UNDERGROUND INJECTION CONTROL
PERMIT APPLICATION

Ute Tribal # 03-12
2272' FSL & 575' FWL
Sec. 3, T5S-R3W
Duchesne County, Utah
API # 43-013-31706

July 2015

Prepared for:
Bruce Suchomel
Groundwater Program, Mail Code 8P-W-UIC
U.S. Environmental Protection Agency
1595 Wynkoop St
Denver, CO 80202-1129

Prepared by:
Petroglyph Energy, INC.
960 Broadway Avenue, Suite 500, P.O. Box 70019
Boise, Idaho 83707
(208) 685-7600
FAX (208) 685-7605

LIST OF ATTACHMENTS

Attachment No. 1	Area Topography Map
Attachment No. 2	Site Map
Attachment No. 3	Map of the A-Marker surface
Attachment No. 4	Cross-Sections of the injection formation
Attachment No. 5	Water Analysis
Attachment No. 6	Completion data for all wells in the AOR
Attachment No. 7	CBL for the UIC well
Attachment No. 8	Open hole log for the UIC well
Attachment No. 9	List of owners and Affidavit Notification
Attachment No. 10	Well bore diagrams for the UIC well
Attachment No. 11	P&A procedure
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SUMMARY DOCUMENT
UIC WELL APPLICATION
Ute Tribal 03-12
API # 43-013-31706

The following document contains information provided in support of the application for the conversion of the Ute Tribal 03-12 well to an injection well in the Green River formation in the Antelope Creek Field in Duchesne County, Utah.

The Antelope Creek Field falls within the Uintah and Ouray Indian reservations and is within Indian Country; therefore, for facilities located on the reservation, only EPA-issued UIC permits are necessary for compliance with UIC regulations.

The EPA has issued an Area Permit #UT20736-00000 for the Underground Injection Control for the Antelope Creek Field. This area permit allows for additional producing wells to be converted to injection wells for enhanced recovery.

(1) Petroglyph Energy, Inc. (Petroglyph) is the operator and only working interest owner of wells located in the Antelope creek Field, Duchesne County, Utah. Petroglyph's business address is provided below:

Petroglyph Energy, Inc.
960 Broadway Avenue, Suite 500
P.O. Box 70019
Boise, ID 83707

(2) Enclosed as Attachment No. 1 is a topographic map of a portion of the Antelope Creek Field, identifying all wells located in this area. The legal location for the Ute Tribal 03-12 is 2272' FSL & 575' FWL NW/SW Sec. 3, T5S-R3W.

(3) Attachment No. 2 is a map of the well. This map shows a circle with a ¼ mile radius centered on the Ute Tribal 03-12 well. The ¼ mile radius encompasses the area of review, AOR, within which Petroglyph is required to investigate all wells for mechanical integrity. The ¼ mile radius also identifies mineral ownership; all lands within the AOR are leased to Petroglyph by the Ute Tribal as indicated by yellow shading. The AOR has Ute Tribal 03-05 and Ute Tribal 04-09 well(s) located in its ¼ mile radius.

(4) Petroglyph proposes to utilize the Ute Tribal 03-12 as an injection well for enhanced recovery in the Antelope Creek Field.

(5) Injection Zone – The injection intervals are between 4170' and 6150' True Vertical Depth and located in the lower portion of the Green River Formation. The injection zone is confined within a 1980' section between the Green River "A" Lime marker bed and the top of the Basal Carbonate in the lower part of the formation. The injection zone is composed of lenticular calcareous sandstones interbedded with low permeable carbonates and calcareous shales. The lenticular sandstones vary in thickness from 1 to 30 feet.

Confining Zone – The overall confining strata above the injection zone consists of impermeable Green River calcareous shales and continuous beds of microcrystalline dolostone. The confining zone in the Ute Tribal 03-12 is 243 feet thick.

Attachment No. 3 is a structure map of the A-Marker surface.

Attachment No. 4 is a cross-section of the injection interval and confining zone.

(6) Enclosed as Attachment No. 5 are standard analyses of produced water from three batteries that currently serve as central handling facilities for all project producing wells. The analysis of the Green River formation water from the Ute Tribal 18-08 Satellite Battery is 12805 mg/L of total dissolved solids (TDS), Ute Tribal 21-11 Satellite Battery is 15659 mg/L TDS, and Ute Tribal 34-12-D3 Satellite Battery is 14590 mg/L TDS.

Injectate in the field is a mixture of produced water and fresh make-up water. The nearest injection well is the Ute Tribal 03-14, the most recent analysis of the water being injected into the Green River formation at this location is 6393 mg/L TDS. This analysis is also included in Attachment No. 5.

(7) A summary of completion data from the Ute Tribal 03-12 and offset wells in the AOR are included in Attachment No. 6

(8) The cement bond log is included in Attachment No. 7.

(9) The open hole log for the Ute Tribal 03-12 is included in Attachment No. 8.

(10) The Antelope Creek Field is operated under a Cooperative Plan of Development between the Ute Tribe and Petroglyph Energy. At the Ute Tribal 03-12 location, all mineral owners, surface owners and operators located within the AOR ¼ mile radius have been notified of the submitted EPA application to convert to injection. Attachment No. 9 is the Affidavit of Notification to all owners.

(11) Petroglyph requests a maximum surface injection pressure of **1900**psi. The EPA Area Permit No. UT20736-00000 uses the formula:

Pm = (0.88psi/ft - 0.43psi/ft(Sg)) D

Where:
Pm = Maximum surface injection pressure
0.88psi/ft = Fracture gradient
D = Top perforation depth
0.43psi/ft = Hydrostatic pressure/hydraulic head
Sg = Specific gravity of injection fluid

For the Ute Tribal 03-12:
1942psi = (0.88psi/ft - 0.43(1.00)) 4316ft

EPA Area Permit No. 20736-00000 further caps maximum surface pressure at 1900psi.

(12) Three wellbore diagrams for the Ute Tribal 03-12 are in Attachment No. 10. One diagram is for production, one for injection, and one for Plug & Abandonment (P&A).

(13) The P&A procedure for this well is shown in Attachment No. 11.

(14) Once the draft permit is issued, Petroglyph will conduct a Mechanical Integrity Test and a static bottom-hole pressure test. The MIT procedure is contained in Attachment No. 12. The conversion work will be satisfactorily completed and submitted to the EPA on Form 7520-12. A wellbore schematic will be included with this form.

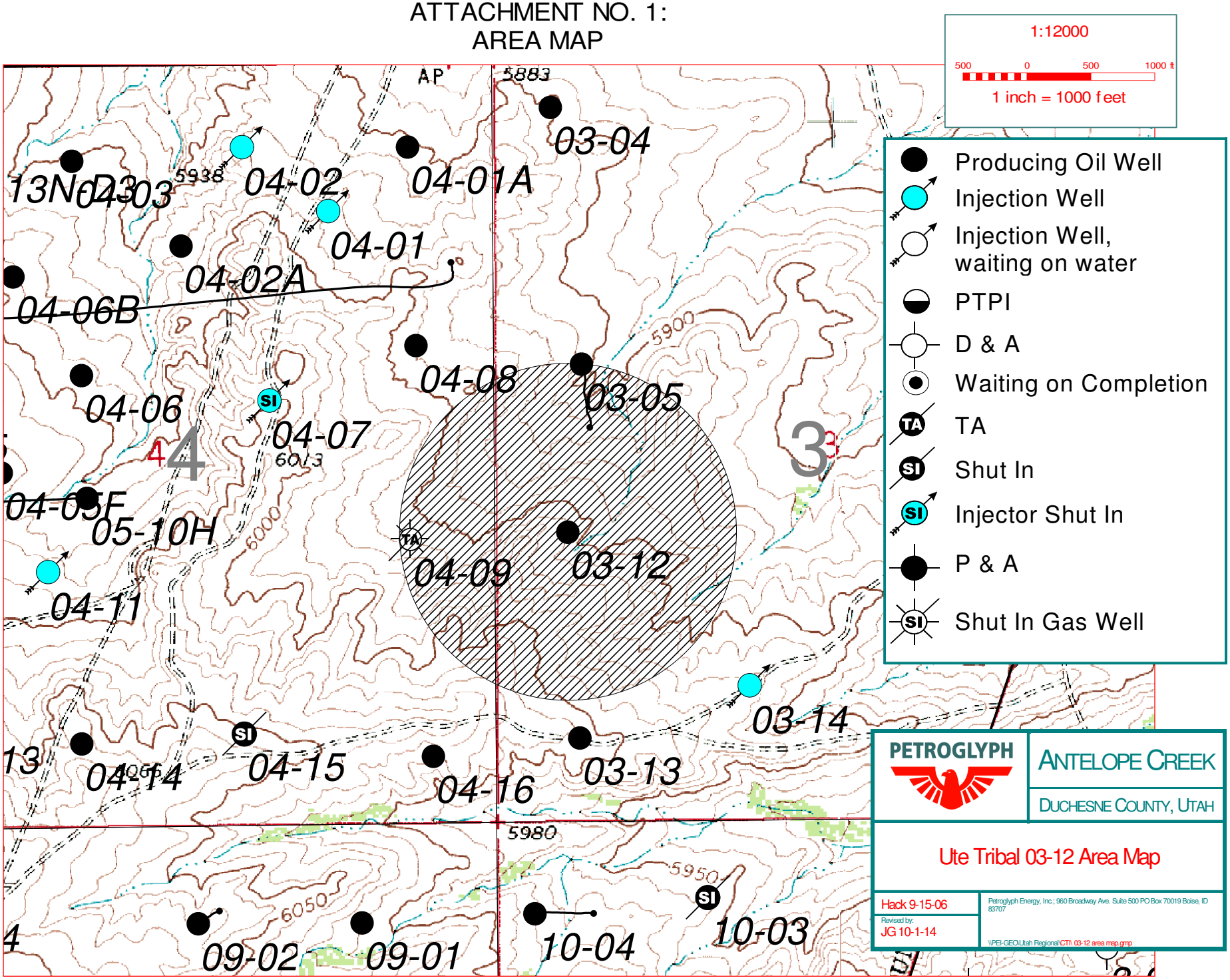
(15) Petroglyph will give proof of financial responsibility by posting a surety bond for the UIC well prior to final permit approval. A copy of this letter is contained in Attachment No. 13.

(16) Petroglyph will install various gauges on the well so that the injection pressure and tubing/casing annulus pressure can be monitored. The well will be equipped with a flow meter with a cumulative volume recorder.

ATTACHMENT NO. 1

AREA MAP

ATTACHMENT NO. 1:
AREA MAP

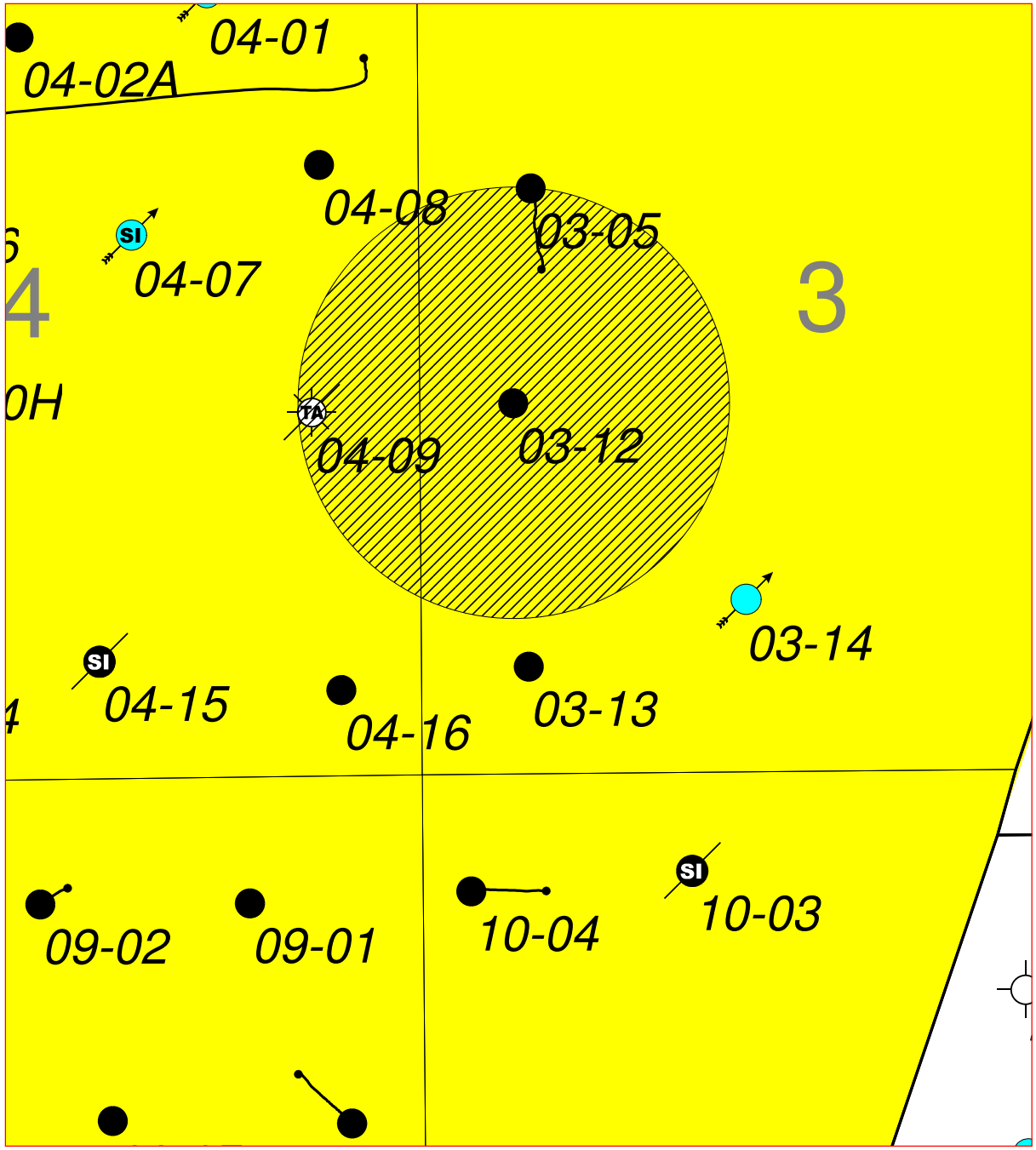


ATTACHMENT NO. 2

SITE MAP

RADIUS MAP OF ADJACENT WELLS

ATTACHMENT NO. 2:
SITE MAP



1:12000

500 0 500 1000 ft

1 inch = 1000 feet

- Producing Oil Well
- Injection Well
- Injection Well, waiting on water
- PTPI
- D & A
- Waiting on Completion
- TA
- Shut In
- Injector Shut In
- P & A
- Shut In Gas Well

PETROGLYPH

ANTELOPE CREEK

DUCHESNE COUNTY, UTAH

Ute Tribal 03-12 Plat and Quarter-mile radius map. Ute Indian lands under Petroglyph lease shown in yellow

Hack 9-15-06

Revised by:
JG 8-29-14

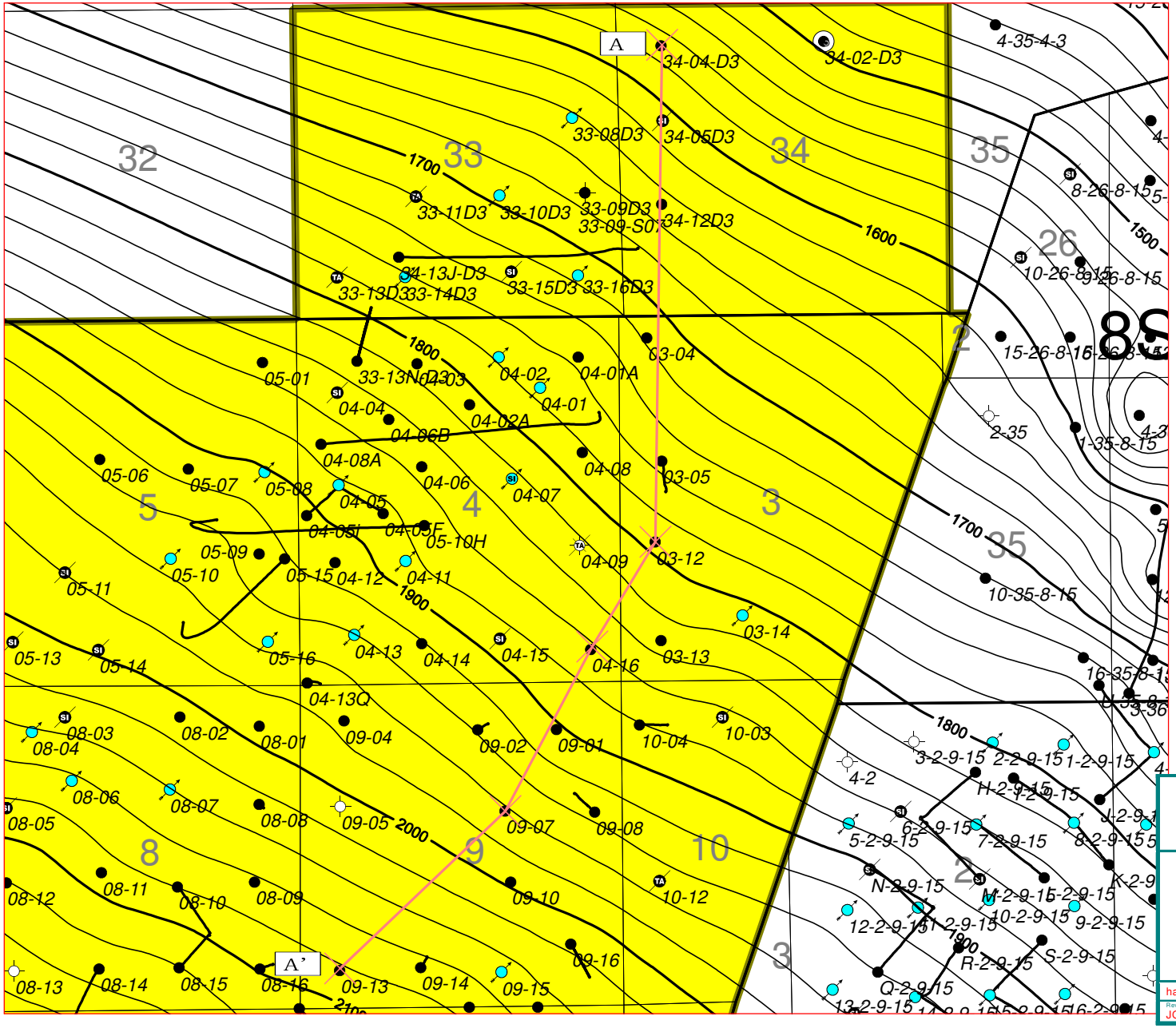
Petroglyph Energy, Inc.; 960 Broadway Ave. Suite 500 PO Box 70019 Boise, ID 83707

\\PEI-GEO\Utah Regional\CTI\ 03-12 quarter mile map.gmp

ATTACHMENT NO. 3

MAP OF THE A-LIME MARKER SURFACE

ATTACHMENT NO. 3:
Map of the "A" Lime Marker



1:30000

1000 0 1000 2000 ft

1 inch = 2500 feet

- Producing Oil Well
- Injection Well
- Injection Well, waiting on water
- PTPI
- D & A
- Waiting on Completion
- TA
- Shut In
- Injector Shut In
- P & A
- Shut In Gas Well

PETROGLYPH

ANTELOPE CREEK

DUCHESNE COUNTY, UTAH

Structure Map of the "A" Lime Marker
(approximate top of Injection Zone)
in the Vicinity of the
Ute Tribal 03-12
With Line of Cross Section A to A'

hack 7-11-06

Revised by:
JG 10-3-14

Petroglyph Energy, Inc.; 555 S. Cole Rd., Boise, ID 83709

\\SERV\Geo\Utah Regional\ CTI\03-12 structure map.gmp

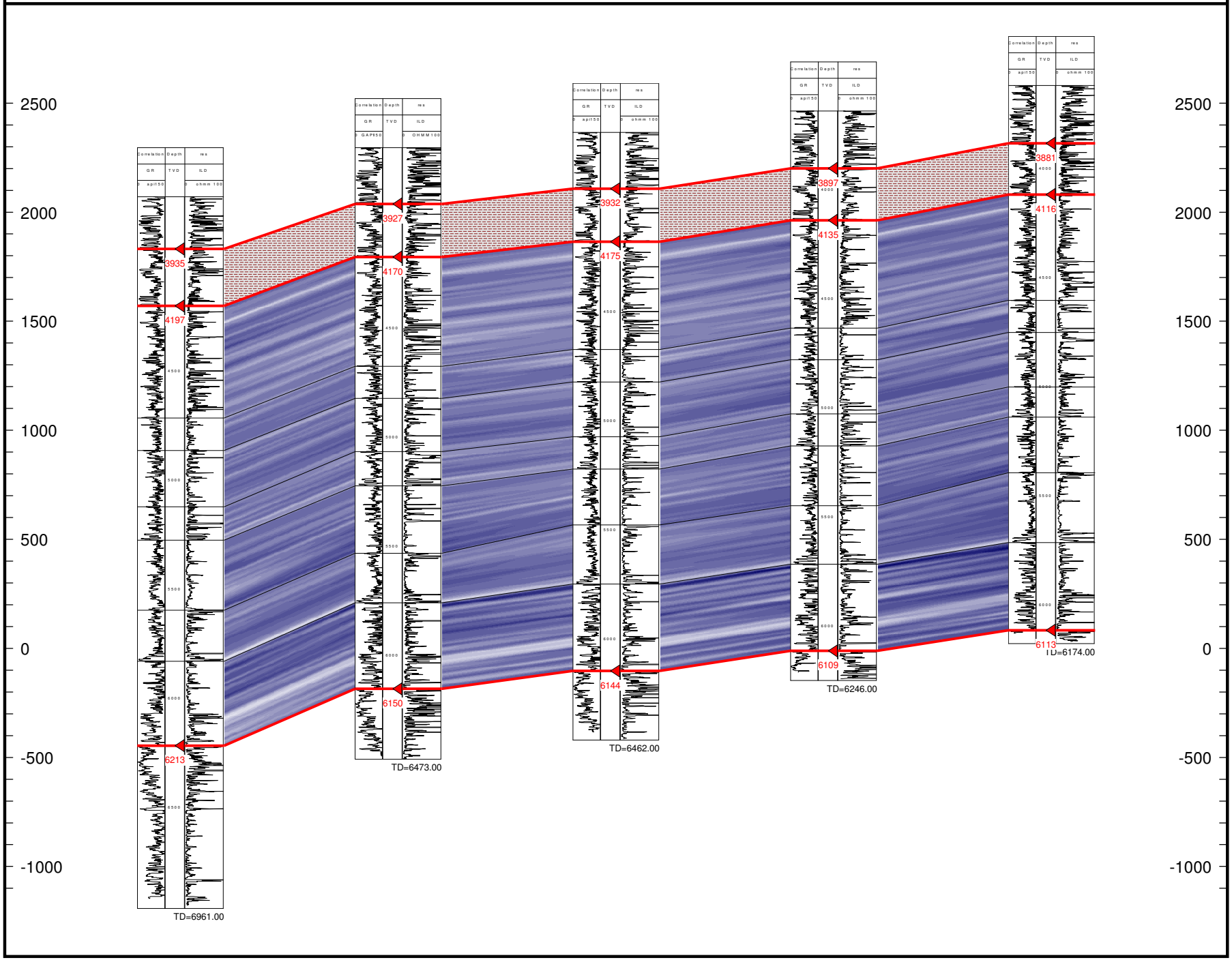
ATTACHMENT NO. 4

CROSS SECTIONS OF THE INJECTION FORMATION

Structural Cross Section A to A' in the Vicinity of Ute Tribal 03-12

43013515540000 — 8109 ft — 43013317060000 — 1998 ft — 43013512130000 — 3035 ft — 43013515210000 — 3722 ft — 43013511990000

43013515540000	43013317060000	43013512130000	43013515210000	43013511990000
PETROGLYPH OPERATING COMPANY	PETROGLYPH OPERATING COMPANY INC	PETROGLYPH OPERATING COMPANY	PETROGLYPH OPERATING COMPANY	PETROGLYPH OPERATING COMPANY
UTE TRIBAL 34-04-D3	Ute Tribal 03-12	UTE TRIBAL 04-16	UTE TRIBAL 09-07	UTE TRIBAL 09-13
660 FNL 762 FWL	2272 FSL 575 FWL	589 FSL 480 FEL	2087 FNL 1910 FEL	650 FSL 657 FWL
TWP: 4 S - Range: 3 W - Sec. 34	TWP: 5 S - Range: 3 W - Sec. 3	TWP: 5 S - Range: 3 W - Sec. 4	TWP: 5 S - Range: 3 W - Sec. 9	TWP: 5 S - Range: 3 W - Sec. 9



ATTACHMENT NO. 5

WATER ANALYSIS

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

multi-chem
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Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 18-08 SATELLITE, DUCHESN**	Lab Tech:	**Gary Winegar**
Sample Point:	**PLANT DISCHARGE COMPLETE**		
Sample Date:	**4/21/2015**		
Sample ID:	**WA-307075**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	4/21/2015
System Temperature 1 (°F):	60.00
System Pressure 1 (psig):	14.70
System Temperature 2 (°F):	180.00
System Pressure 2 (psig):	2000.00
Calculated Density (g/ml):	1.0061
pH:	8.50
Calculated TDS (mg/L):	12805.08
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	0.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	4541.75	Chloride (Cl):	6000.00
Potassium (K):	41.78	Sulfate (SO_4):	163.00
Magnesium (Mg):	28.63	Bicarbonate (HCO_3):	1952.00
Calcium (Ca):	67.44	Carbonate (CO_3):	
Strontium (Sr):	5.41	Acetic Acid (CH_3COO)	
Barium (Ba):	0.90	Propionic Acid (C_2H_5COO)	
Iron (Fe):	2.74	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	1.29	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.05	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.09	Silica (SiO_2):	

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	1.91	56.41	0.09	0.09	0.00	0.00	2.59	1.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	1.87	56.05	0.13	0.14	0.00	0.00	2.54	1.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	1.83	55.66	0.19	0.19	0.00	0.00	2.49	1.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	1.80	55.27	0.26	0.24	0.00	0.00	2.44	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	1.77	54.86	0.33	0.29	0.00	0.00	2.38	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	897	1.74	54.46	0.42	0.33	0.00	0.00	2.32	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	676	1.72	54.08	0.52	0.38	0.00	0.00	2.26	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	455	1.71	53.72	0.64	0.41	0.00	0.00	2.20	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	235	1.69	53.39	0.77	0.45	0.00	0.00	2.14	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	14	1.69	53.56	0.92	0.47	0.00	0.00	2.08	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	0.00	0.00	0.00	0.00	0.00	0.00	2.20	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	0.00	0.00	0.00	0.00	0.00	0.00	2.09	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	0.00	0.00	0.00	0.00	0.00	0.00	1.69	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	897	0.00	0.00	0.00	0.00	0.00	0.00	1.53	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	676	0.00	0.00	0.00	0.00	0.00	0.00	1.37	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	455	0.00	0.00	0.00	0.00	0.00	0.00	1.19	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	235	0.00	0.00	0.00	0.00	0.00	0.00	1.01	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	14	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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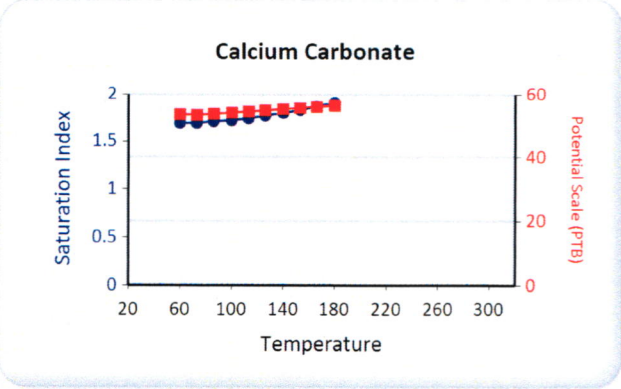
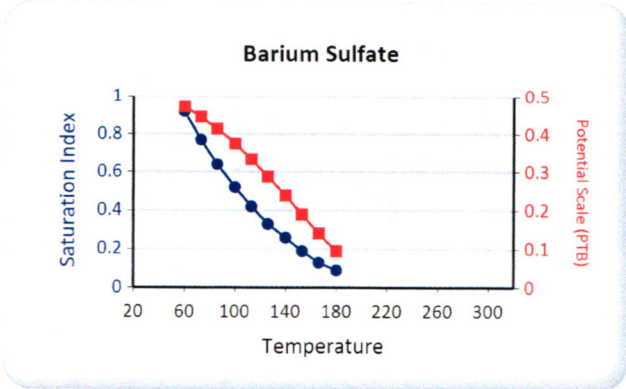
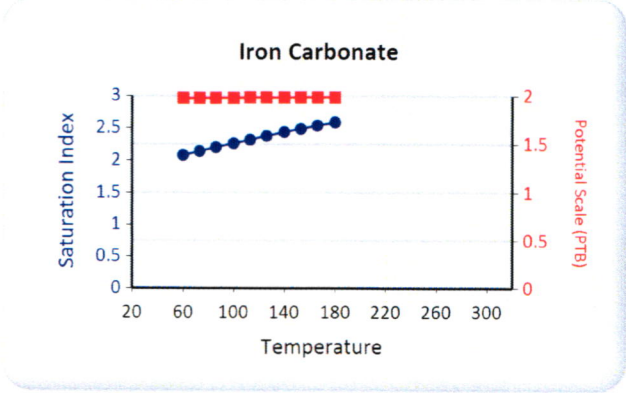
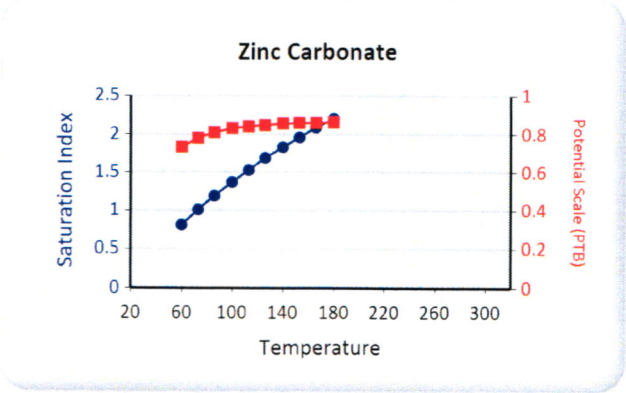
Water Analysis Report









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Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 21-11 SATELLITE, DUCHESN**	Lab Tech:	**Gary Winegar**
Sample Point:	**PLANT DISCHARGE COMPLETE**		
Sample Date:	**4/21/2015**		
Sample ID:	**WA-307071**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	4/21/2015
System Temperature 1 (°F):	60.00
System Pressure 1 (psig):	14.70
System Temperature 2 (°F):	180.00
System Pressure 2 (psig):	2000.00
Calculated Density (g/ml):	1.0081
pH:	8.70
Calculated TDS (mg/L):	15659.01
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	35.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	5585.76	Chloride (Cl):	7000.00
Potassium (K):	55.43	Sulfate (SO_4):	277.00
Magnesium (Mg):	10.62	Bicarbonate (HCO_3):	2684.00
Calcium (Ca):	30.52	Carbonate (CO_3):	
Strontium (Sr):	6.47	Acetic Acid (CH_3COO)	
Barium (Ba):	1.02	Propionic Acid (C_2H_5COO)	
Iron (Fe):	1.09	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	6.88	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.08	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.14	Silica (SiO_2):	

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	1.81	26.18	0.28	0.29	3.60	0.60	2.44	0.79	0.00	0.00	0.00	0.00	0.00	0.00	11.37	3.59
166	1779	1.77	26.13	0.33	0.32	3.61	0.60	2.40	0.79	0.00	0.00	0.00	0.00	0.00	0.00	11.52	3.59
153	1558	1.74	26.09	0.39	0.36	3.63	0.60	2.35	0.79	0.00	0.00	0.00	0.00	0.00	0.00	11.68	3.59
140	1338	1.71	26.05	0.45	0.39	3.67	0.60	2.30	0.79	0.00	0.00	0.00	0.00	0.00	0.00	11.86	3.59
126	1117	1.69	26.00	0.53	0.43	3.72	0.60	2.25	0.79	0.00	0.00	0.00	0.00	0.00	0.00	12.05	3.59
113	897	1.67	25.97	0.62	0.46	3.79	0.60	2.20	0.79	0.00	0.00	0.00	0.00	0.00	0.00	12.27	3.59
100	676	1.65	25.93	0.72	0.49	3.87	0.60	2.14	0.79	0.00	0.00	0.00	0.00	0.00	0.00	12.50	3.59
86	455	1.63	25.91	0.84	0.52	3.97	0.60	2.08	0.79	0.00	0.00	0.00	0.00	0.00	0.00	12.76	3.59
73	235	1.62	25.88	0.97	0.54	4.09	0.60	2.02	0.79	0.00	0.00	0.00	0.00	0.00	0.00	13.04	3.59
60	14	1.62	25.87	1.12	0.56	4.23	0.60	1.96	0.79	0.00	0.00	0.00	0.00	0.00	0.00	13.34	3.59

		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	0.00	0.00	0.00	0.00	0.00	0.00	3.15	4.62	10.72	0.03	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	0.00	0.00	0.00	0.00	0.00	0.00	3.04	4.62	10.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	0.00	0.00	0.00	0.00	0.00	0.00	2.92	4.62	11.24	0.03	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	0.00	0.00	0.00	0.00	0.00	0.00	2.79	4.62	11.54	0.03	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	0.00	0.00	0.00	0.00	0.00	0.00	2.65	4.62	11.86	0.03	0.00	0.00	0.00	0.00	0.00	0.00
113	897	0.00	0.00	0.00	0.00	0.00	0.00	2.50	4.61	12.21	0.03	0.00	0.00	0.00	0.00	0.00	0.00
100	676	0.00	0.00	0.00	0.00	0.00	0.00	2.34	4.61	12.60	0.03	0.00	0.00	0.00	0.00	0.00	0.00
86	455	0.00	0.00	0.00	0.00	0.00	0.00	2.17	4.60	13.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00
73	235	0.00	0.00	0.00	0.00	0.00	0.00	1.99	4.58	13.46	0.03	0.00	0.00	0.00	0.00	0.00	0.00
60	14	0.00	0.00	0.00	0.00	0.00	0.00	1.79	4.55	13.95	0.03	0.00	0.00	0.00	0.00	0.00	0.00

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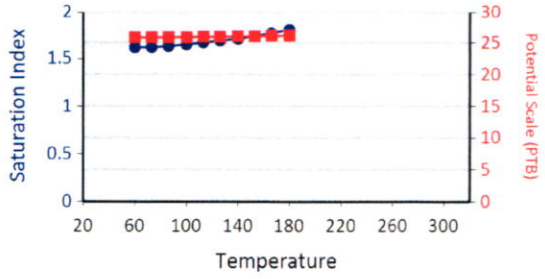
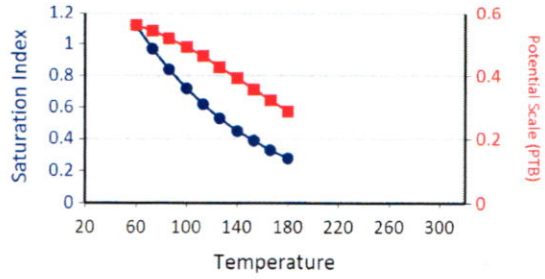
Water Analysis Report

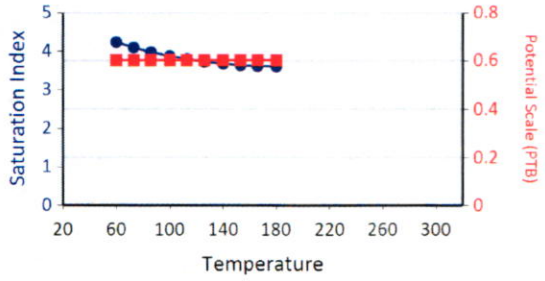
Calcium Carbonate



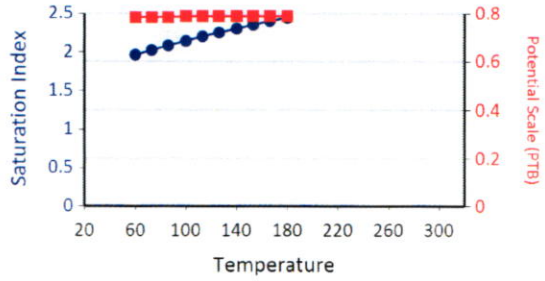
Barium Sulfate



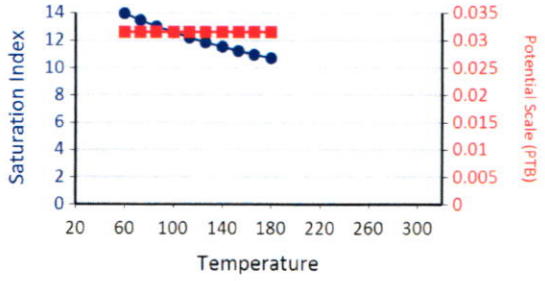
Iron Sulfide



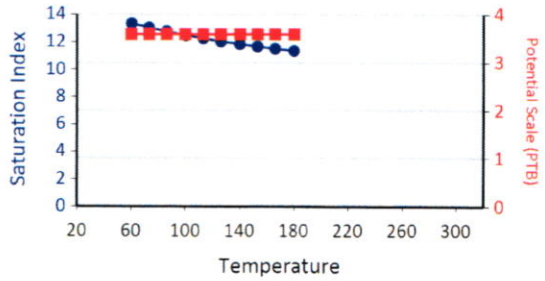
Iron Carbonate



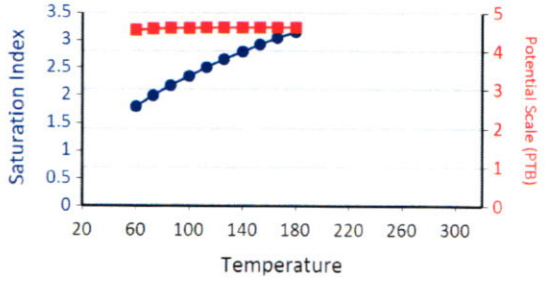
Lead Sulfide



Zinc Sulfide



Zinc Carbonate



Multi-Chem Analytical Laboratory
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Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 34-12D3 SATELLITE, DUCHE**	Lab Tech:	**Gary Winegar**
Sample Point:	**PLANT DISCHARGE**		
Sample Date:	**4/21/2015**		
Sample ID:	**WA-307067**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	4/21/2015
System Temperature 1 (°F):	60.00
System Pressure 1 (psig):	14.70
System Temperature 2 (°F):	180.00
System Pressure 2 (psig):	2000.00
Calculated Density (g/ml):	1.0073
pH:	8.50
Calculated TDS (mg/L):	14589.98
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	0.00

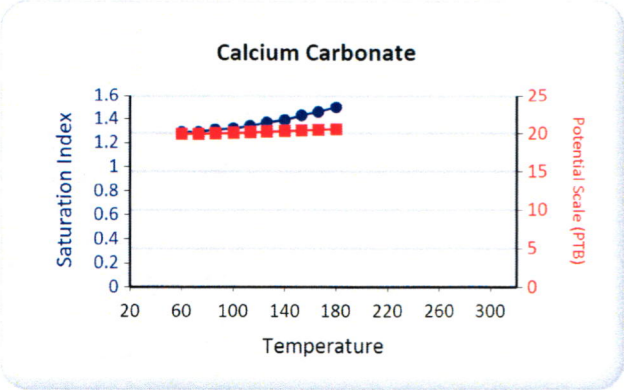
Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	5277.36	Chloride (Cl):	7000.00
Potassium (K):	65.03	Sulfate (SO_4):	0.00
Magnesium (Mg):	7.80	Bicarbonate (HCO_3):	2196.00
Calcium (Ca):	24.60	Carbonate (CO_3):	
Strontium (Sr):	5.20	Acetic Acid (CH_3COO)	
Barium (Ba):	12.37	Propionic Acid (C_2H_5COO)	
Iron (Fe):	0.34	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	1.16	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.04	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.08	Silica (SiO_2):	

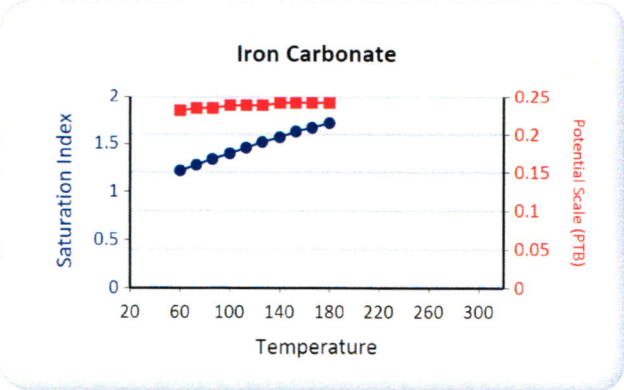
Notes:

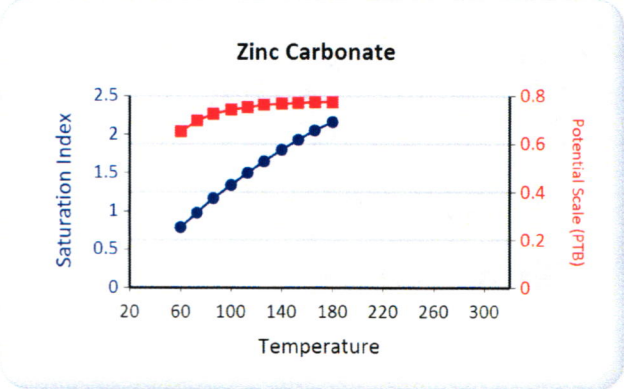
(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	1.50	20.58	0.00	0.00	0.00	0.00	1.72	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	1.46	20.48	0.00	0.00	0.00	0.00	1.67	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	1.43	20.39	0.00	0.00	0.00	0.00	1.63	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	1.39	20.30	0.00	0.00	0.00	0.00	1.57	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	1.37	20.21	0.00	0.00	0.00	0.00	1.52	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	897	1.34	20.13	0.00	0.00	0.00	0.00	1.46	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	676	1.32	20.05	0.00	0.00	0.00	0.00	1.40	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	455	1.31	19.99	0.00	0.00	0.00	0.00	1.34	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	235	1.29	19.93	0.00	0.00	0.00	0.00	1.28	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	14	1.29	19.93	0.00	0.00	0.00	0.00	1.22	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	0.00	0.00	0.00	0.00	0.00	0.00	2.16	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	0.00	0.00	0.00	0.00	0.00	0.00	2.05	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	0.00	0.00	0.00	0.00	0.00	0.00	1.93	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	0.00	0.00	0.00	0.00	0.00	0.00	1.80	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	0.00	0.00	0.00	0.00	0.00	0.00	1.65	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	897	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	676	0.00	0.00	0.00	0.00	0.00	0.00	1.34	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	455	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	235	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	14	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00


Calcium Carbonate
Saturation Index
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
25
20
15
10
5
0
Potential Scale (PTB)
20 60 100 140 180 220 260 300
Temperature


Iron Carbonate
Saturation Index
2
1.5
1
0.5
0
0.25
0.2
0.15
0.1
0.05
0
Potential Scale (PTB)
20 60 100 140 180 220 260 300
Temperature


Zinc Carbonate
Saturation Index
2.5
2
1.5
1
0.5
0
0.8
0.6
0.4
0.2
0
Potential Scale (PTB)
20 60 100 140 180 220 260 300
Temperature

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Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 03-14 INJ, DUCHESNE**	Lab Tech:	**Gary Winegar**
Sample Point:	**WELLHEAD**		
Sample Date:	**1/7/2015**		
Sample ID:	**WA-297463**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	1/14/2015
System Temperature 1 (°F):	160
System Pressure 1 (psig):	1300
System Temperature 2 (°F):	80
System Pressure 2 (psig):	15
Calculated Density (g/ml):	1.0016
pH:	8.30
Calculated TDS (mg/L):	6392.90
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	10.00

Analysis @ Properties in Sample Specifics			
Cations	***mg/L***	***Anions***	***mg/L***
Sodium (Na):	1924.68	Chloride (Cl):	3000.00
Potassium (K):	31.43	Sulfate (SO_4):	166.00
Magnesium (Mg):	47.40	Bicarbonate (HCO_3):	1098.00
Calcium (Ca):	83.24	Carbonate (CO_3):	
Strontium (Sr):	4.12	Acetic Acid (CH_3COO)	
Barium (Ba):	3.59	Propionic Acid (C_2H_5COO)	
Iron (Fe):	7.03	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	5.16	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.00	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.09	Silica (SiO_2):	22.16

Notes:
B=3.55 Al=0 Li=1.1

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	1.50	51.14	1.59	2.08	3.98	3.88	2.26	5.08	0.00	0.00	0.00	0.00	0.00	0.00	12.03	2.70
88.00	157.00	1.49	49.38	1.51	2.07	3.89	3.88	2.28	5.08	0.00	0.00	0.00	0.00	0.00	0.00	11.84	2.70
97.00	300.00	1.51	50.35	1.43	2.06	3.83	3.88	2.33	5.08	0.00	0.00	0.00	0.00	0.00	0.00	11.68	2.70
106.00	443.00	1.53	51.38	1.36	2.04	3.78	3.88	2.38	5.09	0.00	0.00	0.00	0.00	0.00	0.00	11.52	2.70
115.00	585.00	1.55	52.47	1.30	2.03	3.74	3.88	2.42	5.09	0.00	0.00	0.00	0.00	0.00	0.00	11.38	2.70
124.00	728.00	1.57	53.61	1.24	2.02	3.70	3.88	2.47	5.09	0.00	0.00	0.00	0.00	0.00	0.00	11.25	2.70
133.00	871.00	1.59	54.78	1.19	2.00	3.67	3.88	2.51	5.09	0.00	0.00	0.00	0.00	0.00	0.00	11.12	2.70
142.00	1014.00	1.62	55.97	1.14	1.98	3.65	3.88	2.56	5.10	0.00	0.00	0.00	0.00	0.00	0.00	11.01	2.70
151.00	1157.00	1.65	57.17	1.10	1.97	3.64	3.88	2.60	5.10	0.00	0.00	0.00	0.00	0.00	0.00	10.90	2.70
160.00	1300.00	1.68	58.37	1.06	1.95	3.63	3.88	2.64	5.10	0.00	0.00	0.00	0.00	0.00	0.00	10.80	2.70

		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	3.34	0.00	0.00	1.88	8.13	0.72	3.36	7.97	5.44
88.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	3.36	0.00	0.00	2.11	8.59	0.82	3.62	8.04	5.44
97.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	3.39	0.00	0.00	2.48	10.18	1.02	4.45	8.25	5.44
106.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81	3.41	0.00	0.00	2.87	11.86	1.23	5.30	8.48	5.45
115.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93	3.42	0.00	0.00	3.26	13.61	1.44	6.17	8.72	5.45
124.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	3.43	0.00	0.00	3.65	15.44	1.66	7.04	8.97	5.45
133.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	2.14	3.44	0.00	0.00	4.04	17.29	1.88	7.92	9.23	5.46
142.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	2.24	3.45	0.00	0.00	4.44	19.14	2.10	8.77	9.49	5.46
151.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	2.33	3.45	0.00	0.00	4.84	20.89	2.32	9.59	9.75	5.46
160.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	2.42	3.46	0.00	0.00	5.24	22.48	2.54	10.36	10.03	5.46

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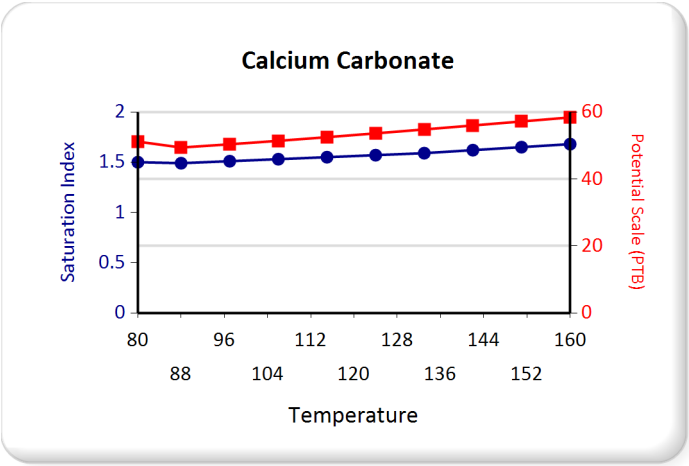
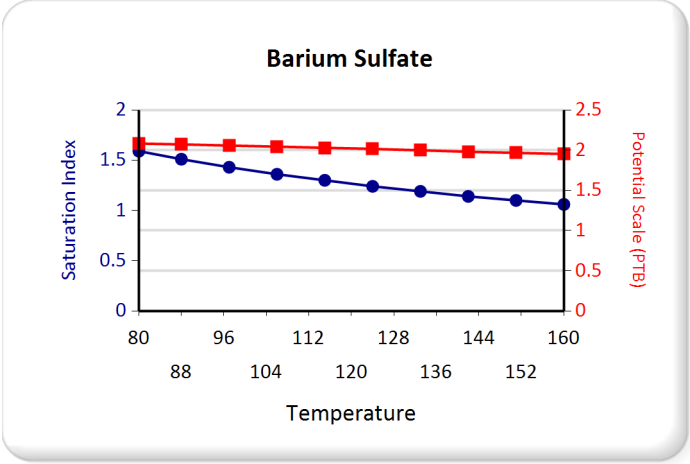
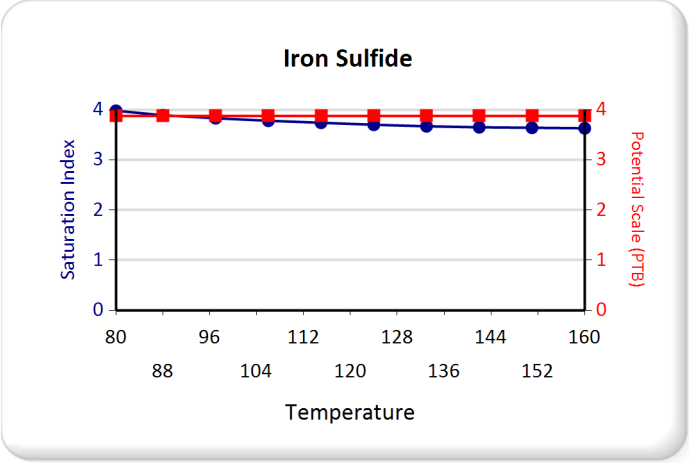
Water Analysis Report

