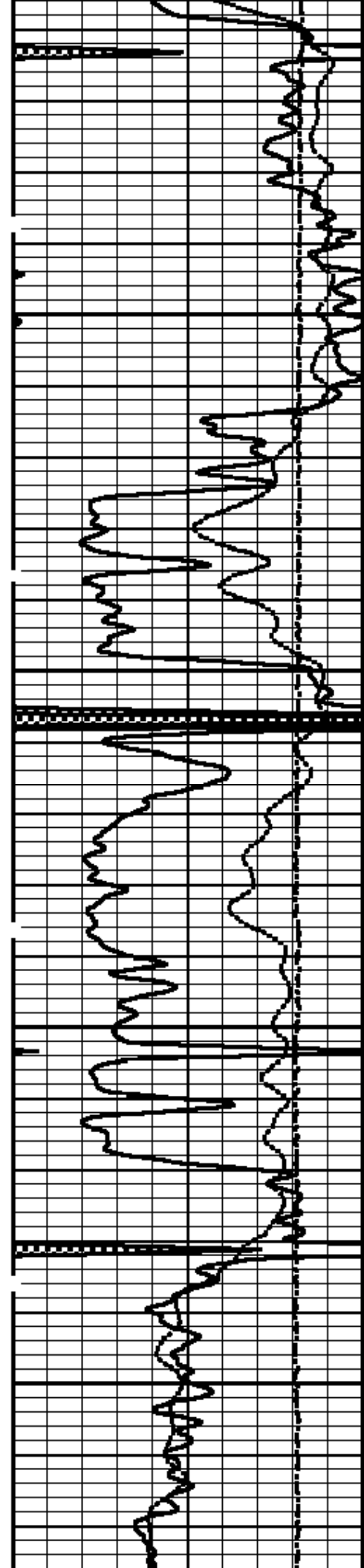


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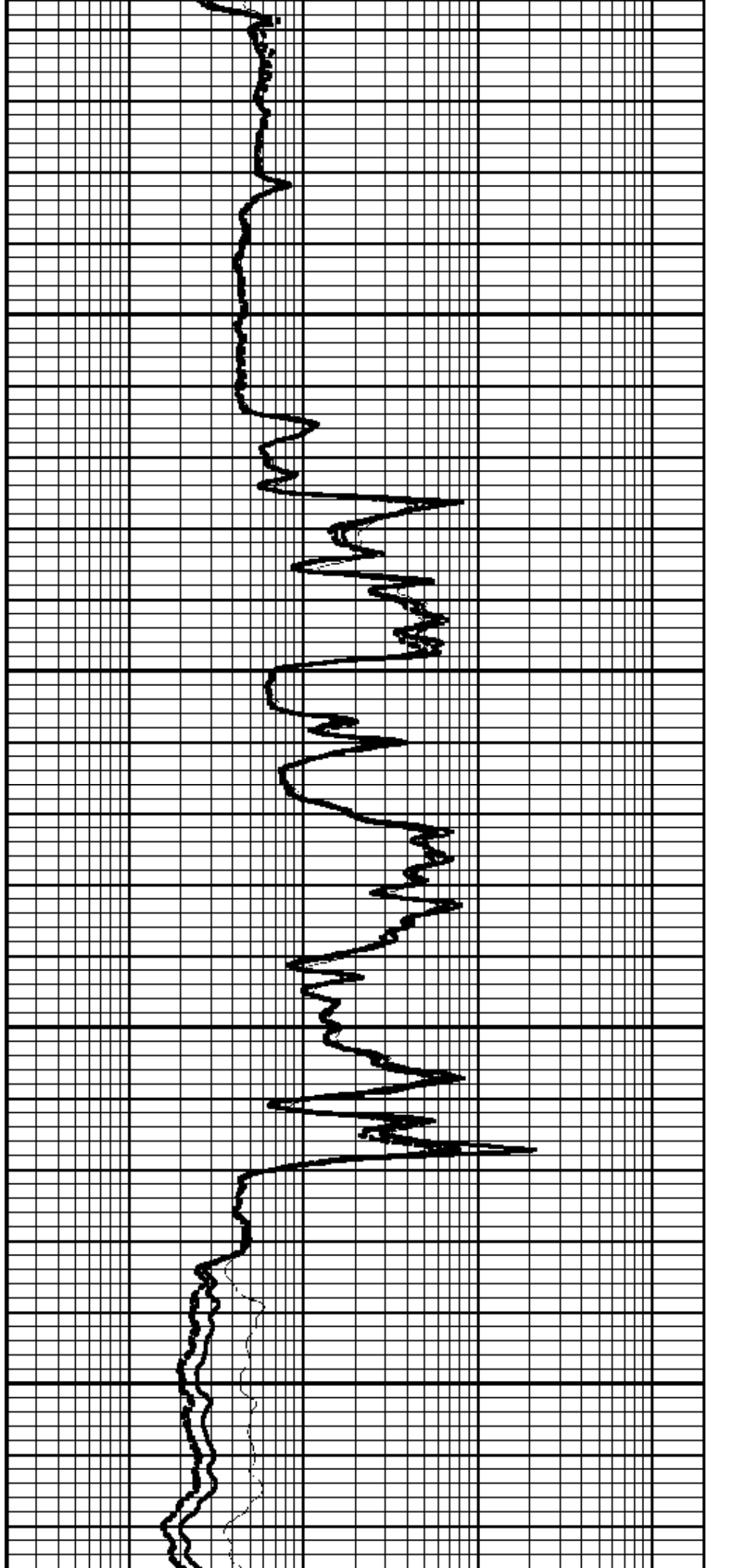
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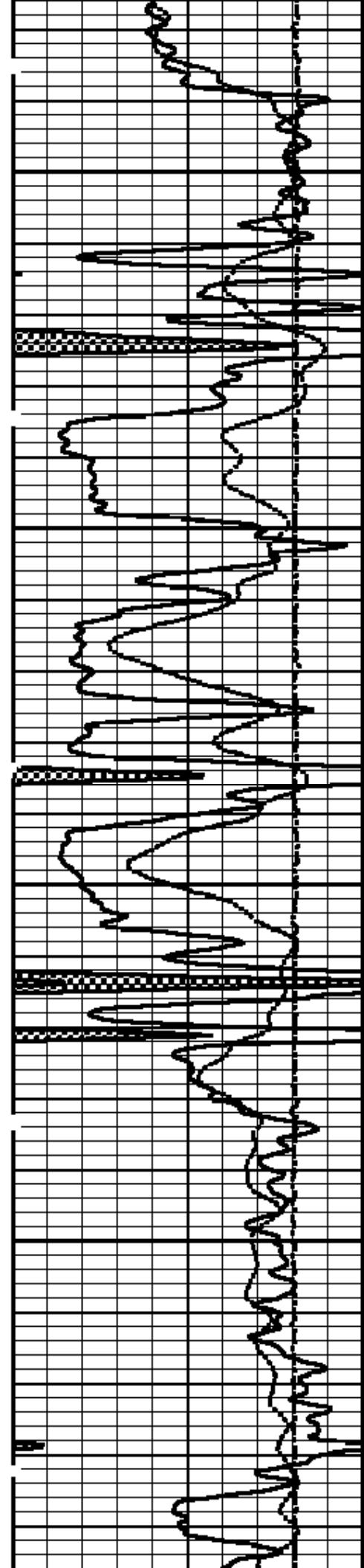