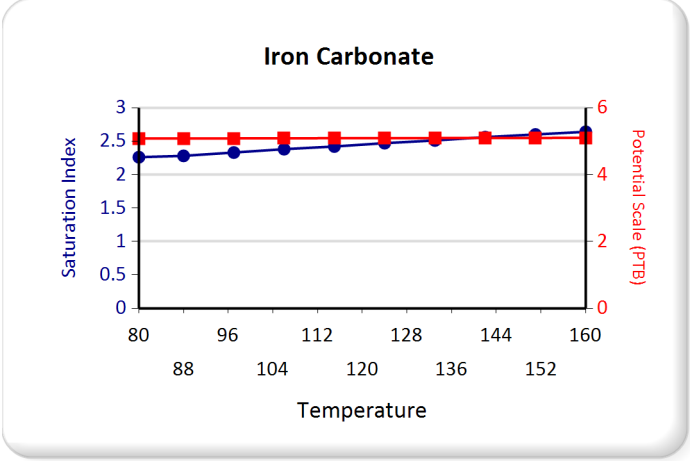
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

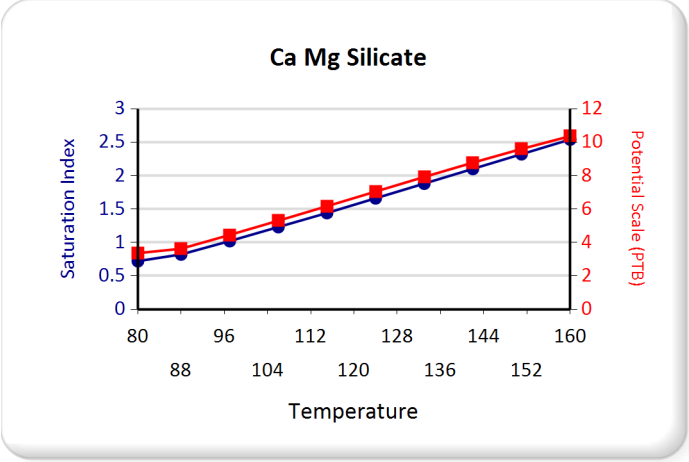
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

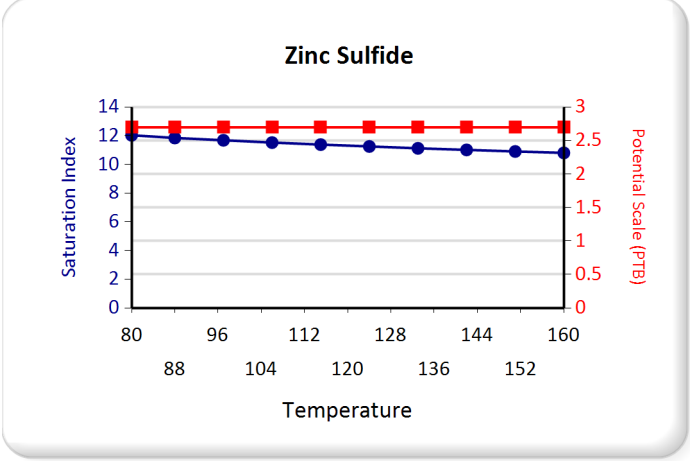


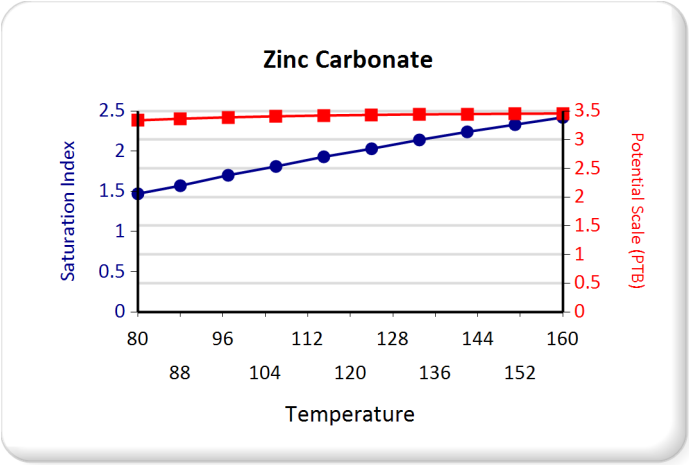


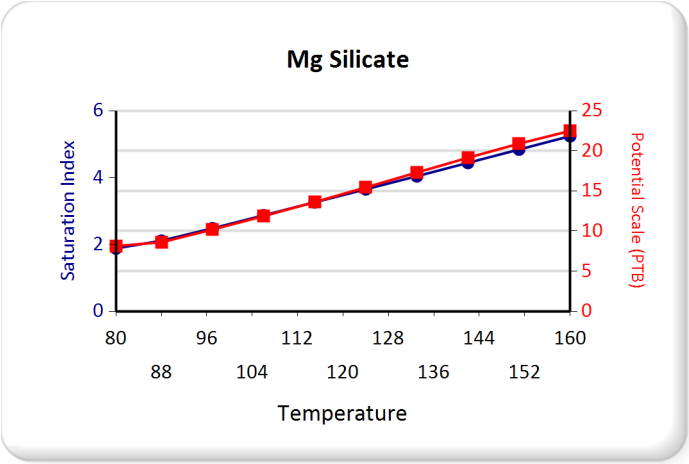


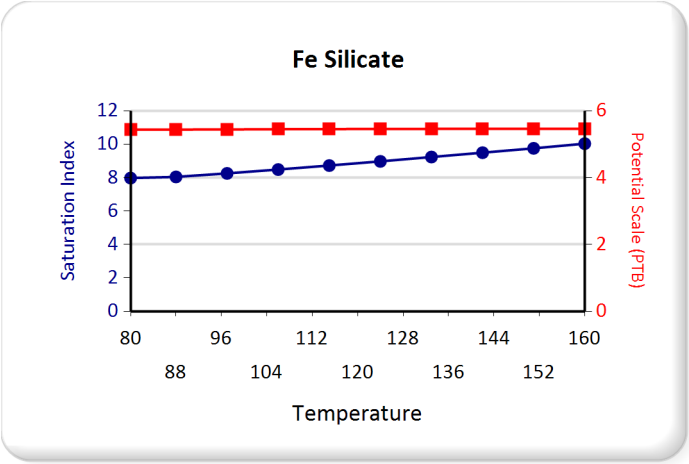







Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
2.5
2
1.5
1
0.5
0
3.5
3
2.5
2
1.5
1
0.5
0
80
96
112
128
144
160
88
104
120
136
152


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
6
4
2
0
25
20
15
10
5
0
80
96
112
128
144
160
88
104
120
136
152


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
12
10
8
6
4
2
0
6
4
2
0
80
96
112
128
144
160
88
104
120
136
152

ATTACHMENT NO. 6

COMPLETION DATA FOR ALL WELLS IN THE AOR

Well Completion Data
Ute Tribal 03-12

	Surface Casing				Production Casing			
Well	**Size (inches)**	**Depth (ft KB)**	**Cement Amount (sx)**	**Cement Top**	**Size (inches)**	**Depth (ft KB)**	**Cement Amount (sx)**	**Estimated Cement Top**
Ute Tribal 03-12	**8-5/8**	**251**	**150**	**surface**	**5-1/2**	**5963**	**480**	**2290**
Ute Tribal 03-05	8-5/8	512	220	surface	5-1/2	6472	1105	surface
Ute Tribal 04-09	8-5/8	263	150	surface	5-1/2	6630	490	2370

ATTACHMENT NO. 7

CBL FOR THE UIC WELL

BJ

Schlumberger

CEMENT BOND LOG WITH GAMMA-RAY AND CCL

COMPANY	PETROGLYPH OPERATING OPERATING COMPANY
WELL	UTE TRIBAL 03 12
FIELD	ANTELOPE CREEK
COUNTY	DUCHESNE STATE UTAH

County DUCHESNE
Field ANTELOPE CREEK
Location 2272'FNL & 575'FWL
Well UTE TRIBAL 03 12
Company PETROGLYPH OPERATING OPER

Location	API Serial No.	Sect.	Twp.	Range	Other Services:
2272'FNL & 575'FWL NW SW	NA	3	5S	3W	CBL MAC

Permanent Datum	GL	Elev. 5954	Elev K.B. 5964
Log Measured From	GL	10.0 above Perm. Datum	D.F.
Drilling Measured From	KB		G.L. 5954

Date	1 OCT 1996	Casing Fluid	WATER		
Run No.	ONE	Fluid Level	FULL		
Depth-Driller	6474	Max. Rec. Temp.	140		
Depth-Logger	5916	Est. Cement Top	SURFACE		
Btm. Log Interval	5916	Unit / District	131	VERNAL	
Top Log Interval	2000	Recorded By	EMICK		
Open Hole Size	7.875	Witnessed By	MR GENE EARLY		

CASING REC.	Size	Wt/Ft	Grade	Type Joint	Top	Bottom
Surface String	8.625				SURF	280
Prot. String						
Prod. String	5.5	17			SURF	5916
Liner						

PRIMARY CEMENTING DATA

STRING	Surface	Protection	Production	Liner
Vol. of Cement				
Type of Cement				
Additive				
Retarder				
Wt. of slurry				
Water loss				
Type fluid in csg.				
Fluid wt.				

REMARKS

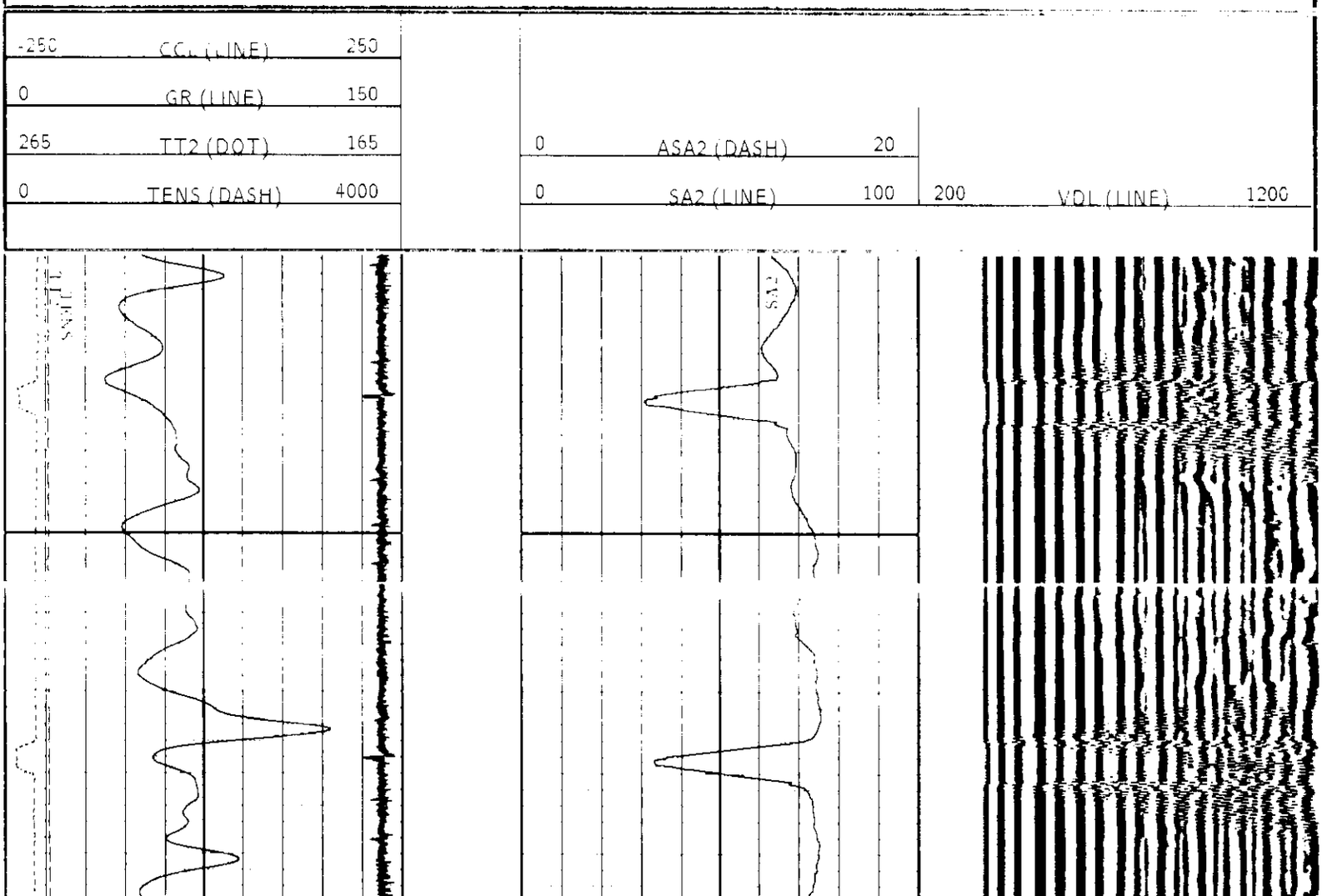
DEPTH REF SWS LDT 9-27-96
EST TOP OF CEMENT AT 2290
WELL LOGGED WITH 0 PSI SURFACE PRESSURE
WELL LOGGED WITH HOLE FULL

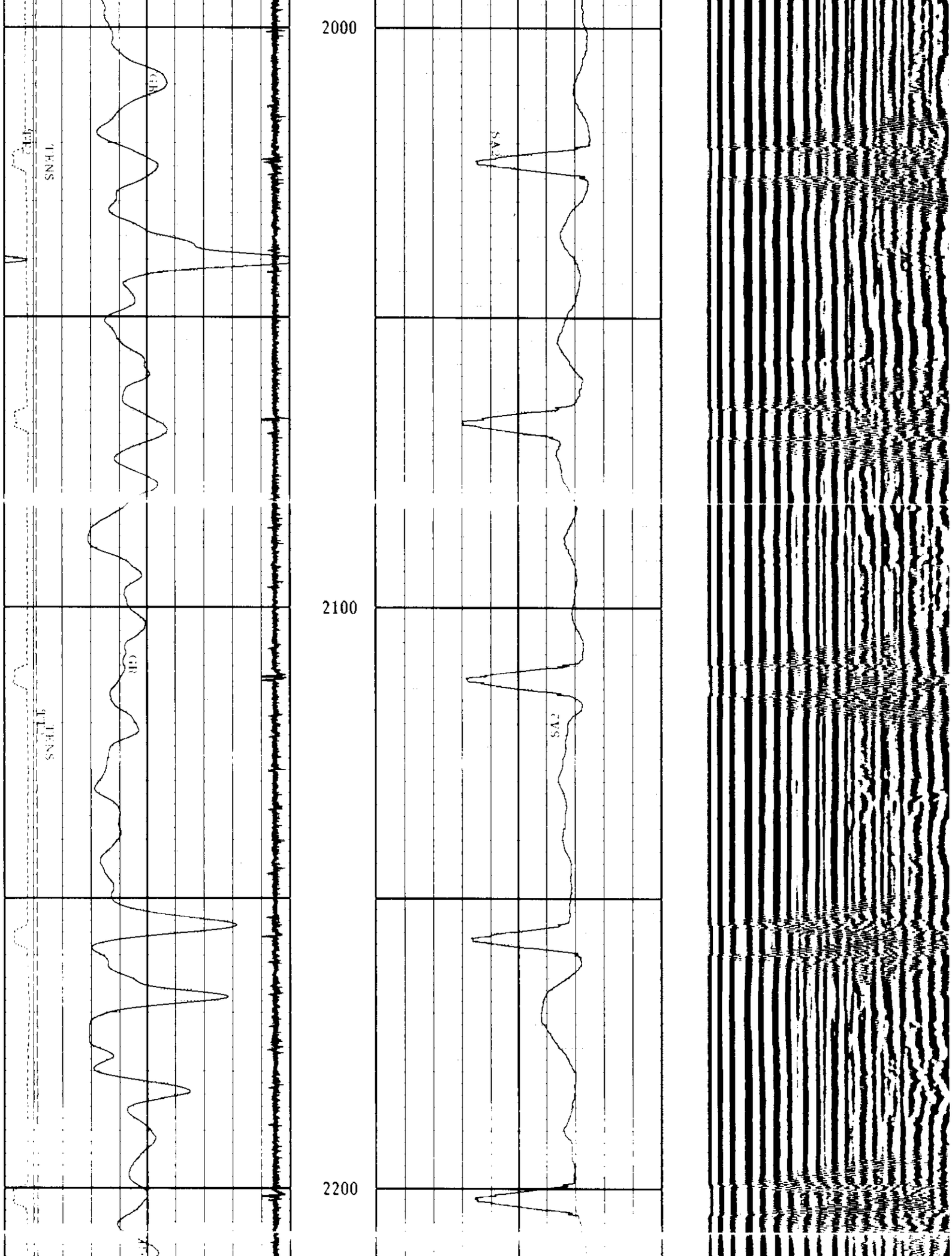
CREW: AMARO
THANK YOU FOR USING SCHLUMBERGER!

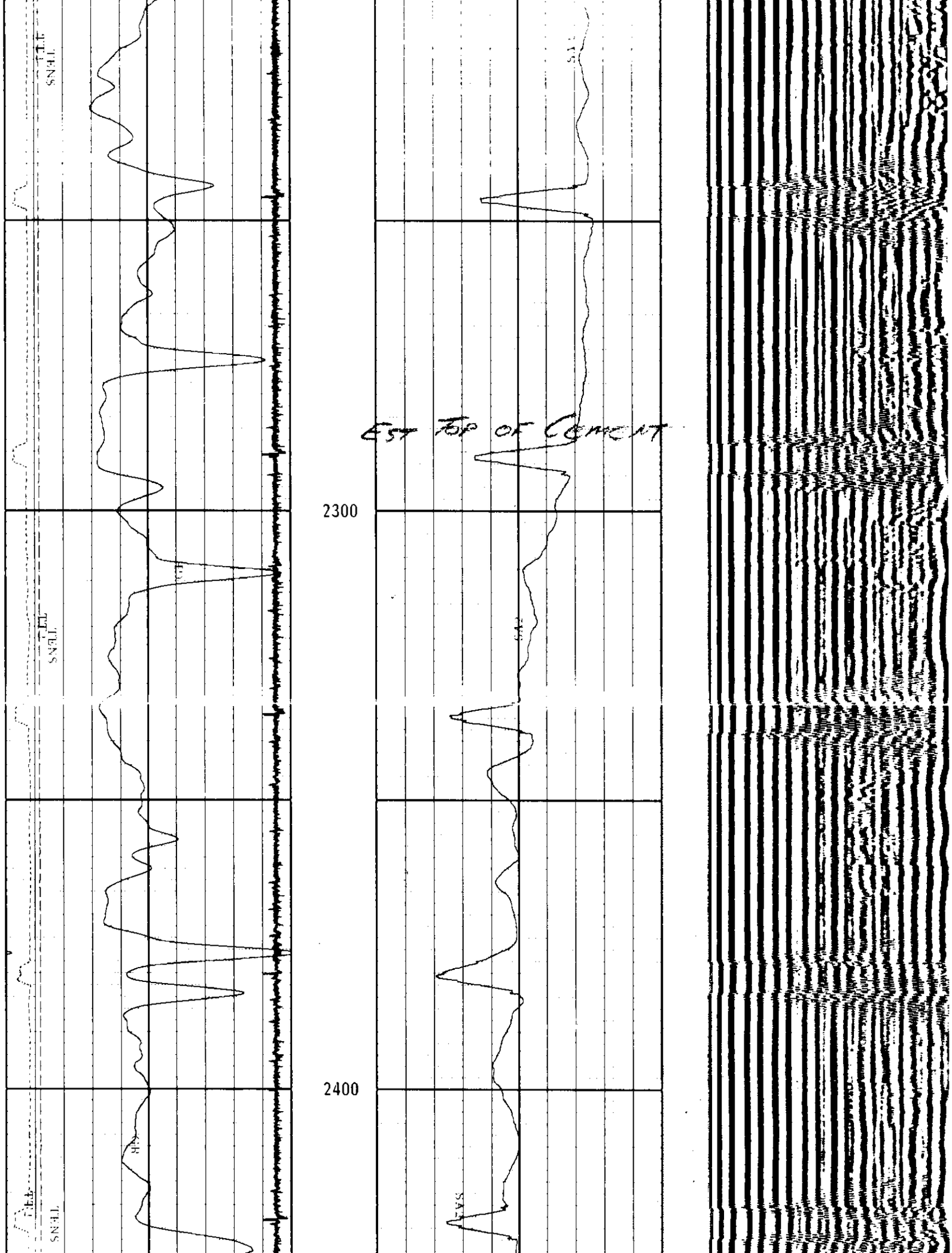
Software Version UX126
Logging Pass Start Depth 5927 2 ft.
Logging Pass Stop Depth 1915 6 ft.

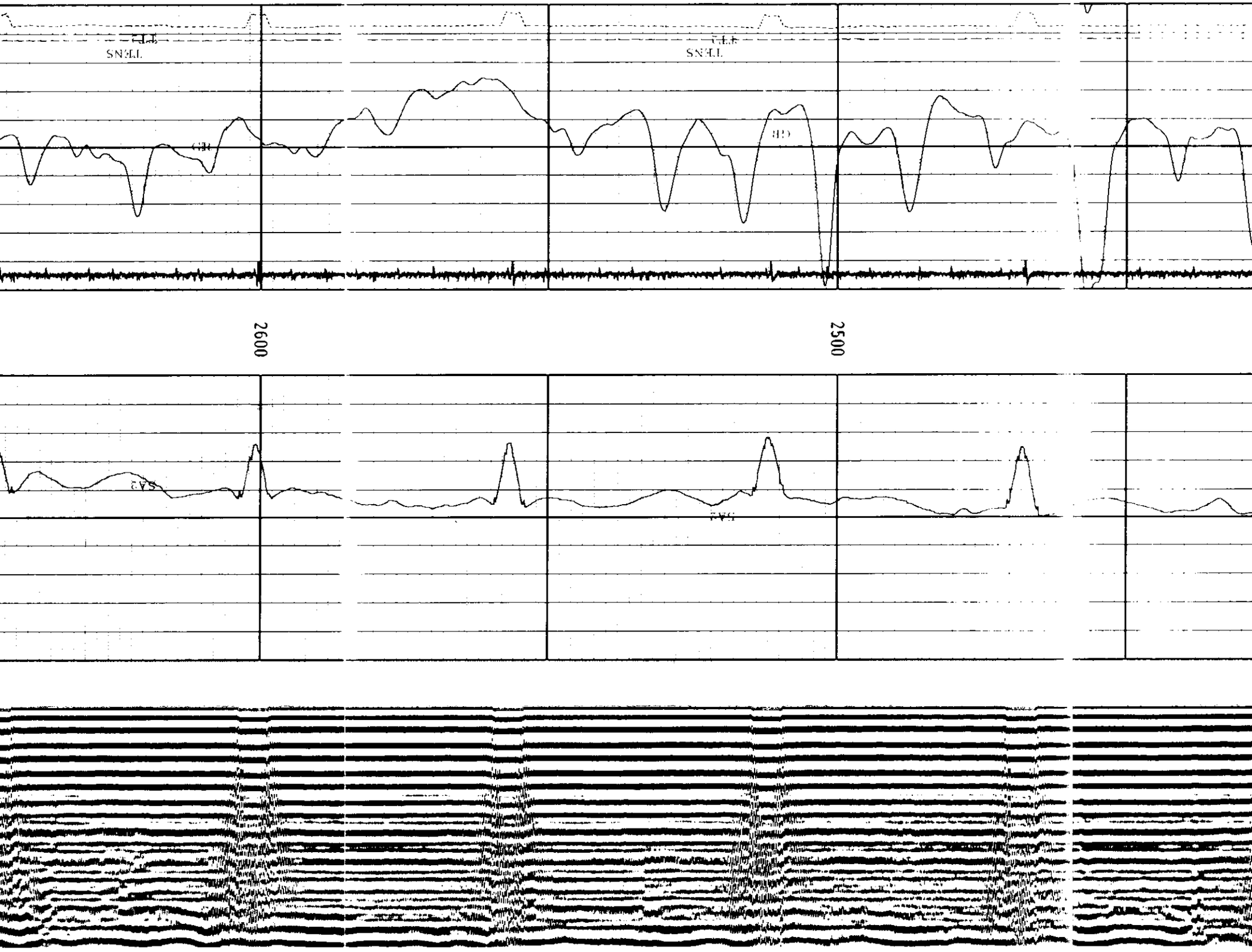
Pass No. 2
Job Name 55067000

SCALE CHANGE REPORT
NO SCALE CHANGES THIS FILE




2000
2100
2200
TENS
GR
SA2


Est Top of Cement
2300
2400


TENS
TENS
2600
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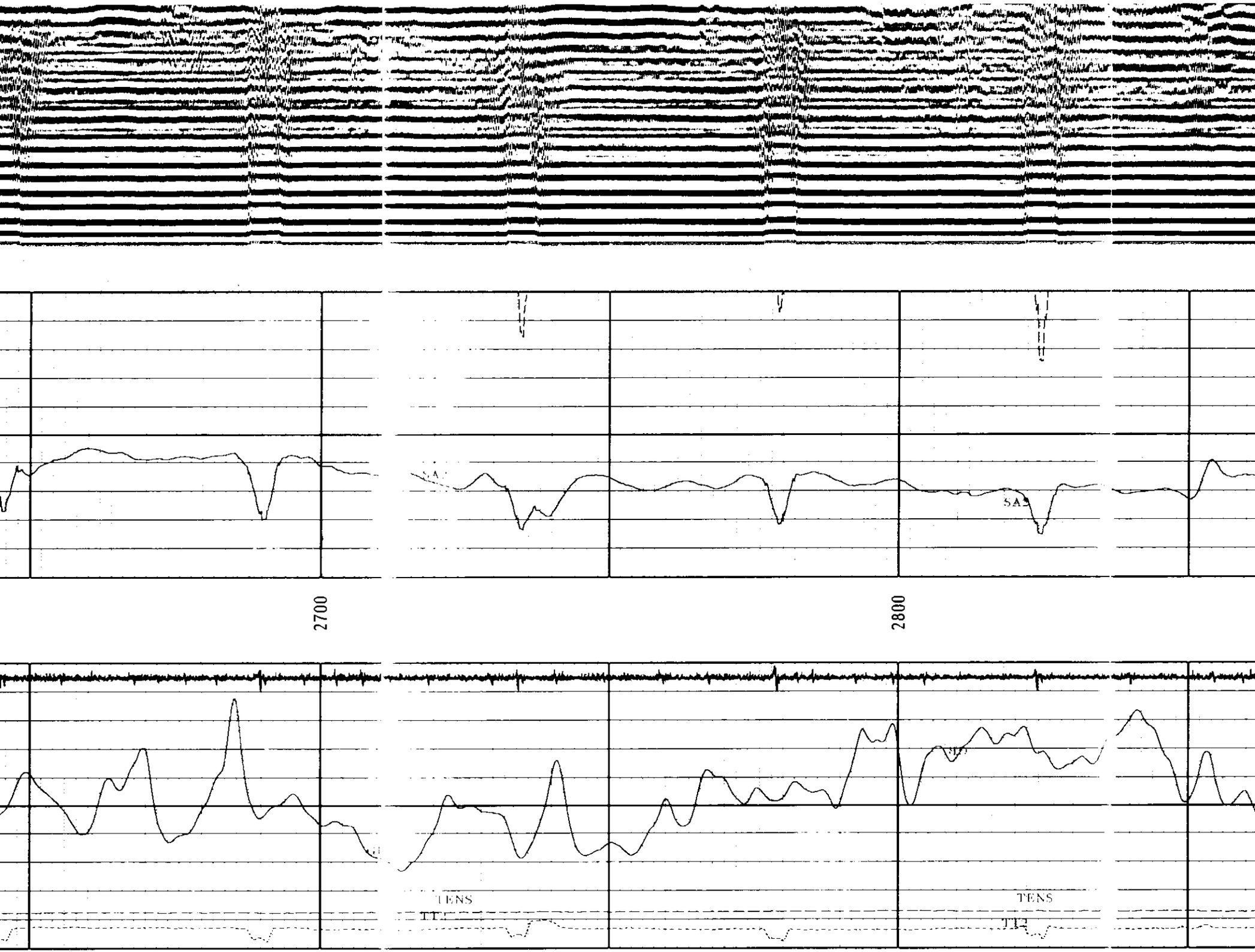
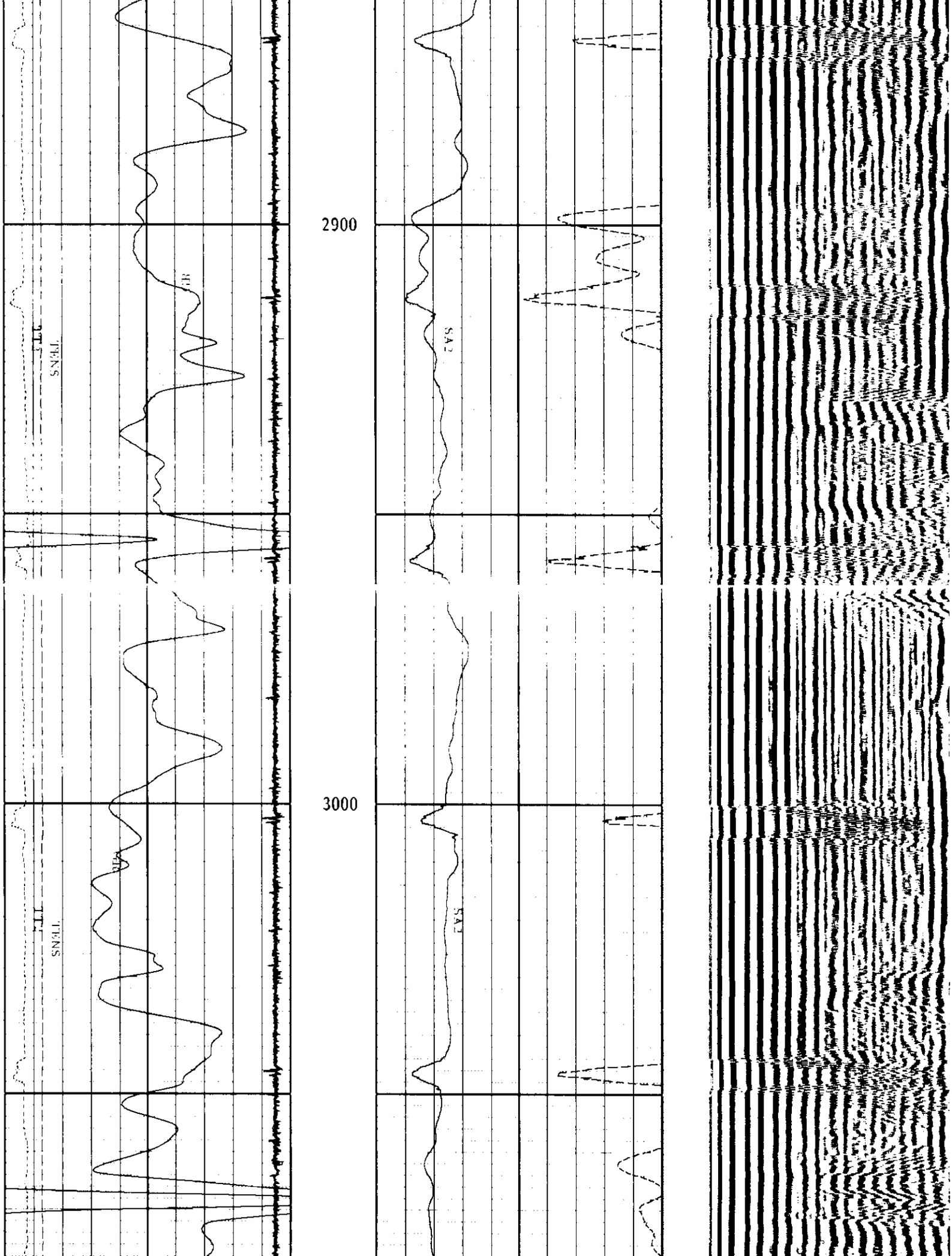
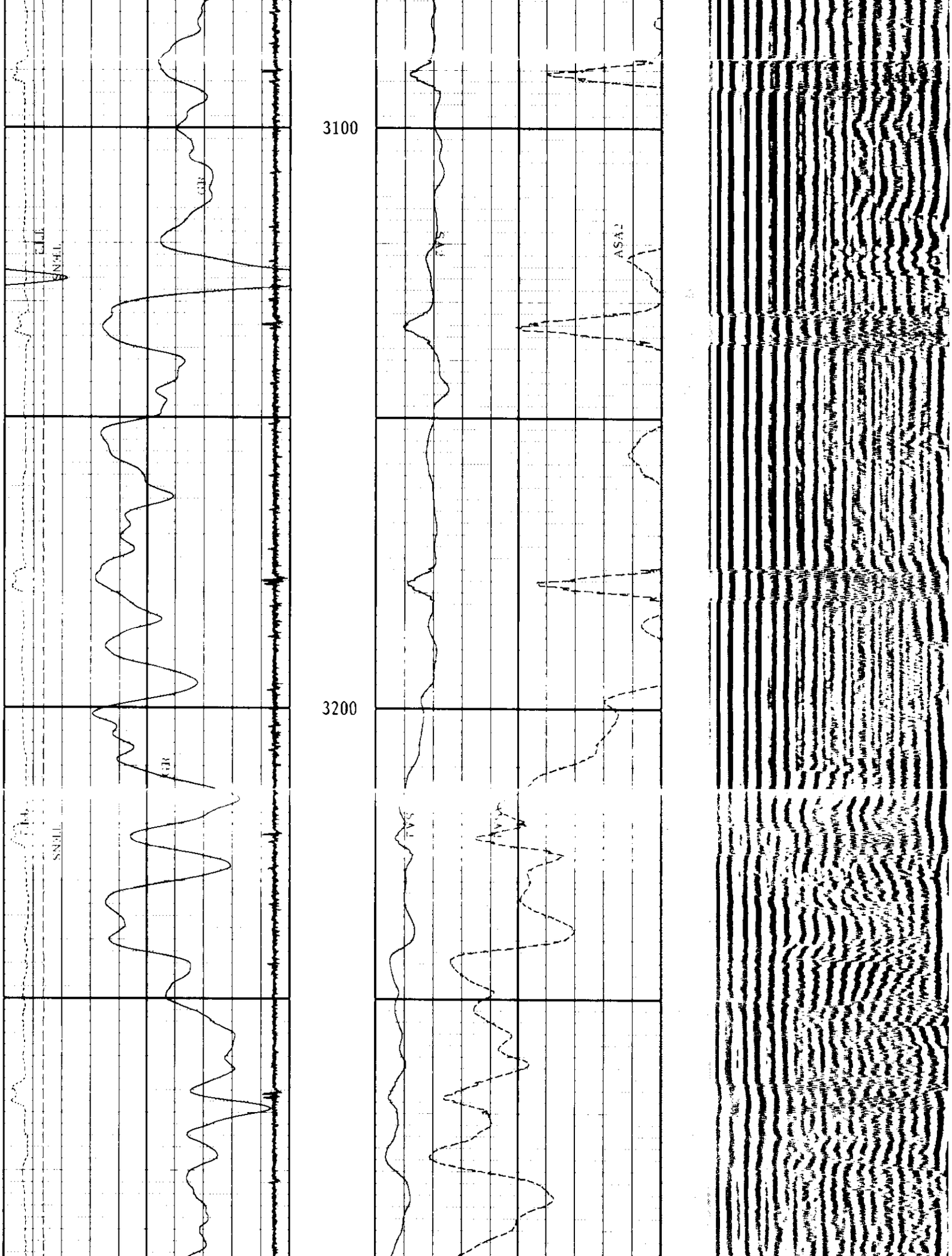

2700
2800
TENS
TENS


2900
3000
TENS
SA2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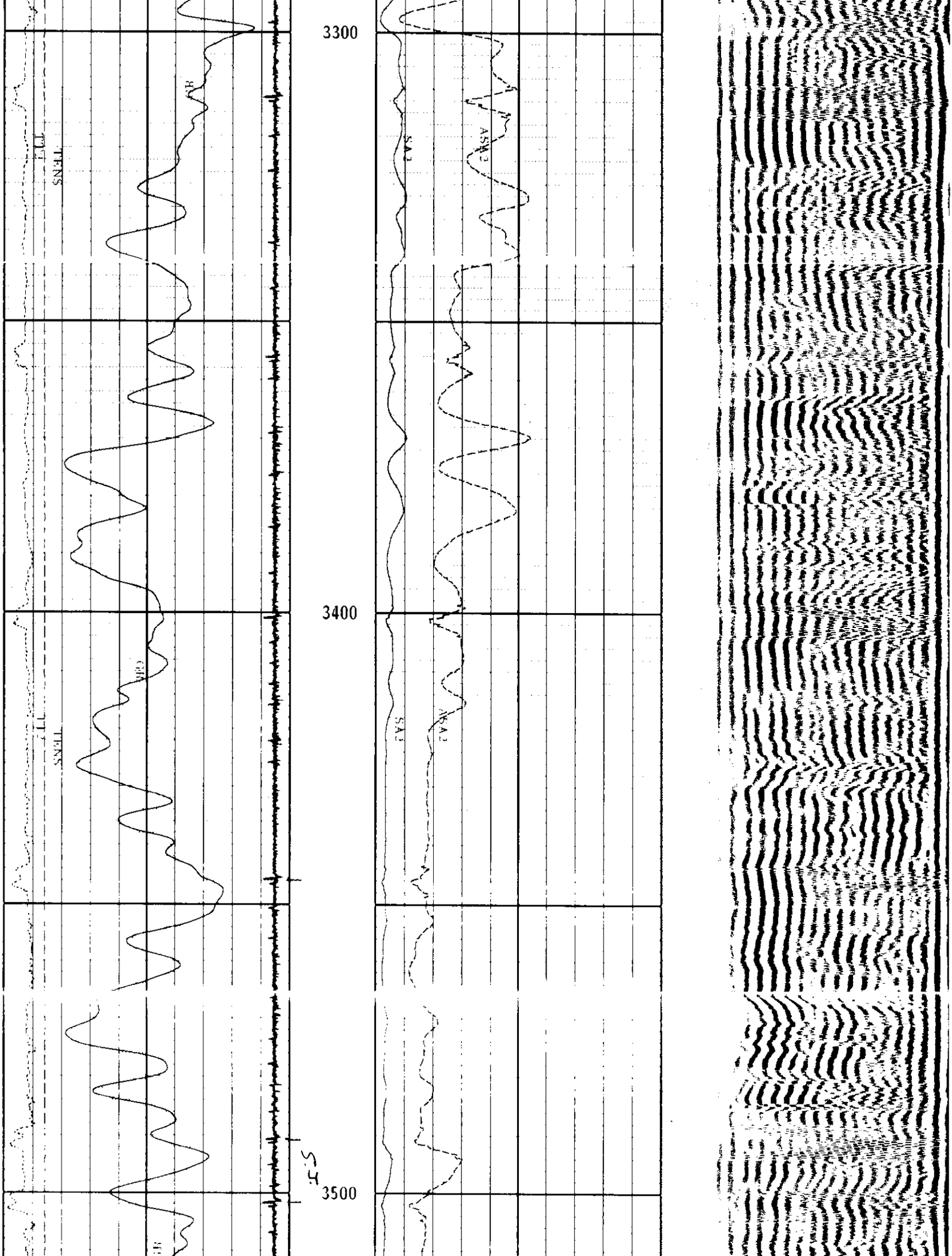
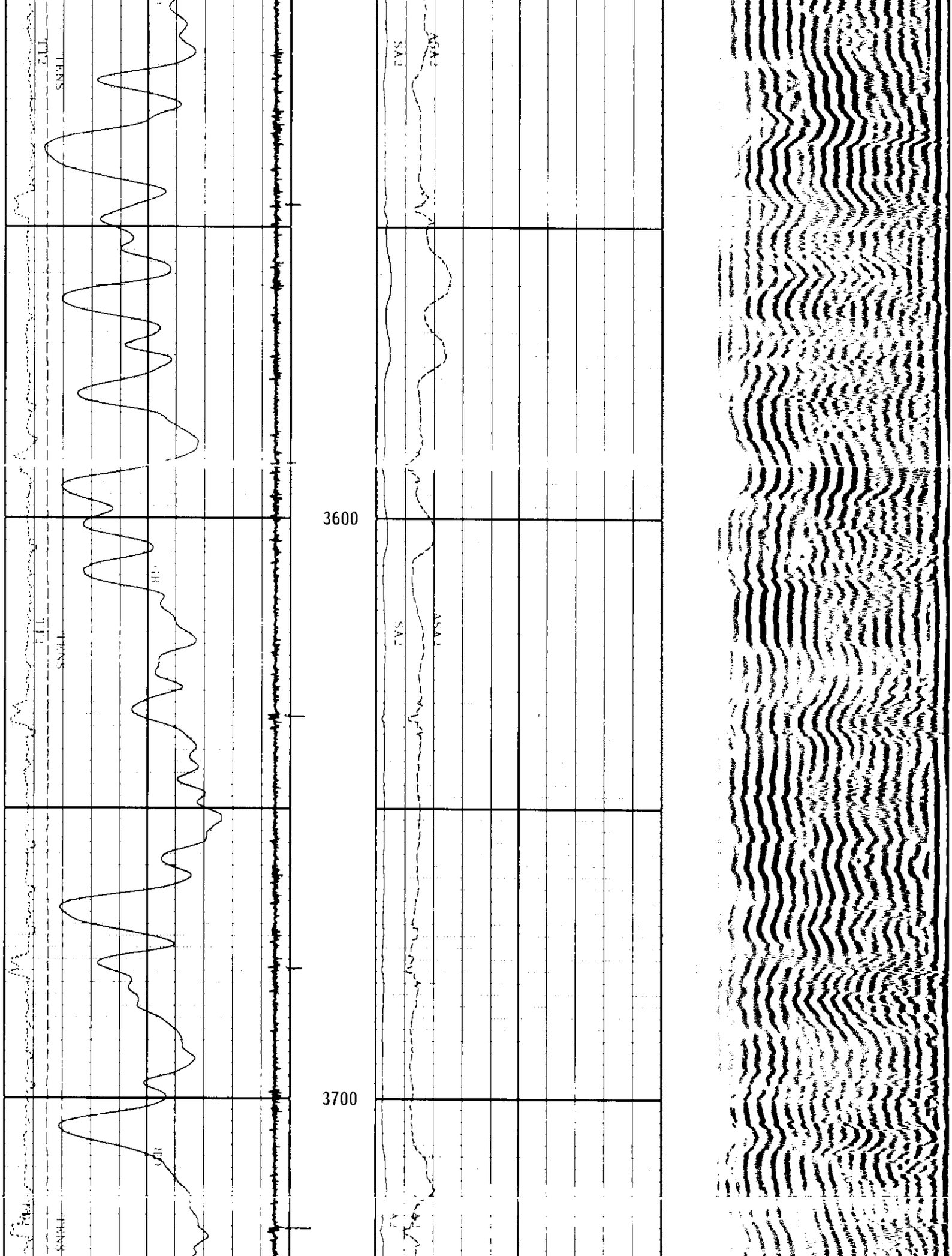
3200
GR
TENS
ASA2


3300
3400
3500
TENS
SA2
ASA2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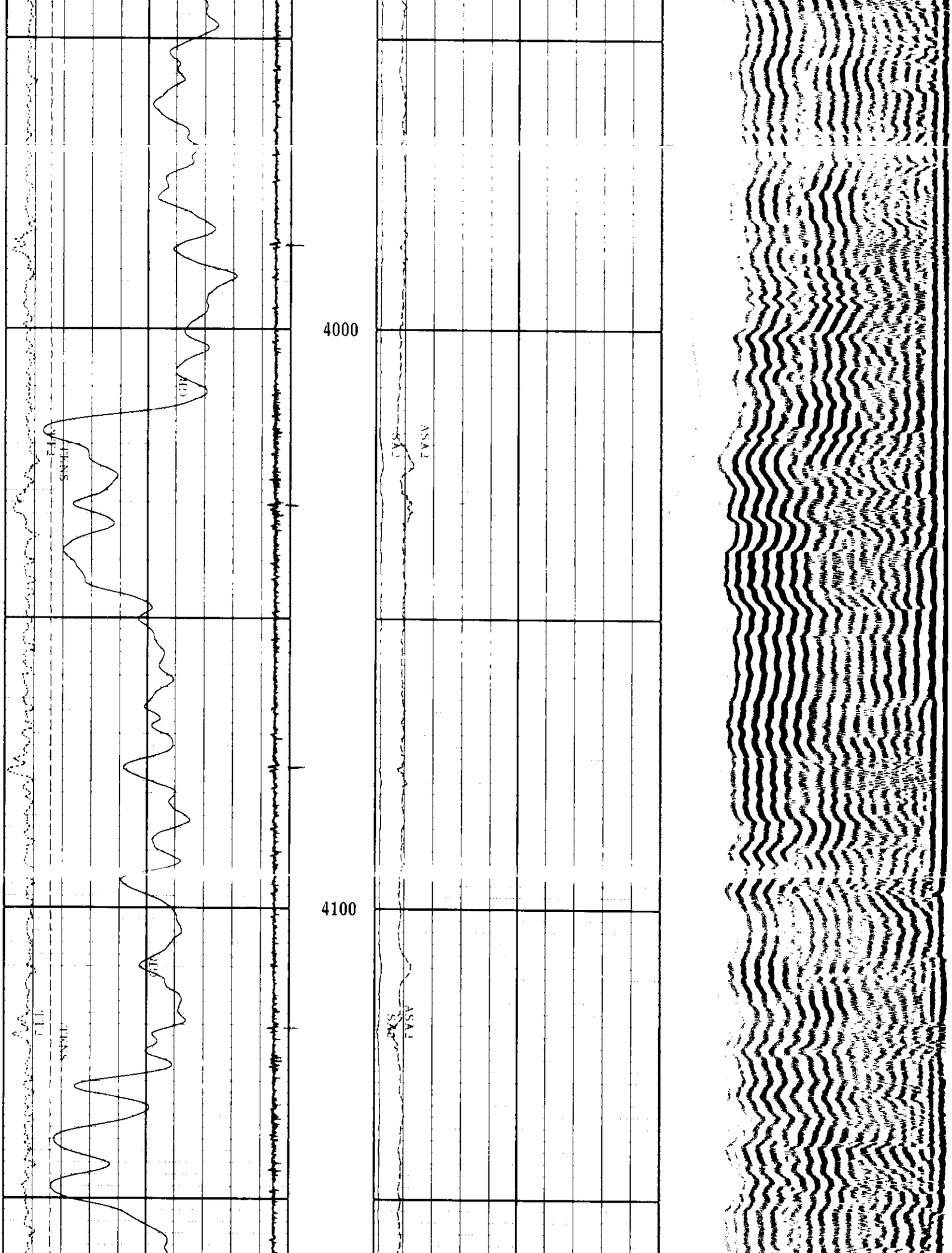
3700