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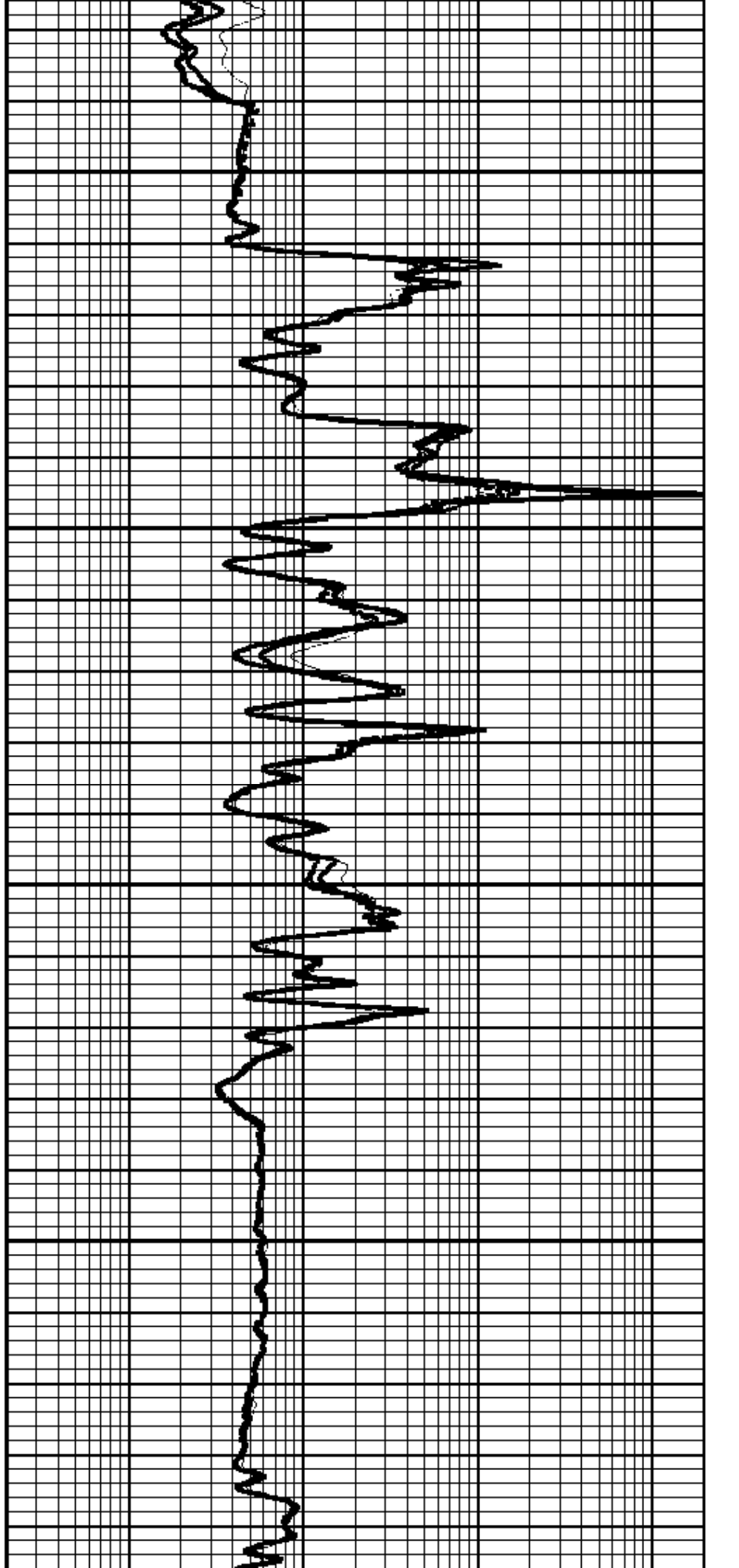
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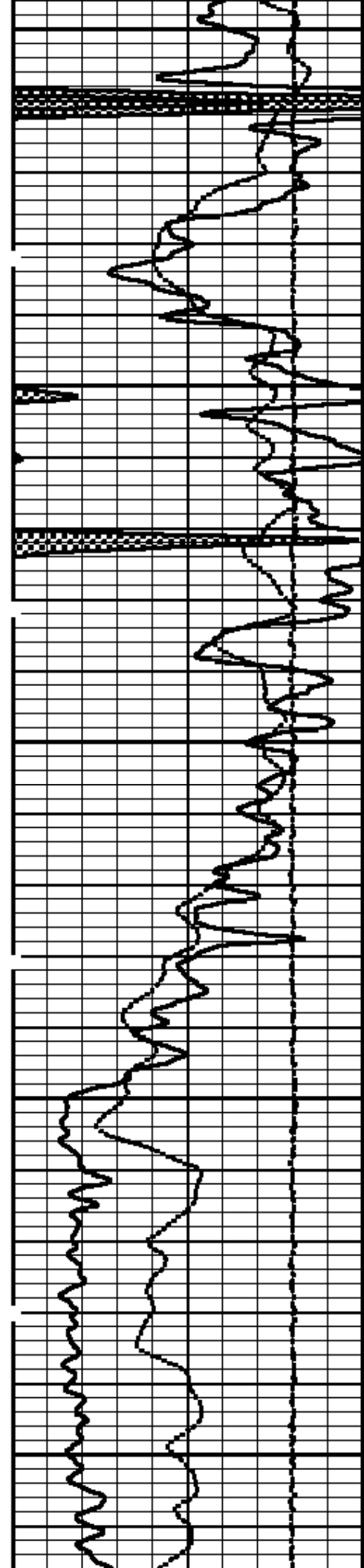




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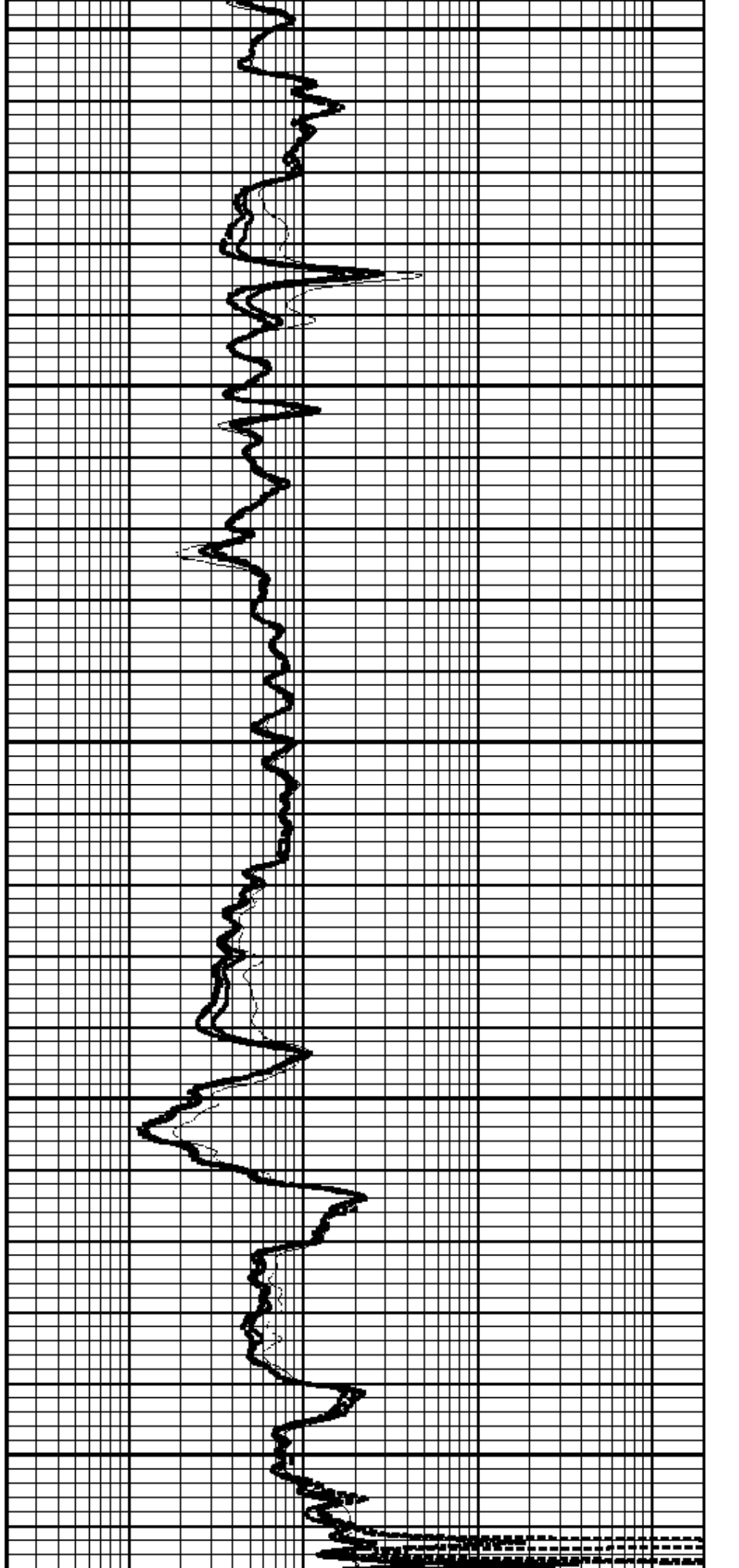
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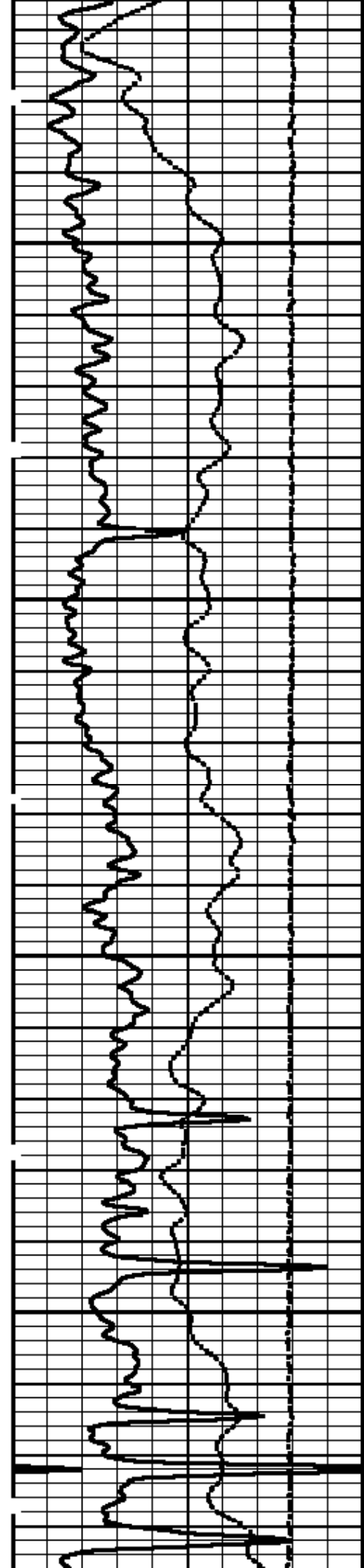




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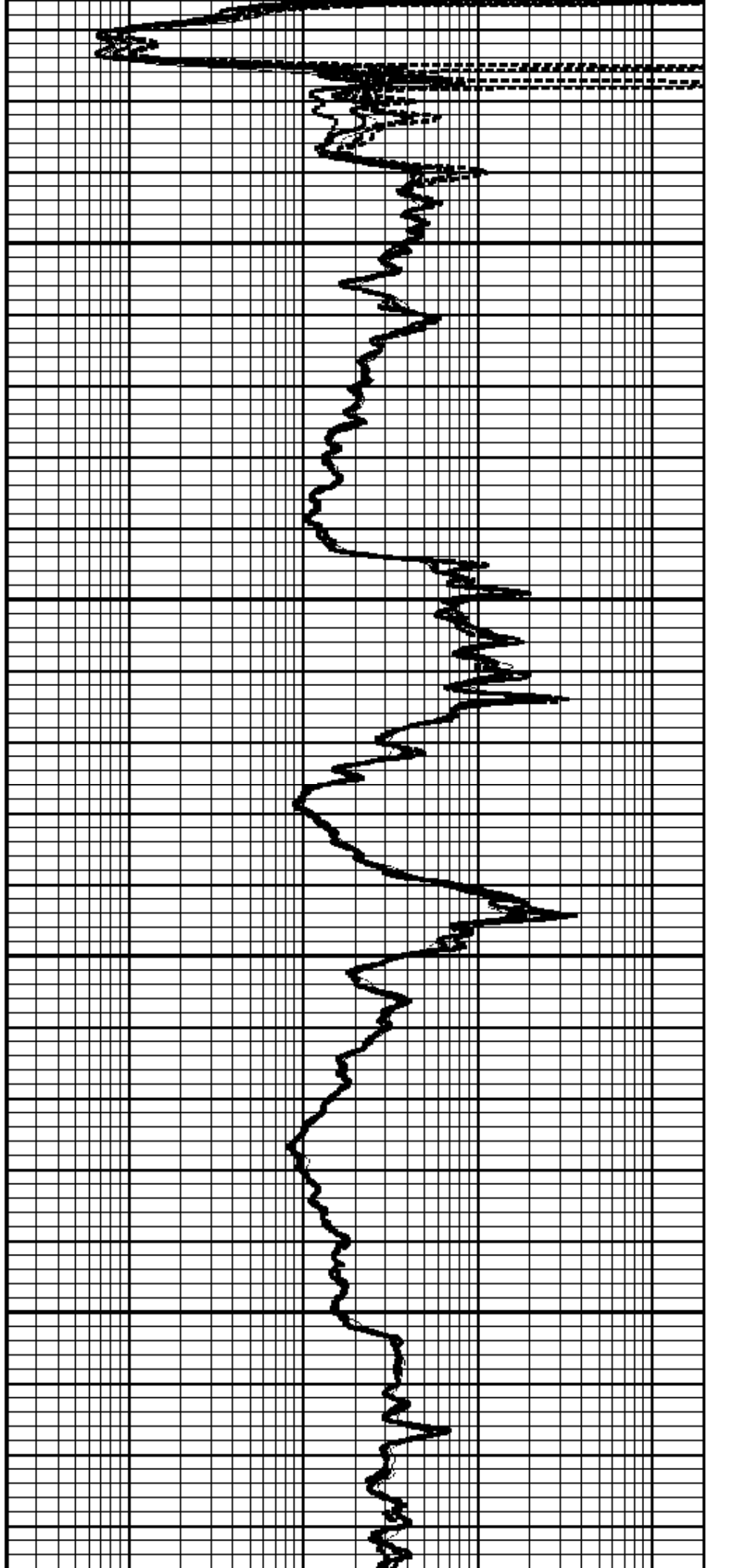
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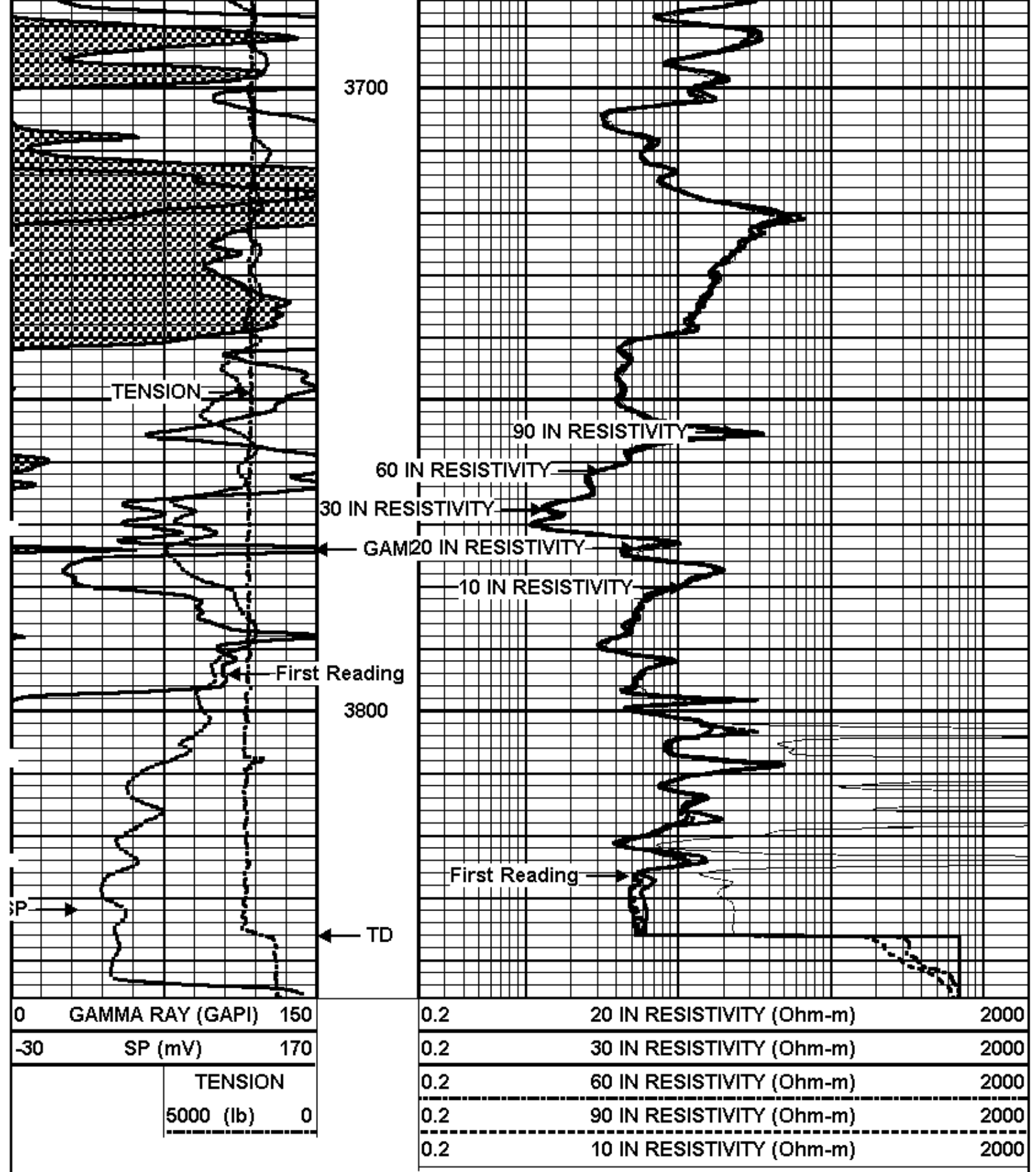




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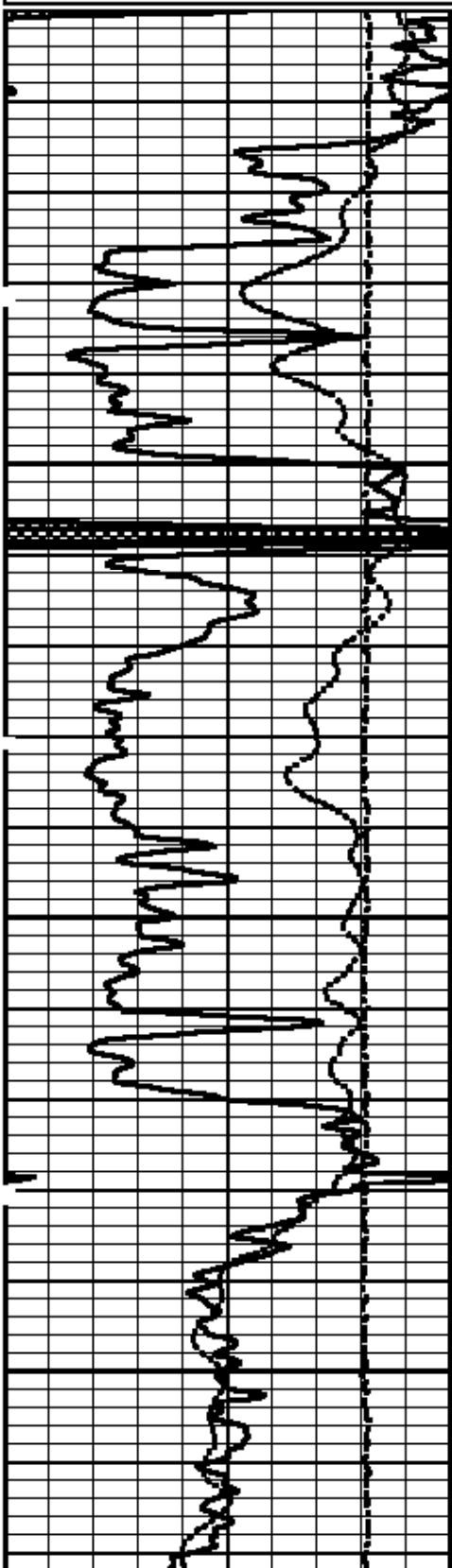