3800
3900
ASA2
SA2
ASA2
SA2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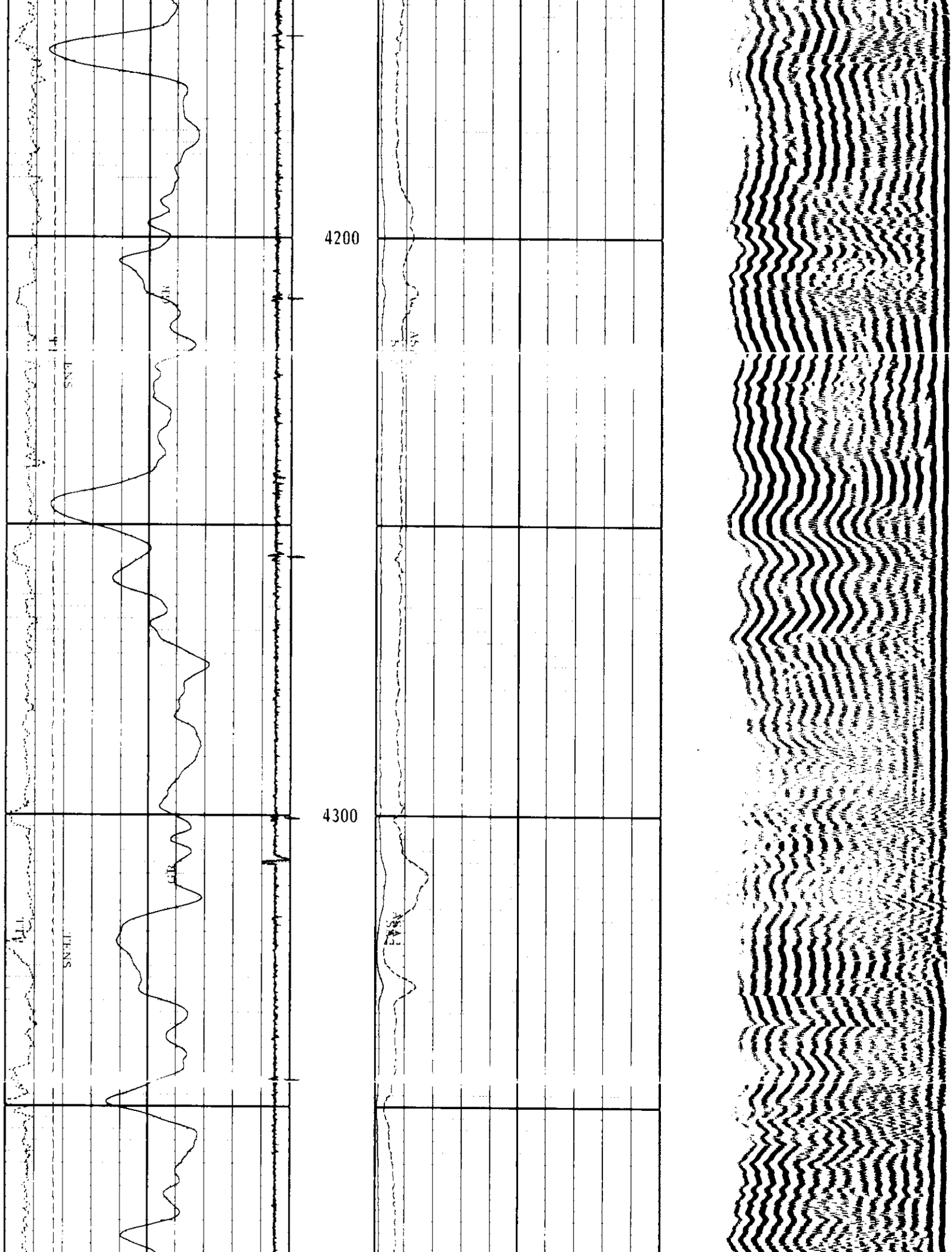
4100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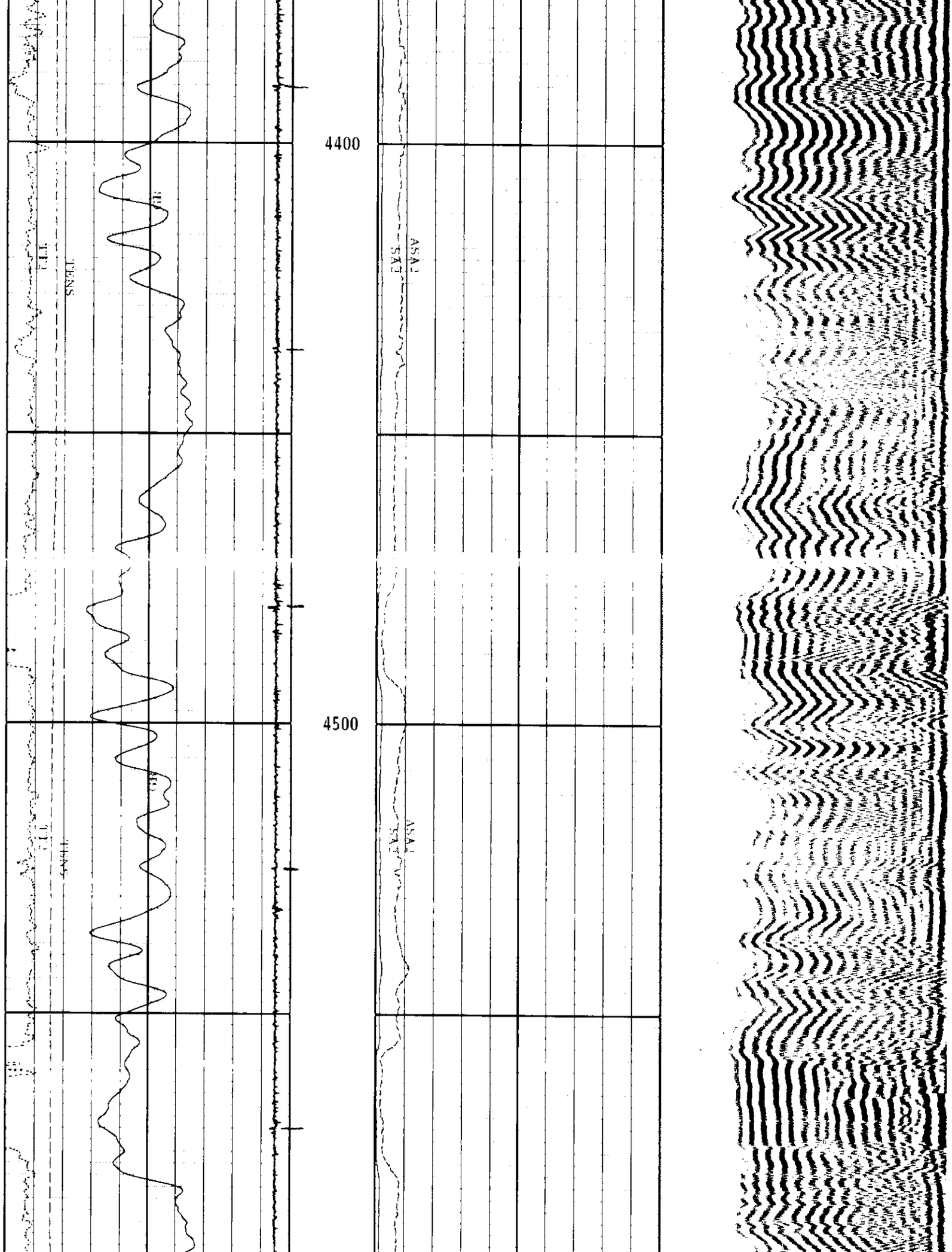
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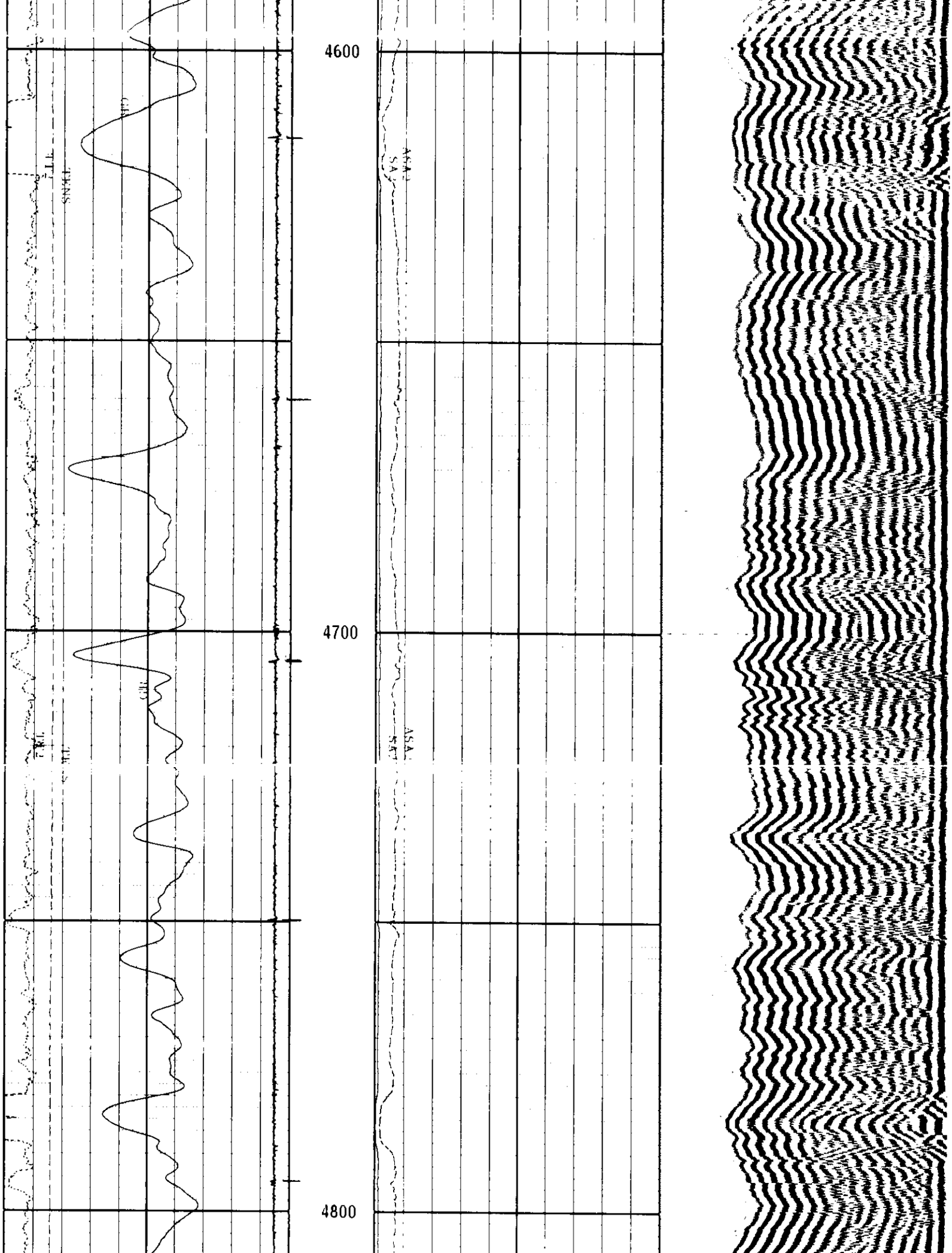
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4700
4800

4900
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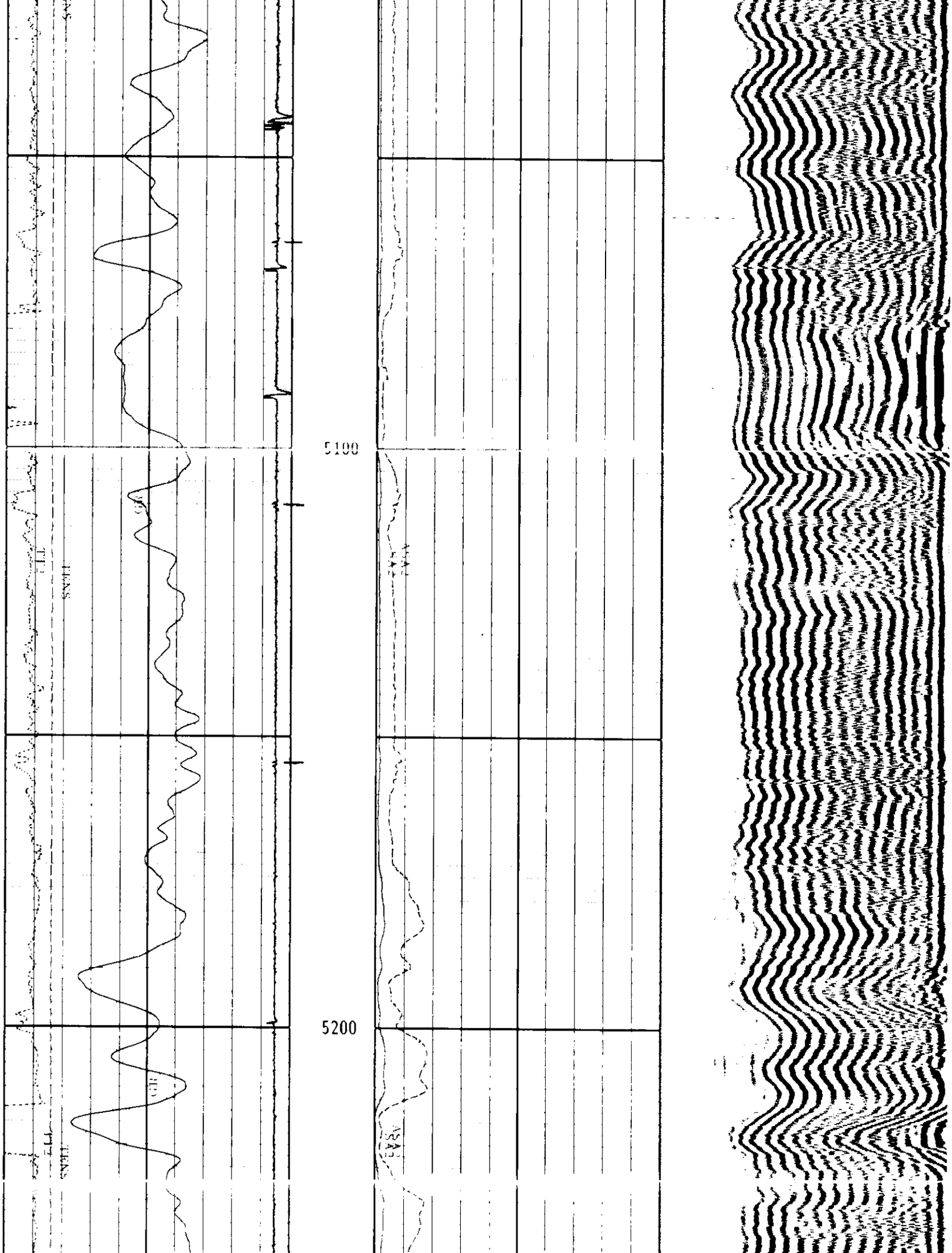
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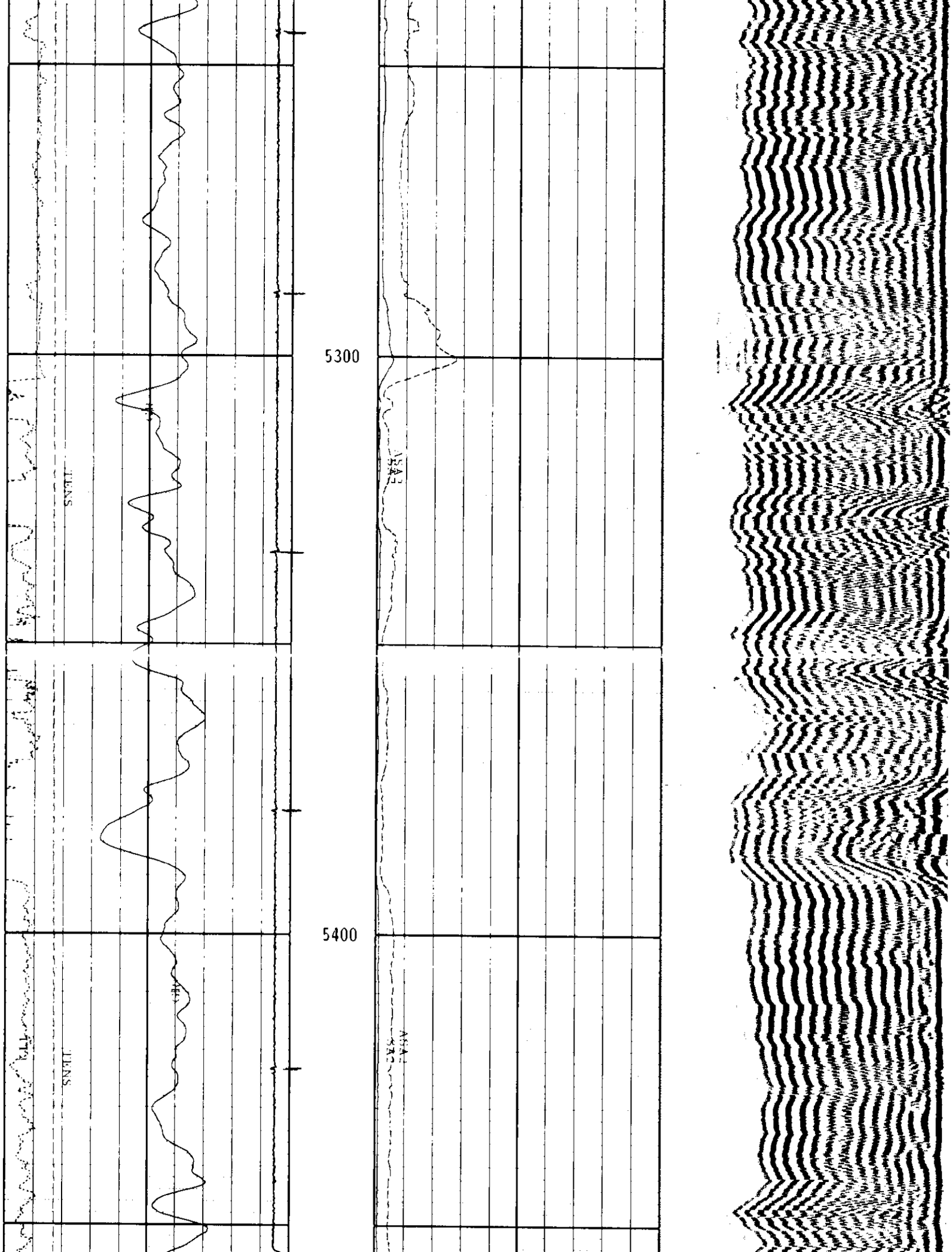
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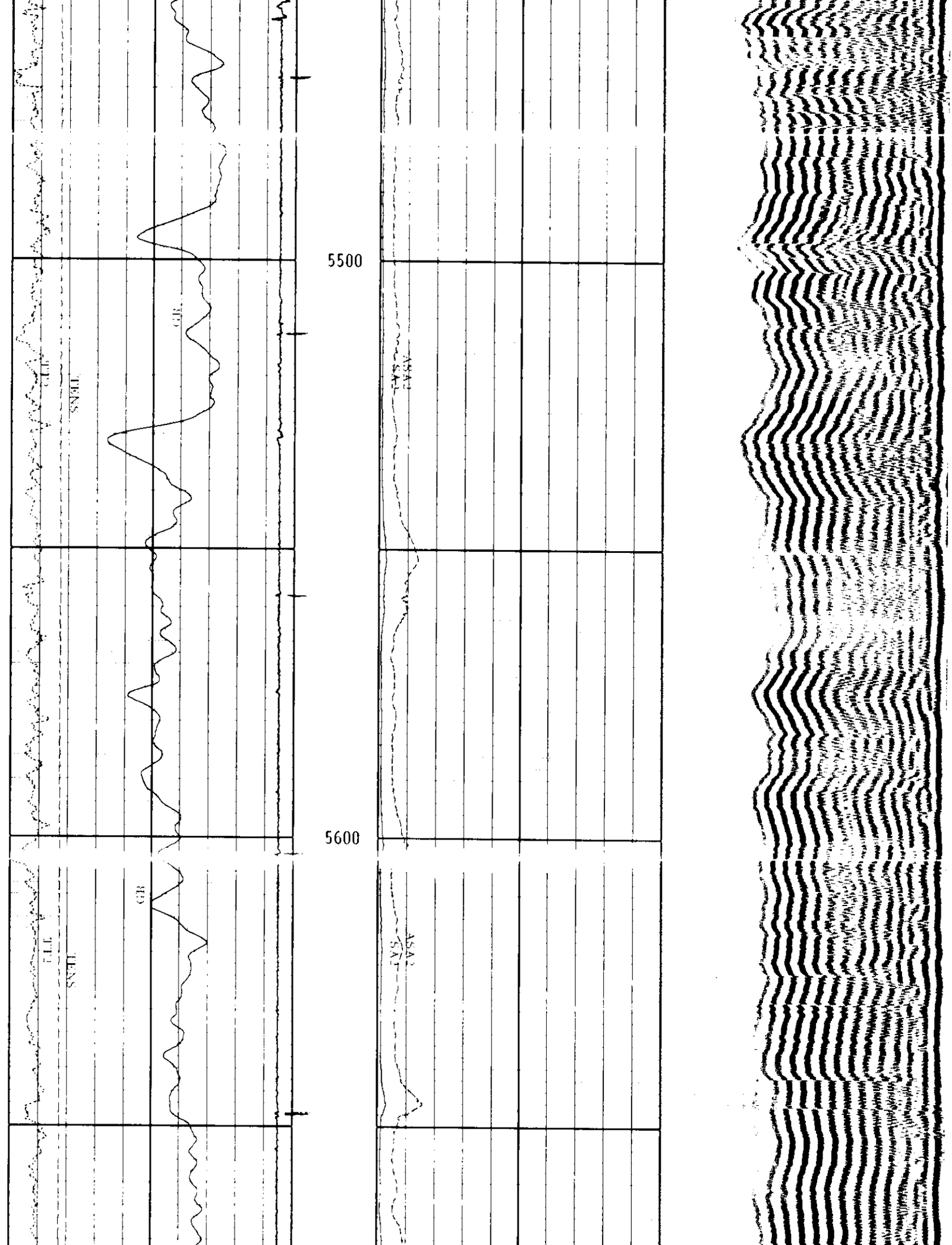
5400
TENS
TENS
TENS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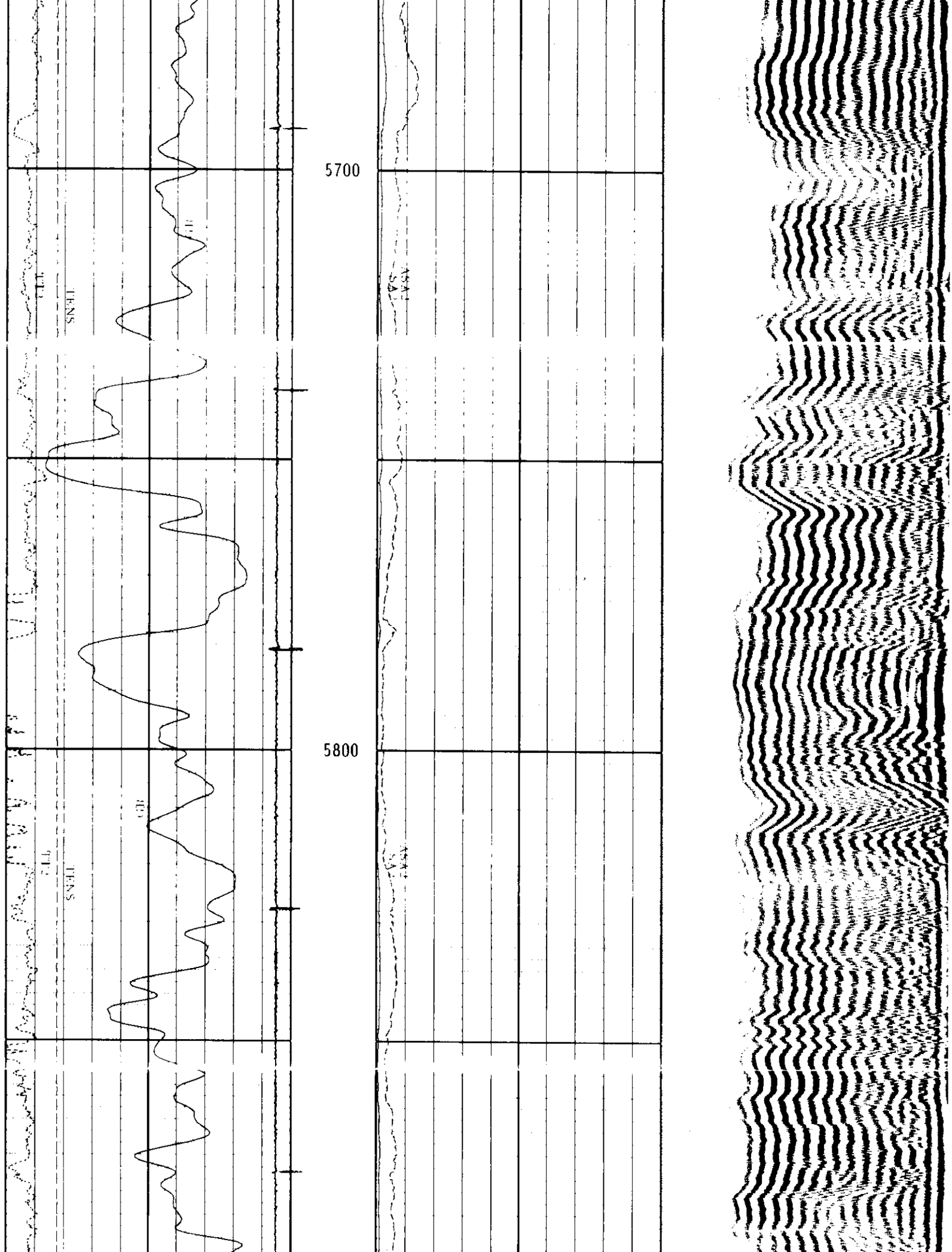
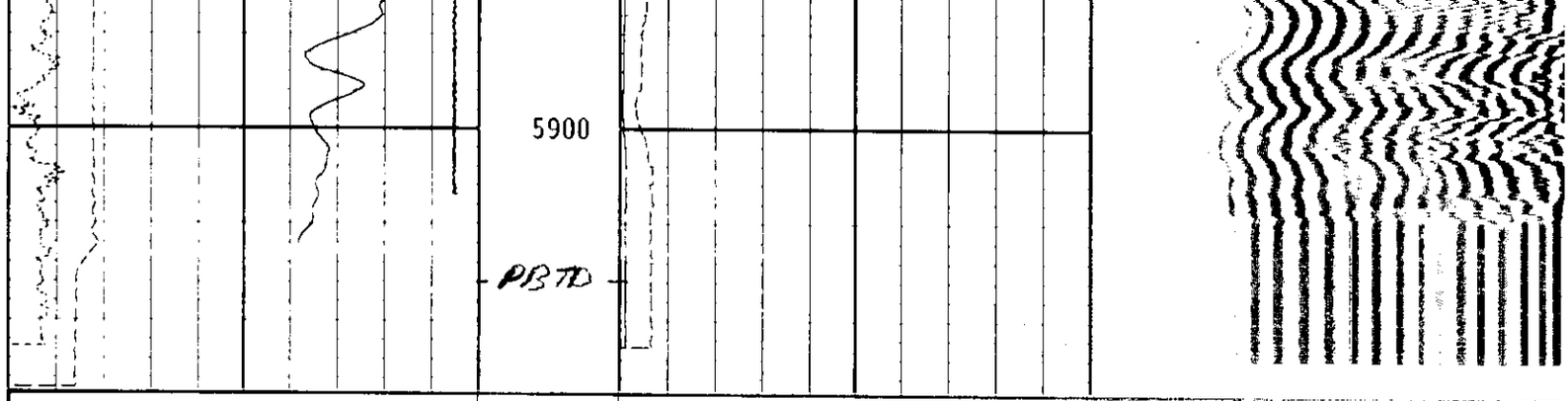
5600
GR
TENS
ASA2
SA1


5700
5800
TENS
TENS



-250	CCL (LINE)	250						
0	GR (LINE)	150						
265	TT2 (DOT)	165	0	ASA2 (DASH)	20			
0	TENS (DASH)	4000	0	SA2 (LINE)	100	200	VDL (LINE)	1200

Film Scale 5 in = 100 feet (5 inch)

Sensor Measure Point to Tool Zero

SLTJ FREC	3.5	ft
[illegible]	[illegible]	ft
[illegible]	[illegible]	ft
CCL-A	20.2	ft
TENS	0.0	ft
SPEED	0.0	ft

Software Version UX126
Logging Pass Start Depth 5943.5 ft
Logging Pass Stop Depth 5638.3 ft

Pass No 1
Job Name 55067000

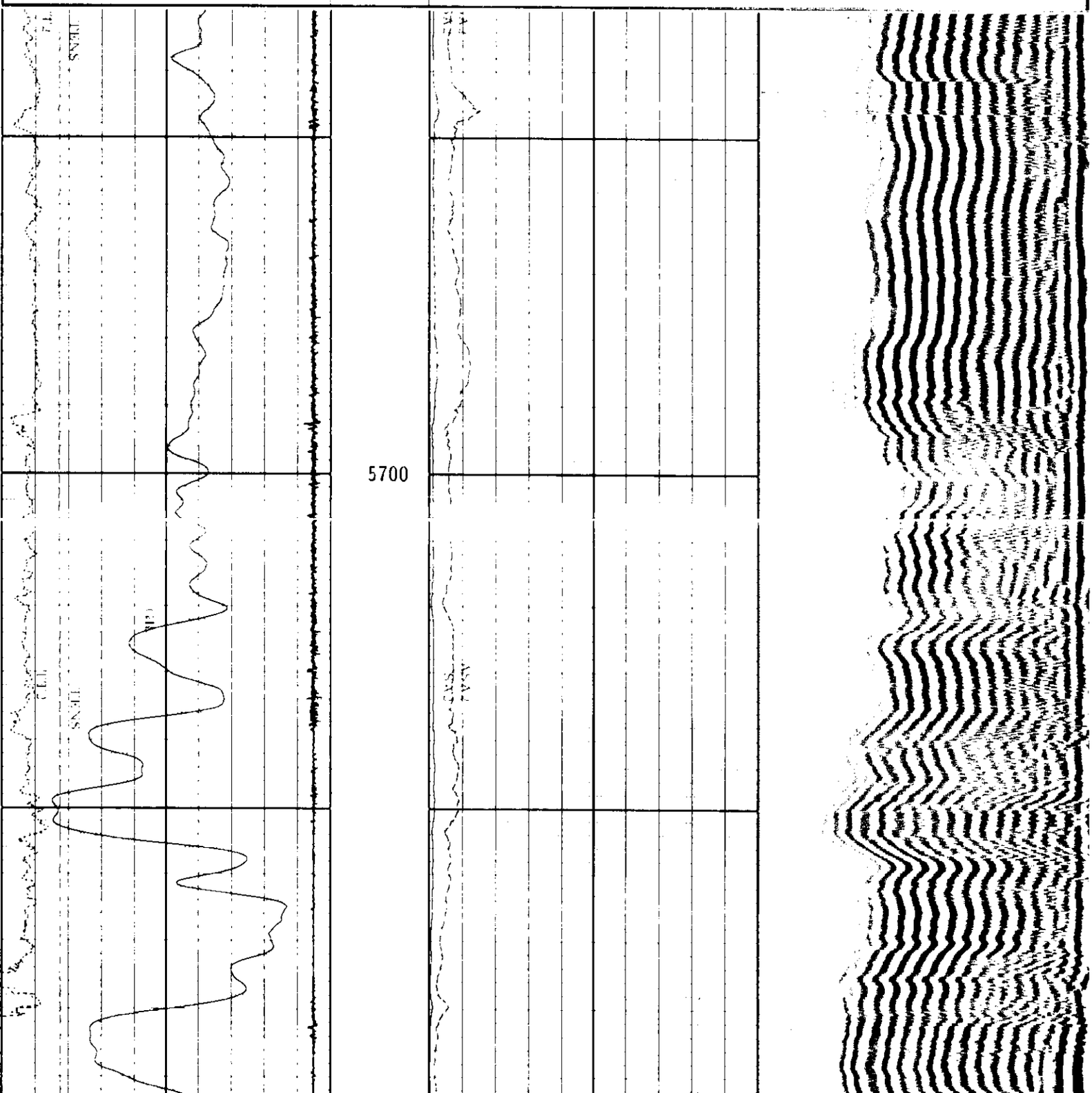
PLAYBACK OFFSET REPORT

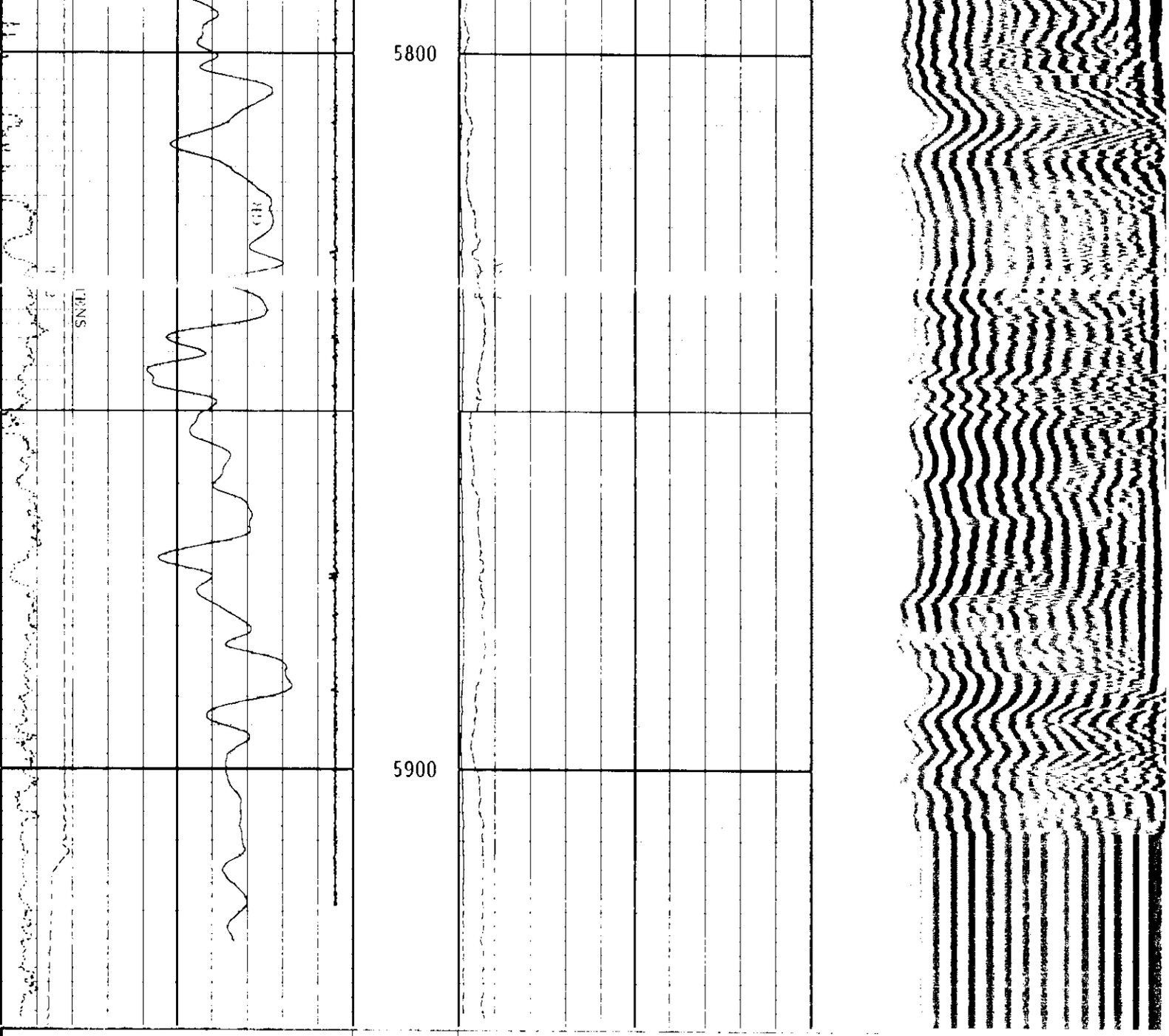
Fire Offset = 4.0 ft.

SCALE CHANGE REPORT
NO SCALE CHANGES THIS FILE

REPEAT SECTION

-250	CCL (LINE)	250	0	ASA2 (DASH)	20			
0	GR (LINE)	150	0	SA2 (LINE)	100	200	VDL (LINE)	1200
265	TT2 (DOT)	165						
0	TENS (DASH)	4000						





-250	CCL (LINE)	250
0	GR (LINE)	150
265	TT2 (DOT)	165

0	ASA2 (DASH)	20

REPEAT SECTION

Film Scale 5 in = 100 feet (5 inch)

Sensor Measure Point to Tool Zero

SLTJ FREC	3.5	ft.
SLTJ NREC	4.5	ft.
SGTG GR	15.5	ft.
CCL-AJ	20.2	ft.
TENS	0.0	ft.
SPEED	0.0	ft.

ATTACHMENT NO. 8

OPEN HOLE LOG FOR THE UIC WELL

COMPANY: PETROGLYPH OPERATING COMPANY, INC.

WELL: UTE TRIBAL 03-12

FIELD: ANTELOPE CREEK

COUNTY: DUCHESNE STATE: UTAH

Field: ANTELOPE CREEK
Location: 2272' FNL 575' FWL
Well: UTE TRIBAL 03-12
Company: PETROGLYPH OPERATING

Schlumberger

LITHO DENSITY COMPENSATED NEUTRON GAMMA RAY LOG

LOCATION

2272' FNL 575' FWL
NW/SW
43-013-31706

Elev.: K.B. 5964 F
G.L. 5954 F
D.F. 5963 F

Permanent Datum: GROUND LEVEL Elev.: 5954 F
Log Measured From: KELLY BUSHING 10.0 F above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	SECTION	TOWNSHIP	RANGE
	3	5S	3W

	Run 1	Run 2	Run 3
Logging Date	27-SEP-1996		
Run Number	ONE		
Depth Driller	6474 F		
Schlumberger Depth	6480 F		
Bottom Log Interval	6462 F		
Top Log Interval	252 F		
Casing Driller Size @ Depth	8.625 IN @ 280 F	@	@
Casing Schlumberger	252 F		
Bit Size	7.875 IN		
Type Fluid In Hole	KCL WATER		
MUD Density / Viscosity	8.4 LB/G / 0 S		
MUD Fluid Loss / PH	0 C3 / 10.4		
Source Of Sample	MUD TANK		
RM @ Measured Temperature	2.750 OHMM @ 65 DEGF	@	@
RMF @ Measured Temperature	3.250 OHMM @ 65 DEGF	@	@
RMC @ Measured Temperature	0 OHMM @ 65 DEGF	@	@
Source RMF / RMC	MUD TANK		
RM @ MRT / RMF @ MRT	1.373 @ 137 / 1.622 @ 137	@ / @	@ / @
Maximum Recorded Temperatures	137 DEGF		
Circulation Stopped / Time	27-SEP-1996 / 14:00		
Logger On Bottom / Time	27-SEP-1996 / 17:40		
Unit Number / Location	8426 VERNAL, UT		
Recorded By	BRIAN WYLIE		
Witnessed By	GENE SEARLE		

RECEIVED
NOV 12 1996
DIV. OF OIL, GAS & MINING

Run 2

Run 3

Run 4

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO CLAUSE 4 OF OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

OTHER SERVICES1	OTHER SERVICES2
OS1: AITH	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

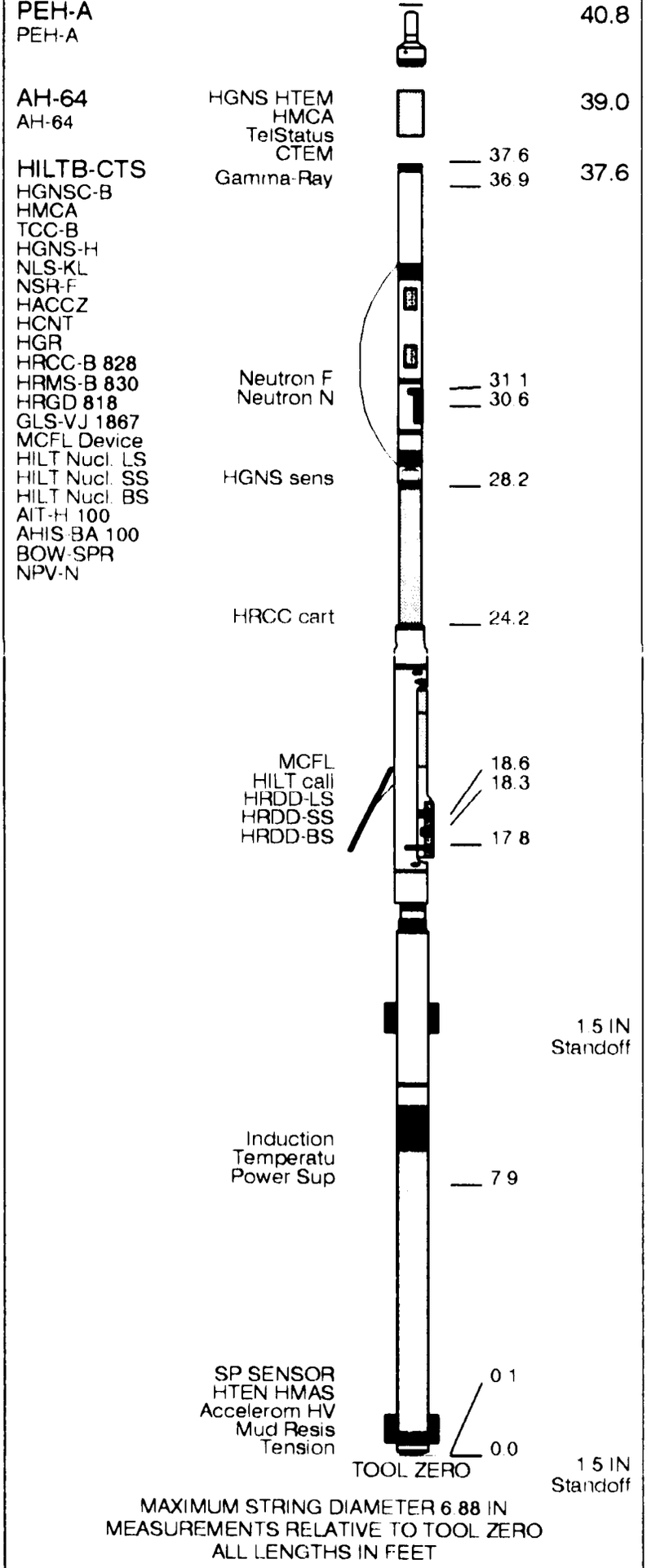
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
SANDSTONE MATRIX: 2.68	
THIS LOG CREATED USING THE	
PLATFORM EXPRESS TOOLSTRING	
BOWSPRING RUN ON NEUTRON	
TWO 1.5 INCH STANDOFFS RUN ON AIT-H	
REDUCED DLIS FILE SENT TO HUB FOR PC FLOPPY	
CREW: SUNKEES / CRITTON	
THANK YOU FOR CHOOSING SCHLUMBERGER WELL SERVICES	

RUN 1		RUN 2	
SERVICE ORDER #	646594	SERVICE ORDER #:	
PROGRAM VERSION:	7C0-427	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1	RUN 2
SURFACE EQUIPMENT	
TCM-AB GSR-U/Y NCT-B CNB-AB NCS-VB	
DOWNHOLE EQUIPMENT	


PEH-A
PEH-A
40.8
AH-64
AH-64
HGNS HTEM
HMCA
TelStatus
CTEM
39.0
HILTB-CTS
HGNSC-B
HMCA
TCC-B
HGNS-H
NLS-KL
NSR-F
HACCZ
HCNT
HGR
HRCC-B 828
HRMS-B 830
HRGD 818
GLS-VJ 1867
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
AIT-H 100
AHIS-BA 100
BOW-SPR
NPV-N
Gamma-Ray
37.6
36.9
37.6
Neutron F
Neutron N
31.1
30.6
HGNS sens
28.2
HRCC cart
24.2
MCFL
HILT call
HRDD-LS
HRDD-SS
HRDD-BS
18.6
18.3
17.8
1.5 IN
Standoff
Induction
Temperatu
Power Sup
7.9
SP SENSOR
HTEN HMAS
Accelerom HV
Mud Resis
Tension
0.1
0.0
TOOL ZERO
1.5 IN
Standoff
MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Output DLIS Files

DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	100.5 FT
REDUCED_HIP	HILTC .069	FN:11	FIELD	27-SEP-1996 18:15	6492.0 FT	100.5 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 2419.07 F3

Cement Volume = 1397.04 F3 (assuming 5.50 IN casing O.D.)

Computed from 6474.0 FT to 280.0 FT using data channel(s) HCAL

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Tension (TENS)
10000 (LBF)

Density Correction (HDRA)
-0.25 (G/C3) 0.2

Tool/Tot. Drag From D3T to STIA

Cable Drag From STIA to STIT

Stuck Stretch (STIT)
0 (F) 50
100

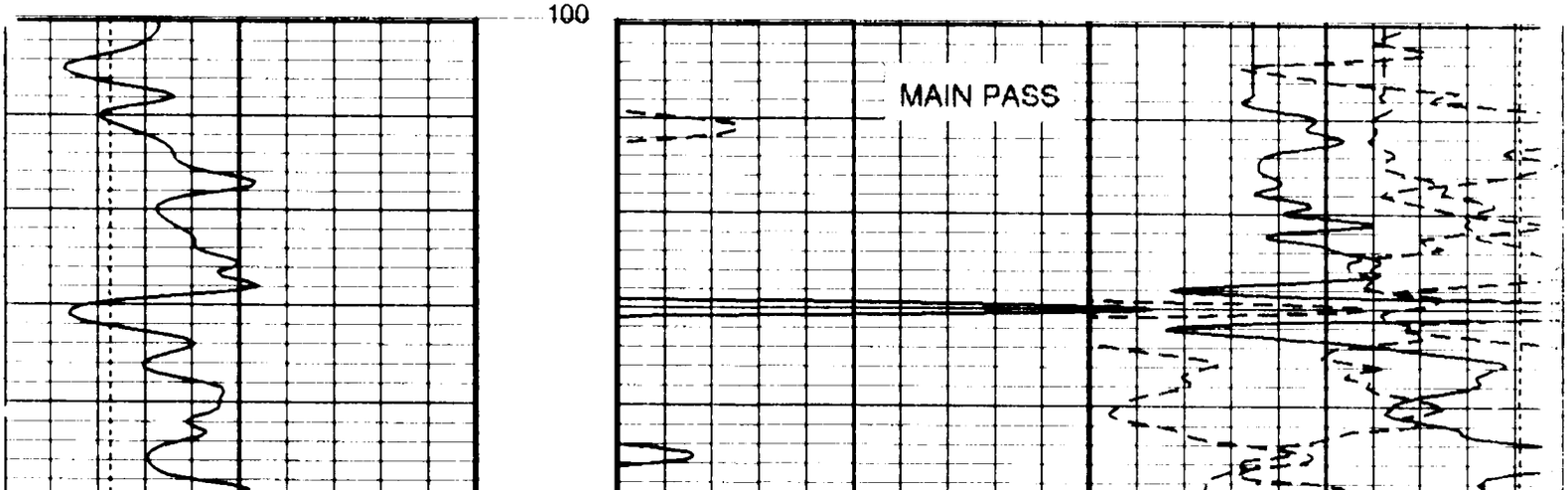
GAS EFFECT From DPHZ to NPOR

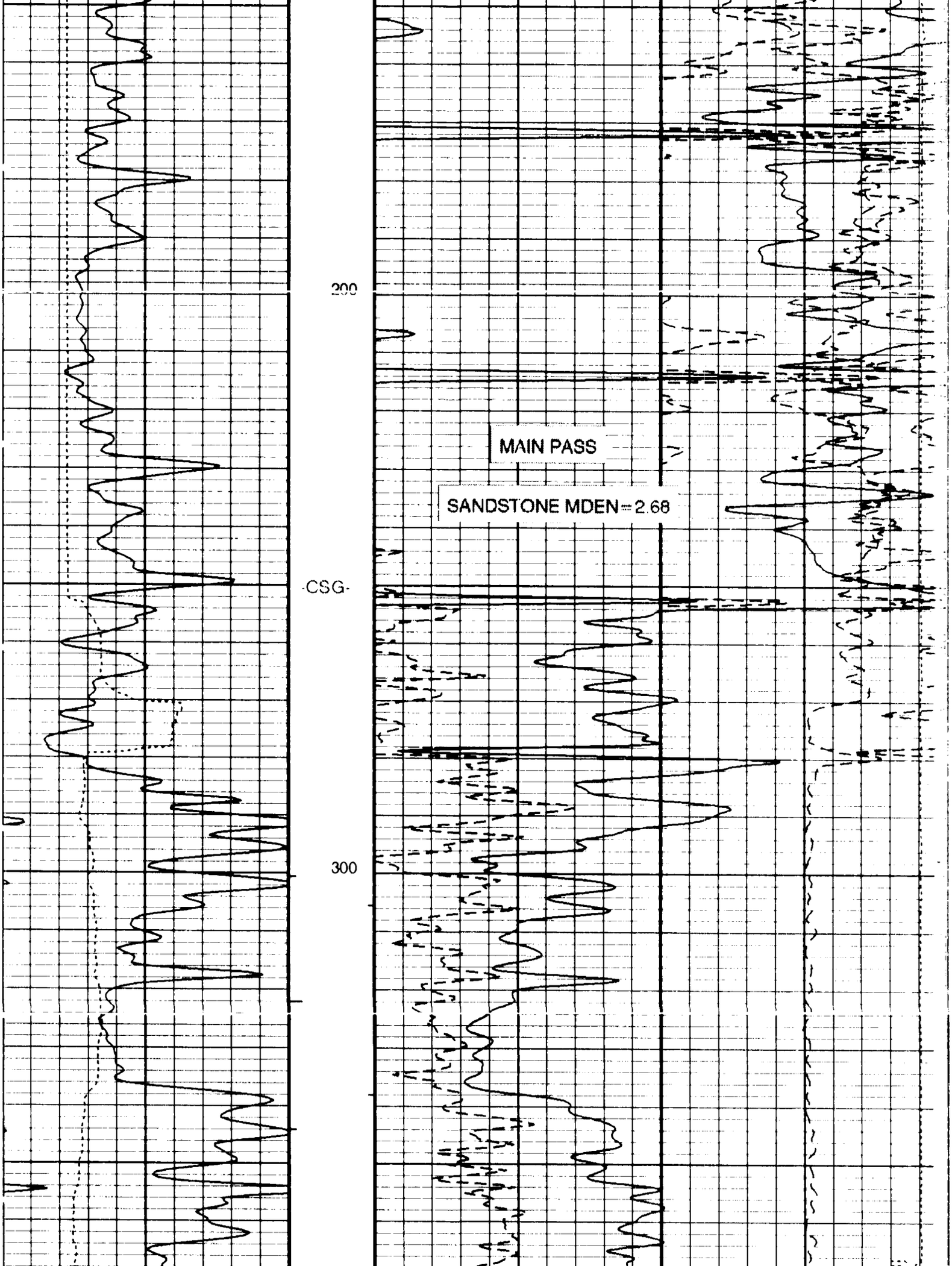
Caliper (HCAL)
6 (IN) 16

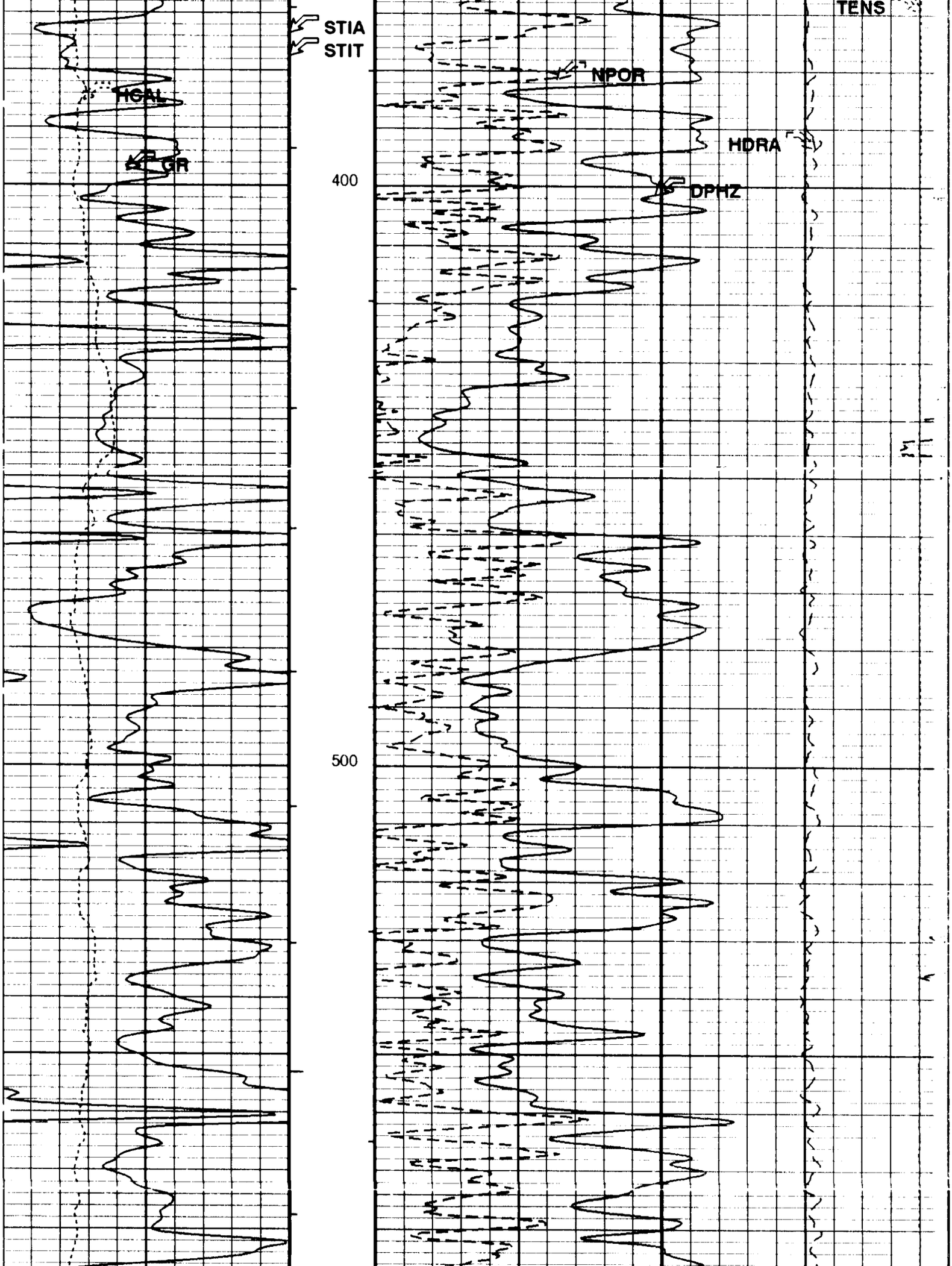
Alpha Processed Neutron Porosity (NPOR)
0.3 (V/V) -0.1