Repeat Pass

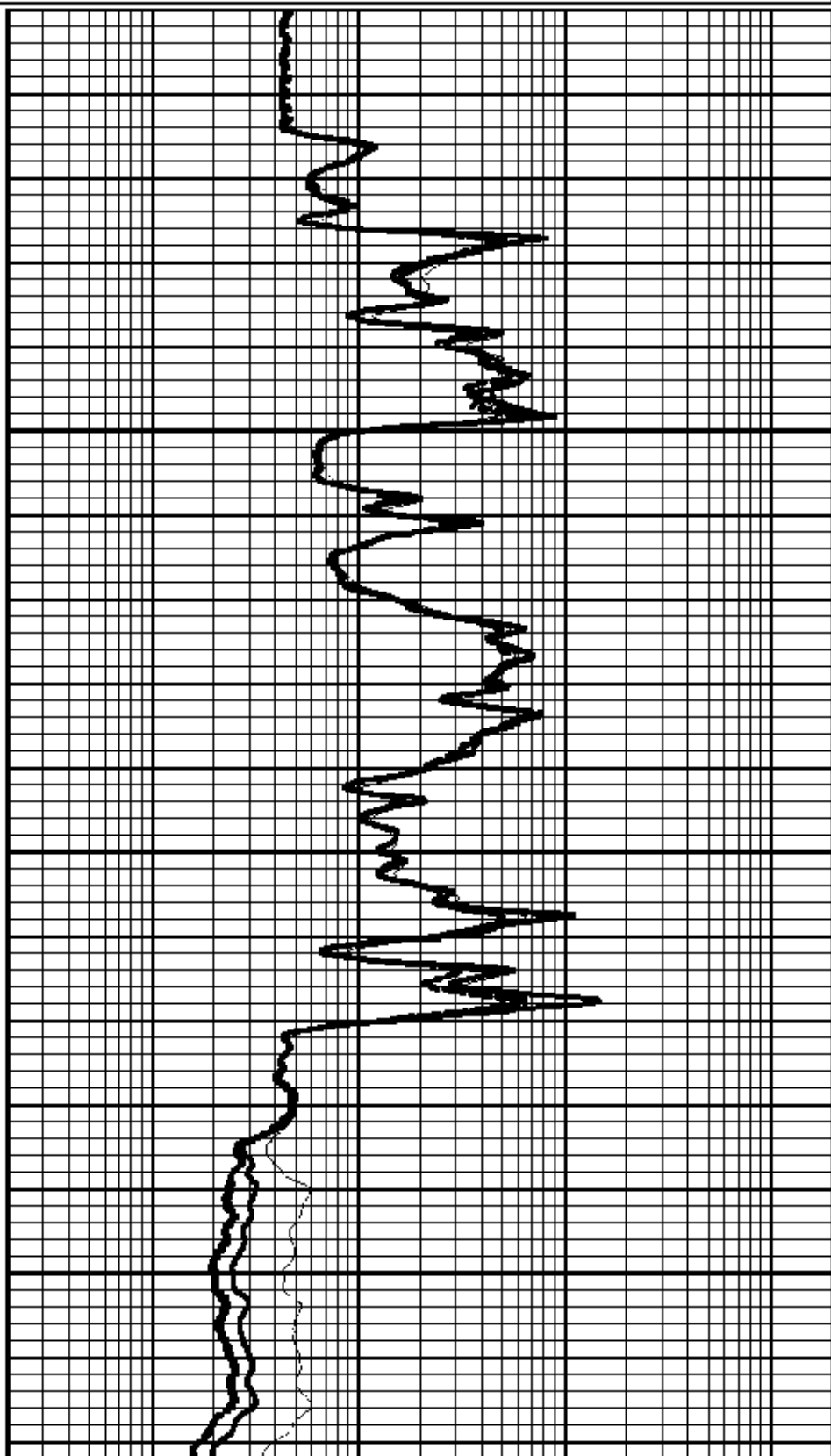
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 Dataset Creation: Wed Jun 29 12:41:22 2011 by Log Sondex V7.03
 Charted by: Depth in Feet scaled 1:240

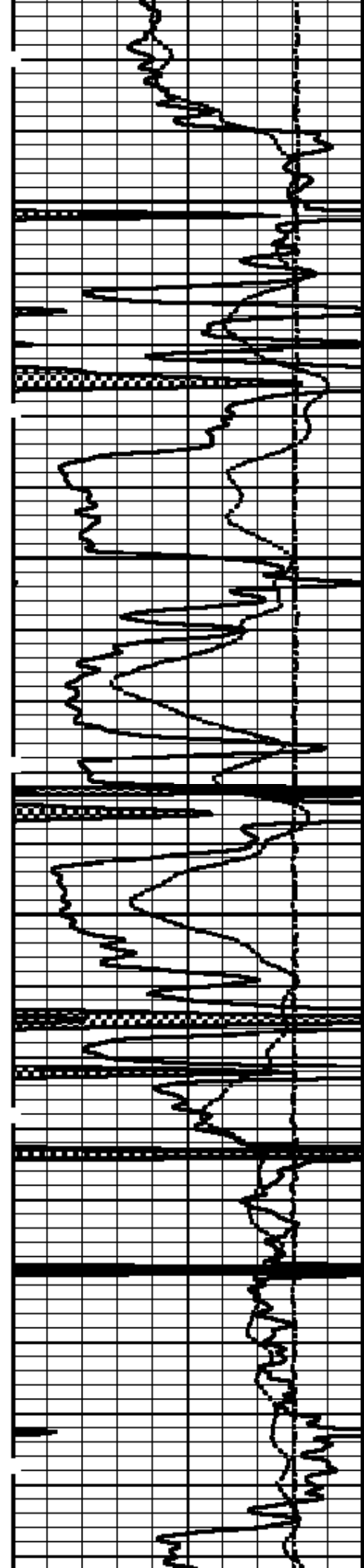
0	GAMMA RAY (GAPI)	150	0.2	20 IN RESISTIVITY (Ohm-m)	2000
-30	SP (mV)	170	0.2	30 IN RESISTIVITY (Ohm-m)	2000
	TENSION		0.2	60 IN RESISTIVITY (Ohm-m)	2000
	5000 (lb)	0	0.2	90 IN RESISTIVITY (Ohm-m)	2000
			0.2	10 IN RESISTIVITY (Ohm-m)	2000



2900

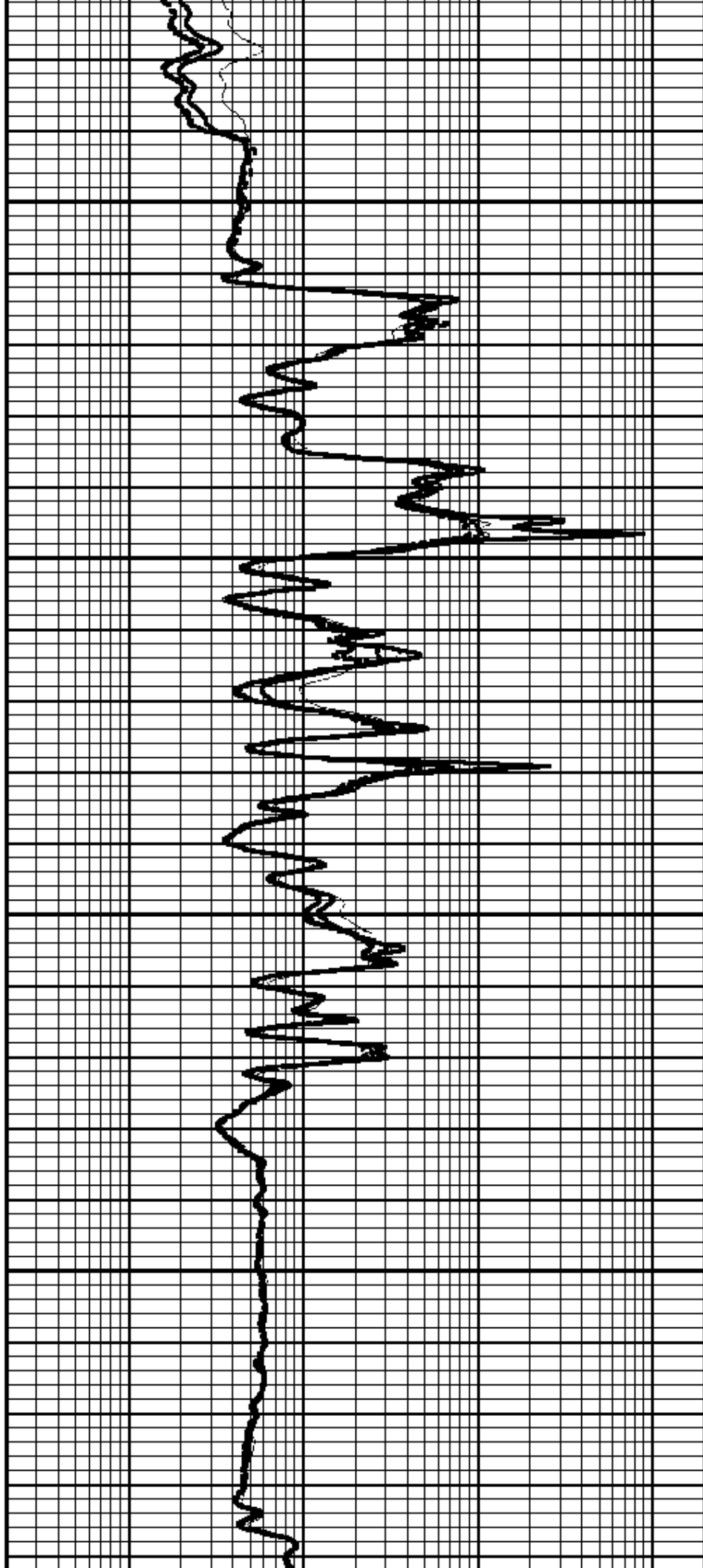
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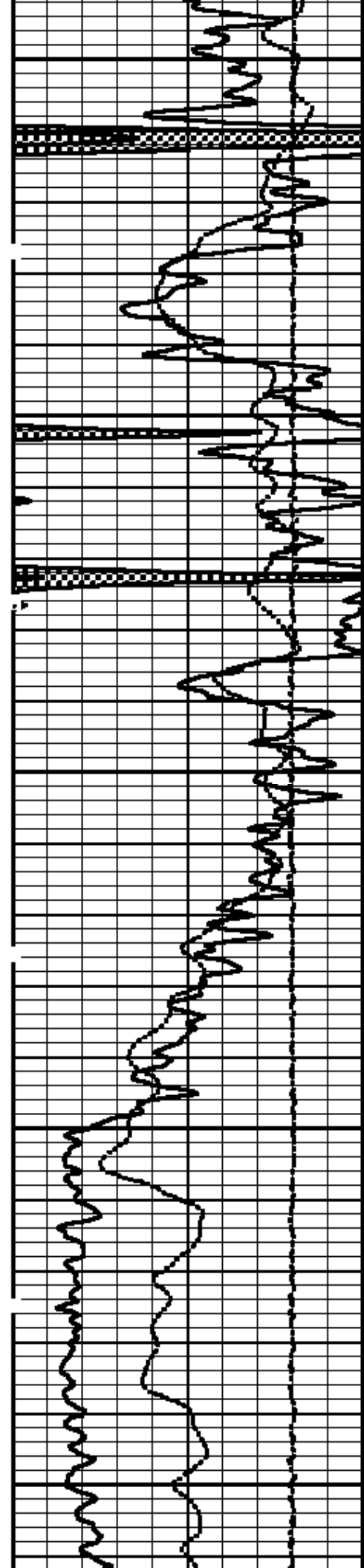