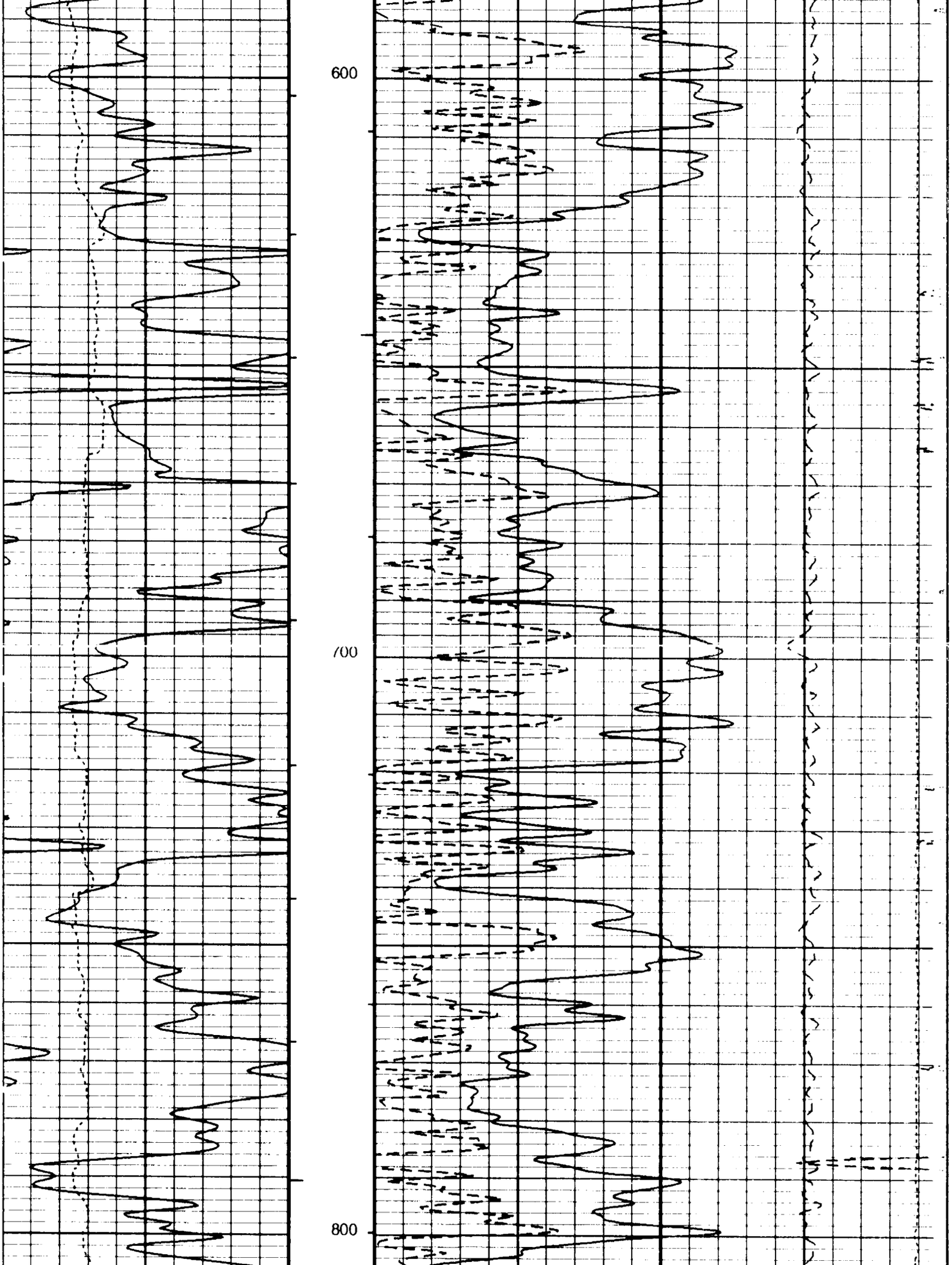
Gamma Ray (GR)
0 (GAPI) 150

Std. Res. Density Porosity (DPHZ)
0.3 (V/V) -0.1




200
MAIN PASS
SANDSTONE MDEN=2.68
-CSG-
300


STIA
STIT
HCAL
GR
NPOR
HDRA
DPHZ
TENS
400
500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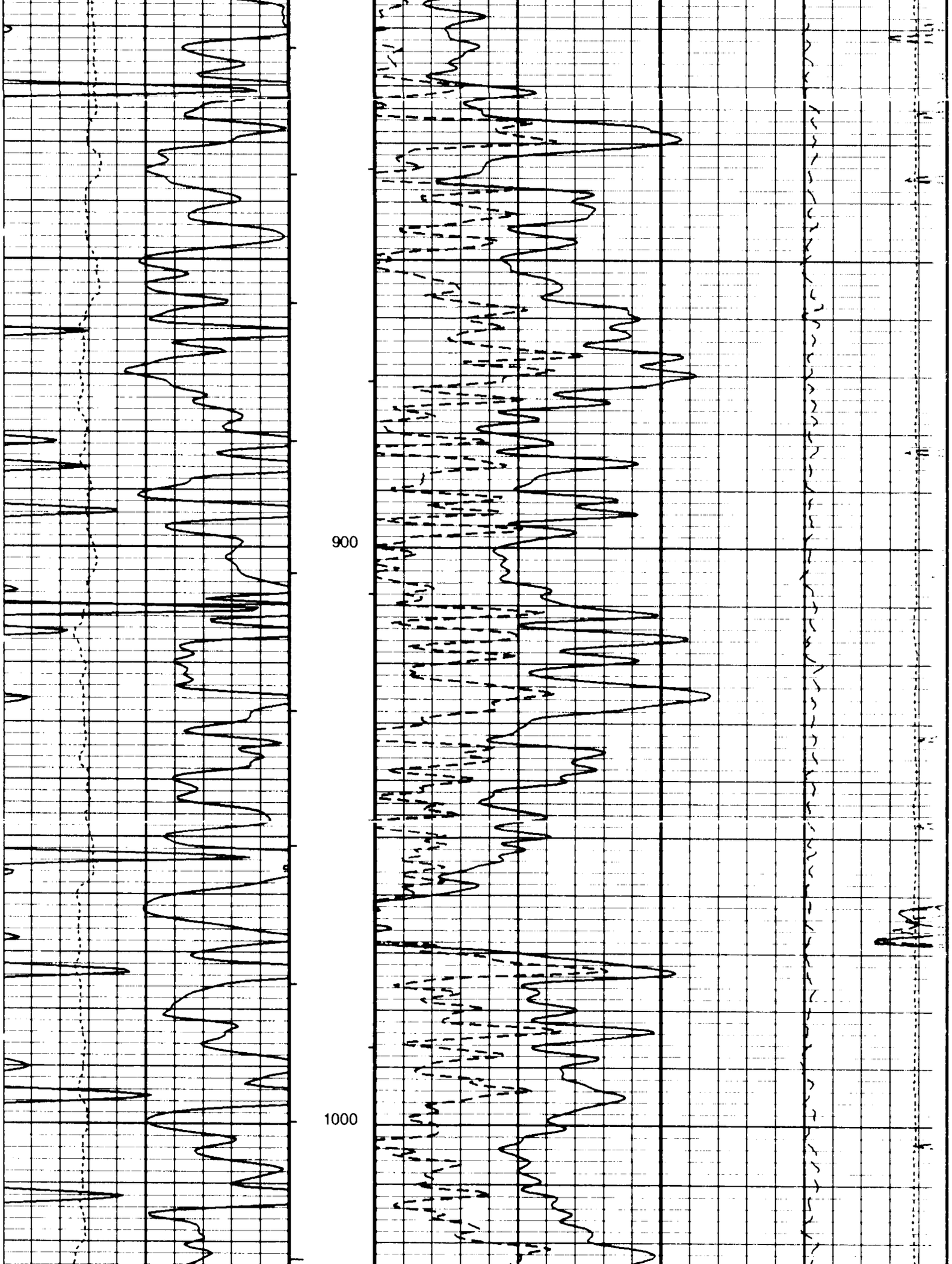
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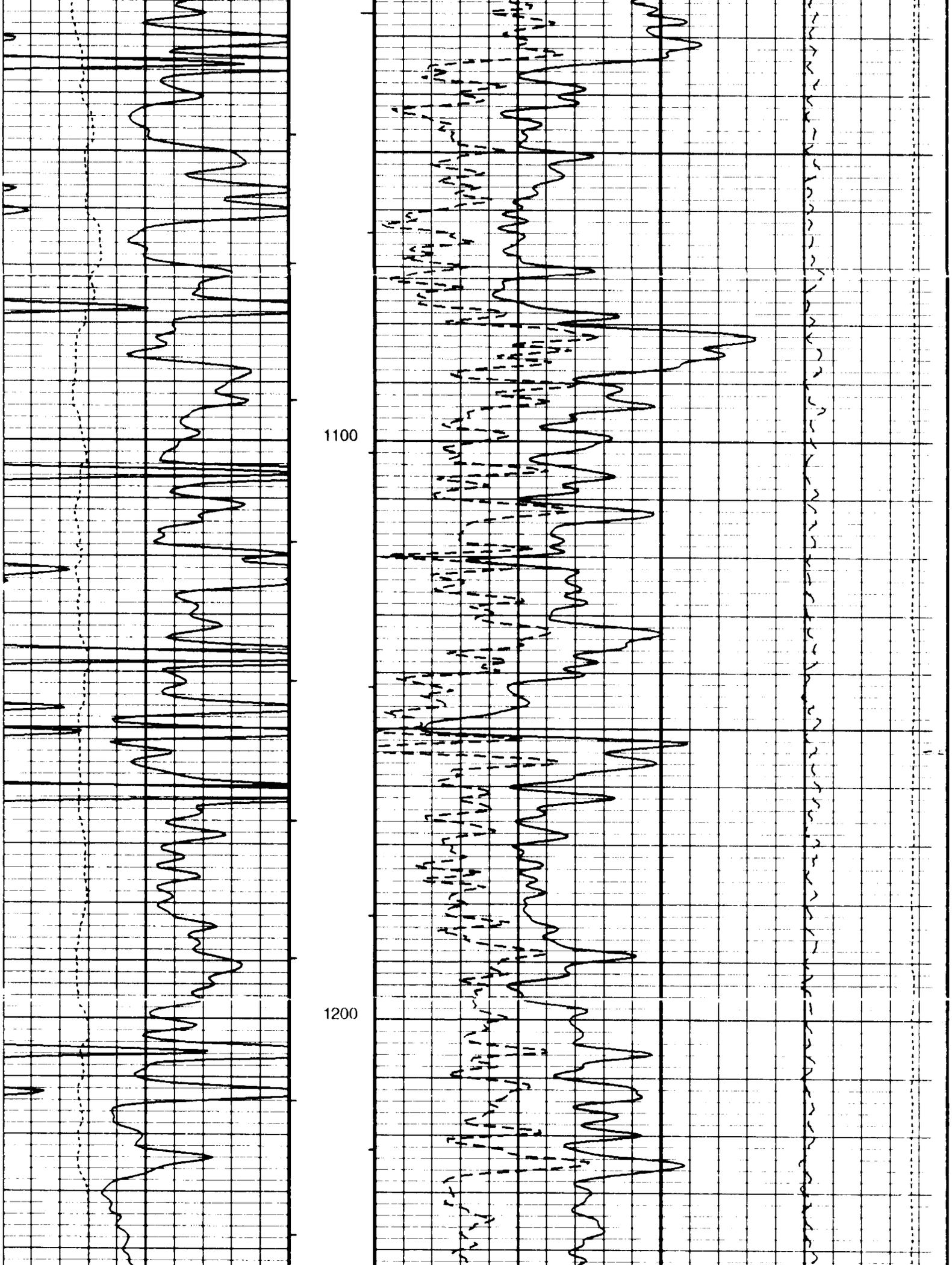
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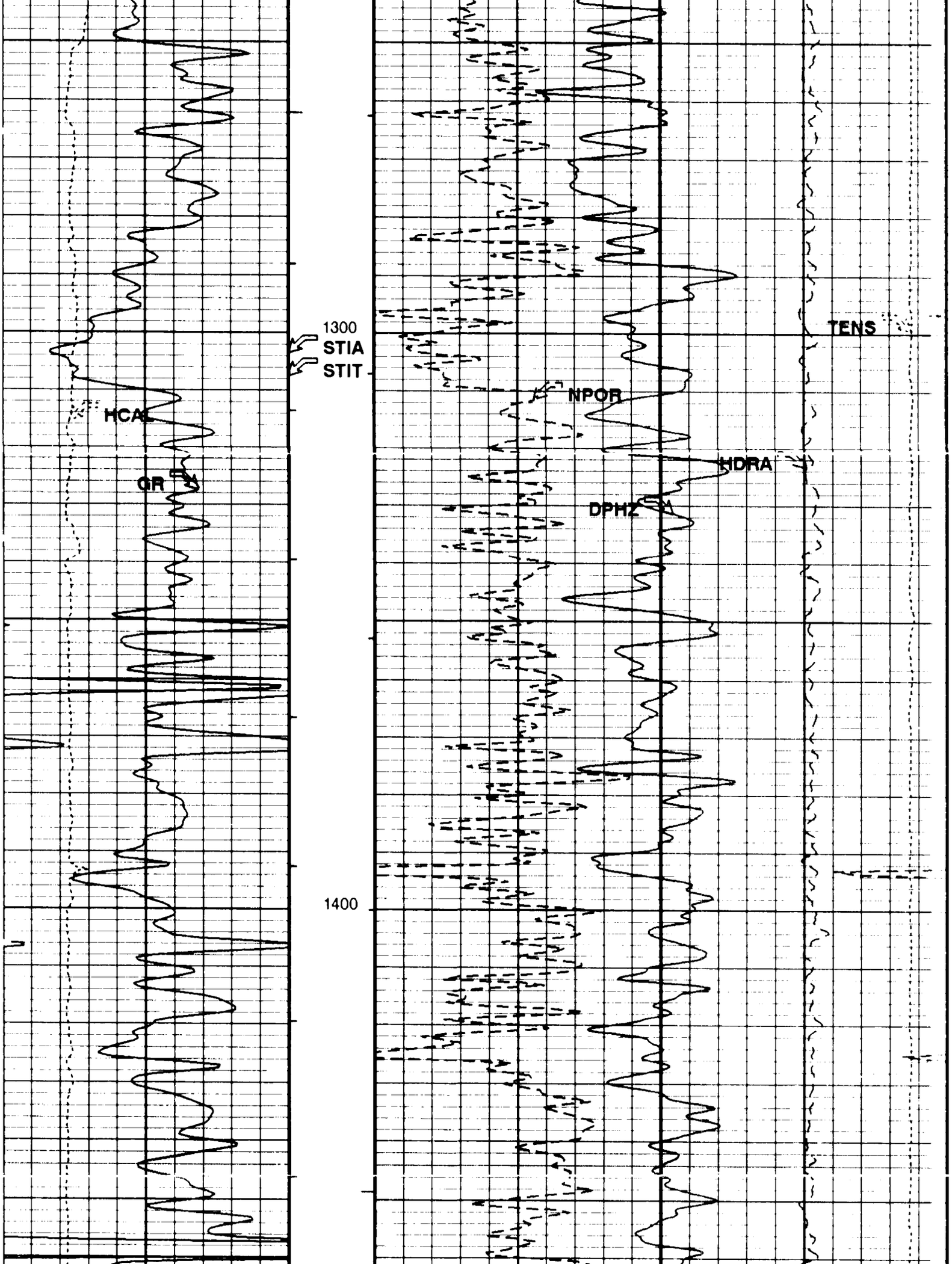
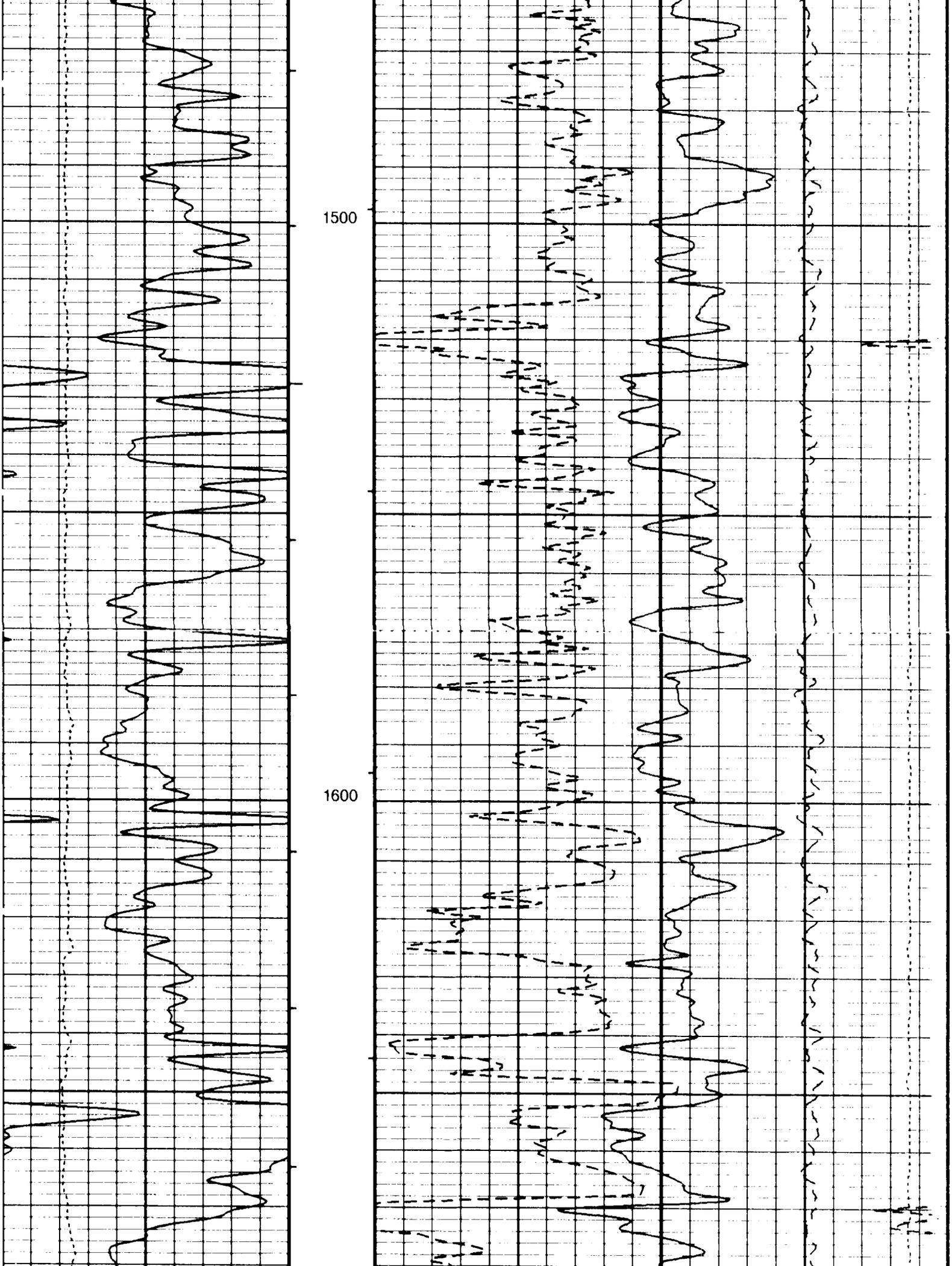

1300
STIA
STIT
HCAL
GR
NPOR
TENS
HDRA
DPHZ
1400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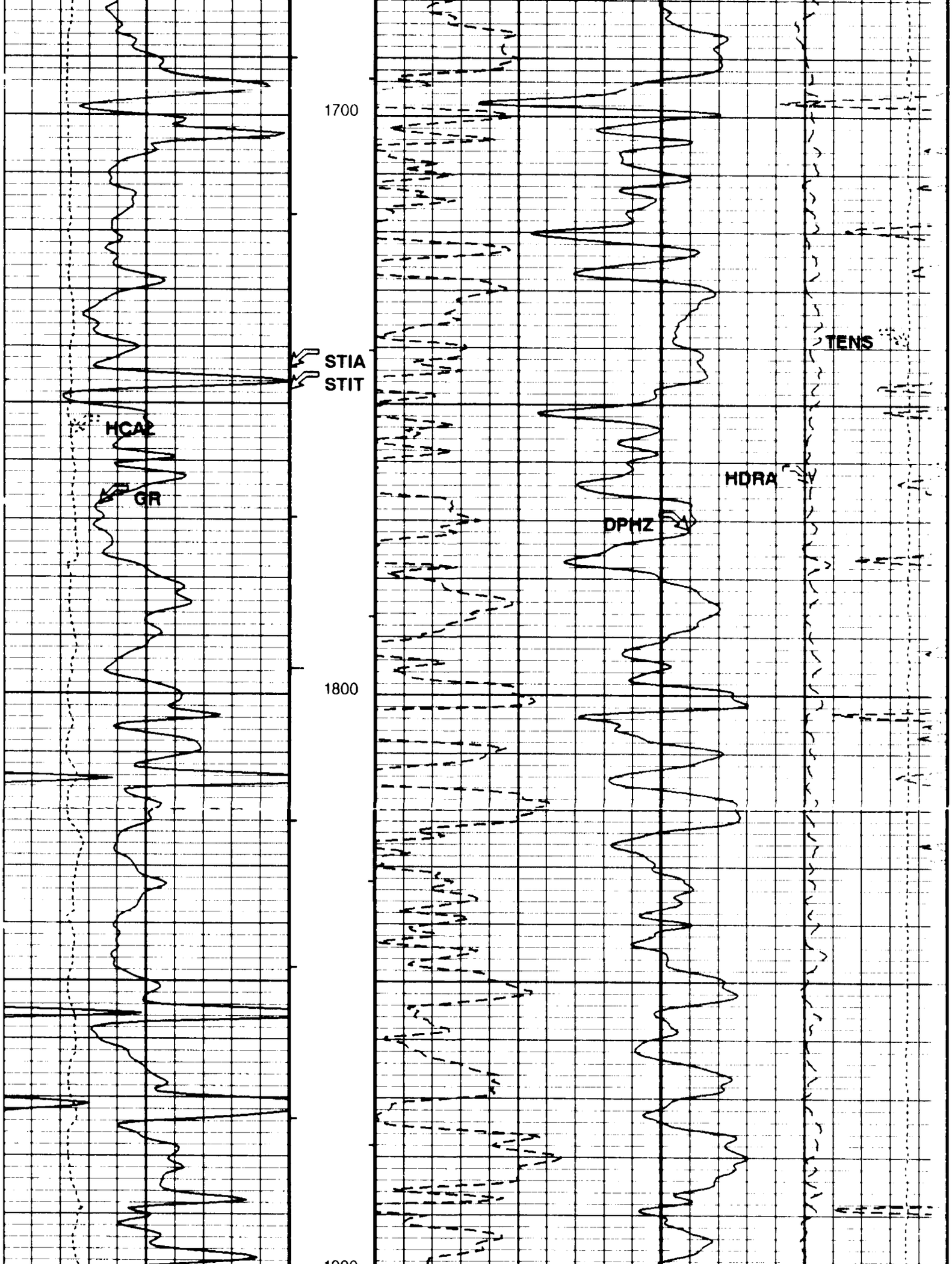
1600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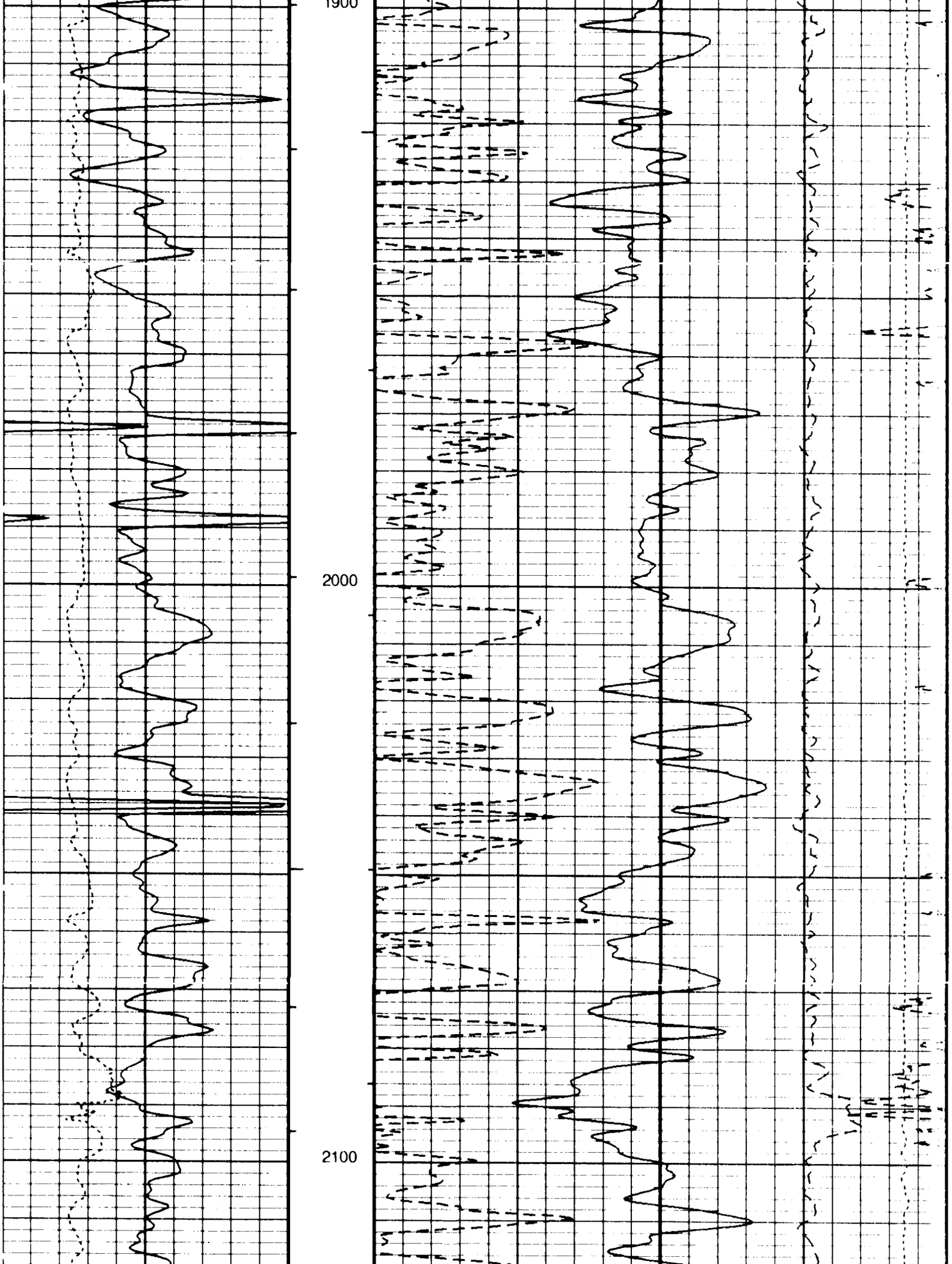
STIT
HCAL
GR
TENS
HDRA
DPHZ
1800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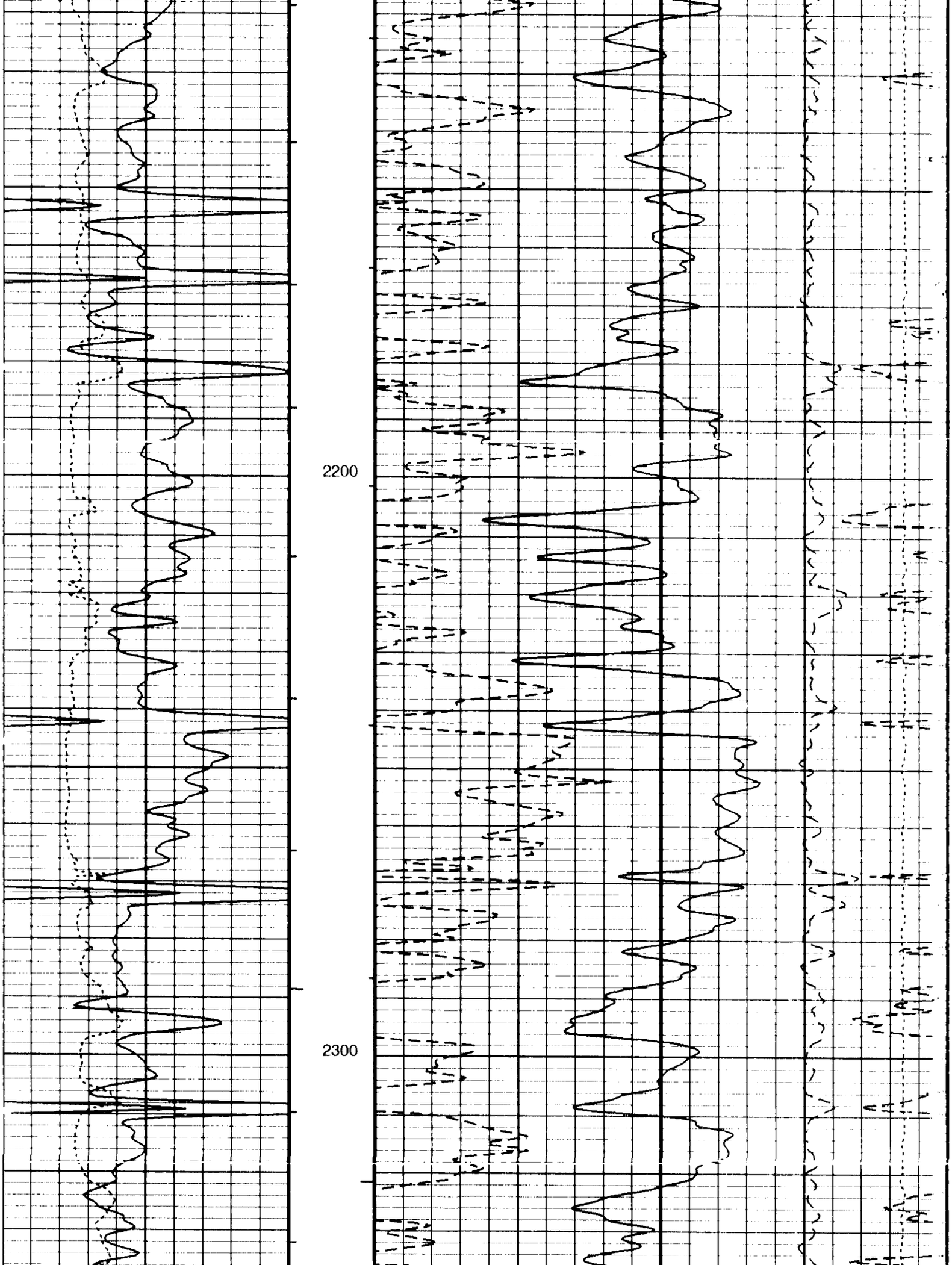
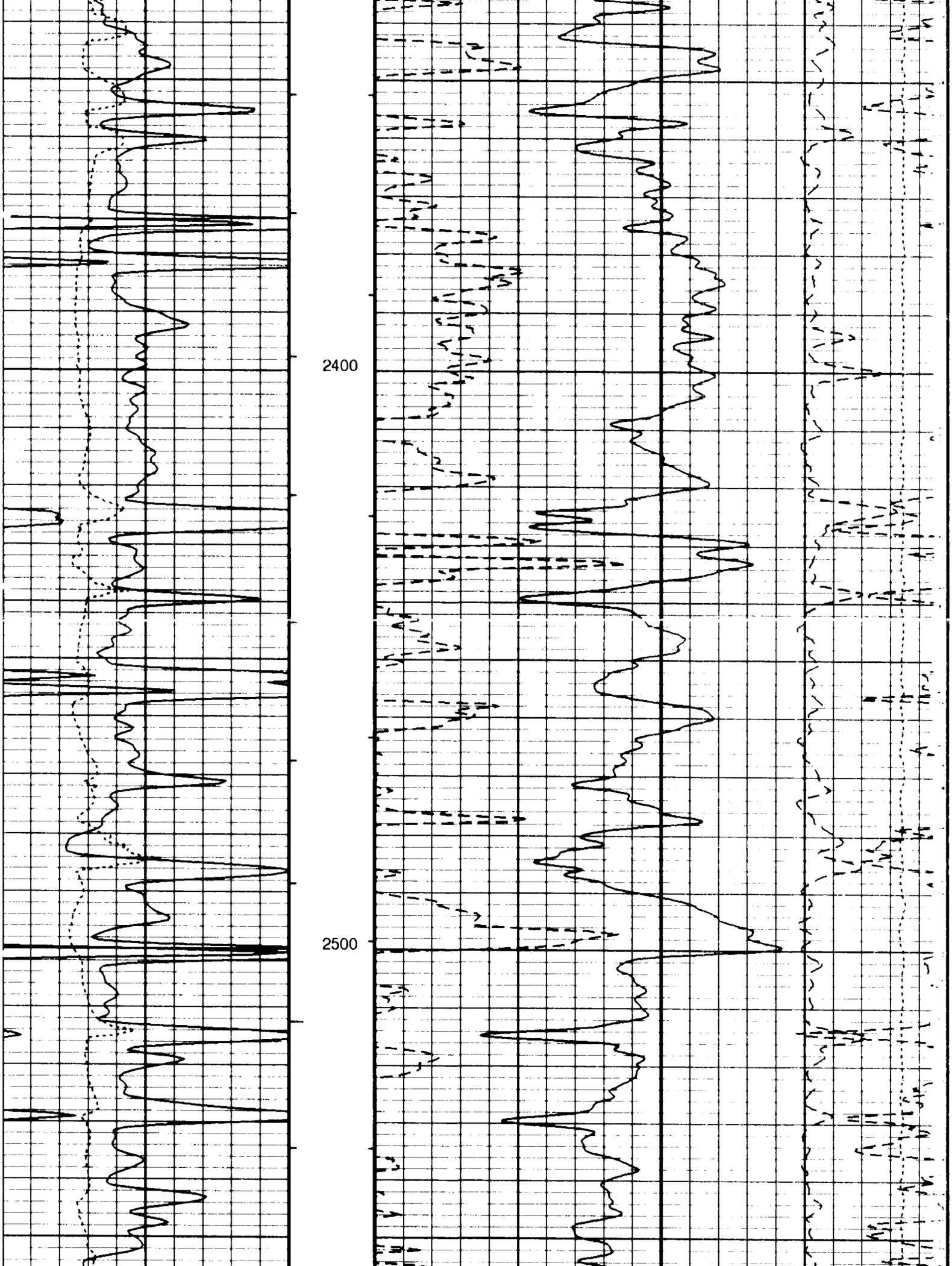