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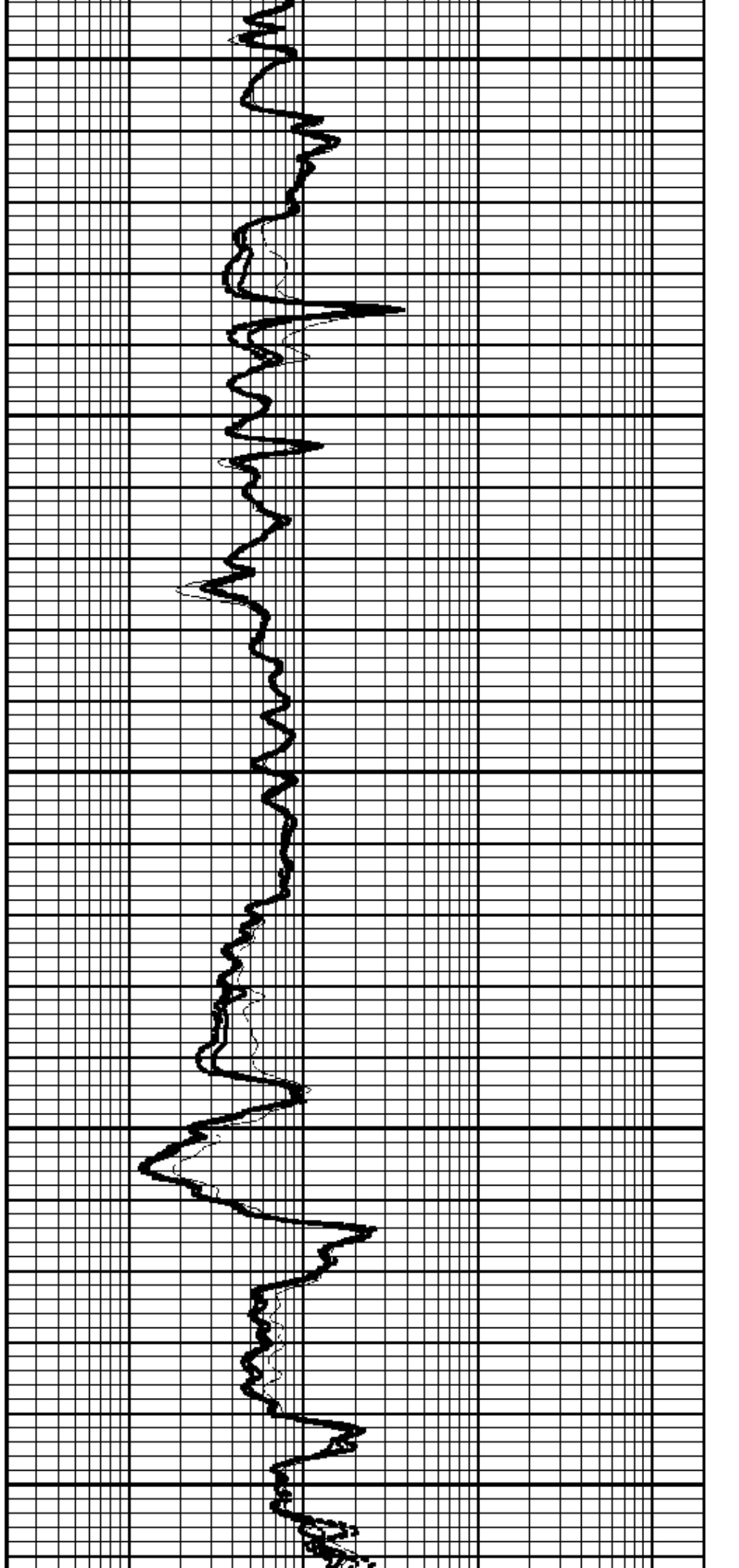
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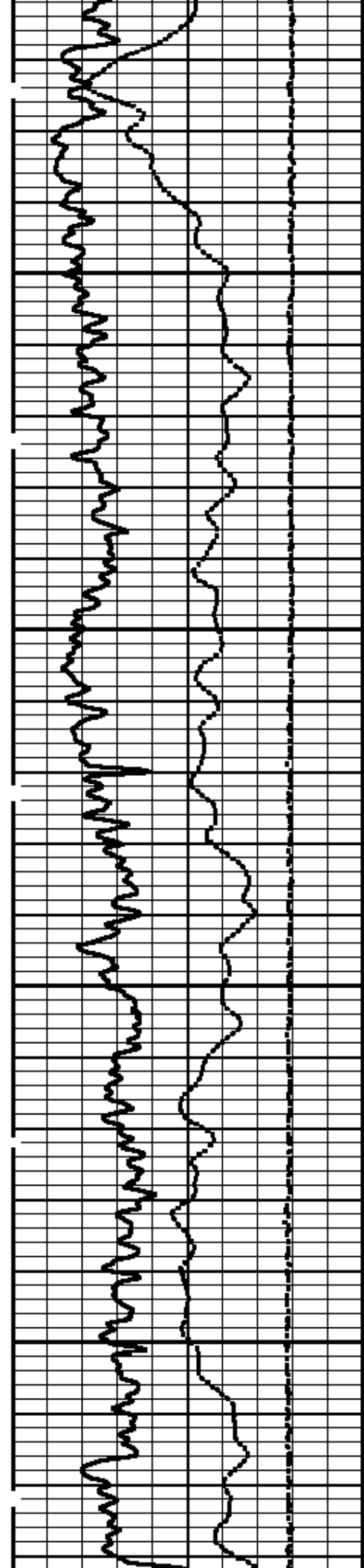