2200
2300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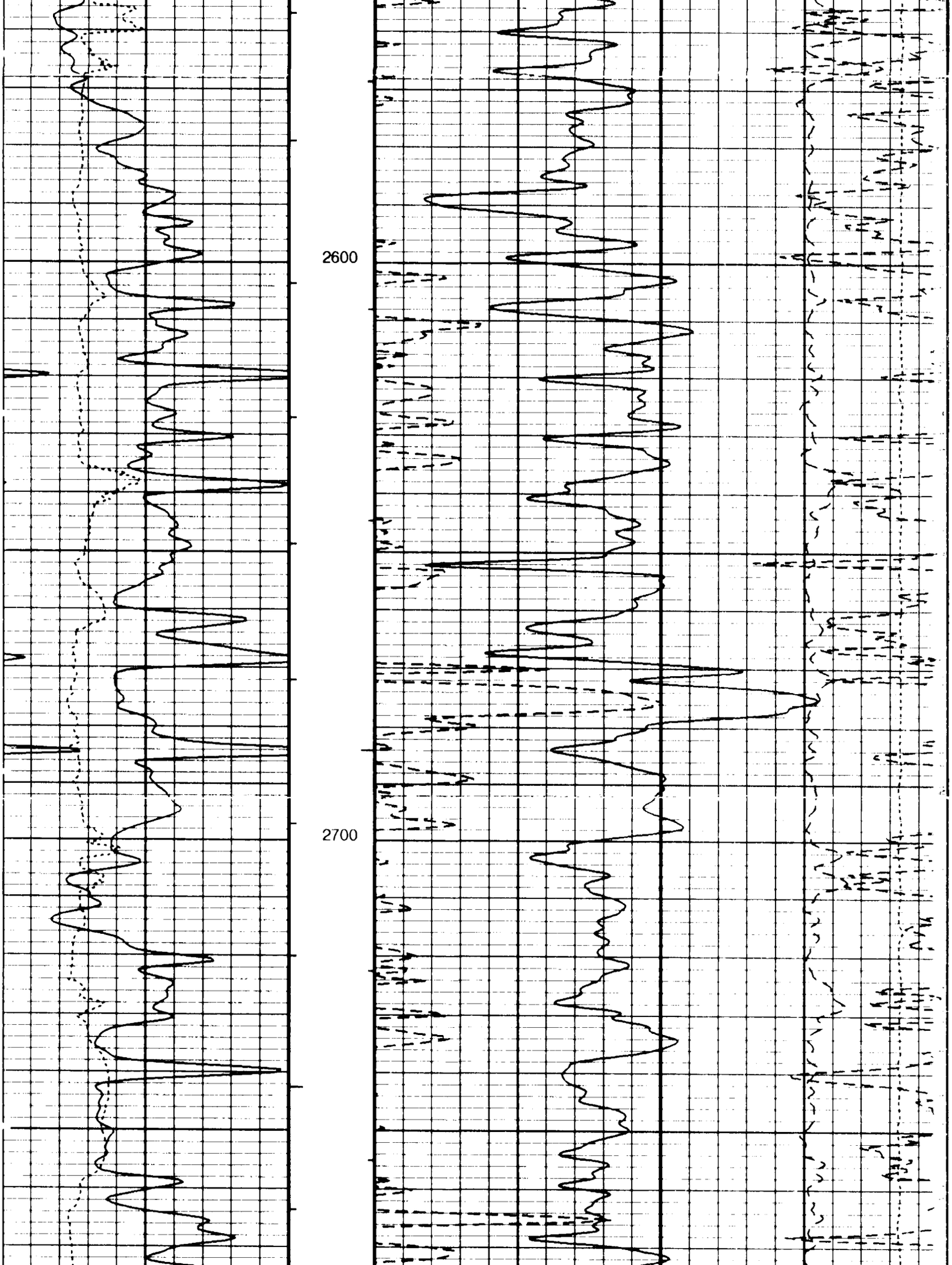
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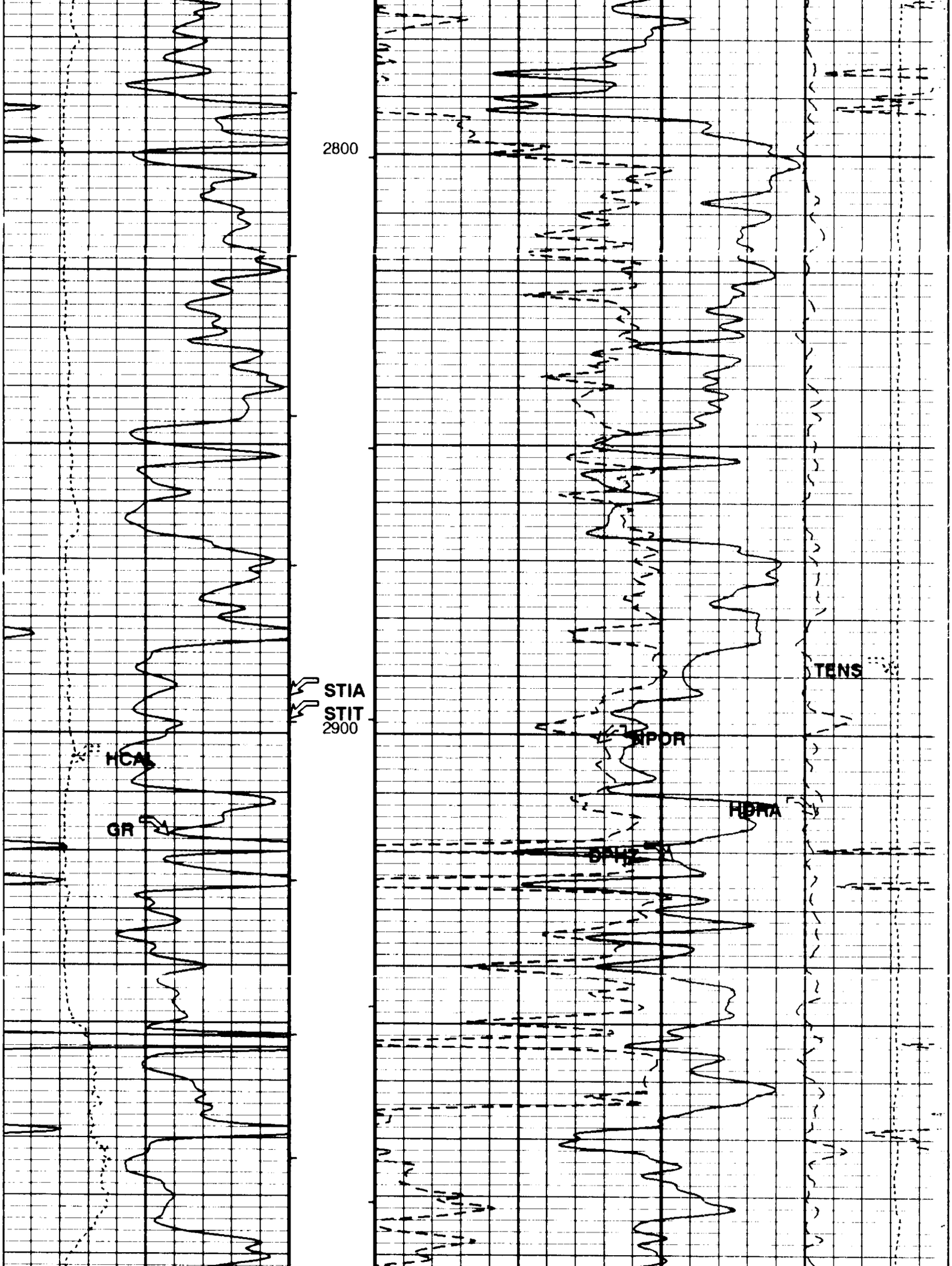
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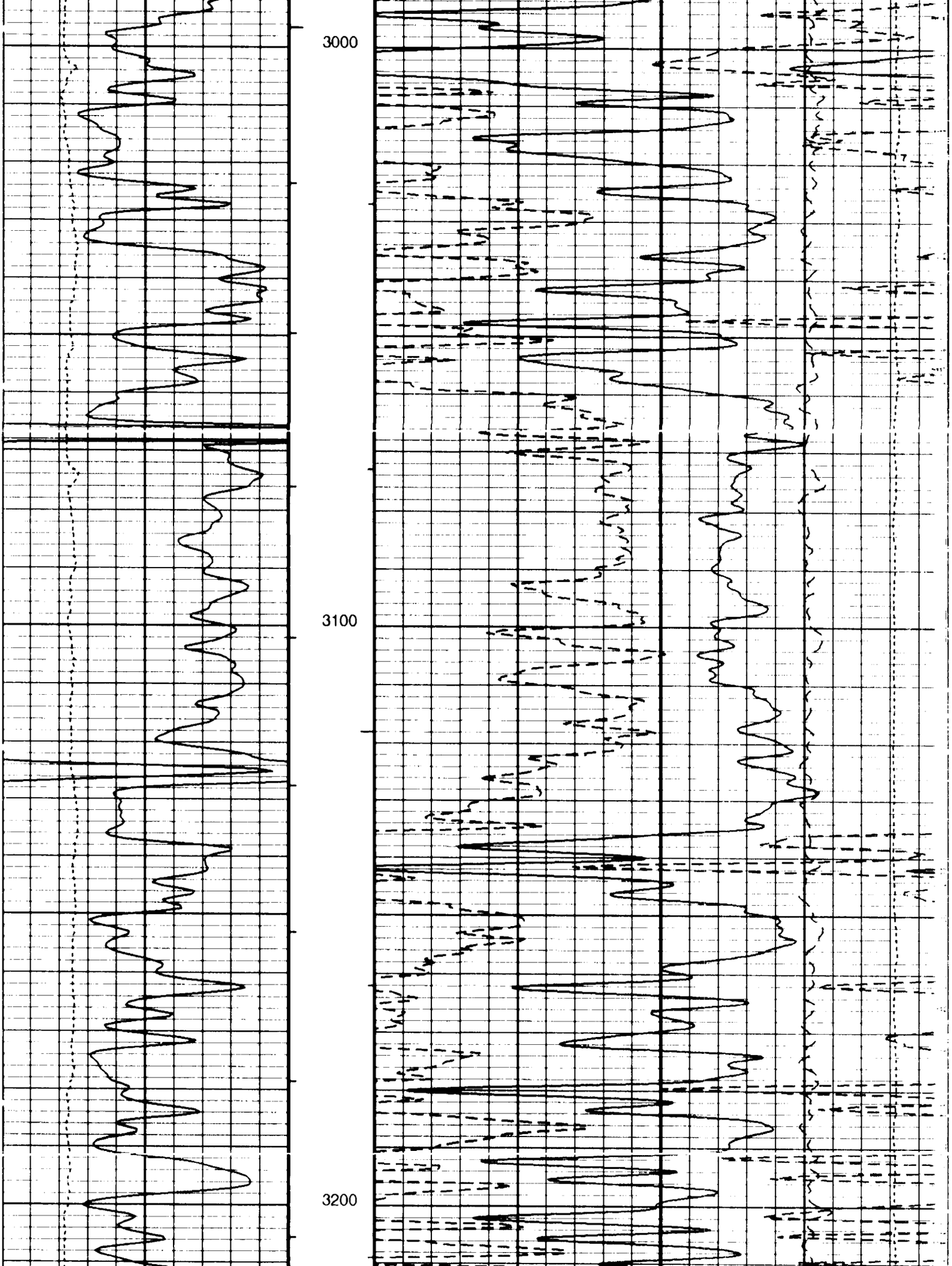
STIT
2900
HCAL
GR
TENS
NPOR
HDRA
DPHZ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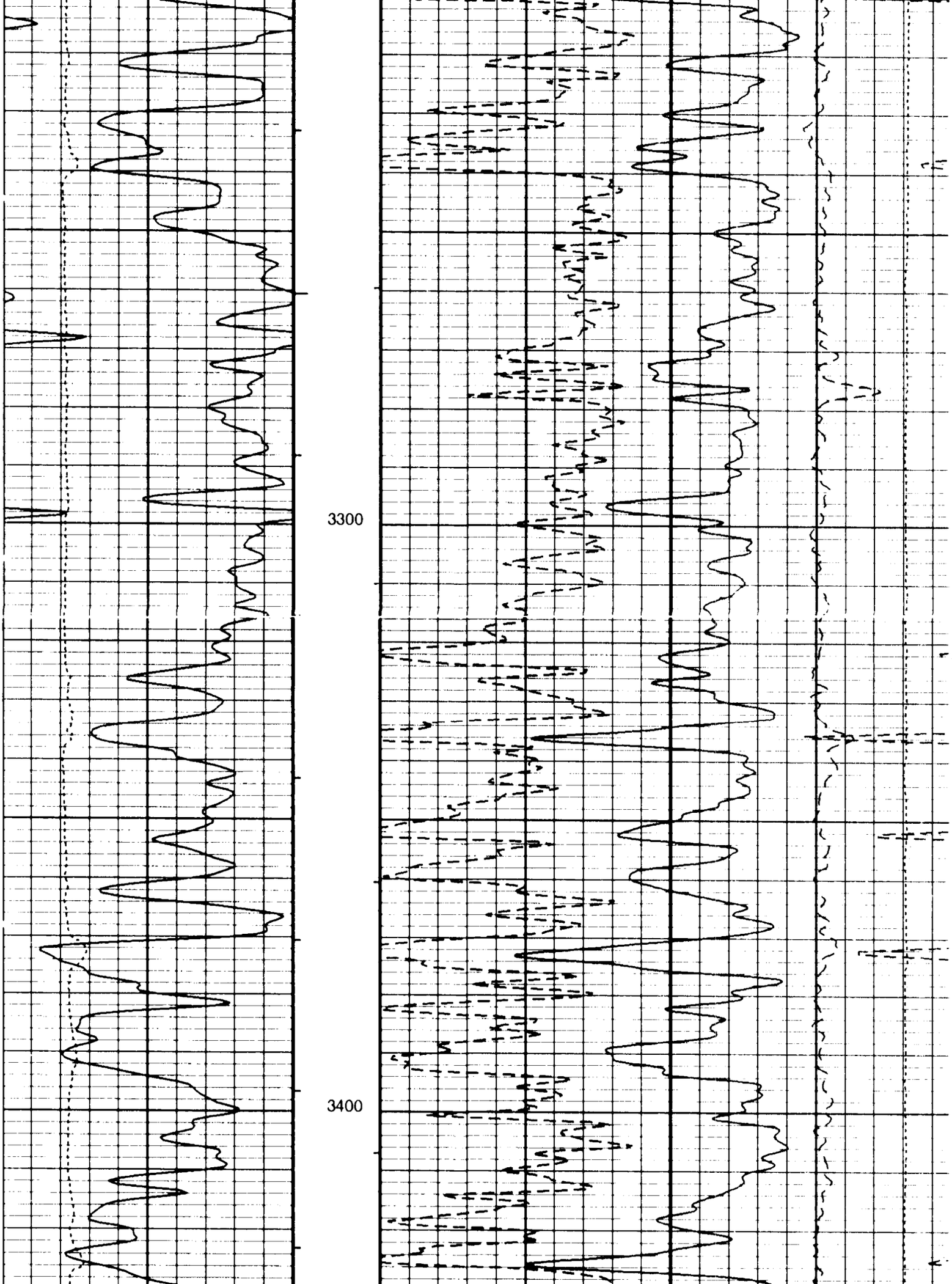
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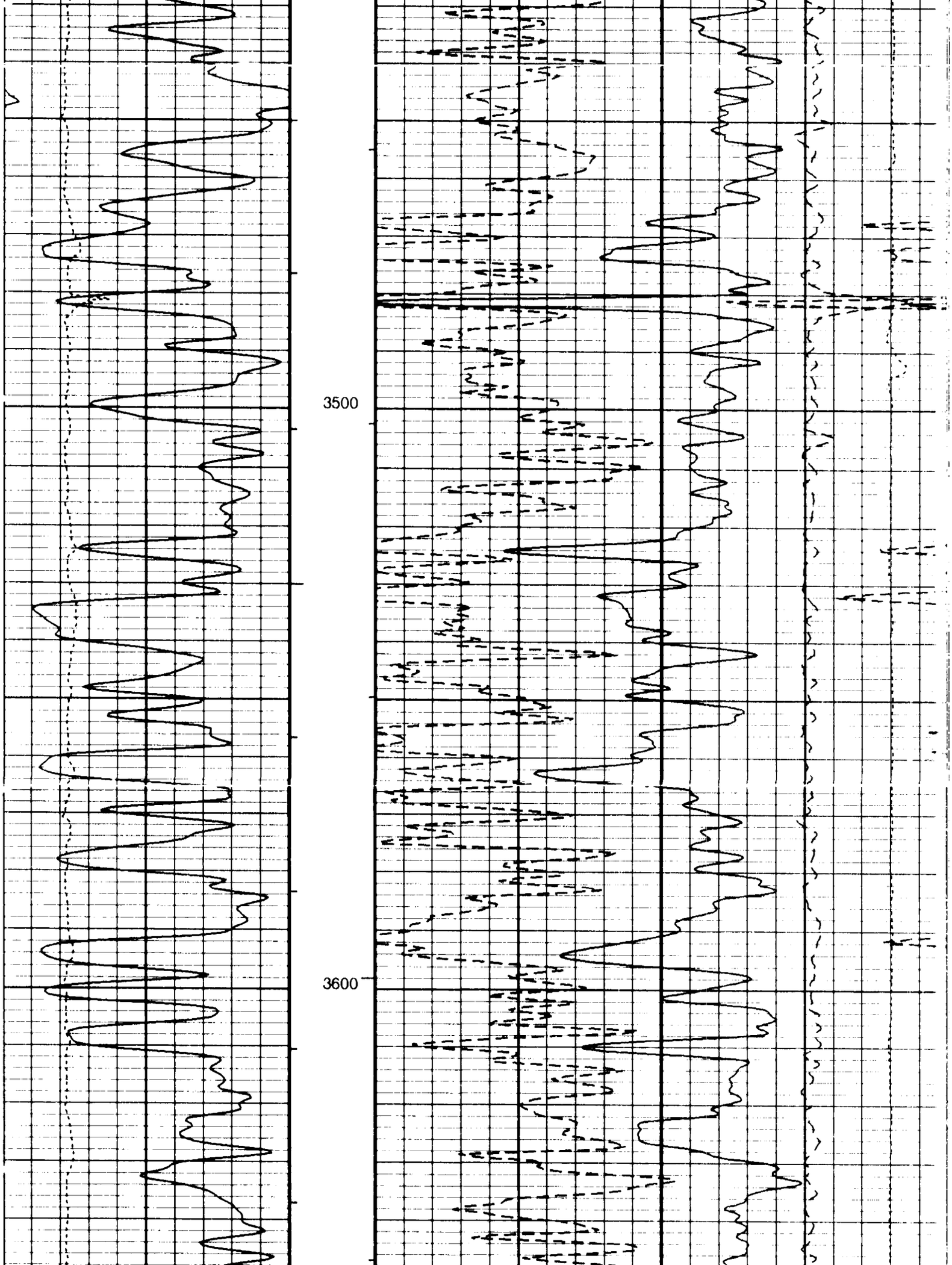
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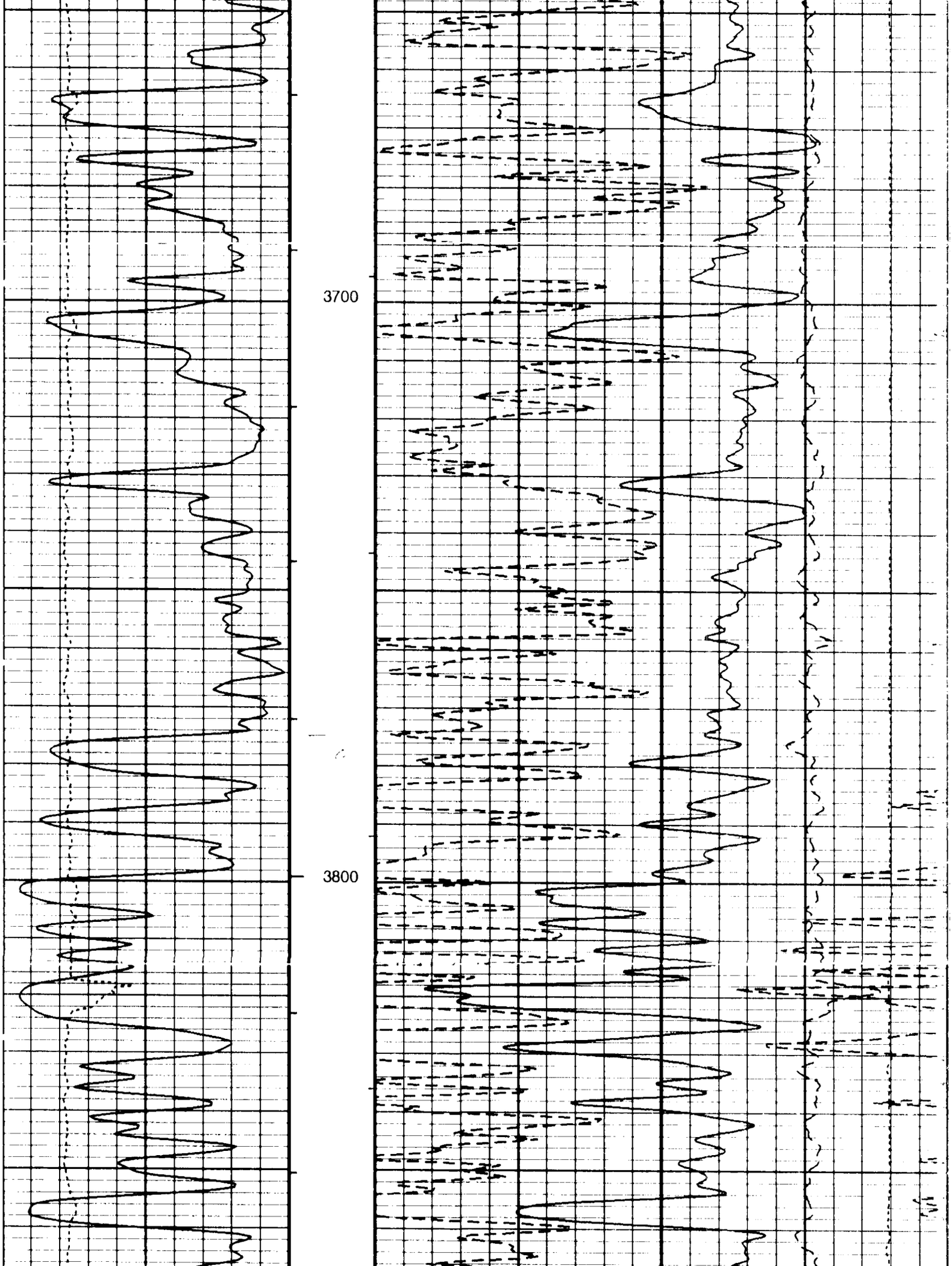
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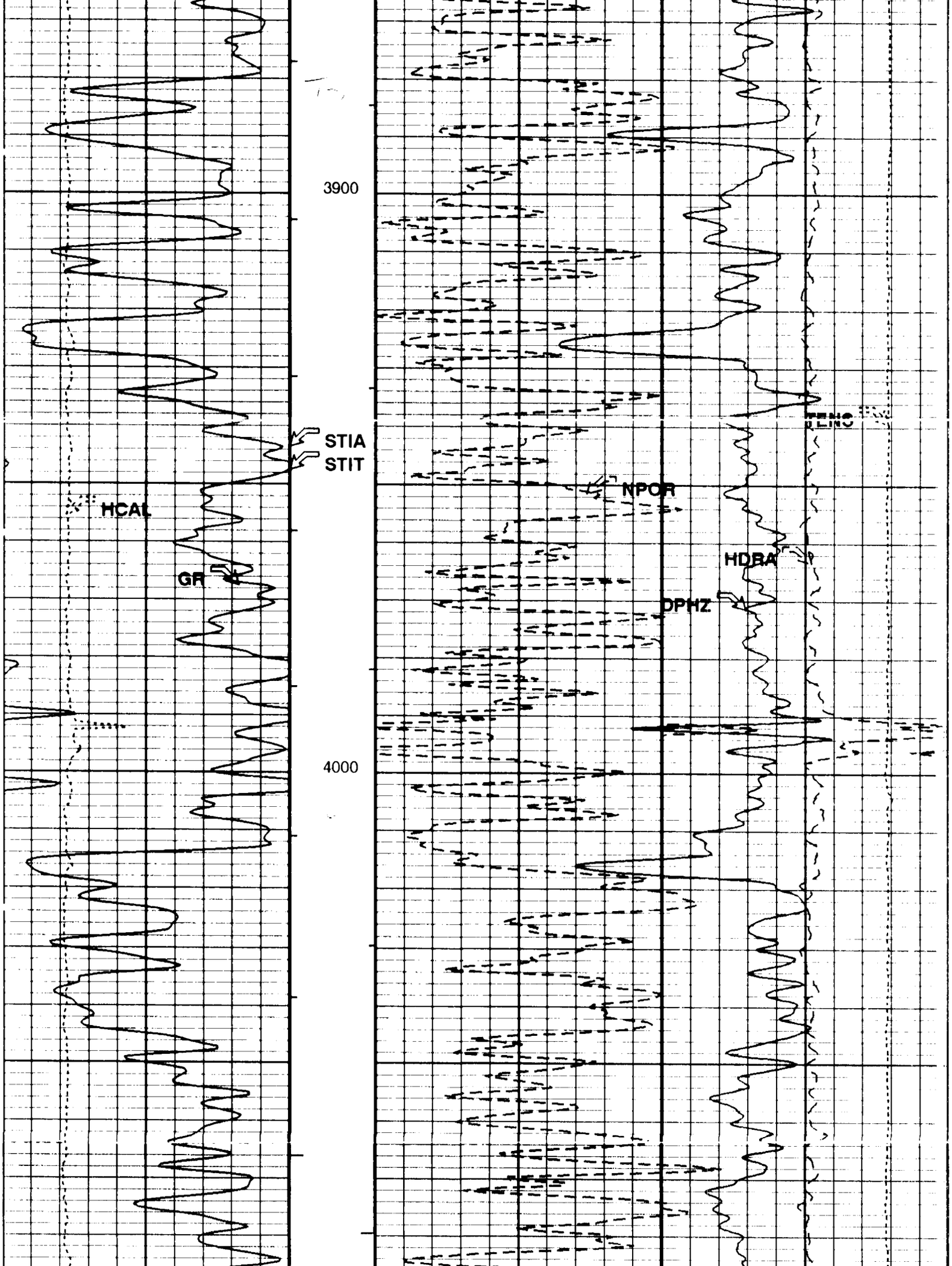
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DPHZ
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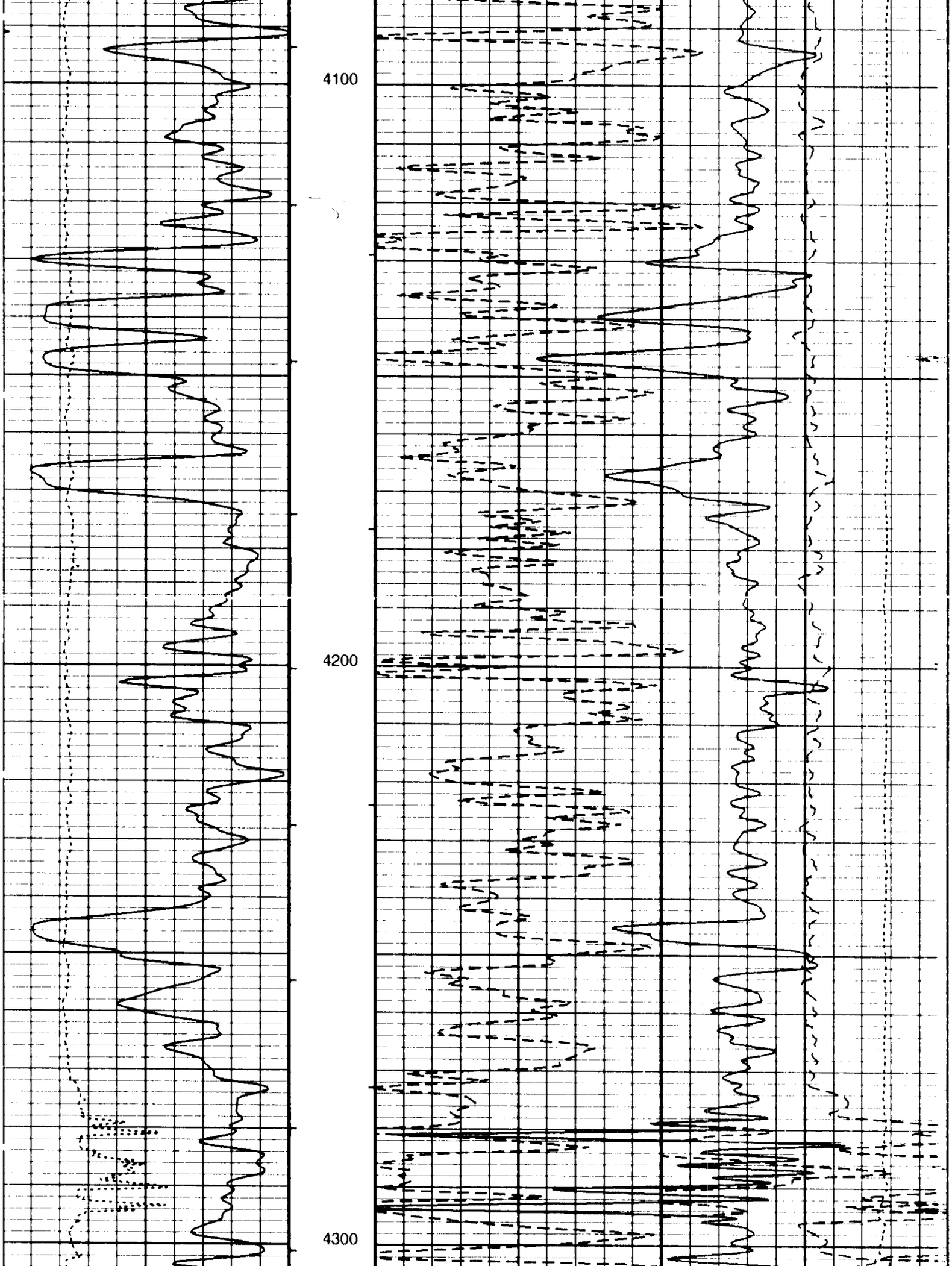
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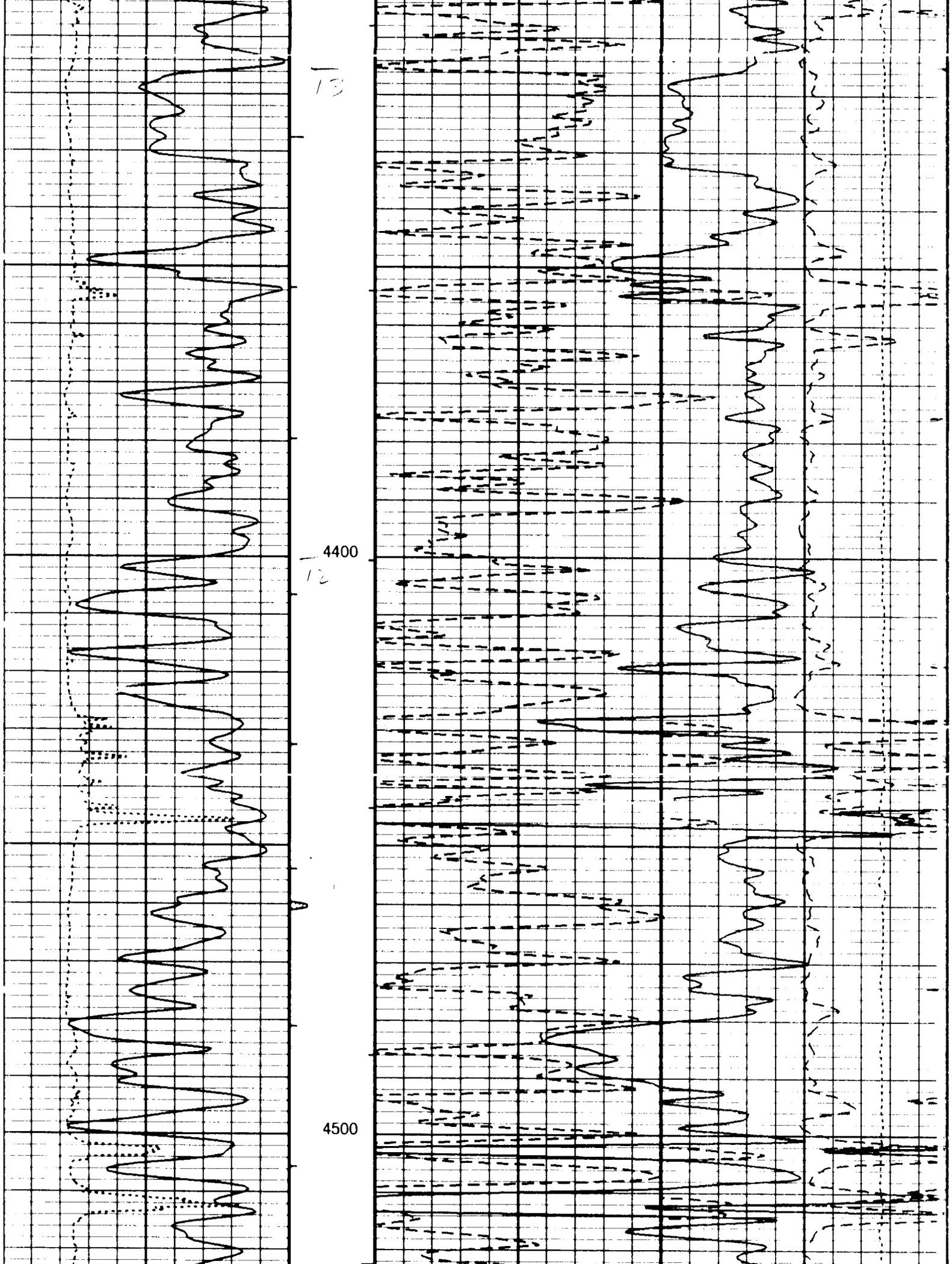
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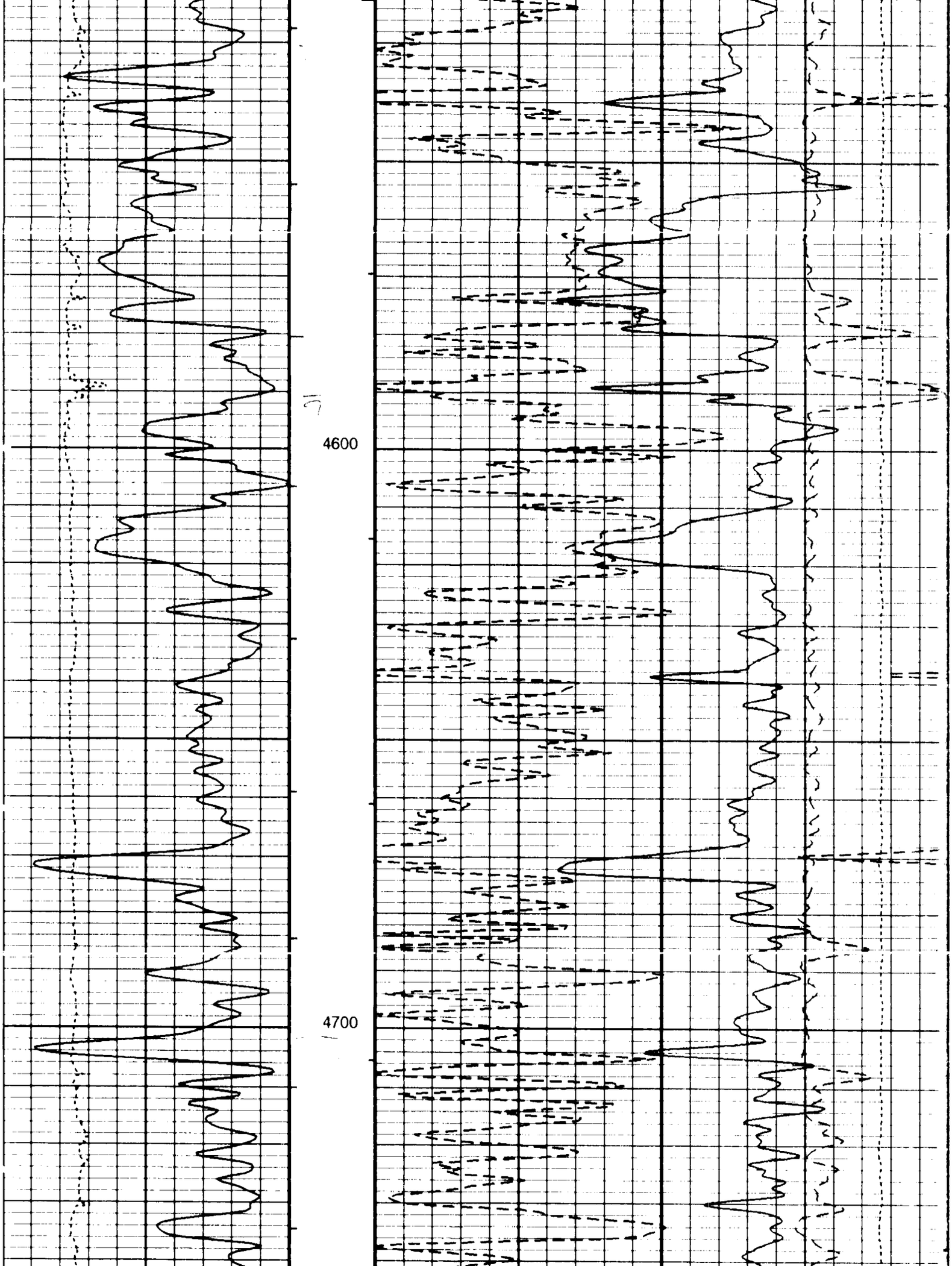
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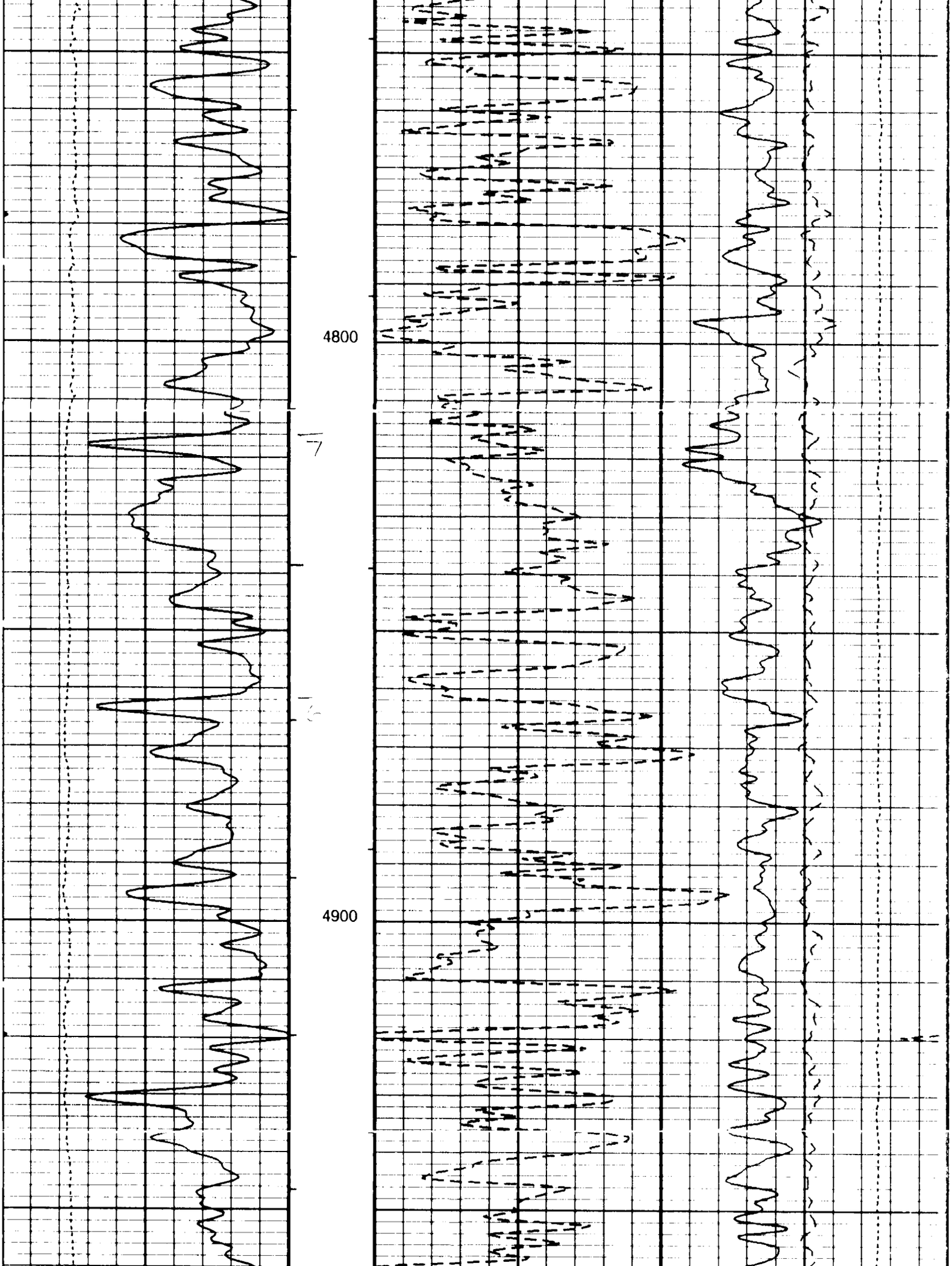
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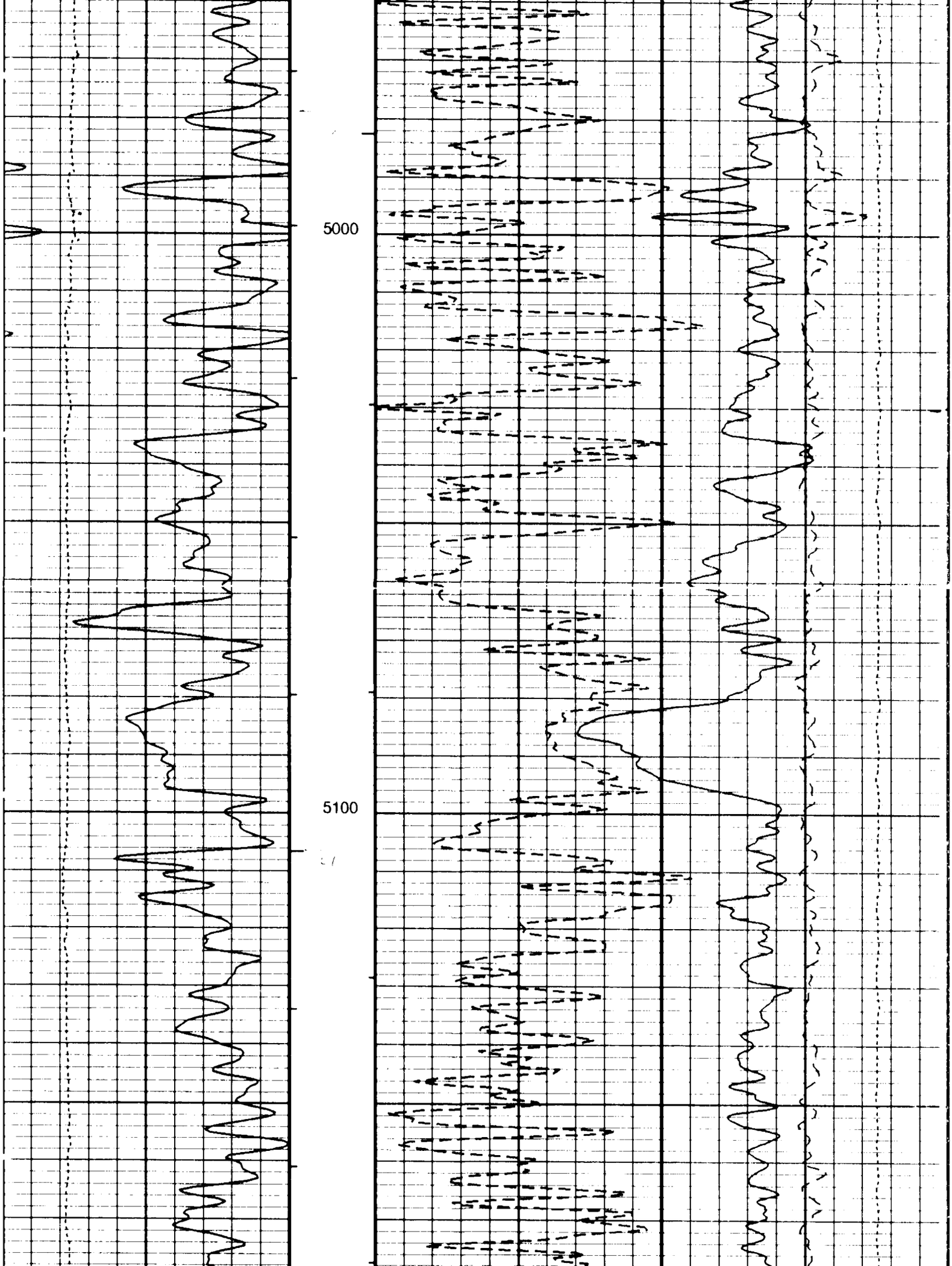
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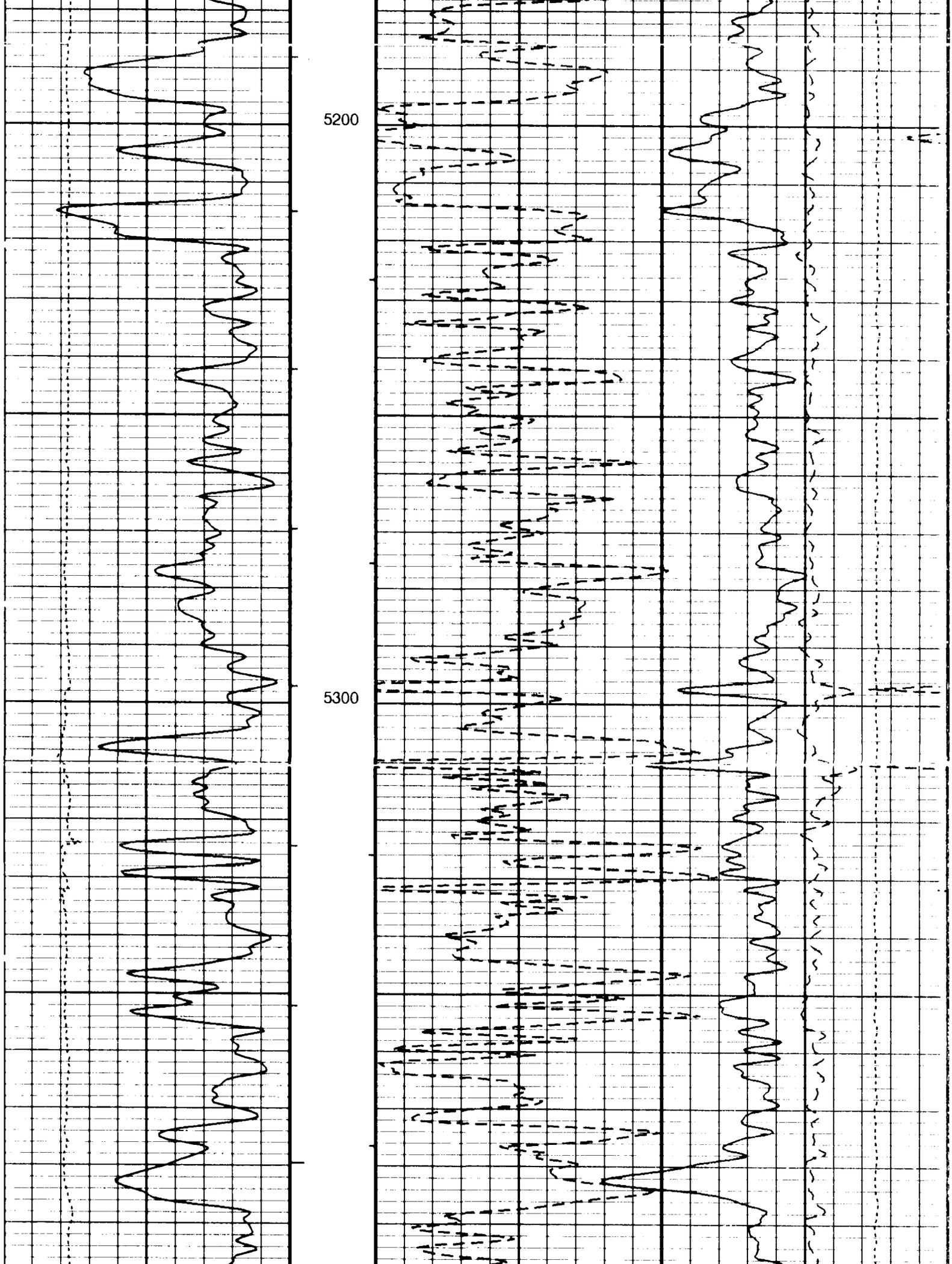
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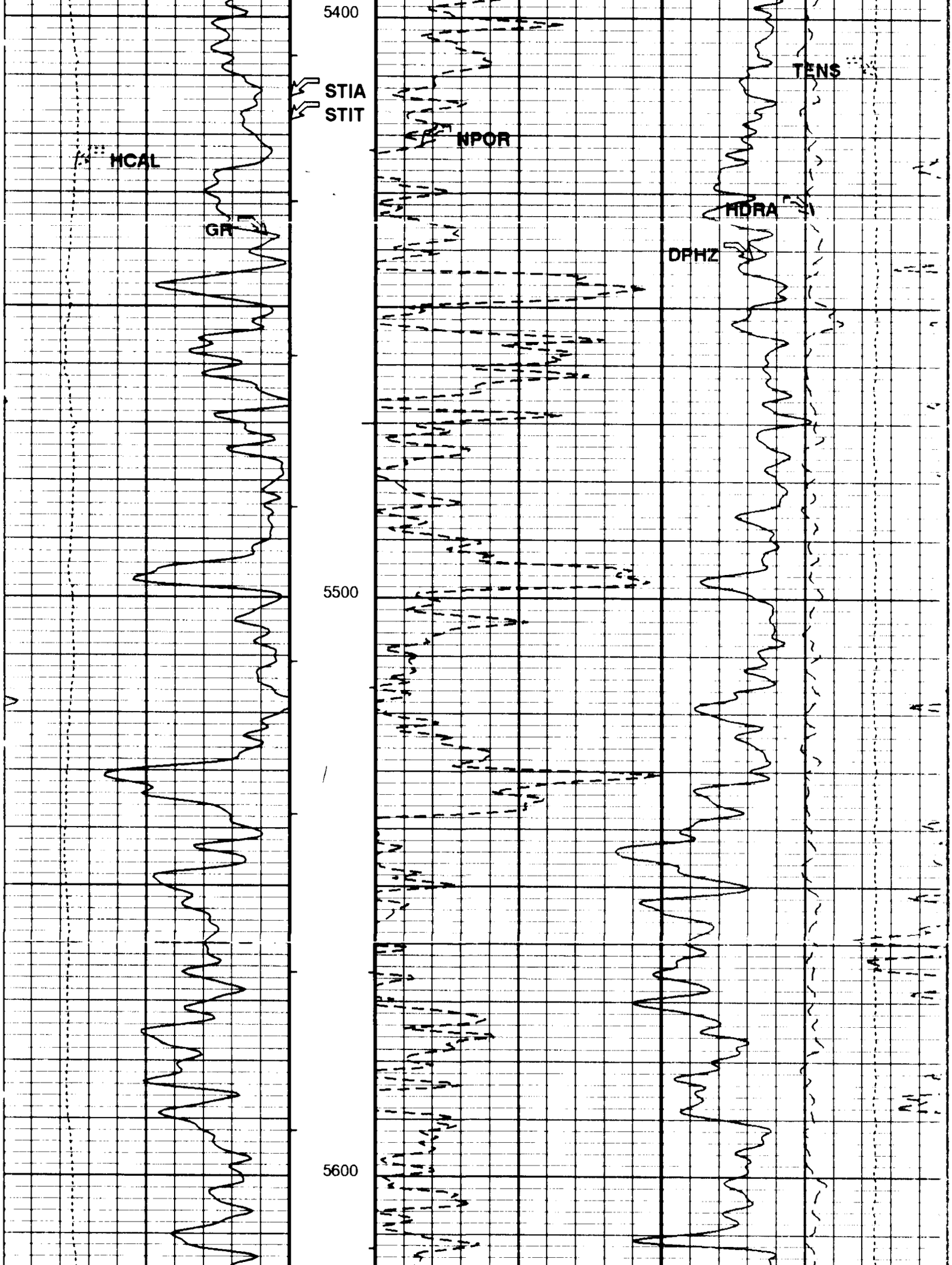
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NPOR
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GR
TENS
HDRA
DPHZ
5500
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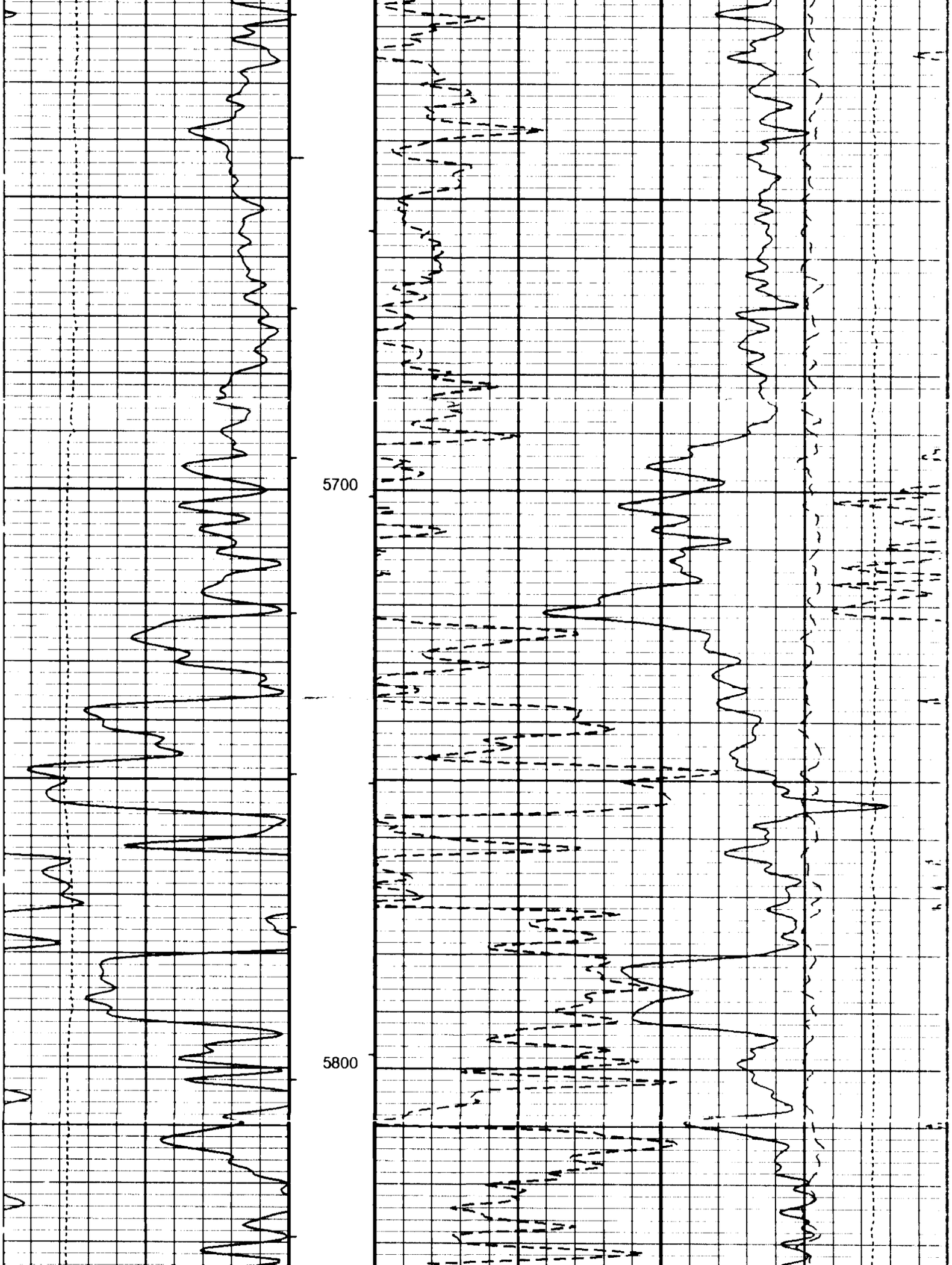
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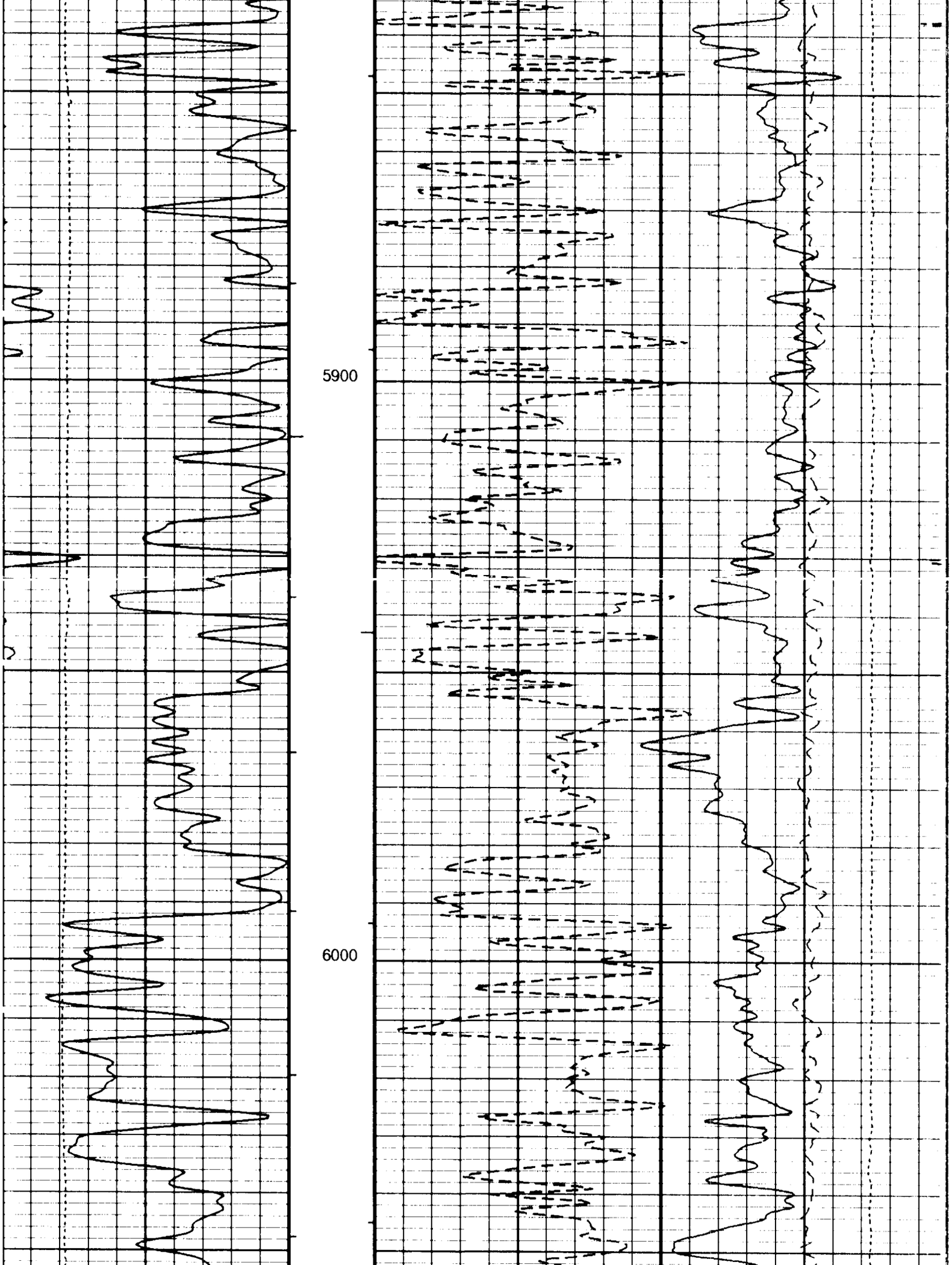
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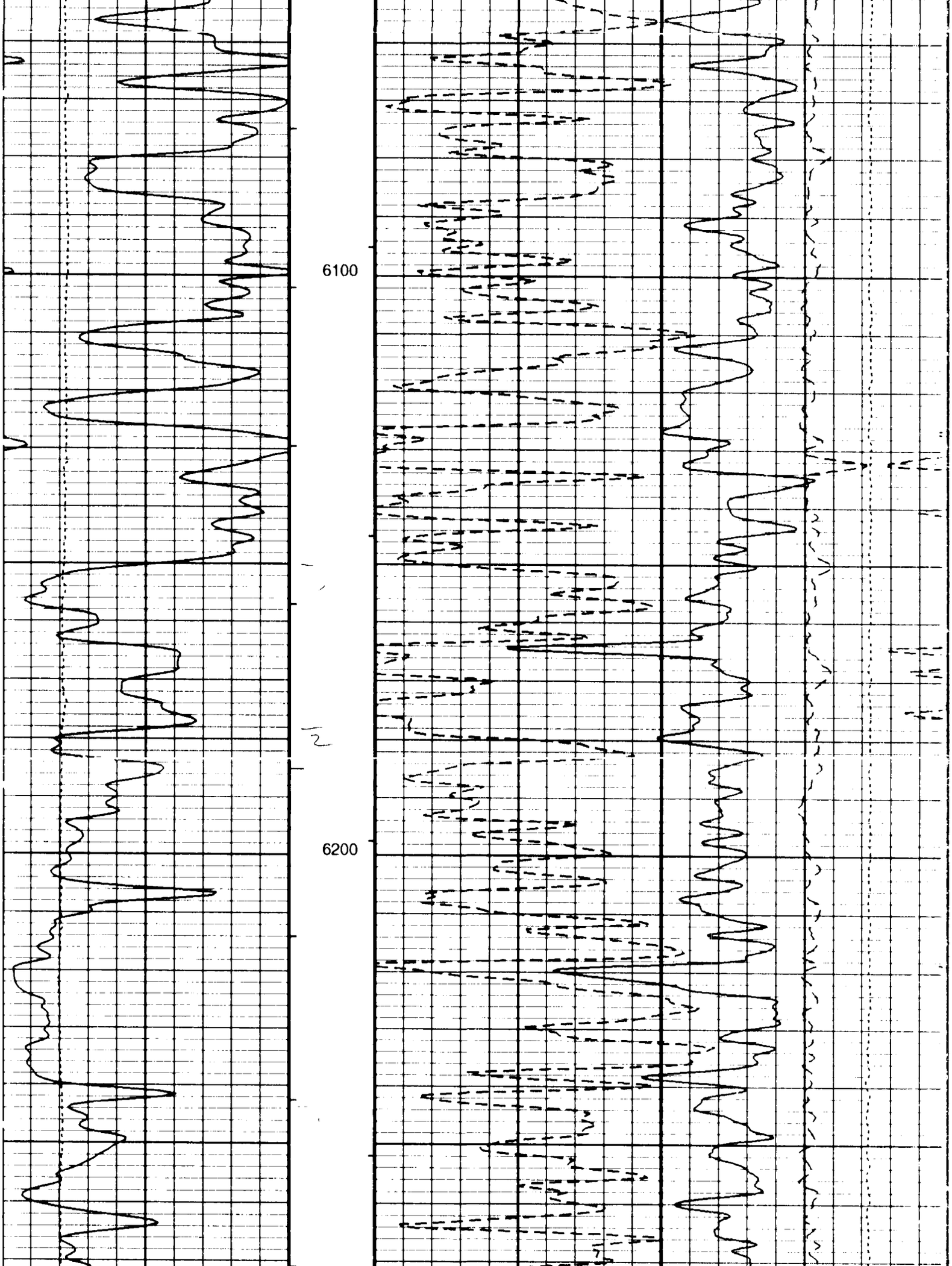
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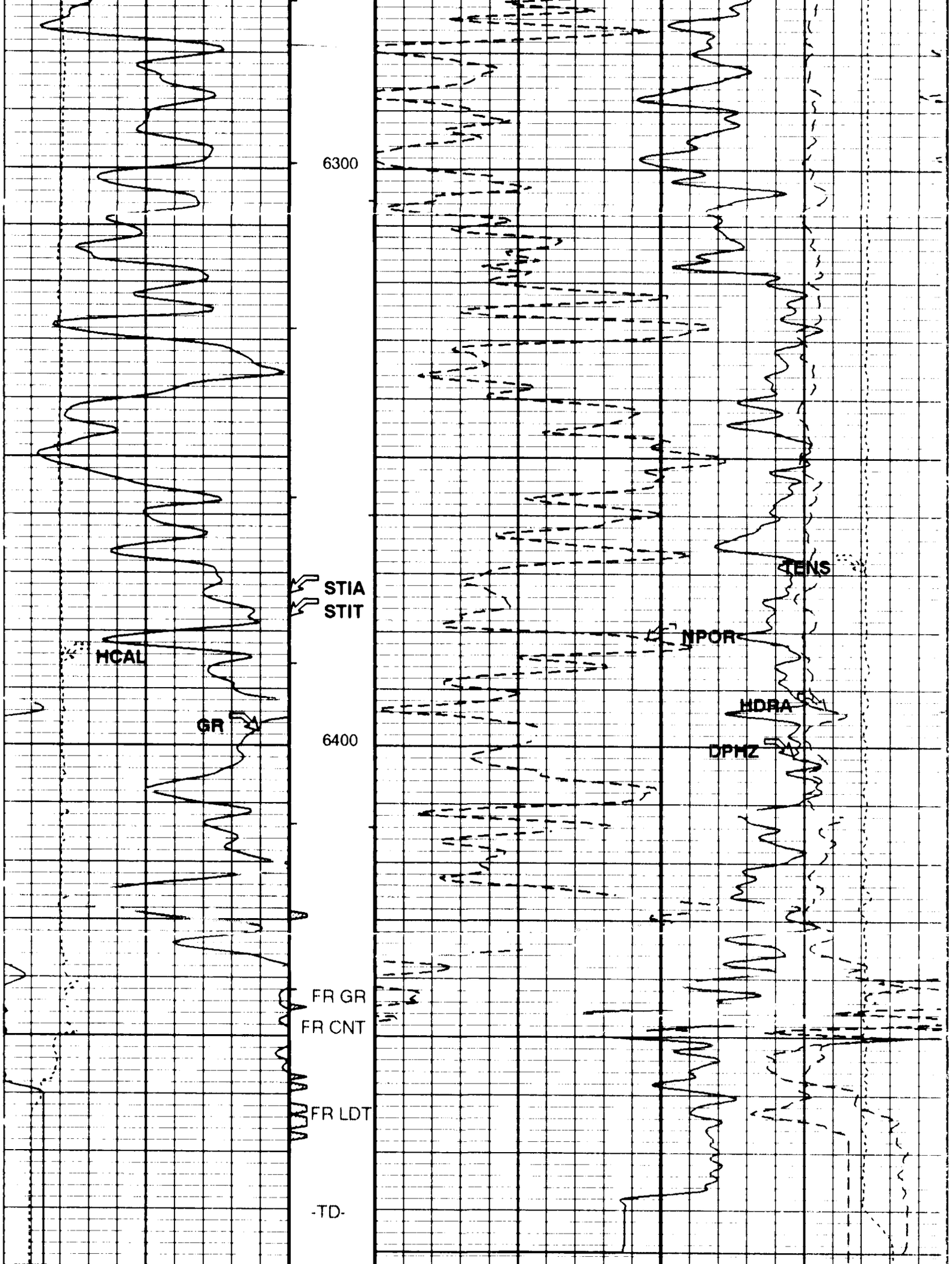

6300
STIA
STIT
HCAL
GR
6400
TENS
NPOR
HDRA
DPHZ
FR GR
FR CNT
FR LDT
-TD-

Gamma Ray (GR)	Stuck Stretch (STIT)	MAIN PASS	Std. Res. Density Porosity (DPHZ)
0 (GAPI) 150	0 (F) 50		0.3 (V/V) -0.1

SANDSTONE MDEN=2.68

Caliper (HCAL)	Cable Drag From STIA to STIT	Alpha Processed Neutron Porosity (NPOR)
6 (IN) 16		0.3 (V/V) -0.1

Tool/Tot. Drag From D3T to STIA	GAS EFFECT From DPHZ to NPOR

Density Correction (HDRA)
-0.25 (G/C3) 0.25

Tension (TENS)
10000 (LBF) 0

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BHFL	Borehole Fluid Type	WATER	
BHS	Bore Hole Status	OPEN	
BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	1200.00	PPM
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
CWEI	Casing Weight	24.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DHC	Density Hole Correction	BS	
FD	Fluid Density	1	G/C3
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	1.000000e-02	DF/F
HMPCO	HILT RTSC Measure points correction	NO	
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSCO	Hole Size Correction Option	YES	
HSTI	STI Uses HILT Acceleration	YES	
MATR	Rock Matrix Type	SANDSTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.68	G/C3
MST	Mud Sample Temperature	65.00	DEGF
MWCO	Mud Weight Correction Option	NO	
NIAV	HRDD Density/Pe Algorithm Version	1	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PTCO	Pressure/Temperature Correction Option	NO	
RMFS	Resistivity of Mud Filtrate Sample	3.2500	OHMM
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	60	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Corrrection Option	YES	
STKT	STI Stuck Threshold	2.5	FT

Format: PORO Vertical Scale: 5" per 100' Graphics File Created: 27-SEP-1996 18:15

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

Output DLIS Files

DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15
REDUCED_HIP	HILTC .069	FN:11	FIELD	27-SEP-1996 18:15

Input DLIS Files

DEFAULT	HILTC .067	FN:6	FIELD	27-SEP-1996 17:33	6486.0 FT	6136.5 FT
DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT

Output DLIS Files

DEFAULT	HILTC .072	FN:14	FIELD	27-SEP-1996 20:37
REDUCED_HIP	HILTC .072	FN:15	FIELD	27-SEP-1996 20:37

Integrated Hole/Cement Volume Summary

Hole Volume = 118.58 F3

Cement Volume = 62.32 F3 (assuming 5.50 IN casing O.D.)