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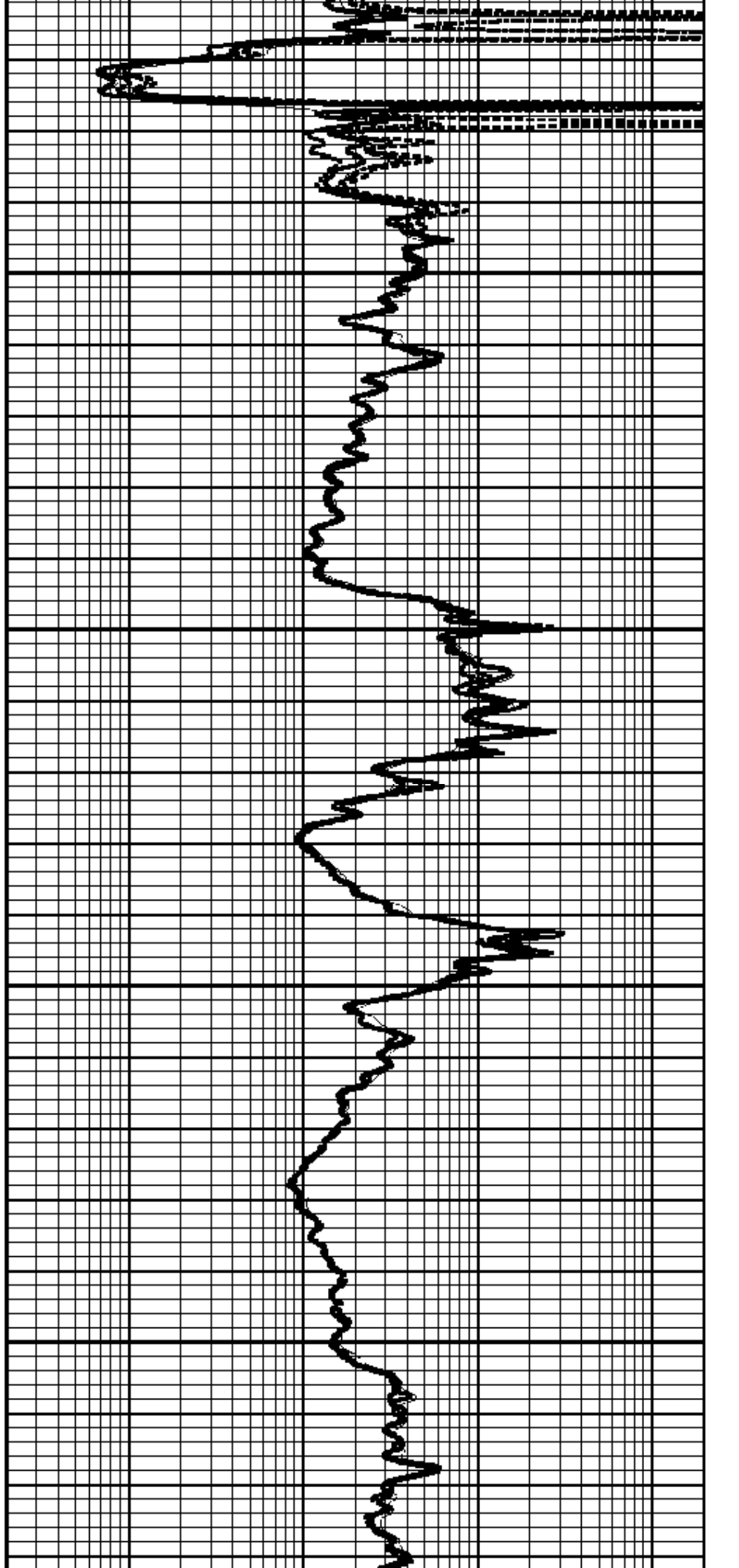
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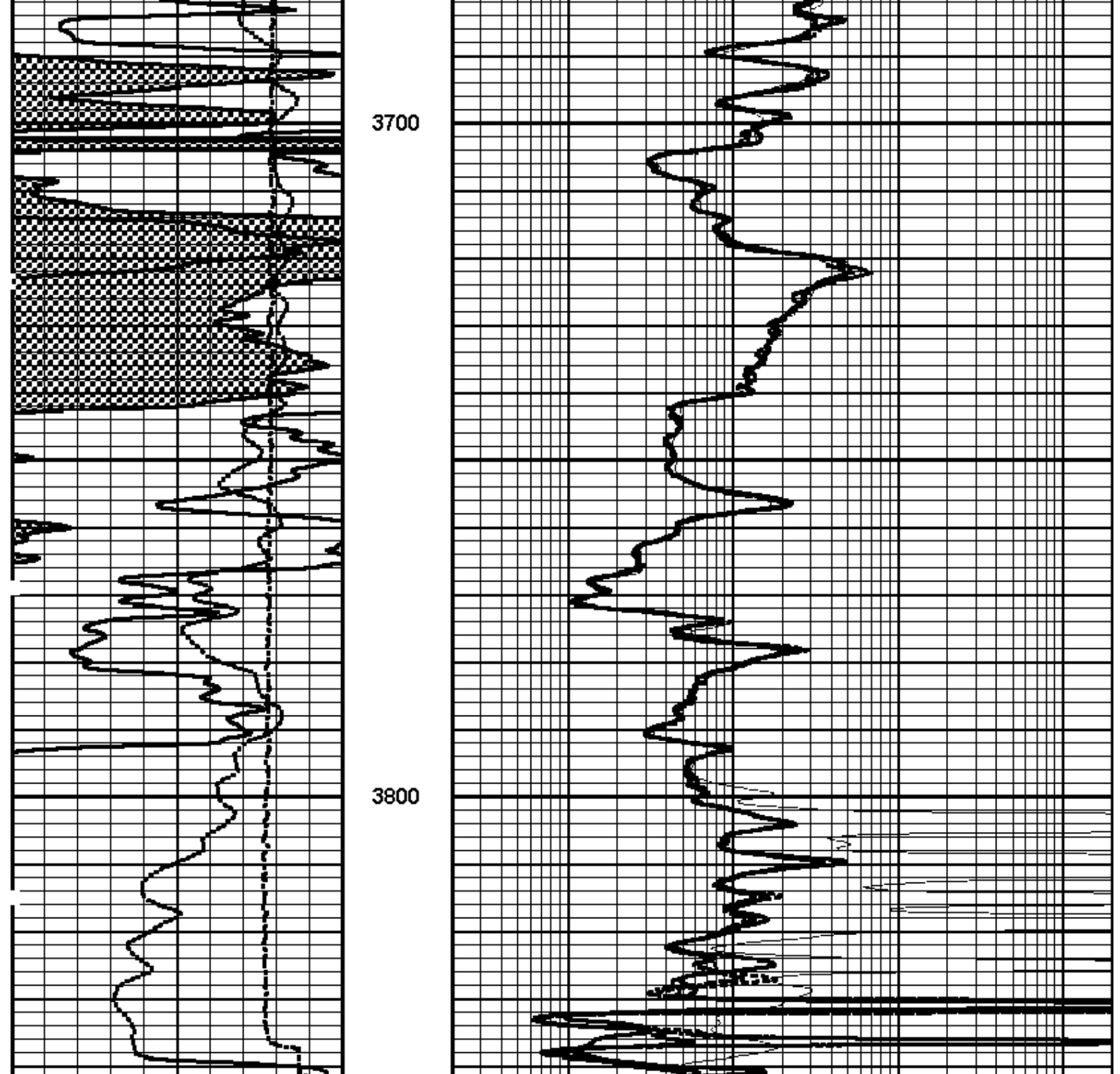




3500

3600





3700

3800

0	GAMMA RAY (GAPI)	150	0.2	20 IN RESISTIVITY (Ohm-m)	2000
-30	SP (mV)	170	0.2	30 IN RESISTIVITY (Ohm-m)	2000
	TENSION		0.2	60 IN RESISTIVITY (Ohm-m)	2000
	5000 (lb)	0	0.2	90 IN RESISTIVITY (Ohm-m)	2000
			0.2	10 IN RESISTIVITY (Ohm-m)	2000



Repeat Pass

Log Variables

Database: C:\Warrior\Data\voegele_1_28.db
 Dataset: field\wireline1\resis

Top - Bottom

FRM: SALIN kppm 0	MUD: SALIN kppm 0	DEVI ° 0	SRFTEMP degF 69	SO in 0.75	DE-CENT Yes	CASED? No	CASEWEIGHT lb/ft 11.5	AIR_HOLE? No	MudWgt lb/gal 9.2
FLUID: EN g/cc 1	MATRIX: EN g/cc 2.71	SPSHIFT mV -40	CASE: OD in 7	PERFS 0	TDEPTH ft 3840	BOTTEMP degF 106	BOREID in 6.75		

Calibration Report

Database File: voegele_1_28.db
 Dataset Pathname: main
 Dataset Creation: Wed Jun 29 14:43:03 2011 by Gale Sondex V7.03

Induction Array Tool Calibration Report

Serial Number: B10107
 Tool Model: 002
 Filter Version:

Master Calibration Performed: Thu May 06 11:29:47 2010
 Temperature: 67.6 degF

Sonde Error:

Array	1	2	3	4	5	6	7	
Real	203.4	-9.7	-39.9	-14.2	-1.5	1.8	4.4	mmho/m
Imaginary	203.6	89.7	-2.8	20.7	8.6	18.5	5.5	mmho/m

Loop Gain:

Array	1	2	3	4	5	6	7	
Loop (real)	537.7	678.5	1295.3	1394.1	1144.8	712.8	404.8	mmho/m
Loop (imaginary)	73.3	92.5	389.9	419.5	344.5	214.5	121.9	mmho/m
Real	764.0	722.2	1258.1	1375.0	1163.7	738.9	422.1	mmho/m
Imaginary	278.6	189.9	386.4	437.3	356.9	240.7	130.0	mmho/m
Gain (real)	0.959	0.927	0.998	1.004	0.982	0.967	0.969	
Gain (imaginary)	0.977	0.934	1.002	1.007	0.989	0.965	0.979	

Before Survey Verification Performed: Fri Jun 17 16:37:10 2011
 Sonde 1 Temperature: 86.6 degF
 Sonde 2 Temperature: 87.1 degF
 Array 1 Temperature: 91.8 degF

Array	1	2	3	4	5	6	7
TxIR	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
TxIX	0.0	0.0	0.2	0.2	0.2	0.2	0.2
Tx Magnitude	0.0	0.0	0.2	0.2	0.2	0.2	0.2
Gain	114.1	154.0	153.6	163.3	165.9	173.5	183.0
RxCR	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
RxCX	0.1	0.1	0.1	0.1	0.1	0.1	0.2
RxC Magnitude	0.8	3.5	3.5	4.9	5.4	7.0	9.5

Litho Density Tool Calibration Report

Serial Number: B10110850129B
 Tool Model: 002

Caliper Calibration Performed: Wed Jun 29 12:41:15 2011

	Diameter		Reading	
Small Ring:	6.000	in	1487.600	cps
Large Ring:	12.000	in	2155.700	cps
Gain:	0.0090			
Offset:	-5.8000			

Master Calibration Performed: Tue Jun 14 22:18:29 2011

Source Number: 50129B
 Medium: Water
 Al Block Density: 2.5993 g/cc

	Background	Al Block	Al Block + Fe	
SS1	855.4	5464.2	4506.0	cps
SS2	2352.8	33946.1	28318.8	cps
SSTOTAL	5582.1	54921.7	45443.8	cps
LITH	114.4	606.5	356.8	cps
LL	218.1	976.3	832.5	cps
LU	633.6	1265.4	1154.3	cps
LS	851.7	2241.6	1986.9	cps
LSTOTAL	1606.6	5487.5	4373.0	cps
SSHV	1531.0	1537.0	1538.3	V
LSHV	1488.3	1490.4	1491.7	V
SSFF	0.02	0.01	-0.01	
LSFF	0.01	-0.00	0.01	

Before Survey Verification Performed: Tue Jun 28 11:06:13 2011
 After Survey Verification Performed:

	Master Background	Before Survey Background	After Survey Background	
SS1	855.4	842.5		cps
SS2	2352.8	2340.6		cps
SSTOTAL	5582.1	5519.3		cps
LITH	114.4	110.0		cps
LL	218.1	222.4		cps
LU	633.6	633.2		cps
LS	851.7	855.6		cps
LSTOTAL	1606.6	1605.9		cps
SSHV	1531.0	1533.0		V
LSHV	1488.3	1489.3		V
SSFF	0.02	0.01		
LSFF	0.01	0.02		

Compensated Neutron Tool Calibration Report

Serial Number: C10038
 Tool Model: 009

Master Calibration Performed: Tue Jun 14 21:12:01 2011

Source Number: 66005

Short Spacing Counts: 5603.59 cps
 Long Spacing Counts: 220.38 cps
 High Voltage: 1371.00 V
 Target Ratio: 27.2000
 Ratio: 25.4273
 F-Factor: 1.0697

Before Survey Verification Performed: Tue Jun 28 11:01:12 2011
 After Survey Verification Performed:

Verifier Number: 6499

Verifier Values	Master Cal	Before Survey	After Survey	
Short Spacing Counts:	250.34	246.30		cps
Long Spacing Counts:	287.36	272.55		cps
High Voltage:	1371.00	1371.39		V
Ratio:	0.9364	0.9055		

Serial Number:		000001	
Tool Model:		001	
Caliper Calibration Performed:		Sun Mar 13 21:55:53 2011	
	Diameter		Reading 1
Small Ring:	1.950	in	1303.900
Large Ring:	4.450	in	1342.100
Gain:			0.0783
Offset:			-100.6540
Pad Calibration			
			Inverse
Gain:			1.0000
Offset:			0.0000

Borehole Fluid Resistivity Calibration Report


Serial Number:		000002	
Tool Model:		001	
Master Calibration Performed:		Fri Jun 24 11:49:39 2011	
Resistivity Polynomial Equation:			
0.3130x ² + 1.1800x + 0.0520			
Temperature Calibration:			
	Reference		Reading
	53.60	degF	846.40
	107.42	degF	919.20
			bits
			bits

Gamma Ray Calibration Report

Serial Number:		C10032	
Tool Model:		001	
Performed:		Fri Jun 17 00:49:53 2011	
Calibrator Value:	147.0	GAPI	
Background Reading:	120.7	cps	
Calibrator Reading:	532.1	cps	
Sensitivity:	0.3574	GAPI/cps	

Head Tension Unit Calibration Report

Serial Number:		000004	
Tool Model:		011	
Performed:		Mon Aug 23 04:52:34 2010	
Point #	Reference		Reading
1	-20000.000	lb	3767.000
2	0.000	lb	31265.000
3	20000.000	lb	58902.000
4		lb	
5		lb	
6		lb	
7		lb	
8		lb	
9		lb	
10		lb	

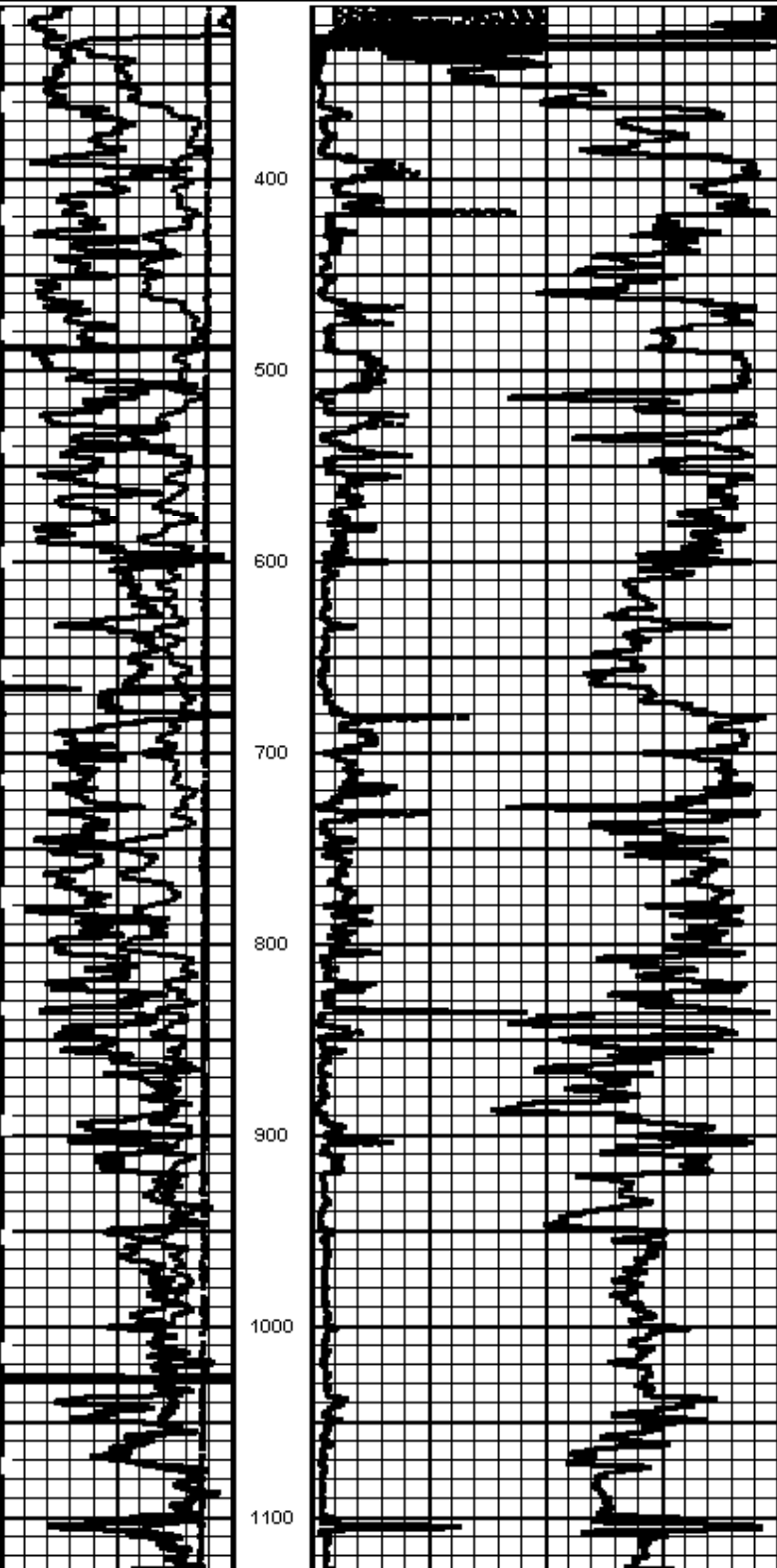
Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
						