Computed from 6474.0 FT to 6133.5 FT using data channel(s) HCAL

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

TENS_REP Curve (TENS_REP)
10000 (LBF) 0

HDRA_REP Curve (HDRA_REP)
-0.25 (G/C3) 0.25

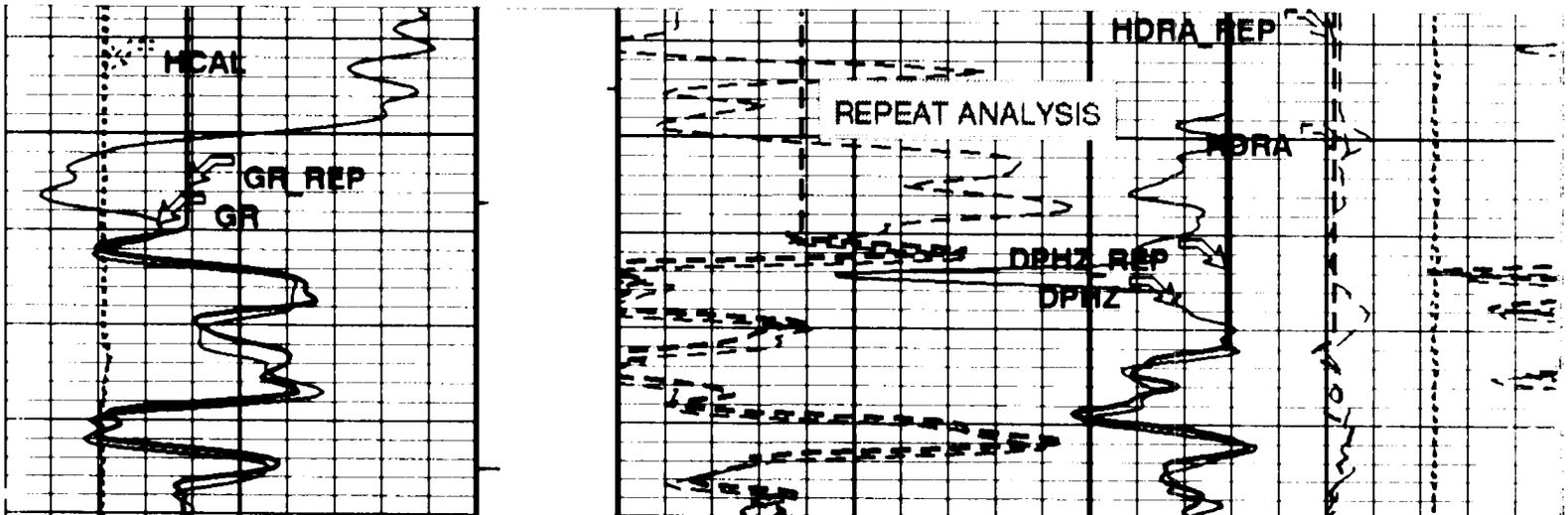
GAS EFFECT
From DPHZ to NPOR

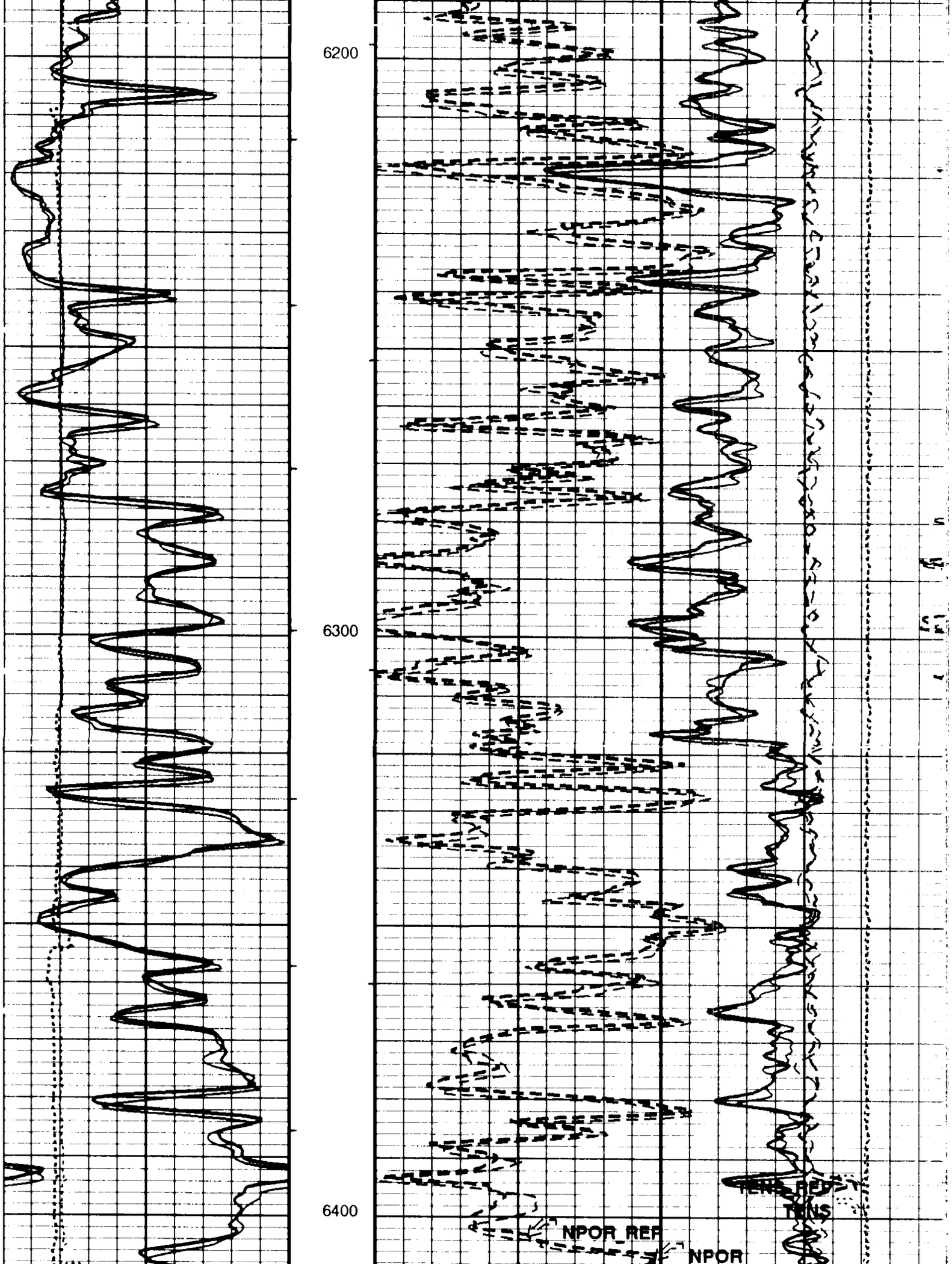
HCAL_REP Curve (HCAL_REP)
6 (IN) 16

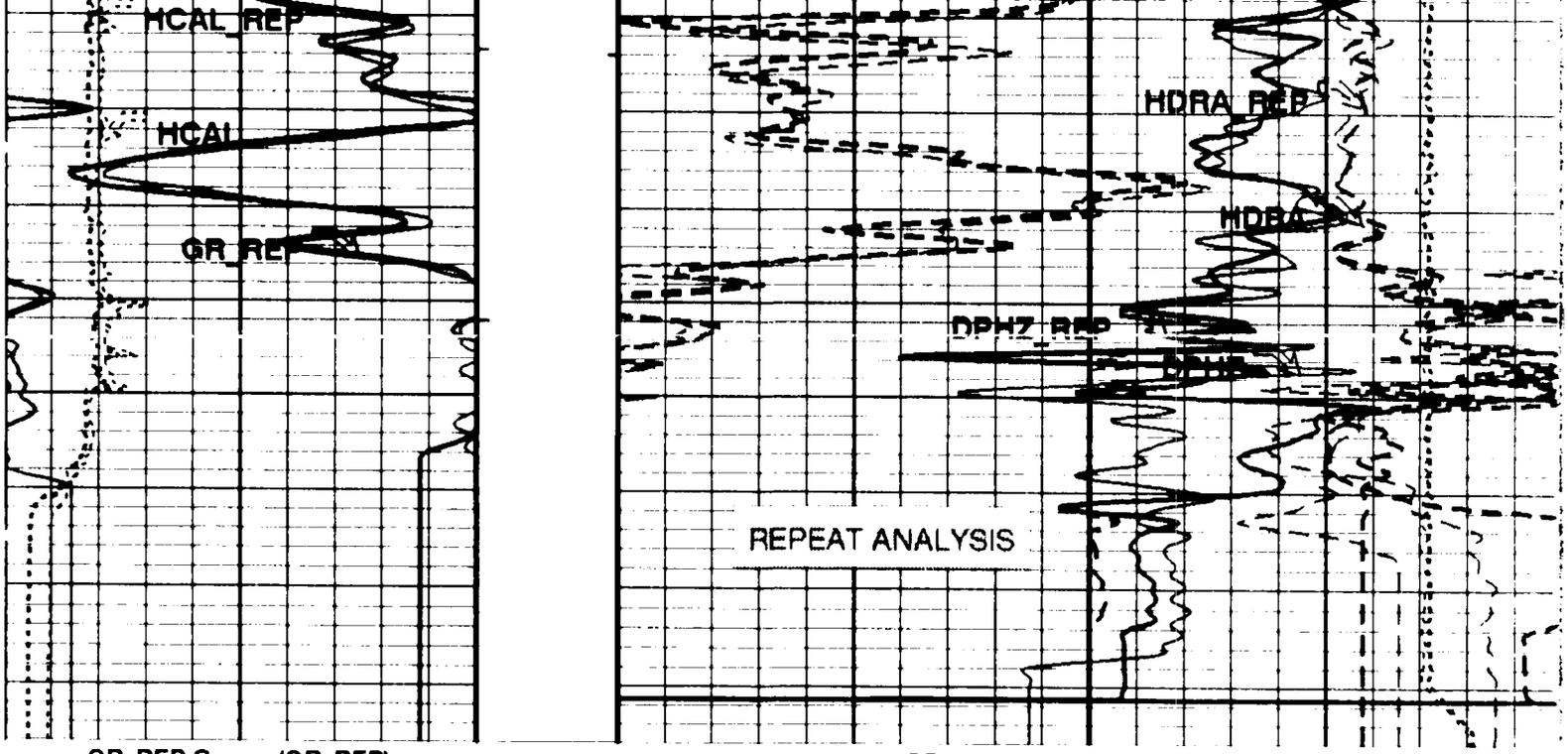
NPOR_REP Curve (NPOR_REP)
0.3 (V/V) -0.1

GR_REP Curve (GR_REP)
0 (GAPI) 150

DPHZ_REP Curve (DPHZ_REP)
0.3 (V/V) -0.1




6200
6300
6400
TENS_REF
TENS
NPOR_REF
NPOR



GR_REP Curve (GR_REP)
0 (GAPI) 150

HCAL_REP Curve (HCAL_REP)
6 (IN) 16

DPHZ_REP Curve (DPHZ_REP)
0.3 (V/V) -0.1

NPOR_REP Curve (NPOR_REP)
0.3 (V/V) -0.1

GAS EFFECT
From DPHZ to NPOR

HDRA_REP Curve (HDRA_REP)
-0.25 (G/C3) 0.25

TENS_REP Curve (TENS_REP)
10000 (LBF) 0

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BHFL	Borehole Fluid Type	WATER	
BHS	Bore Hole Status	OPEN	
BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	1200.00	PPM
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
CWEI	Casing Weight	24.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DHC	Density Hole Correction	BS	
DO	Depth Offset	0.0	FT
DORL	Depth Offset Repeat Analysis	0.0	FT
FD	Fluid Density	1	G/C3
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	1.000000e-02	DF/F
HMPCO	HILT RTSC Measure points correction	NO	
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSCO	Hole Size Correction Option	YES	
HSTI	STI Uses HILT Acceleration	YES	
MATR	Rock Matrix Type	SANDSTONE	
MCCO	Mud Cake Correction Option	NO	

MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.68	G/C3
MST	Mud Sample Temperature	65.00	DEGF
MWCO	Mud Weight Correction Option	NO	
NIAV	HRDD Density/Pe Algorithm Version	1	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PP	Playback Processing	NORMAL	
PTCO	Pressure/Temperature Correction Option	NO	
RMFS	Resistivity of Mud Filtrate Sample	3.2500	OHMM
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	60	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Corrrection Option	YES	

Format: PORO_REP Vertical Scale: 5" per 100' Graphics File Created: 27-SEP-1996 20:37

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

Input DLIS Files

DEFAULT	HILTC .067	FN:6	FIELD	27-SEP-1996 17:33	6486.0 FT	6136.5 FT
DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT

Output DLIS Files

DEFAULT	HILTC .072	FN:14	FIELD	27-SEP-1996 20:37
REDUCED_HIP	HILTC .072	FN:15	FIELD	27-SEP-1996 20:37

Output DLIS Files

DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT
REDUCED_HIP	HILTC .069	FN:11	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 2419.07 F3

Cement Volume = 1397.04 F3 (assuming 5.50 IN casing O.D.)

Computed from 6474.0 FT to 280.0 FT using data channel(s) HCAL

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Tension (TENS)
10000 (LBF) 0

Dolomite/Shale From RHT1 to MP3

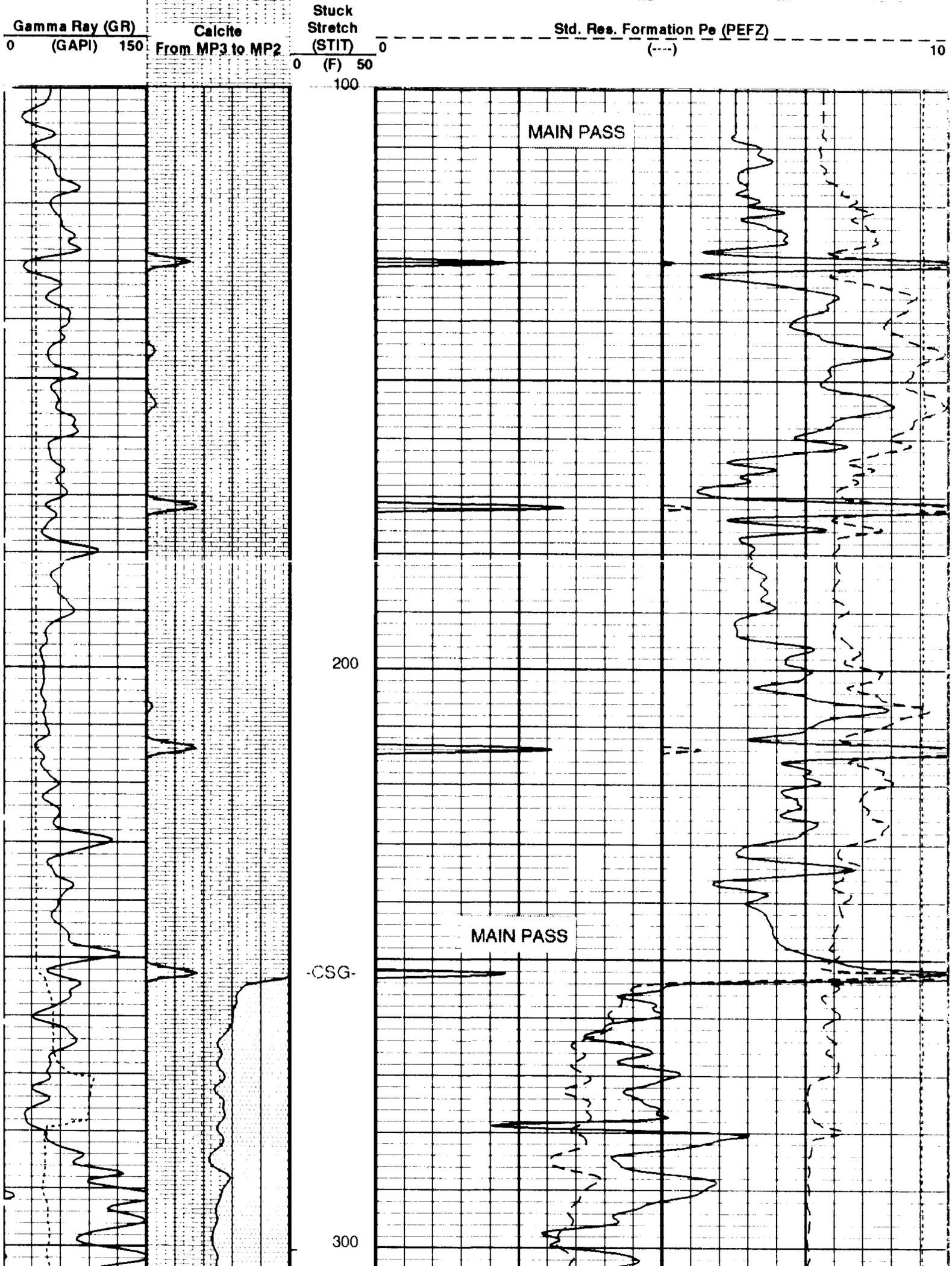
Density Correction (HDRA)
-0.5 (G/C3) 0.5

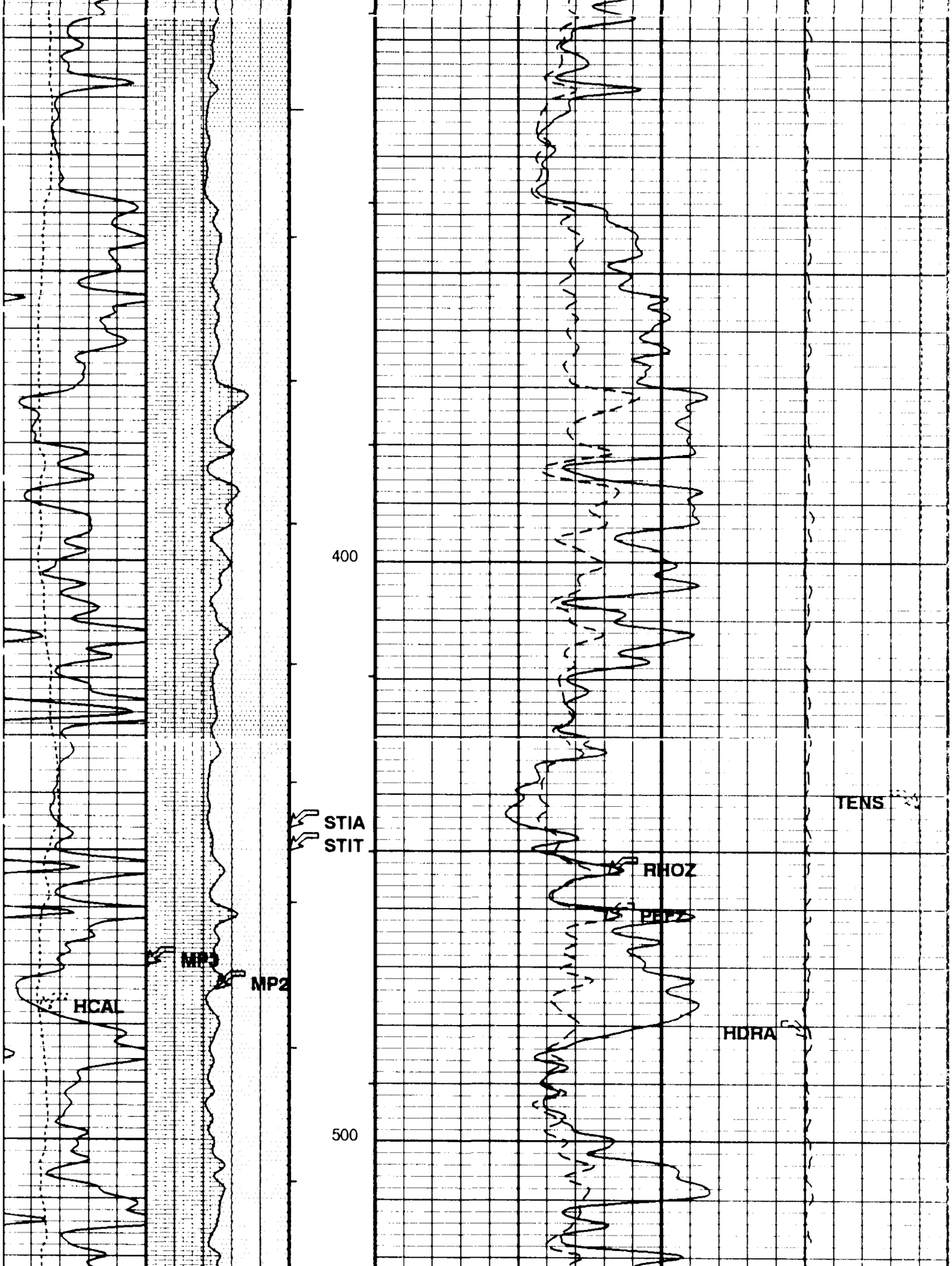
Caliper (HCAL)
6 (IN) 16

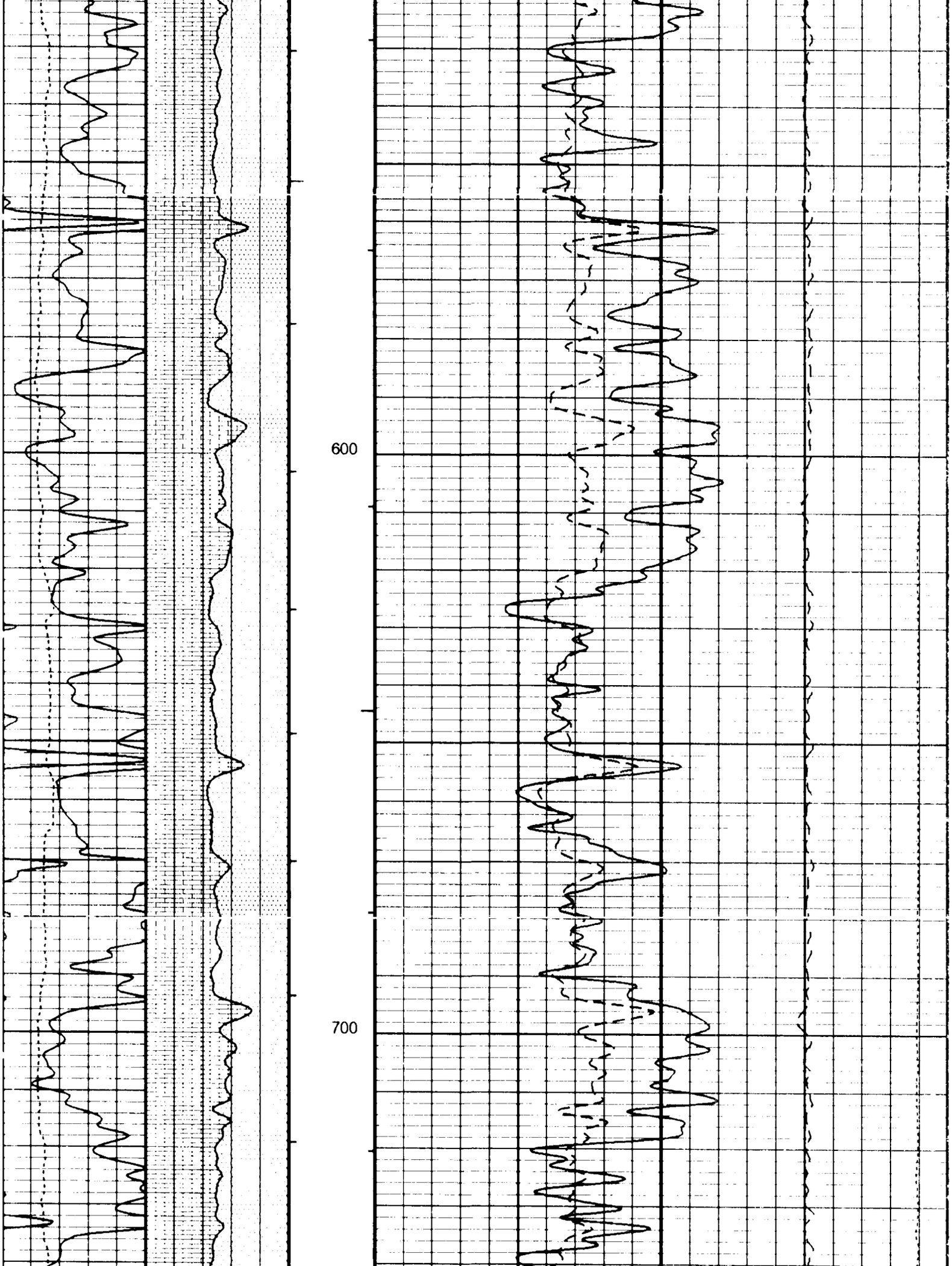
Quartz From MP2 to RHT1

Tool/Tot. Drag From D3T to STIA

Std. Res. Formation Density (RHOZ)
2 (G/C3) 3


Gamma Ray (GR)
0 (GAPI) 150
Calcite
From MP3 to MP2
Stuck
Stretch
(STIT)
0 (F) 50
Std. Res. Formation Pe (PEFZ)
0 (----) 10
100
MAIN PASS
200
MAIN PASS
-CSG-
300


400
500
STIA
STIT
MP3
MP2
HCAL
RHOZ
PEFZ
HDRA
TENS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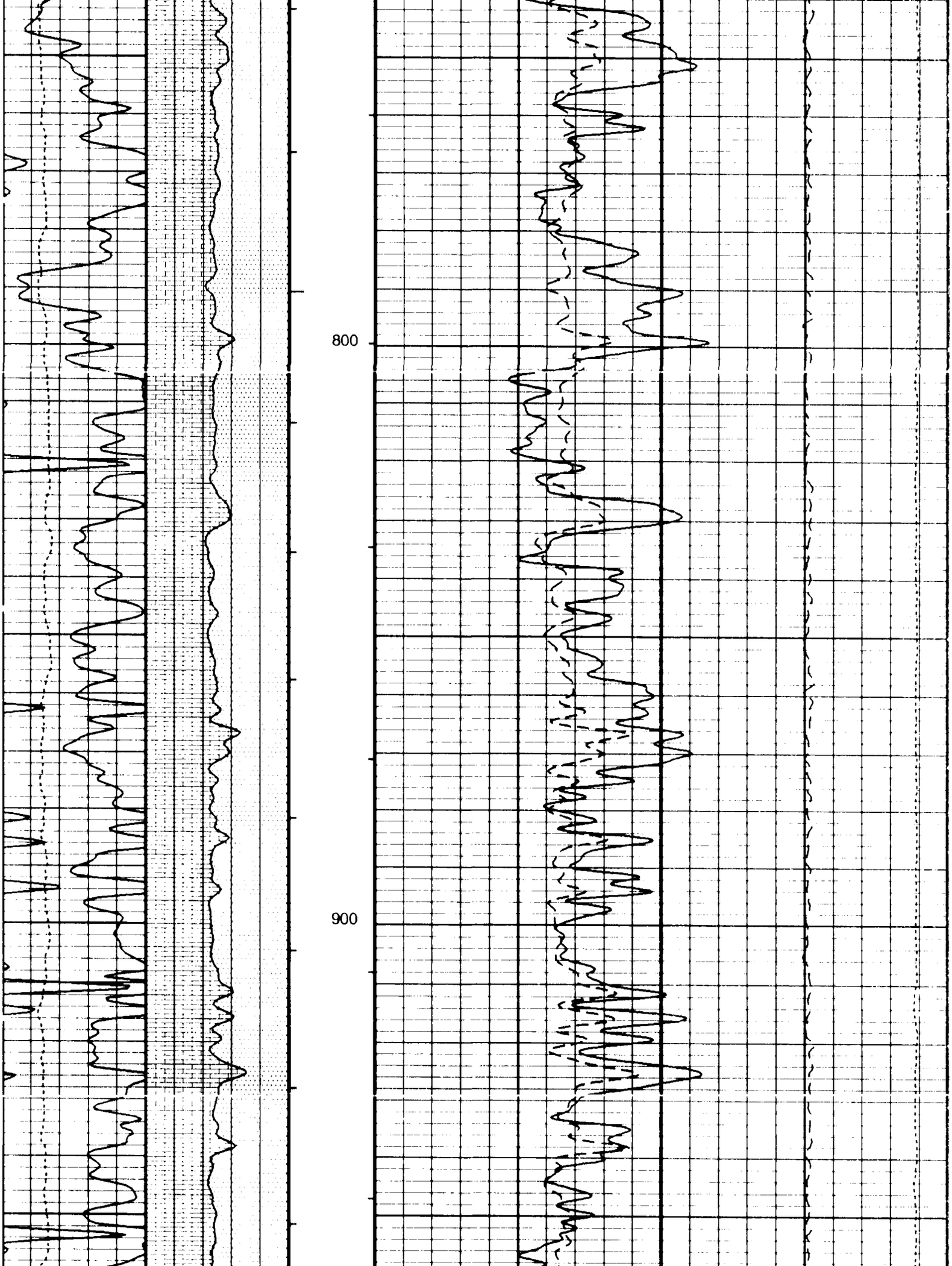
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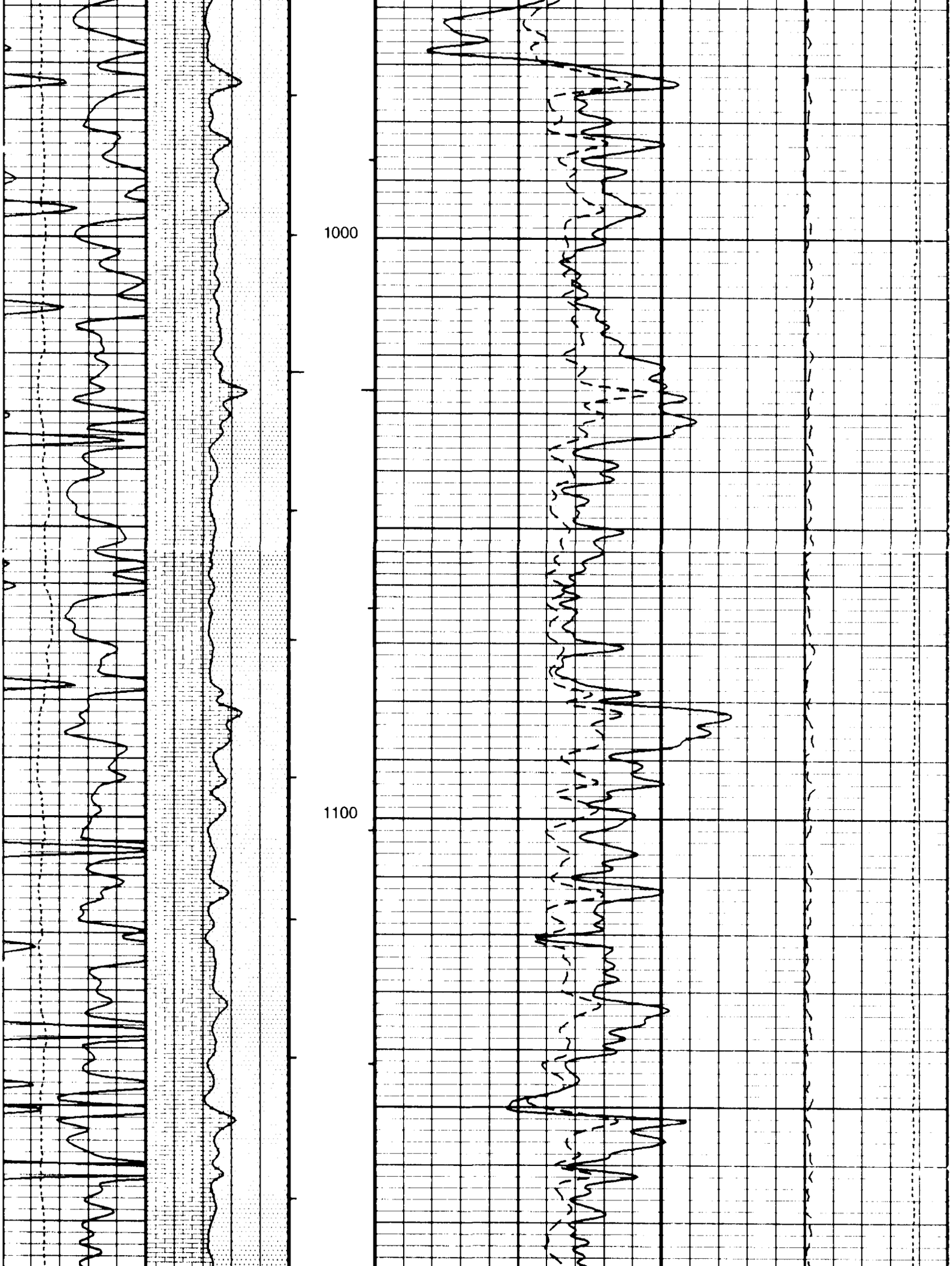
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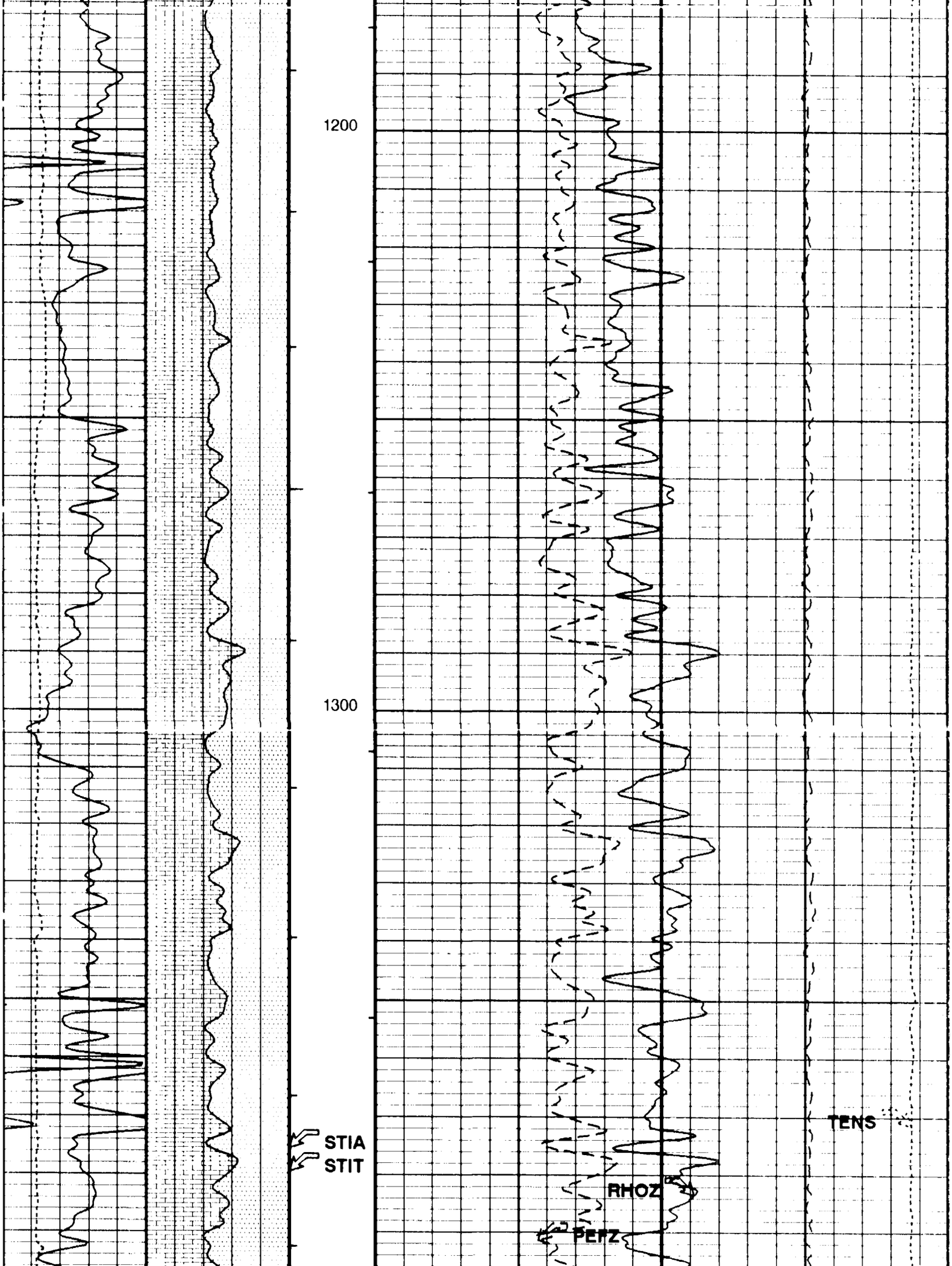
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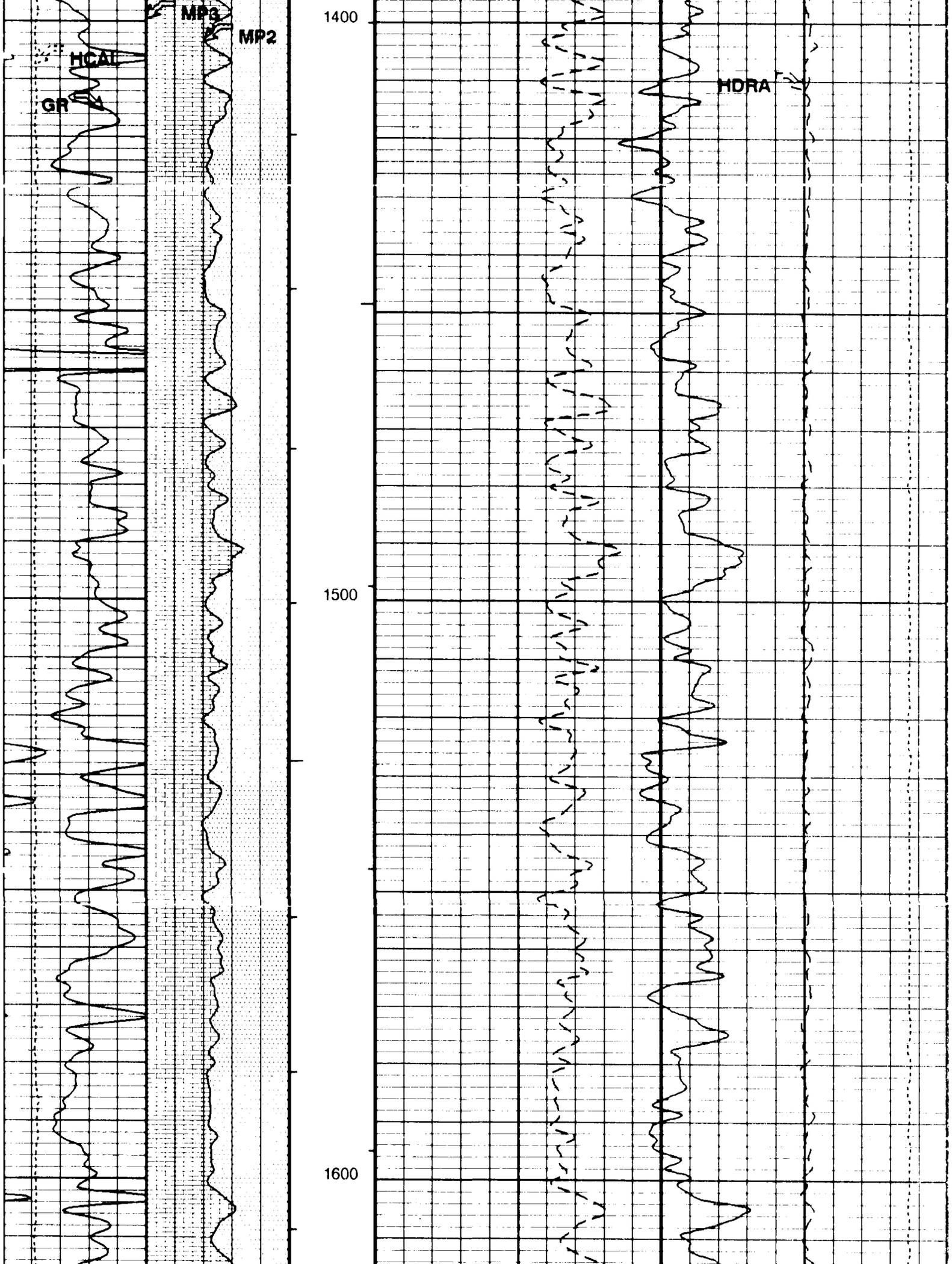
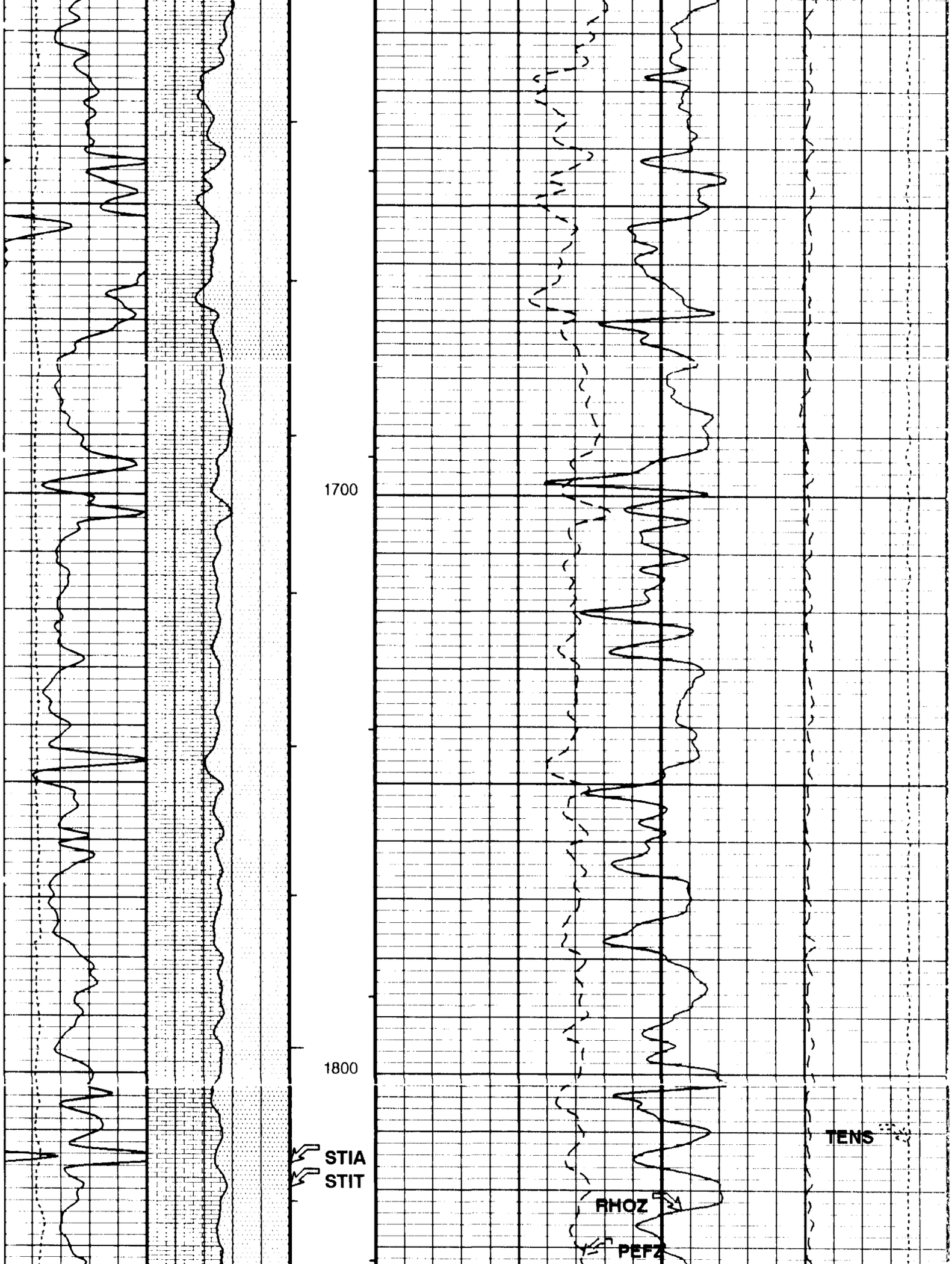
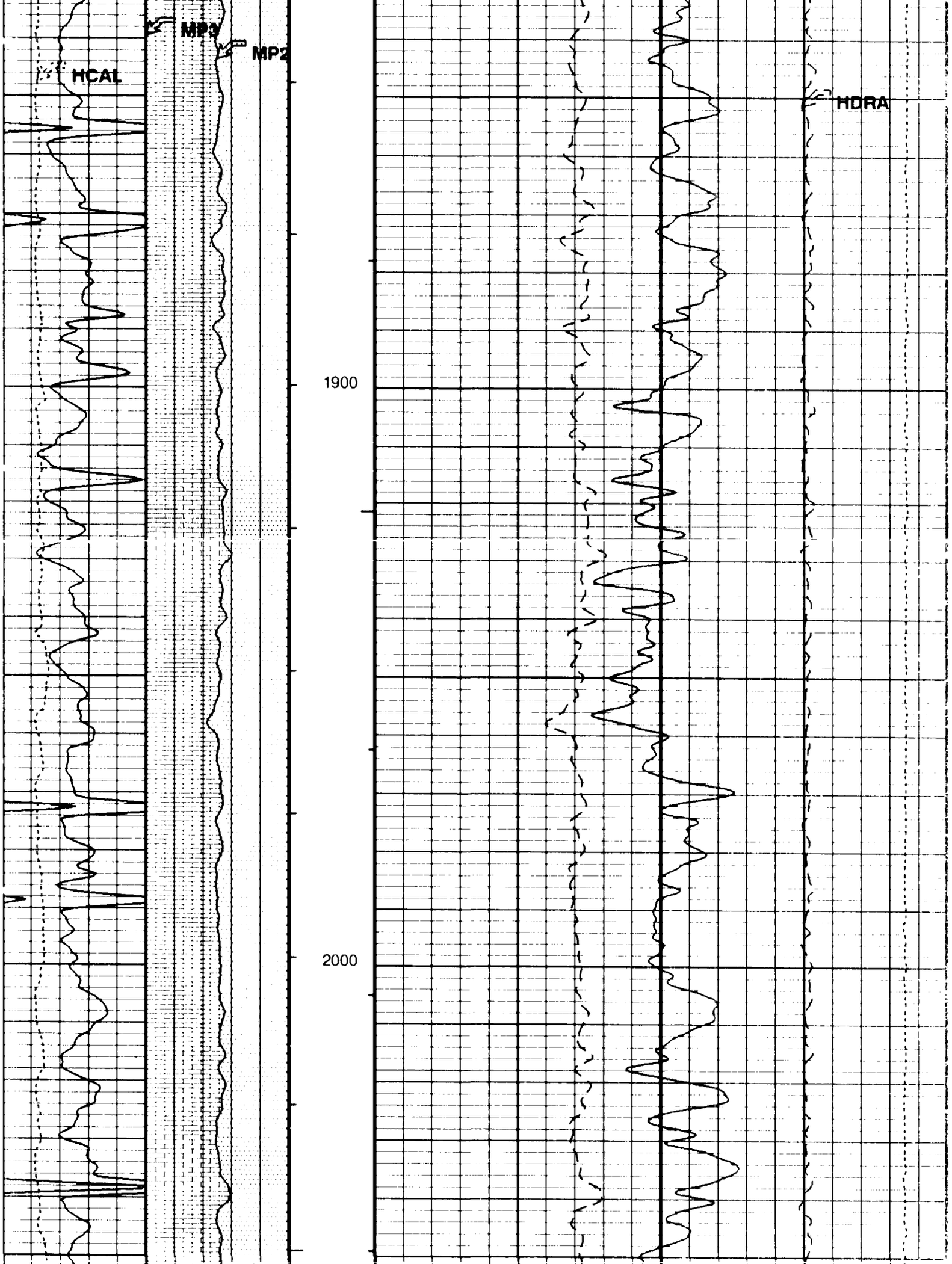
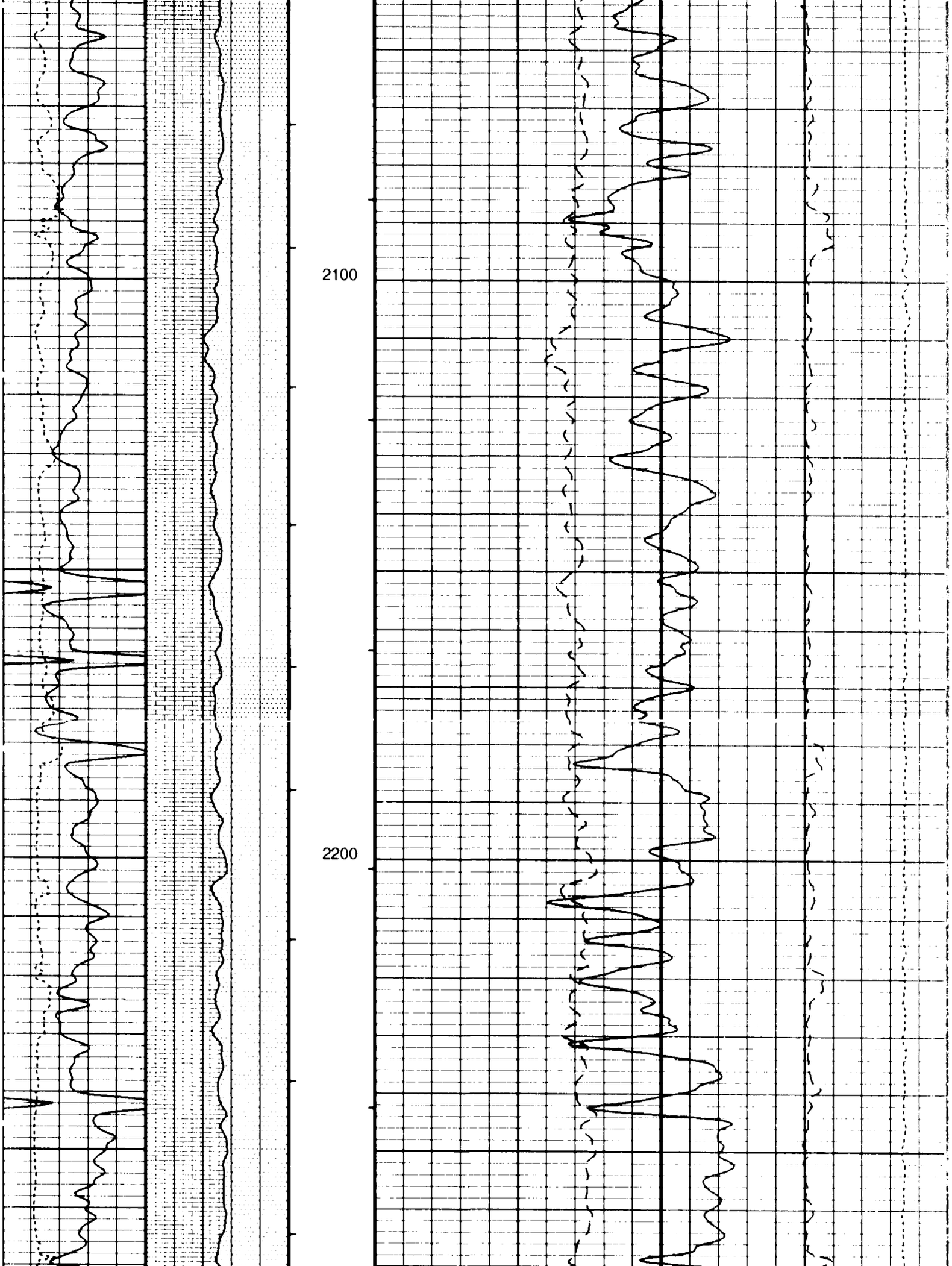
1300
STIA
STIT
TENS
RHOZ
PEFZ