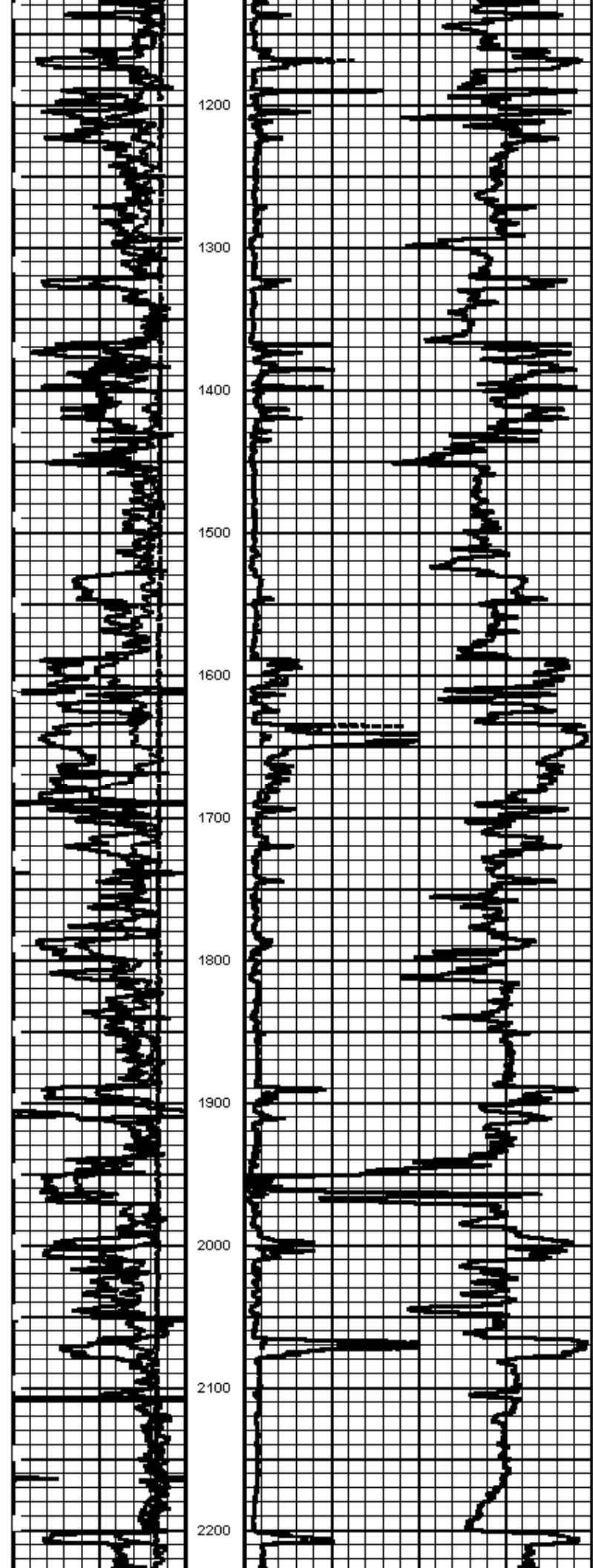
				CHD-001 (000004) Cable Head	2.19	3.38	35.00
				XTU-008 (C10067) Crossover Ultrawire Toolbus to Ultralink	2.08	3.38	47.00
HTEN	50.84			HTU-011 (000004) Head Tension Unit	2.18	3.38	55.00
GR	48.82			GRT-001 (C10082) Gamma Ray Tool	3.22	3.38	69.00
BFR	44.41			BFR-001 (000002) Borehole Fluid Resistivity	3.80	3.38	75.00
MEL	35.03			MEL-001 (000001) Micro Electric Log	9.17	3.38	190.00
				KJT-001 (000001) Knuckle Joint	2.86	3.38	72.00
CNLSC	27.35			CNL-009 (C10088) Compensated Neutron Logging Tool	5.27	3.38	125.00
CNSSC	26.85			LDT-002 (B10110S50129B) Litho Density Tool	9.75	4.50	310.00
LDT	17.19			IAT-002 (B10107) Induction Array Tool	13.42	3.88	200.00
IAT	10.01			BN-HF (000003) Holefinder	1.94	3.88	8.00
SP	2.20						

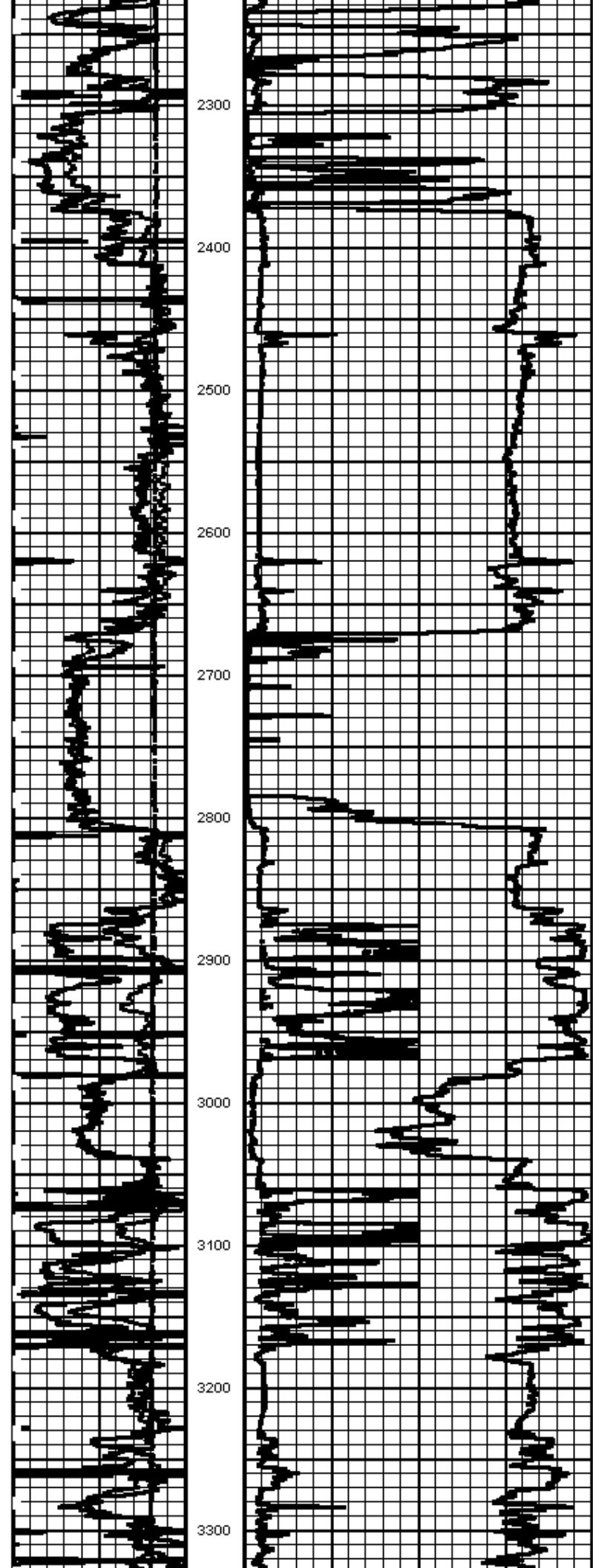
Dataset: voegele_1_20.db; file: weinrum/main
 Total Length: 55.87 ft
 Total Weight: 1186.00 lb
 O.D.: 4.50 in

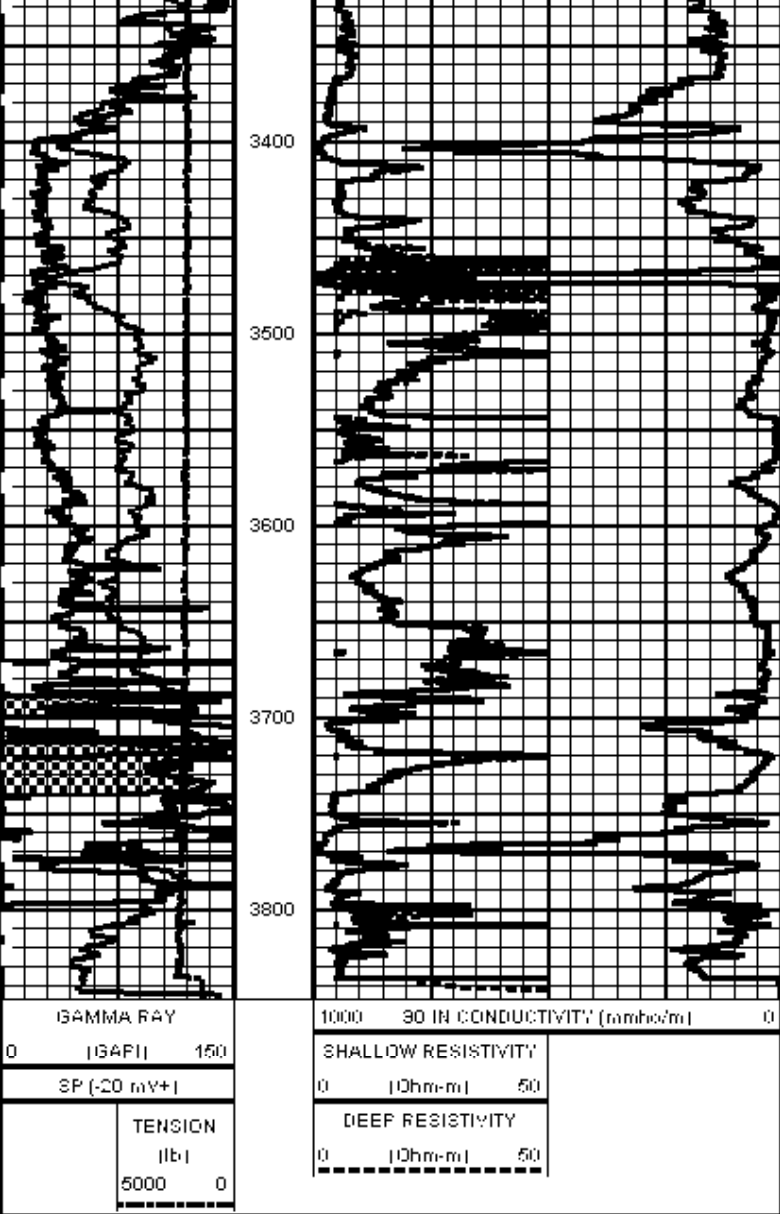
Database File: voegele_1_20.db
 Dataset Pathname: main
 Presentation Format: acond2
 Dataset Creation: Wed Jun 29 14:43:03 2011 by Calo Sonde: V7.03
 Charted by: Depth in Feet scaled 1:1200

GAMMA RAY		1000	30 IN CONDUCTIVITY (cmho/m)	0
0	(GAPI)	150		
SP (-20 mV+)				
TENSION				
(lb)				
5000		0		
		SHALLOW RESISTIVITY		
		0	(Ohm-m)	50
		DEEP RESISTIVITY		
		0	(Ohm-m)	50









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