MP3
MP2
HCAL
GR
1400
HDRA
1500
1600


1700
1800
STIA
STIT
RHOZ
PEFZ
TENS


MP3
MP2
HCAL
HDRA
1900
2000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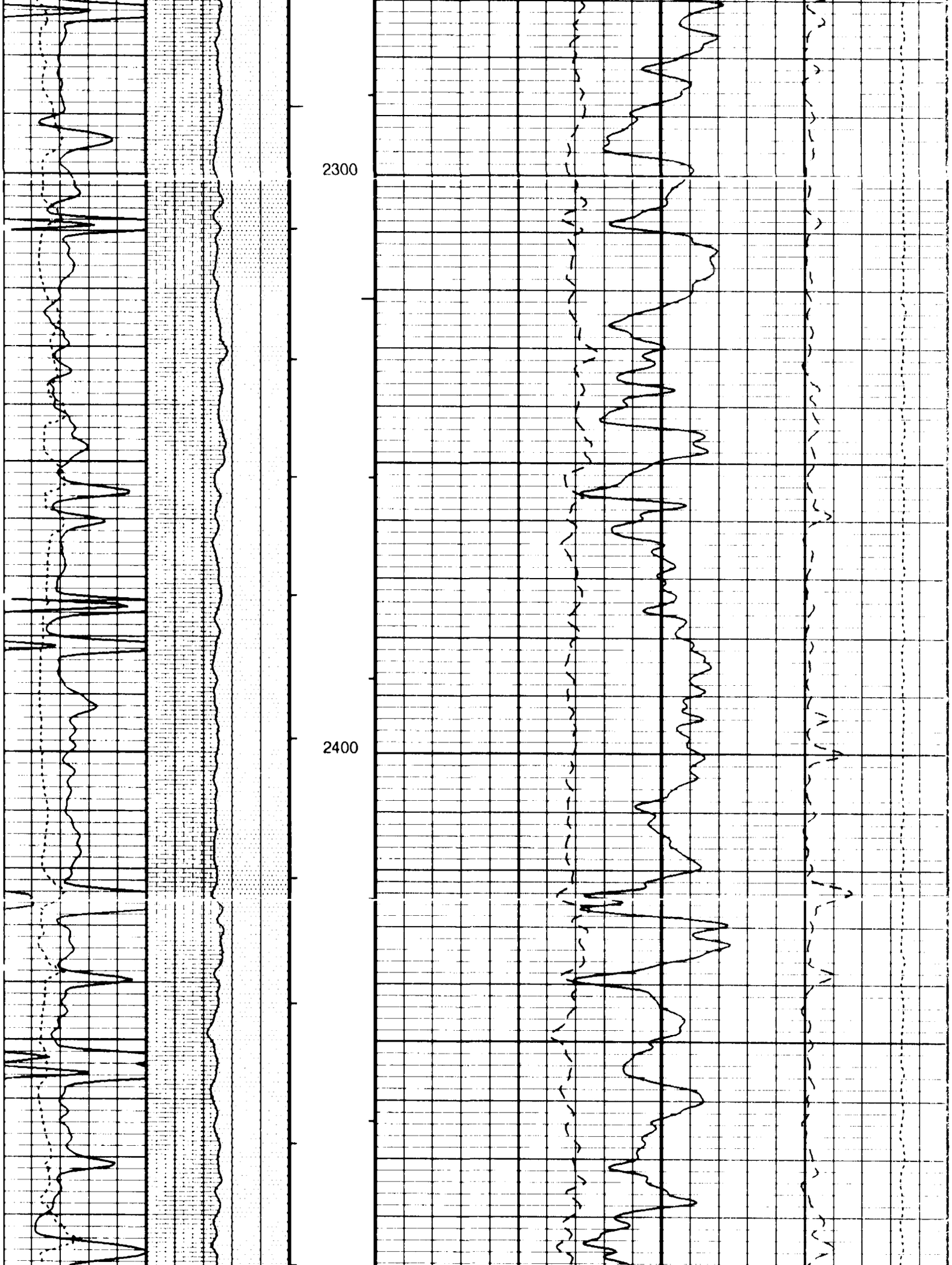
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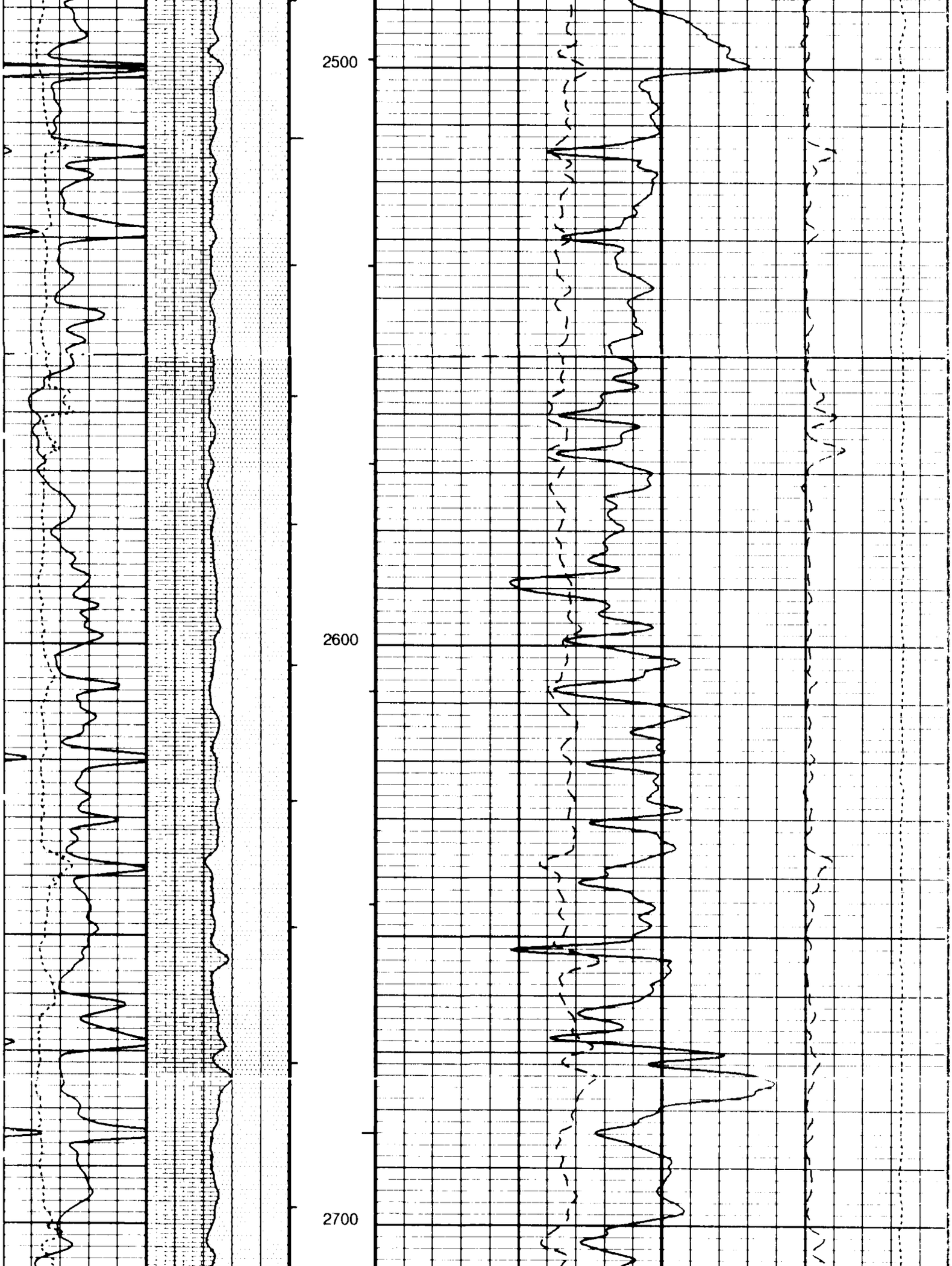
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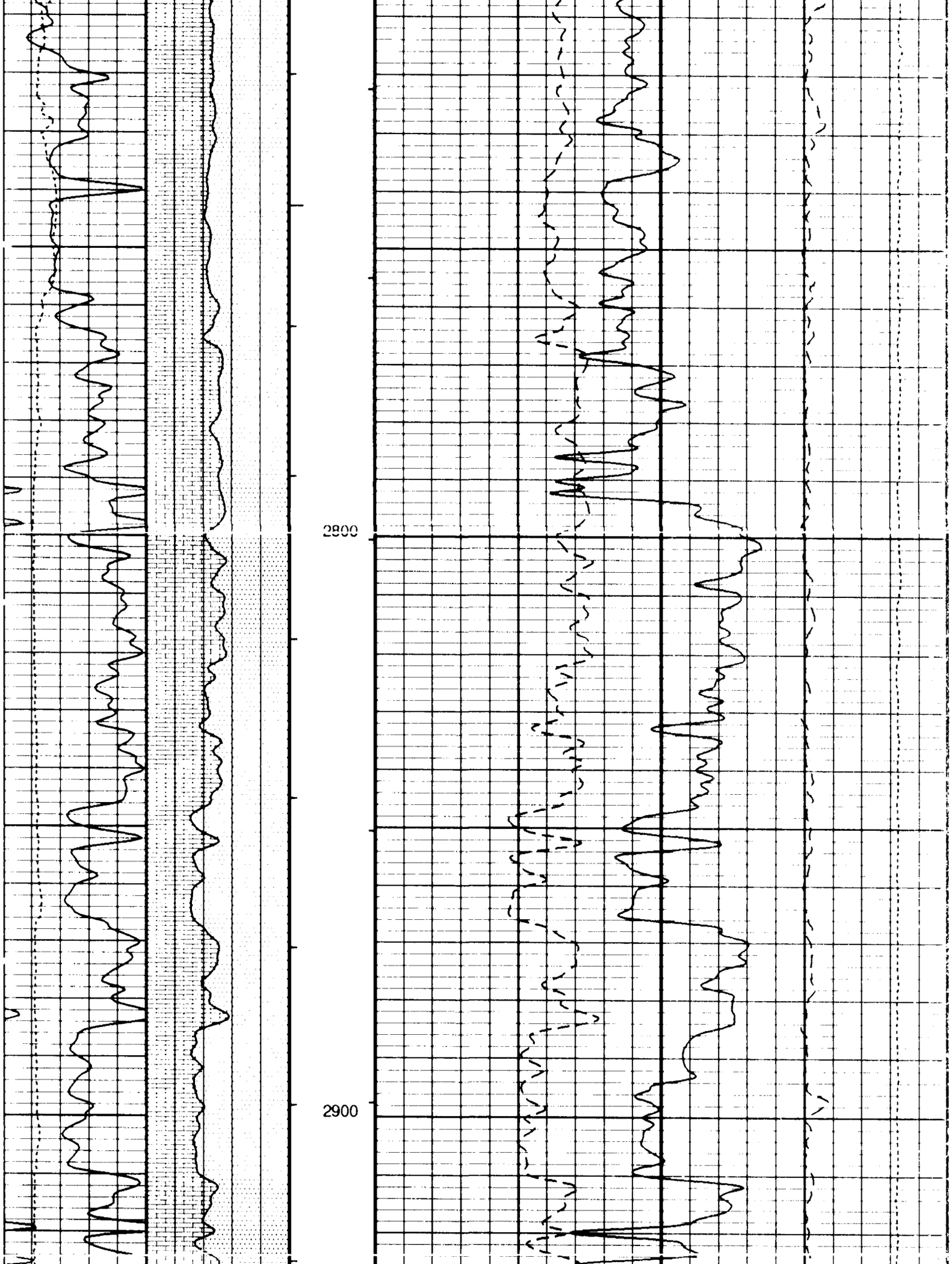
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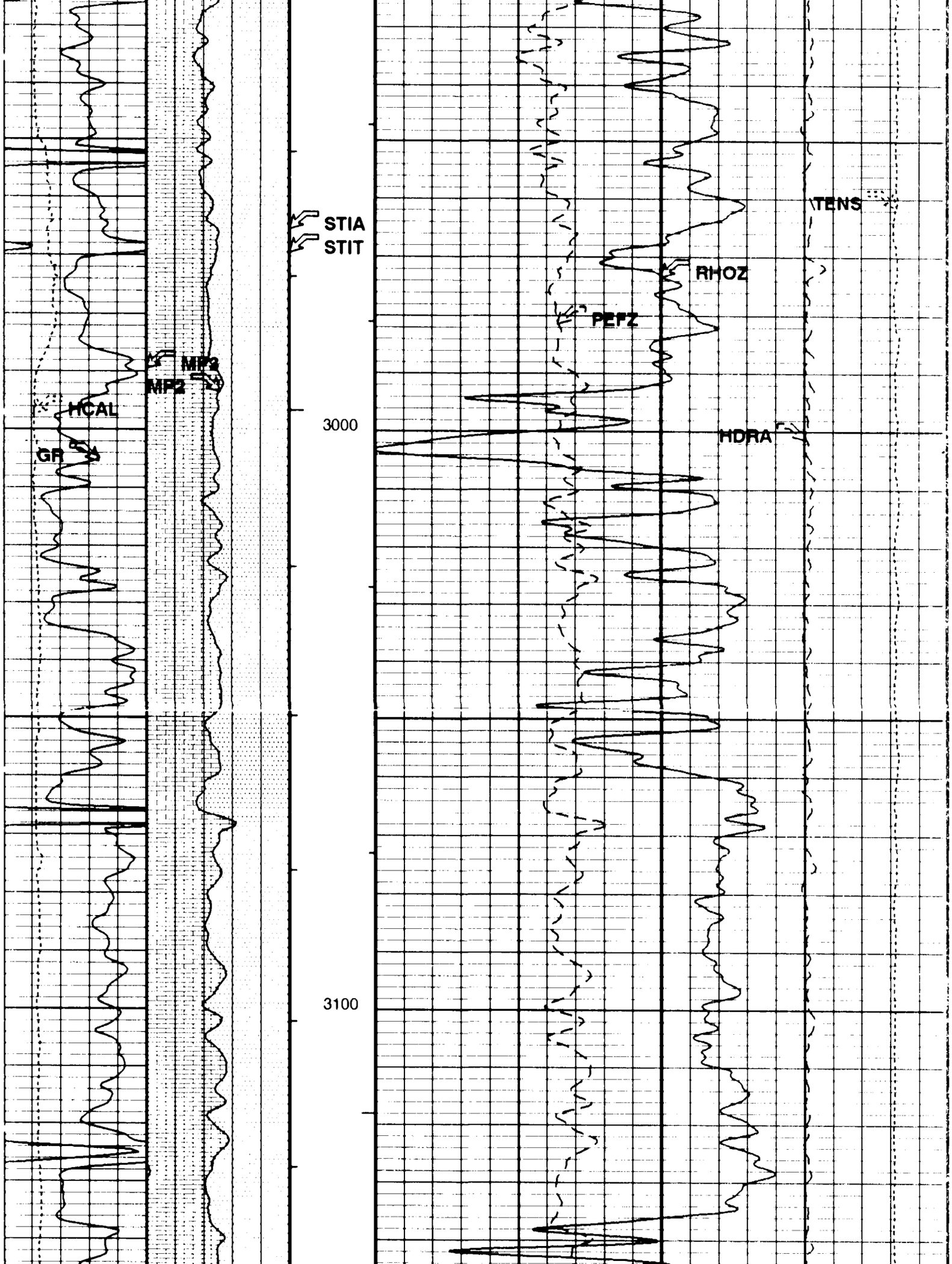
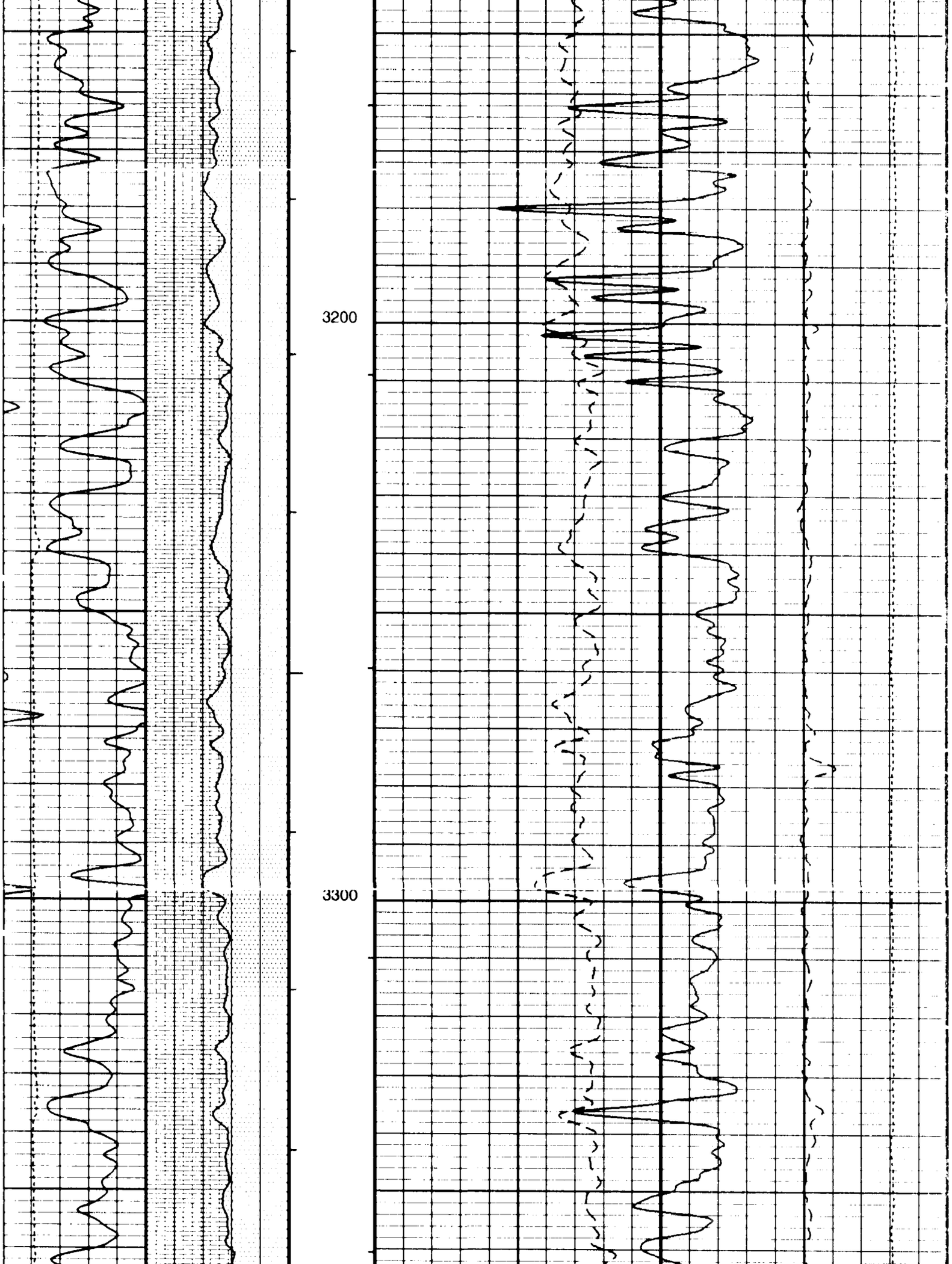

STIA
STIT
MP2
MP2
HCAL
GR
3000
3100
TENS
RHOZ
PEFZ
HDRA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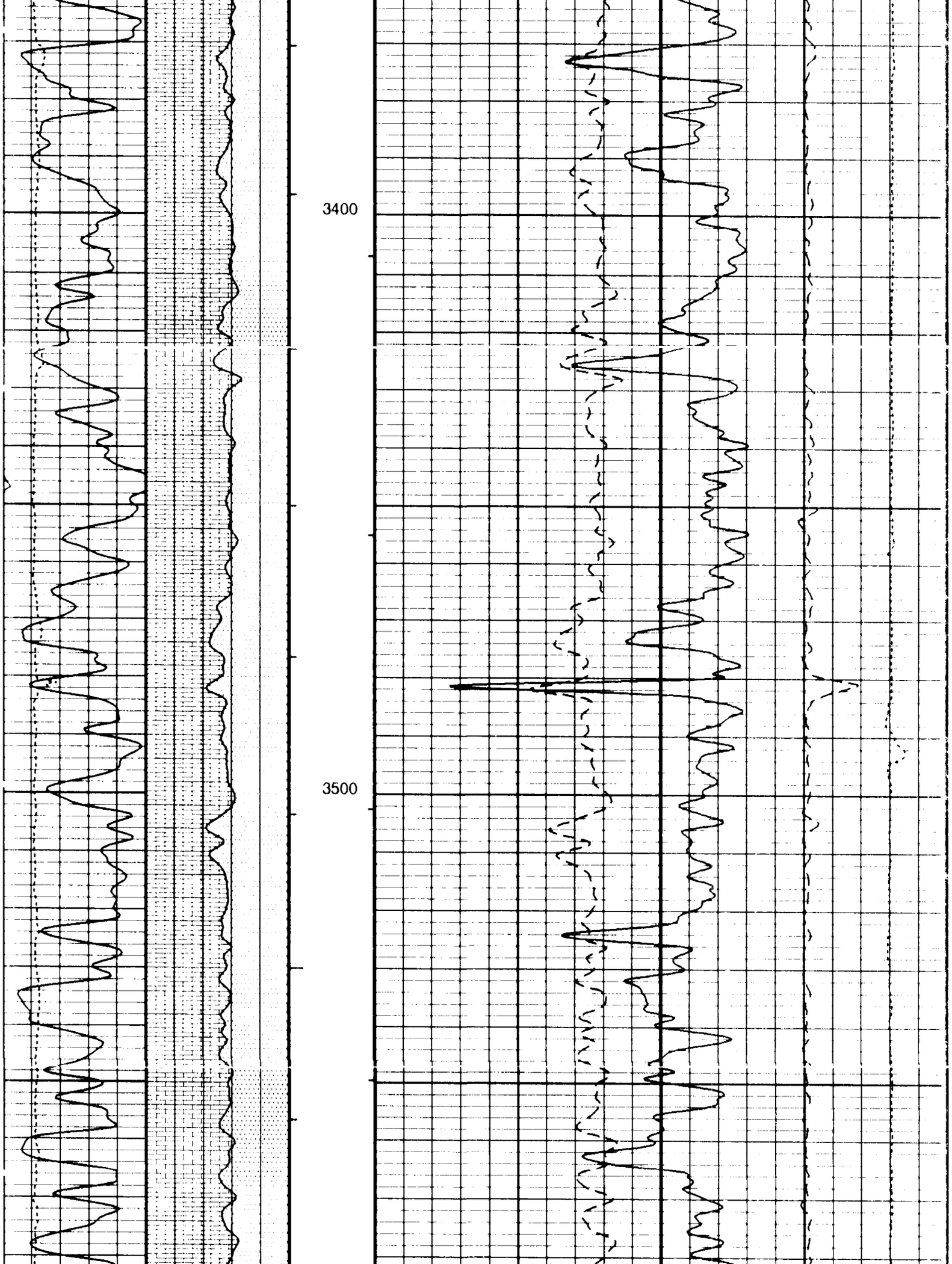
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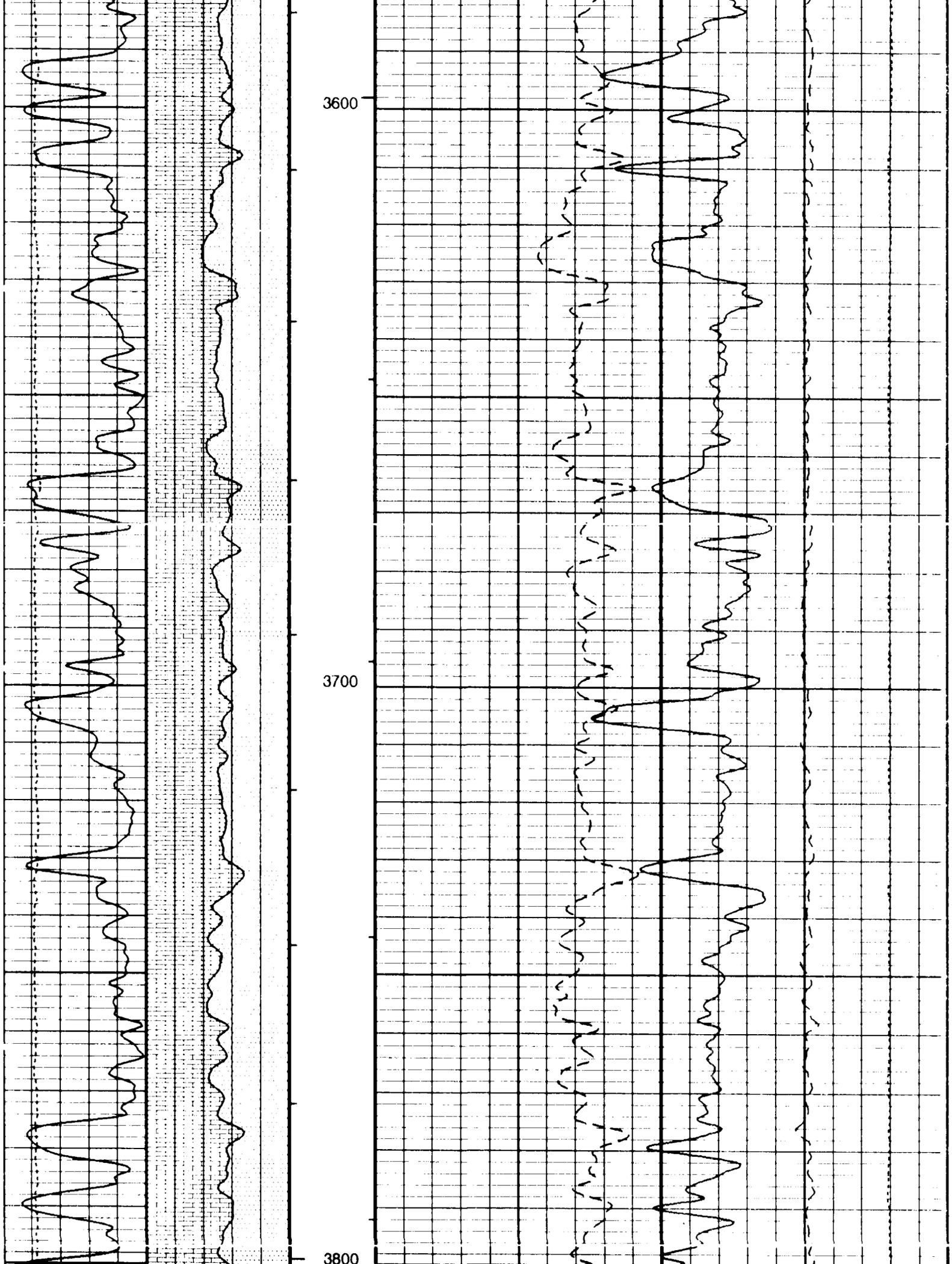
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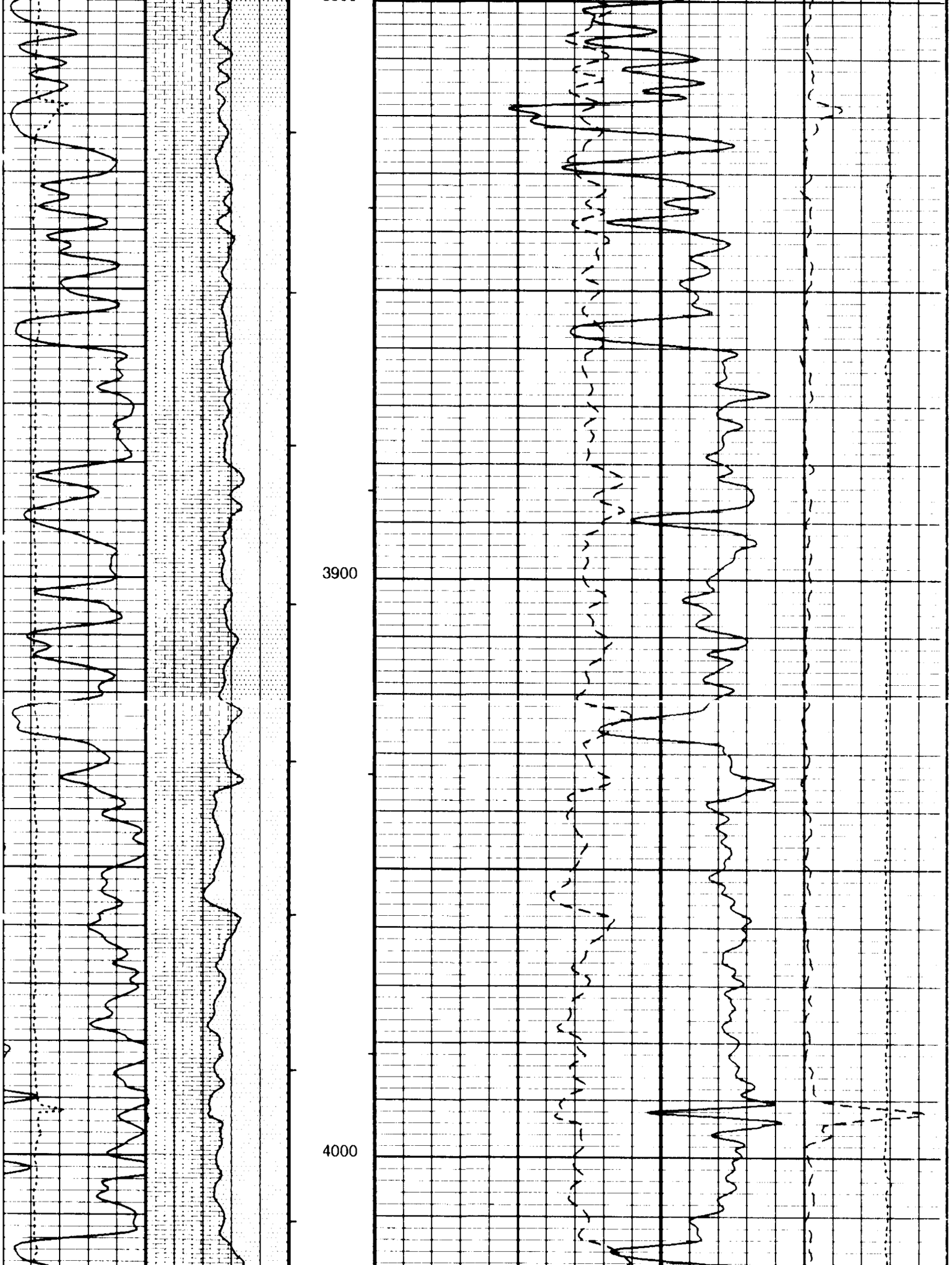
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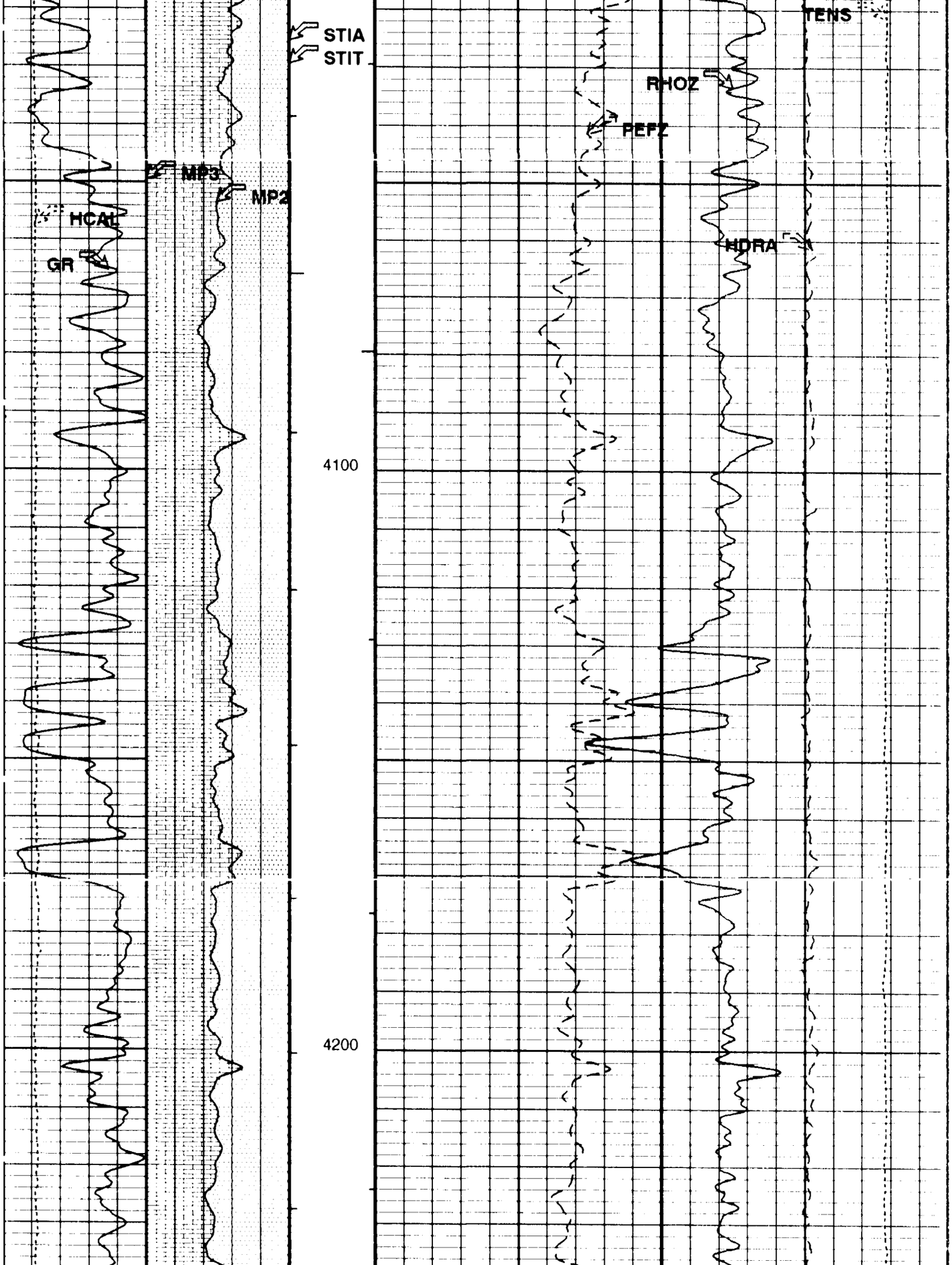
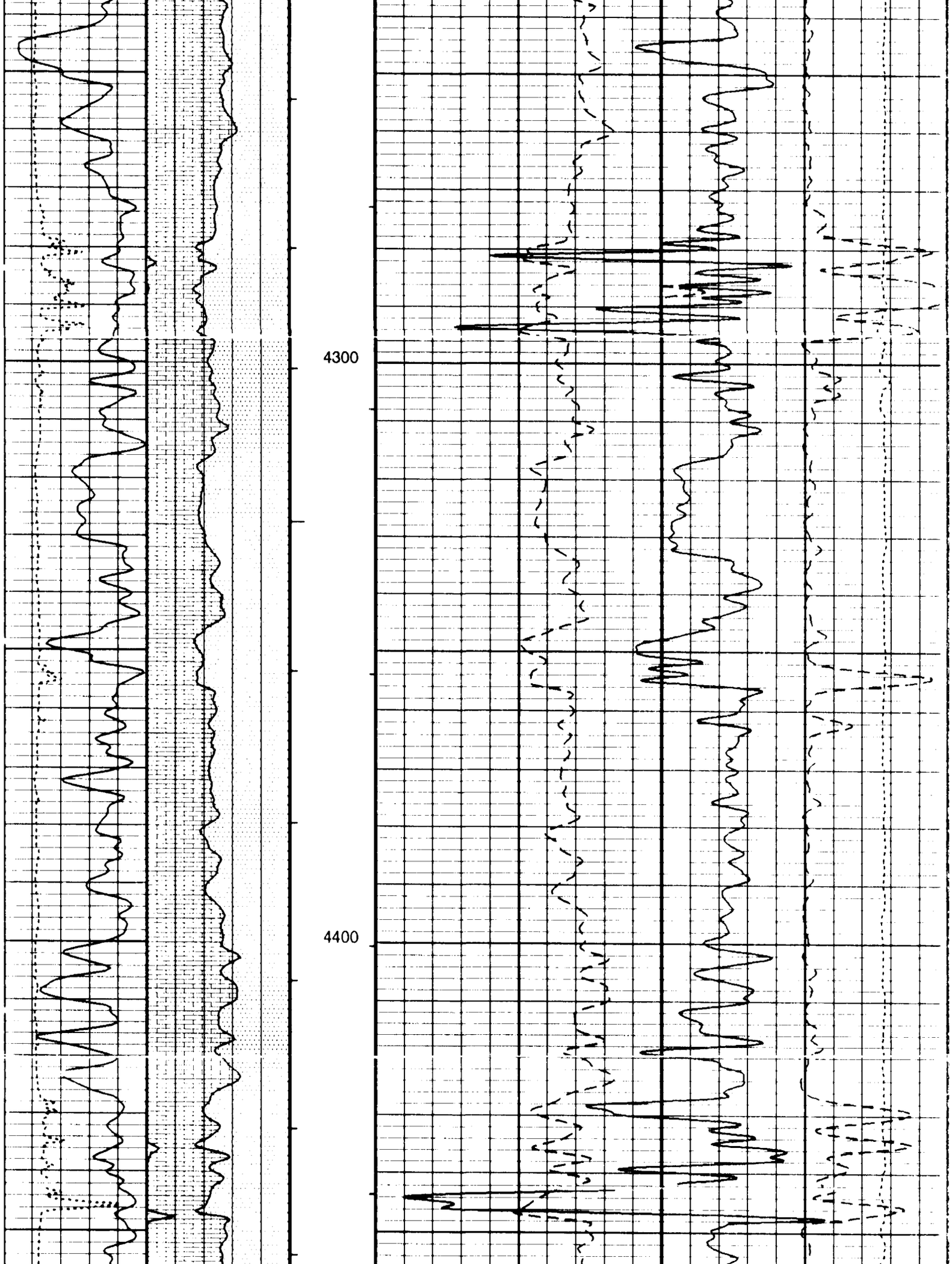

STIA
STIT
TENS
RHOZ
PEFZ
MP3
MP2
HCAL
GR
HDRA
4100
4200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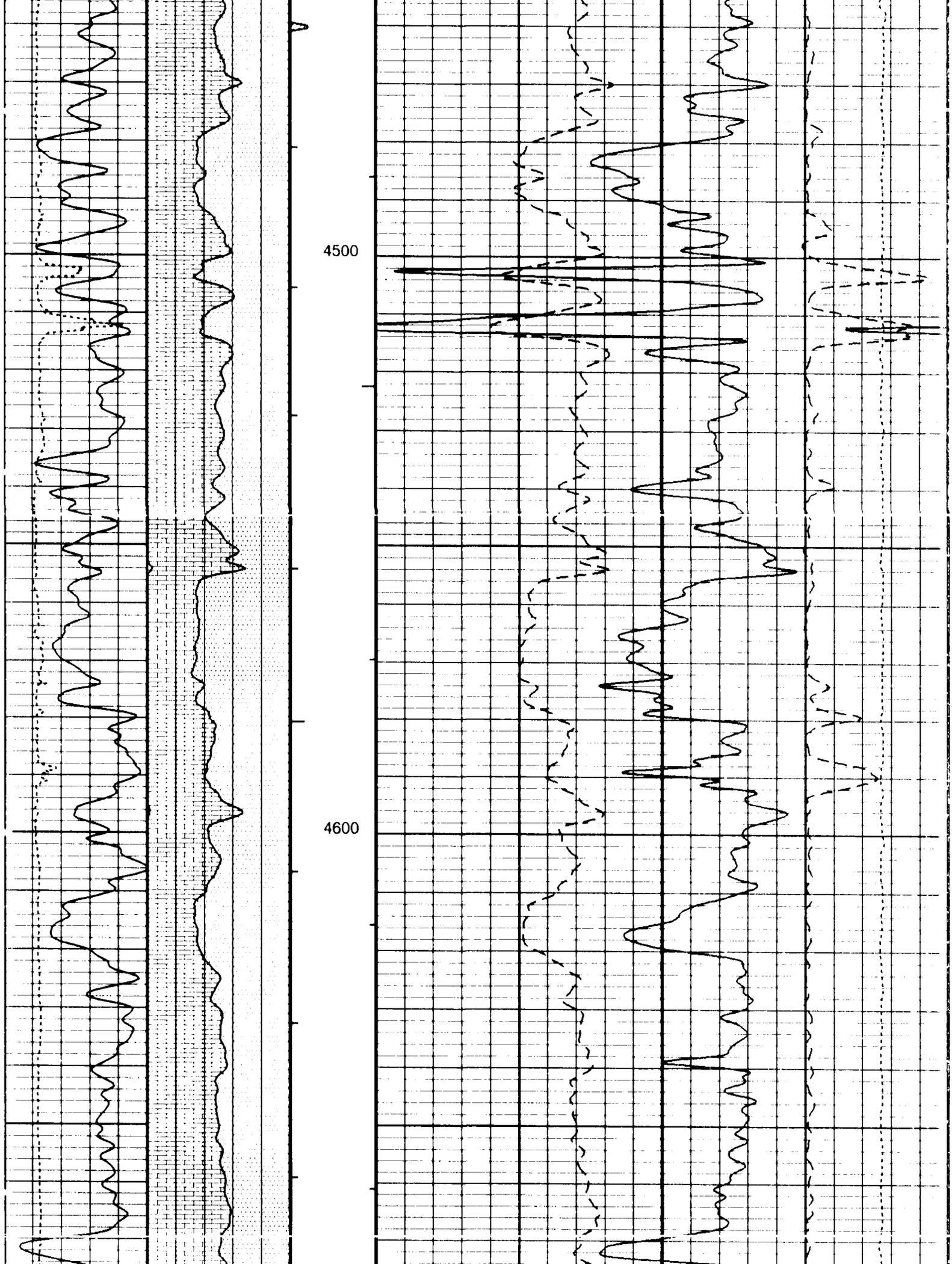
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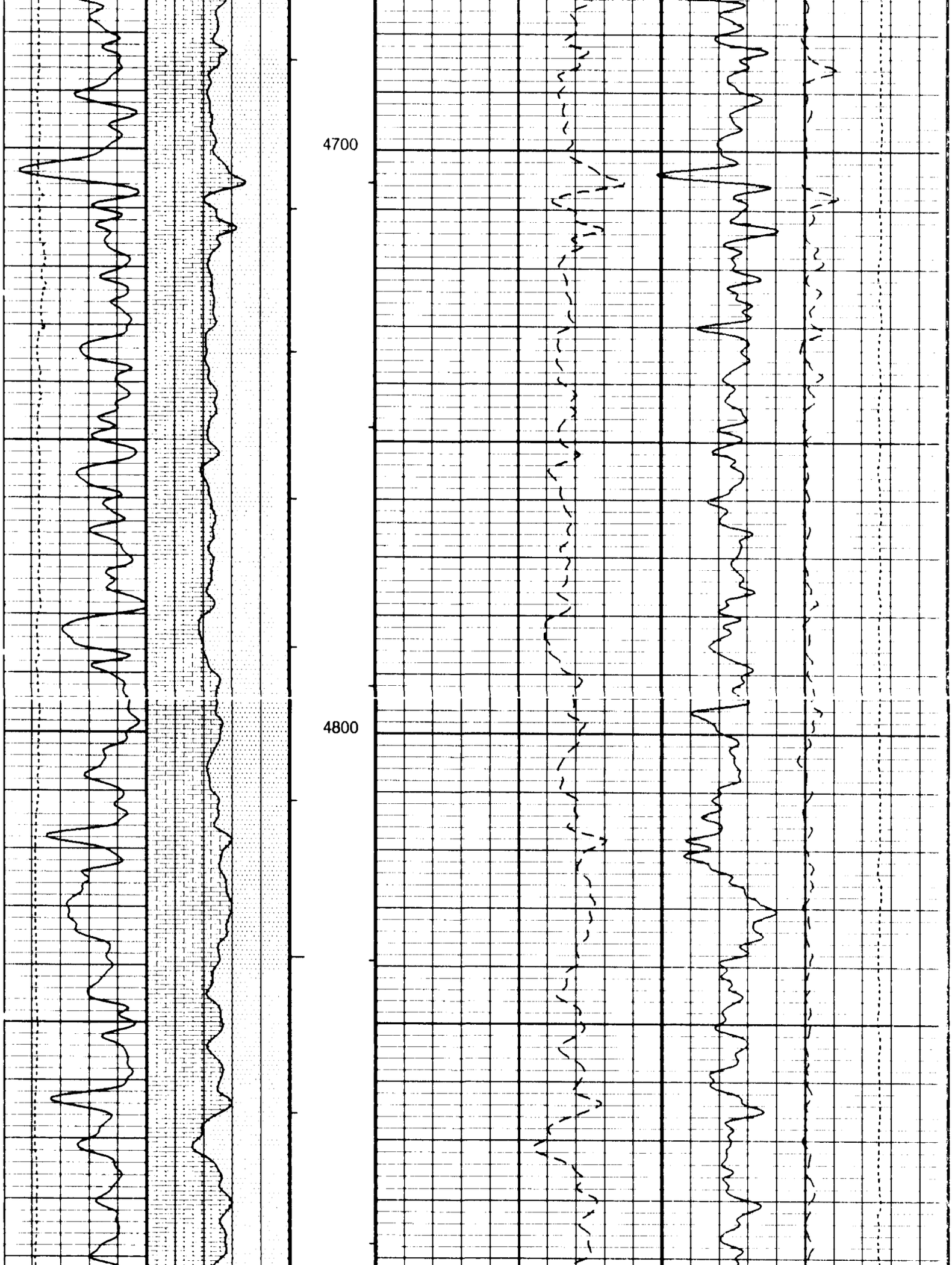
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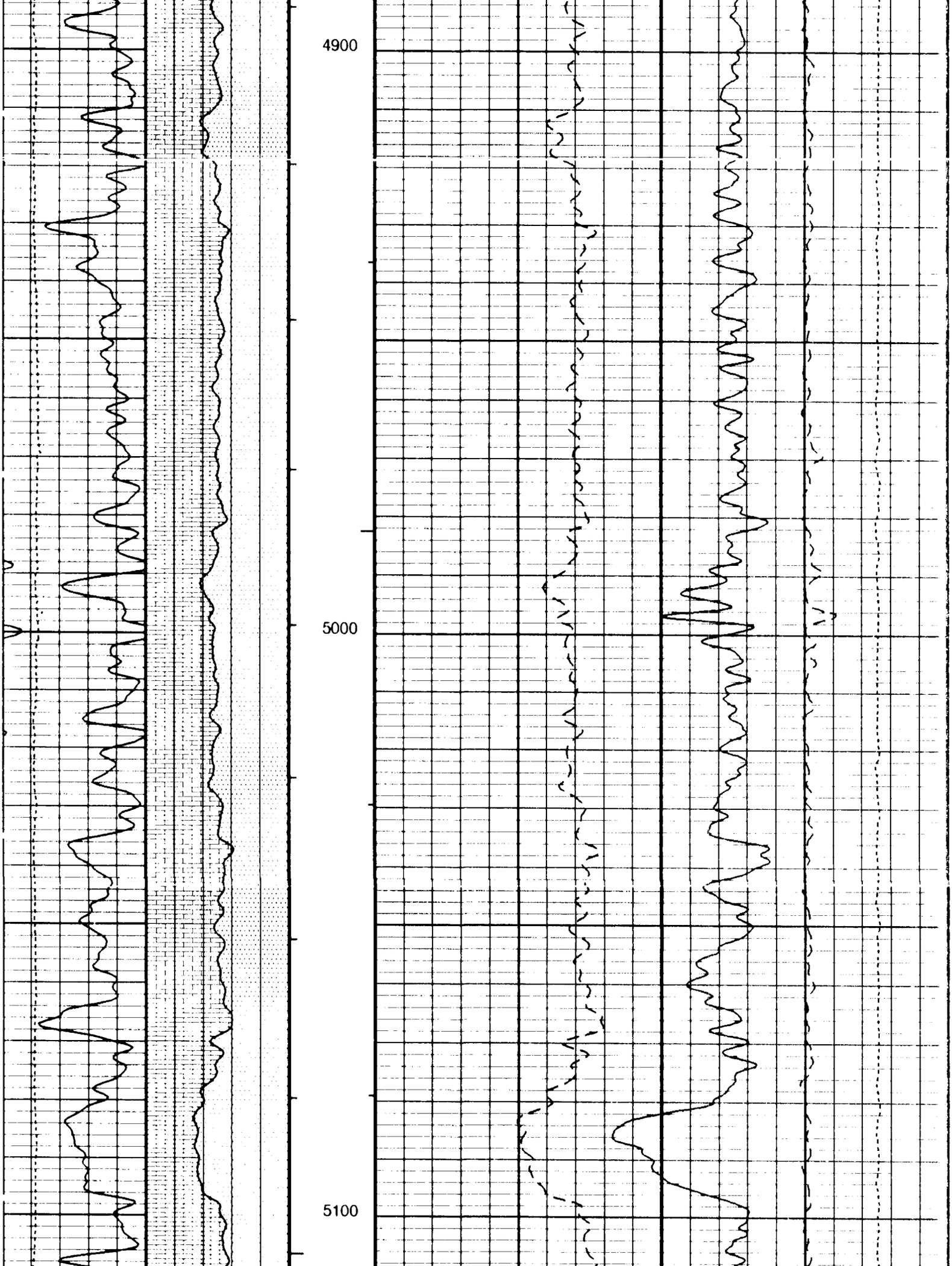
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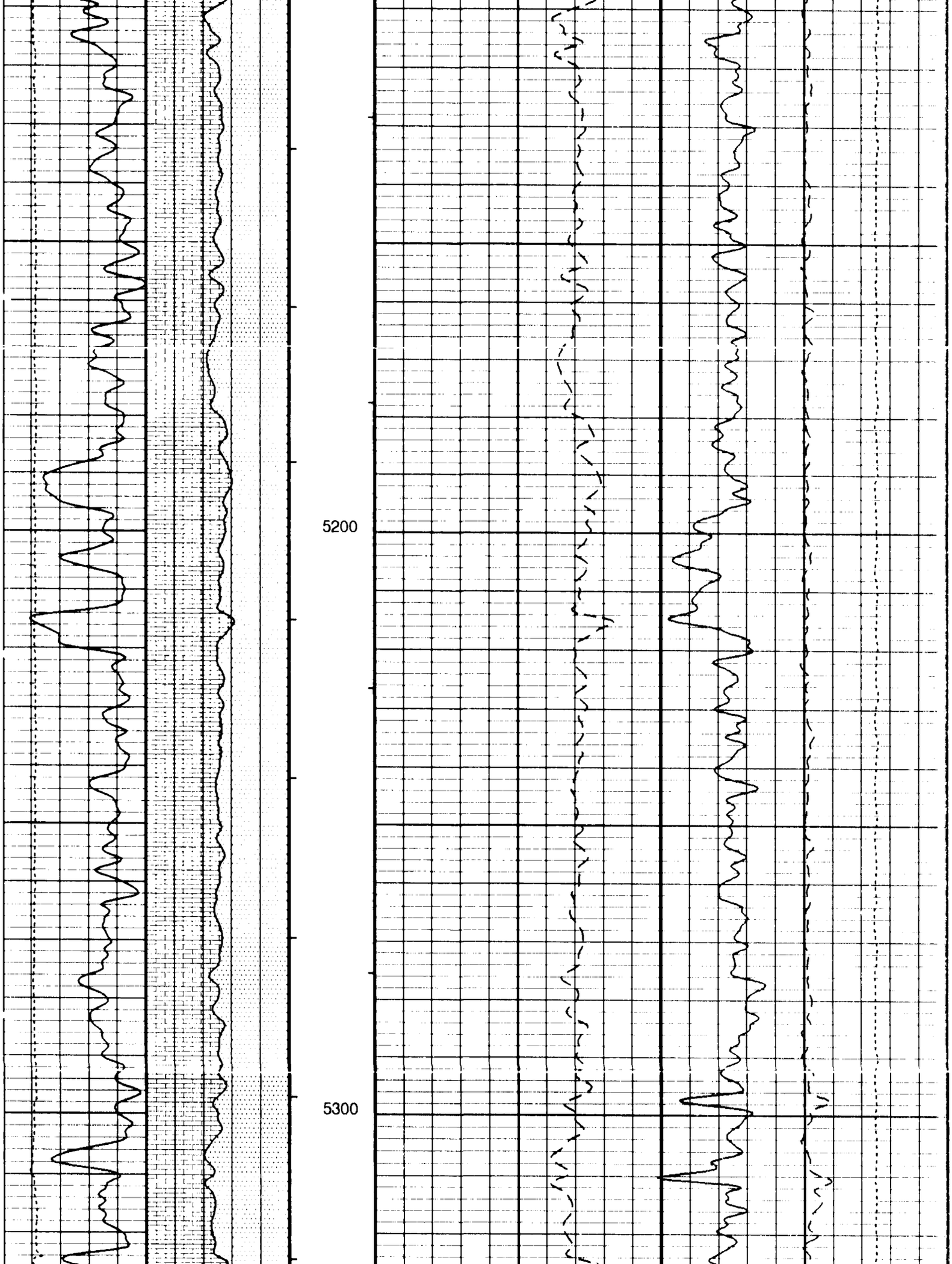
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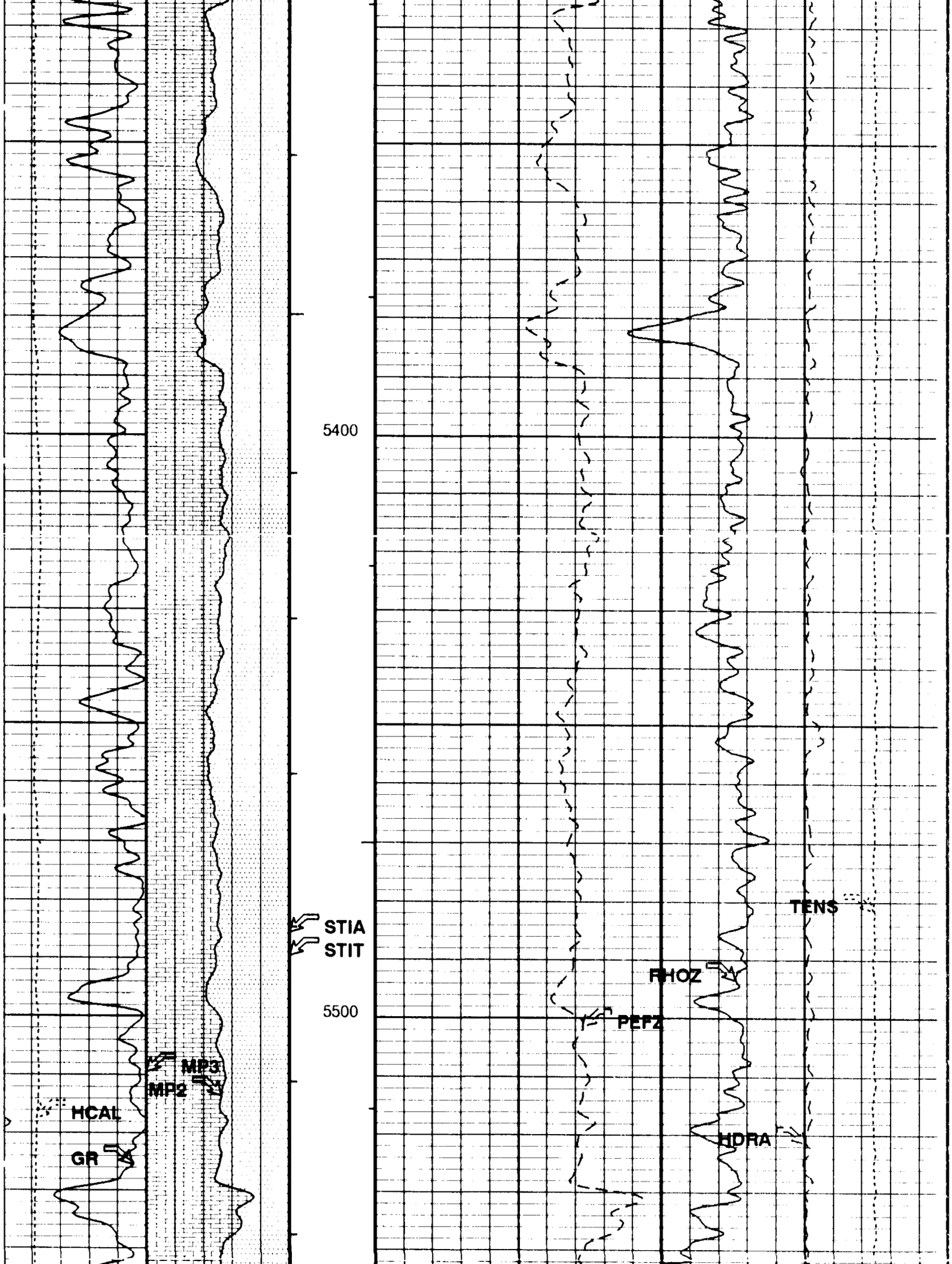
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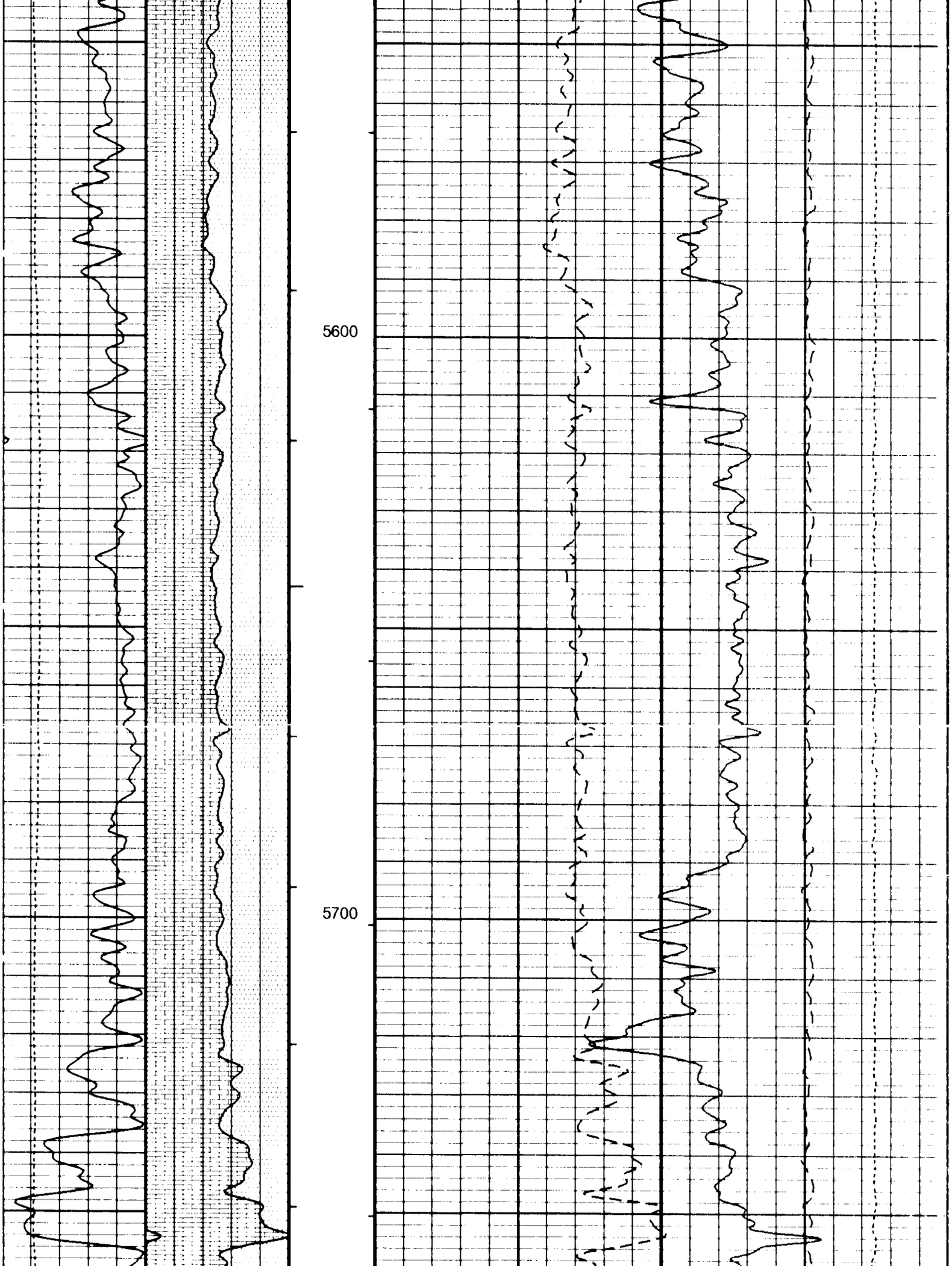
STIT
5500
MP3
MP2
HCAL
GR
TENS
RHOZ
PEFZ
HDRA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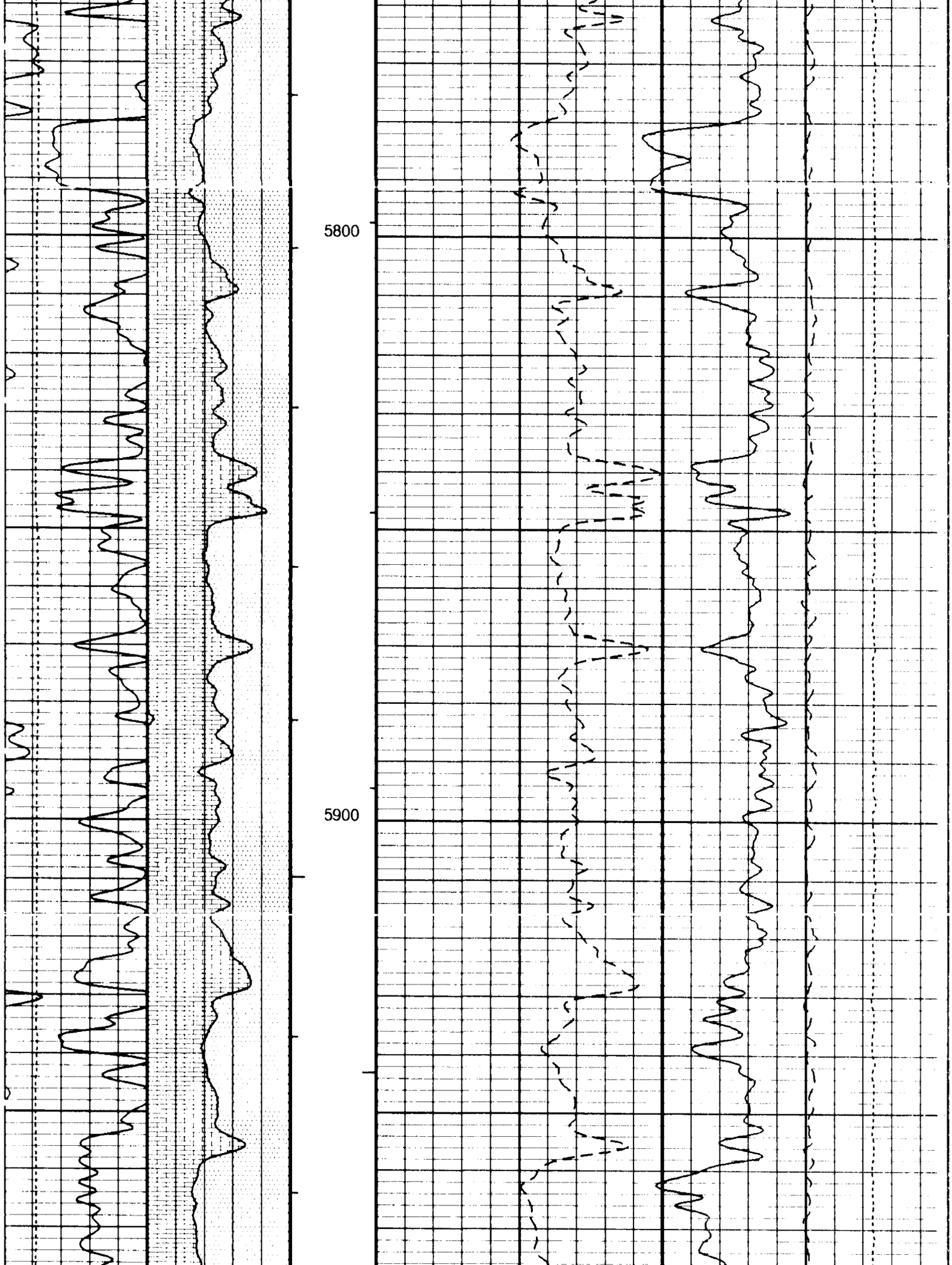
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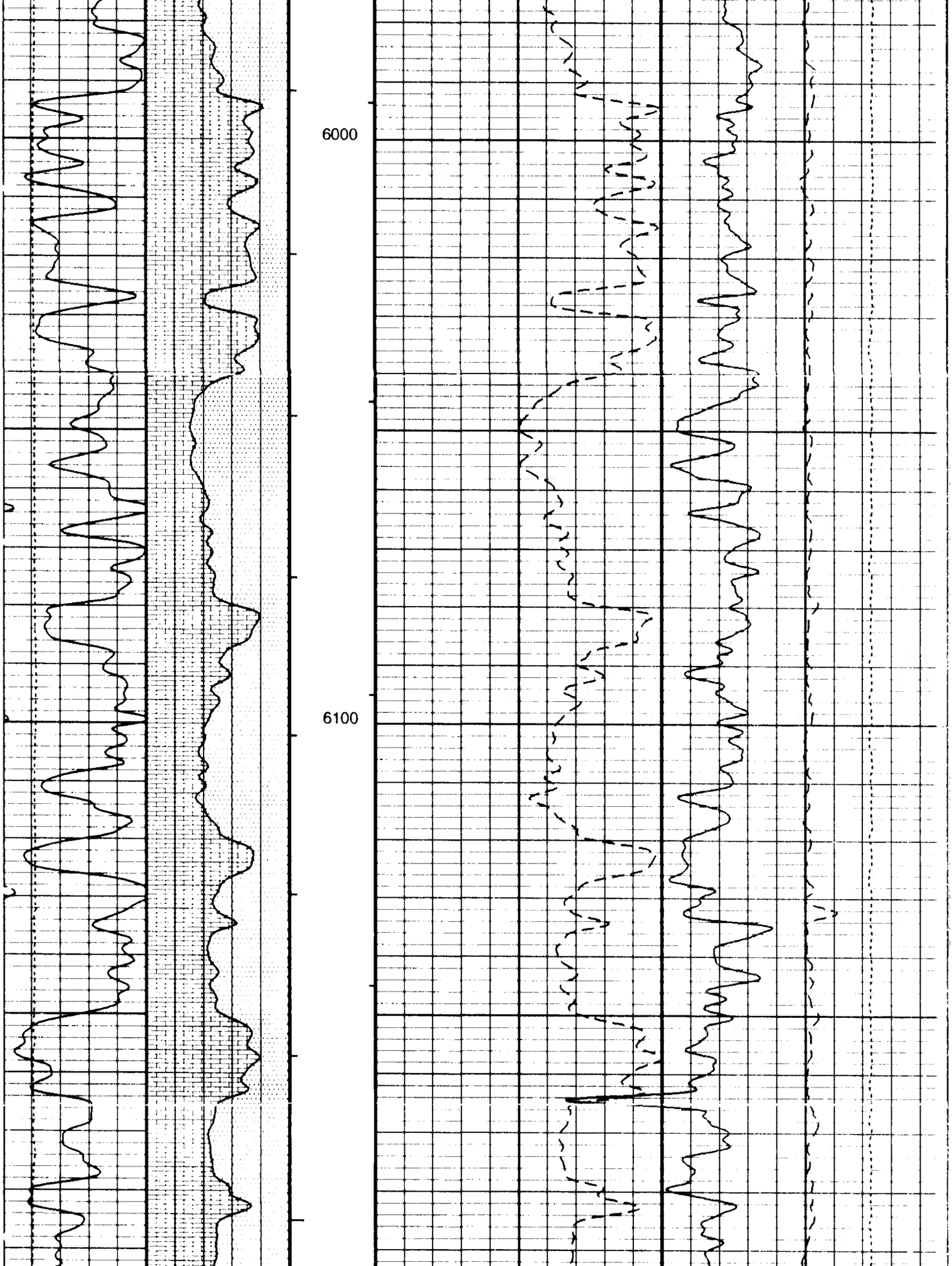
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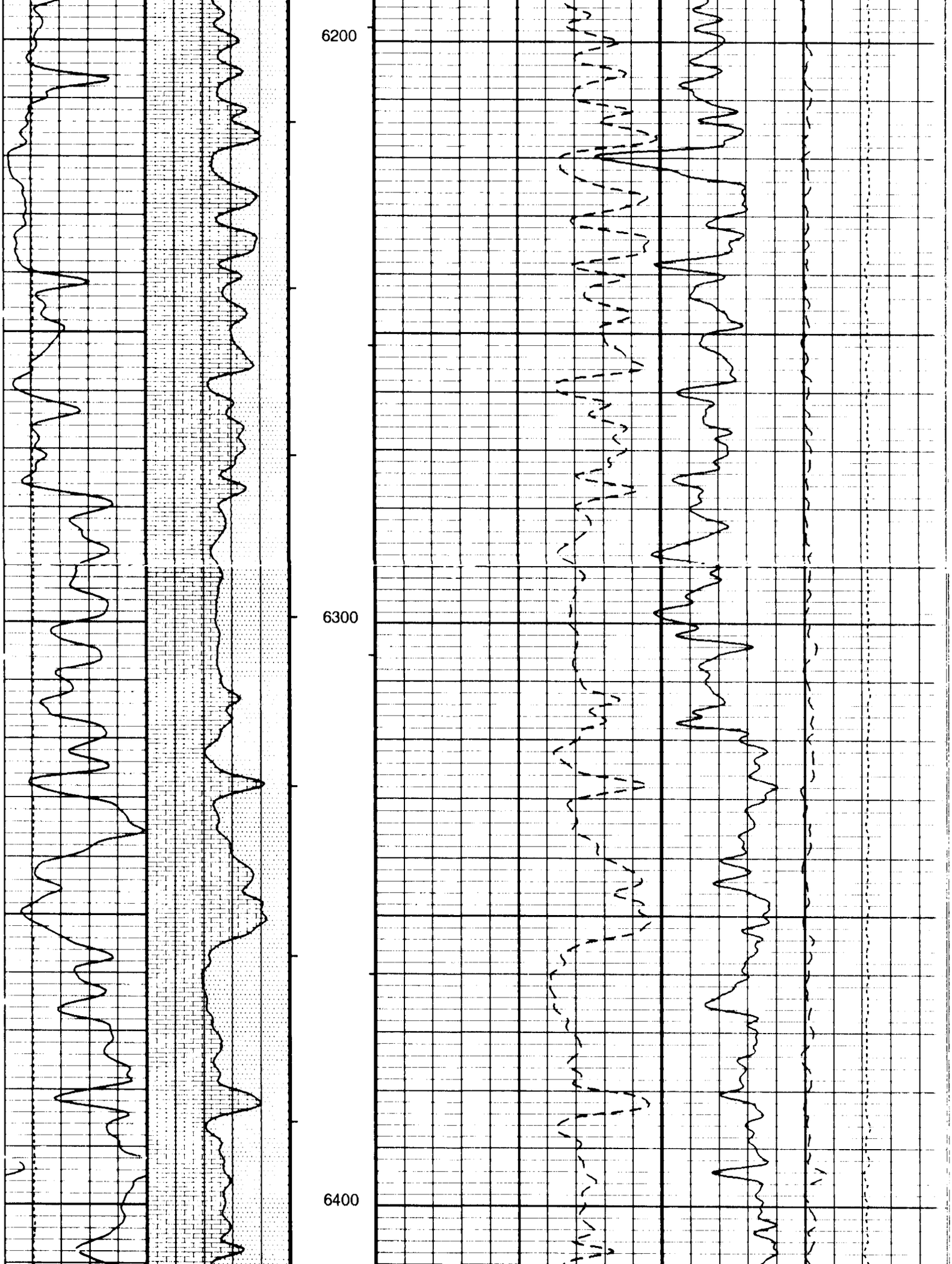
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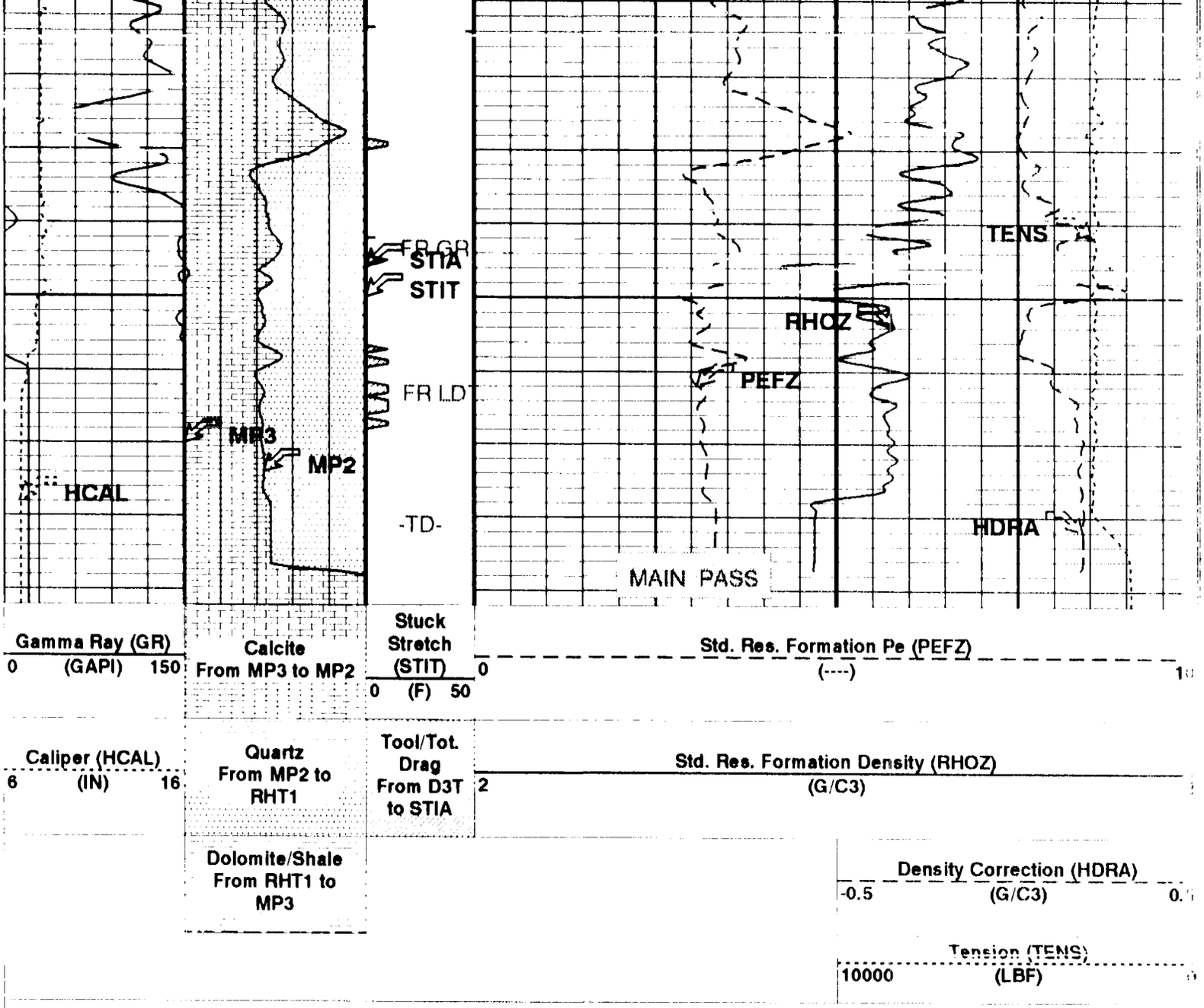


PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BDPS	Bulk Density Processing Selector	RHOB	
BHT	Bottom Hole Temperature (used in calculations)	150	DEGF
BS	Bit Size	7.875	IN
CLIM	Caliper Limit for Bad Hole	10	IN
CNPS	Corrected Neutron Porosity Selector	ENPH	
DFD	Drilling Fluid Density	8.40	LB/G
DHC	Density Hole Correction	BS	
DRUL	DRHO Upper Limit	3	G/C3
FCAL	Caliper Presence Flag	PRESENT	
FCGR	CGR Presence Flag	PRESENT	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FLDT	LDT Presence Flag	PRESENT	
FNUM	Form Factor Numerator	1	
FSON	Sonic Presence Flag	ABSENT	
GGRD	Geothermal Gradient	1.000000e-02	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HMPCO	HILT RTSC Measure points correction	NO	

HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSTI	STI Uses HILT Acceleration	YES	
MATR	Rock Matrix Type	SANDSTONE	
NIAV	HRDD Density/Pe Algorithm Version	1	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PMAX	PHI Maximum	35	PU
POUT	Porosity Output Lithology	SANDSTONE	
RG21	RHO Grain (2-Mineral Model, Min-1)	2.71	G/C3
RG22	RHO Grain (2-Mineral Model, Min-2)	2.644	G/C3
RG23	RHO Grain (2-Mineral Model, Min-3)	2.877	G/C3
RG31	RHO Grain (3-Mineral Model, Min-1)	2.71	G/C3
RG32	RHO Grain (3-Mineral Model, Min-2)	2.644	G/C3
RG33	RHO Grain (3-Mineral Model, Min-3)	2.877	G/C3
RMFS	Resistivity of Mud Filtrate Sample	3.2500	OHMM
RTLF	RT Limit Flag	NO_LIMIT	
RWF	Resistivity of Free Water	2.000000e-02	OHMM
SHT	Surface Hole Temperature	60	DEGF
STKT	STI Stuck Threshold	2.5	FT
TD	Total Depth	6474	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF
UF	U Fluid	0.398	B/C3
UM21	U Matrix (2-Mineral Model, Min-1)	13.77	B/C3
UM22	U Matrix (2-Mineral Model, Min-2)	4.779	B/C3
UM23	U Matrix (2-Mineral Model, Min-3)	8.997	B/C3
UM31	U Matrix (3-Mineral Model, Min-1)	13.77	B/C3
UM32	U Matrix (3-Mineral Model, Min-2)	4.779	B/C3
UM33	U Matrix (3-Mineral Model, Min-3)	8.997	B/C3

Format: DENS.MIN Vertical Scale: 5" per 100' Graphics File Created: 27-SEP-1996 18:15

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

Output DLIS Files

DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15
REDUCED_HIP	HILTC .069	FN:11	FIELD	27-SEP-1996 18:15

Input DLIS Files

DEFAULT	HILTC .067	FN:6	FIELD	27-SEP-1996 17:33	6486.0 FT	6136.5 FT
DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT

Output DLIS Files

DEFAULT	HILTC .072	FN:14	FIELD	27-SEP-1996 20:37
REDUCED_HIP	HILTC .072	FN:15	FIELD	27-SEP-1996 20:37

Integrated Hole/Cement Volume Summary

Hole Volume = 118.58 F3

Cement Volume = 62.32 F3 (assuming 5.50 IN casing O.D.)

Computed from 6474.0 FT to 6133.5 FT using data channel(s) HCAL

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

TENS_PER Curve (TENS_PER)

TENS_REP Curve (TENS_REP)
10000 (LBF)

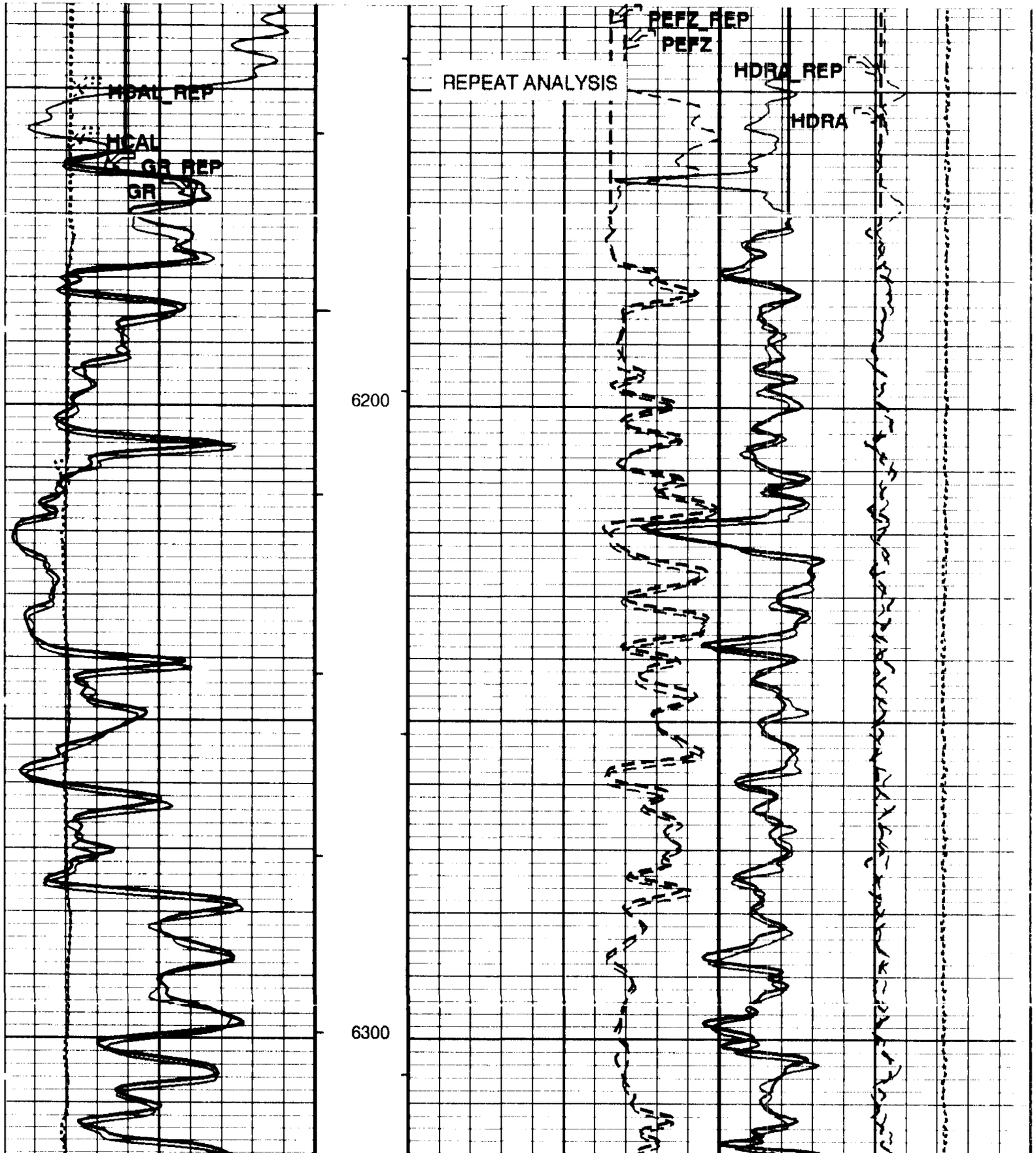
HDRA_REP Curve (HDRA_REP)
-0.25 (G/C3) 0.2

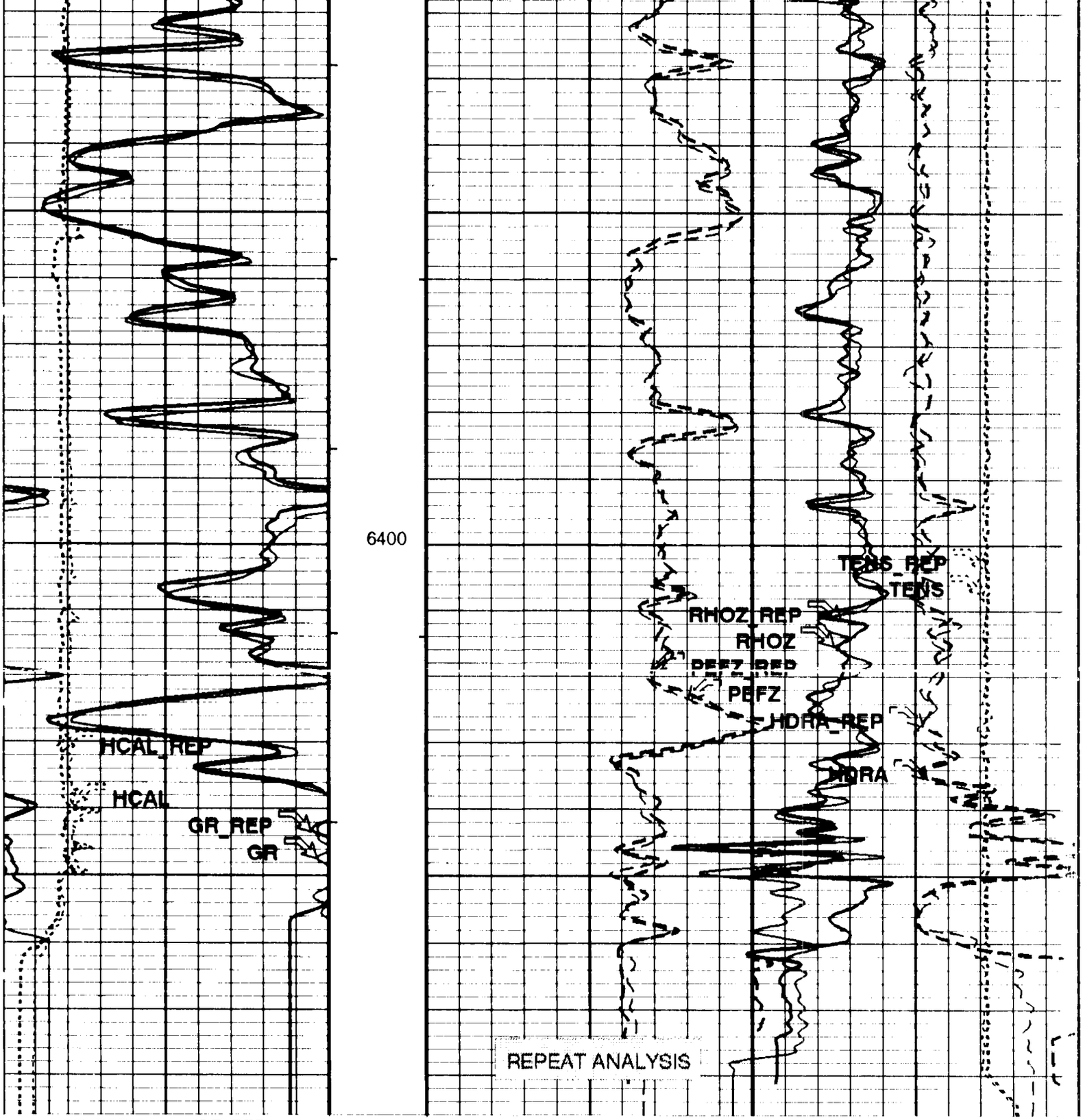
HCAL_REP Curve (HCAL_REP)
6 (IN) 16

GR_REP Curve (GR_REP)
0 (GAPI) 150

RHOZ_REP Curve (RHOZ_REP)
2 (G/C3)

PEFZ_REP Curve (PEFZ_REP)
0 (----) 1





GR_REP Curve (GR_REP)
0 (GAPI) 150

HCAL_REP Curve (HCAL_REP)
6 (IN) 16

PEFZ_REP Curve (PEFZ_REP)
0 (----) 1

RHOZ_REP Curve (RHOZ_REP)
2 (G/C3)

HDRA_REP Curve (HDRA_REP)
-0.25 (G/C3) 0.2

TENS_REP Curve (TENS_REP)
10000 (LBF)

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3

Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	8.40	LB/G
DHC	Density Hole Correction	BS	
DO	Depth Offset	0.0	FT
DORL	Depth Offset Repeat Analysis	0.0	FT
HMPCO	HILT RTSC Measure points correction	NO	
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSTI	STI Uses HILT Acceleration	YES	
NIAV	HRDD Density/Pe Algorithm Version	1	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PP	Playback Processing	NORMAL	

Format: DENS_REP Vertical Scale: 5" per 100' Graphics File Created: 27-SEP-1996 20:37

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

Input DLIS Files

DEFAULT	HILTC .067	FN:6	FIELD	27-SEP-1996 17:33	6486.0 FT	6136.5 FT
DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT

Output DLIS Files

DEFAULT	HILTC .072	FN:14	FIELD	27-SEP-1996 20:37
REDUCED_HIP	HILTC .072	FN:15	FIELD	27-SEP-1996 20:37

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase							
Master. Calibration out of date Jun 15 08:08 1996 Before Sep 27 16:59 1996							
Thru Cal Magnitude - 0	0	0.6235	0.6232	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	1.278	1.277	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	0.6344	0.6337	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	0.7182	0.7179	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	1.342	1.342	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	1.954	1.953	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	1.953	1.951	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	1.393	1.394	N/A	N/A	N/A	V
Phase - 0	0	55.81	56.80	N/A	N/A	N/A	DEG
Phase - 1	0	54.71	55.71	N/A	N/A	N/A	DEG
Phase - 2	0	50.99	52.00	N/A	N/A	N/A	DEG
Phase - 3	0	50.20	51.22	N/A	N/A	N/A	DEG
Phase - 4	0	43.97	45.01	N/A	N/A	N/A	DEG
Phase - 5	0	42.09	43.16	N/A	N/A	N/A	DEG
Phase - 6	0	42.09	43.16	N/A	N/A	N/A	DEG
Phase - 7	0	38.45	39.70	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Auxilliary							
Master: Calibration out of date Jun 15 08:08 1996 Before: Sep 27 16:59 1996							
AIT-H SPA Plus	990.5	993.0	993.3	N/A	N/A	N/A	MV
AIT-H SPA Zero	0	-0.2287	-0.2027	N/A	N/A	N/A	MV
AIT-H Temperature Plus	0.9150	0.9198	0.9201	N/A	N/A	N/A	V
AIT-H Temperature Zero	0	-0.0002239	-0.0001948	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Test Loop Gain Correction							
Master Calibration out of date Jun 15 08:08 1996							
Test Loop Gain Magnitude - 0	0	1.012	N/A	N/A	N/A	N/A	V

Test Loop Gain Magnitude - 0	0	1.016	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 1	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 2	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 3	0	1.015	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 4	0	0.9943	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 5	0	1.007	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 6	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 7	0	1.026	N/A	N/A	N/A	N/A	V
Phase - 0	0	0.4351	N/A	N/A	N/A	N/A	DEG
Phase - 1	0	0.4877	N/A	N/A	N/A	N/A	DEG
Phase - 2	0	-0.07914	N/A	N/A	N/A	N/A	DEG
Phase - 3	0	-0.01529	N/A	N/A	N/A	N/A	DEG
Phase - 4	0	-0.08327	N/A	N/A	N/A	N/A	DEG
Phase - 5	0	-0.3508	N/A	N/A	N/A	N/A	DEG
Phase - 6	0	0.01955	N/A	N/A	N/A	N/A	DEG
Phase - 7	0	-0.3622	N/A	N/A	N/A	N/A	DEG

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Sonde Error Correction
Master: Calibration out of date Jun 15 08:08 1996

R Sonde Error Correction - 0	0	-117.3	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 1	0	162.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 2	0	107.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 3	0	60.03	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 4	0	24.85	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 5	0	13.28	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 6	0	9.377	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 7	0	-0.4773	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 0	0	-242.4	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 1	0	281.1	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 2	0	103.4	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 3	0	-8.335	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 4	0	-7.819	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 5	0	3.205	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 6	0	5.059	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 7	0	10.05	N/A	N/A	N/A	N/A	MM/M

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Mud Gain Correction
Master: Calibration out of date Jun 15 08:08 1996

Coarse - Mag, Real, Imag - 0	0	1.100	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 1	0	1.100	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 2	0	1.100	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 0	0	1.098	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 1	0	1.099	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 2	0	1.099	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Stab Measurement Summary
Before: Sep 24 05:44 1996

BS Window Ratio	0.9832	N/A	0.9849	N/A	N/A	N/A	
BS Window Sum	16120	N/A	16110	N/A	N/A	N/A	CPS
SS Window Ratio	0.4719	N/A	0.4738	N/A	N/A	N/A	
SS Window Sum	11740	N/A	11680	N/A	N/A	N/A	CPS
LS Window Ratio	0.2970	N/A	0.2986	N/A	N/A	N/A	
LS Window Sum	1619	N/A	1606	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations
Before: Sep 24 05:44 1996

BS PM High Voltage (Command)	1441	N/A	1491	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1634	N/A	1638	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1865	N/A	1874	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Crystal Quality Resolutions Calibration
Before: Sep 24 05:44 1996

BS Crystal Resolution	12.54	N/A	12.63	N/A	N/A	N/A	%
SS Crystal Resolution	9.305	N/A	9.515	N/A	N/A	N/A	%
LS Crystal Resolution	10.02	N/A	9.938	N/A	N/A	N/A	%

High resolution Integrated Logging Tool-CTS Wellsite Calibration - MCFL Calibration
Before: Sep 16 15:02 1996

Raw B0 Resistivity	3875	N/A	3855	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3807	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3825	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-CTS Wellsite Calibration - HILT Caliper Calibration
Before: Sep 24 05:42 1996

HILT Caliper Zero Measurement	8.000	N/A	7.853	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	11.82	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Detector Calibration
Before: Sep 24 05:58 1996

Gamma Ray Background	30.00	N/A	57.45	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	183.2	N/A	183.2	N/A	N/A	16.66	GAPI

Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Zero Measurement
Master: Aug 2 02:04 1996 Before: Sep 24 05:43 1996

CNTC Background	25.80	25.80	25.78	N/A	N/A	3.870	CPS
CFTC Background	26.10	26.10	24.94	N/A	N/A	3.915	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Accelerometer Calibration
Before: Sep 27 16:59 1996

Z-Axis Acceleration	32.19	N/A	32.09	N/A	N/A	N/A	F S/

High resolution Integrated Logging Tool-CTS Master Calibration - Inversion results
Master: Jul 31 15.04 1996

Rho Aluminium	2.596	2.599	--	--	--	--	G C3
Rho Magnesium	1.686	1.686	--	--	--	--	G C3
Pe Aluminium	2.570	2.550	--	--	--	--	
Pe Magnesium	2.760	2.775	--	--	--	--	

High resolution Integrated Logging Tool-CTS Master Calibration - Deviation Summary
Master: Jul 31 15:04 1996

BS Average Deviation	0	0.2217	--	--	--	--	%
BS Max Deviation	0	0.6642	--	--	--	--	%
SS Average Deviation	0	0.6695	--	--	--	--	%
SS Max Deviation	0	1.694	--	--	--	--	%
LS Average Deviation	0	0.3227	--	--	--	--	%
LS Max Deviation	0	1.354	--	--	--	--	%

High resolution Integrated Logging Tool-CTS Master Calibration - Tank Measurement
Master: Aug 2 02:04 1996

Thermal Near Corr. (Tank)	6031	5764	--	--	--	--	CPS
Thermal Far Corr. (Tank)	2793	2415	--	--	--	--	CPS
CNTC/CFTC (Tank)	2.159	2.387	--	--	--	--	

The CNT Master Calibration Was Done With The Following Parameters

NCT-B Water Temperature	83.0	DEGF.
Thermal Housing Size	3.375	IN.

High resolution Integrated Logging Tool-CTS / Equipment Identification

Primary Equipment

Array Induction Tool - H	AIT - H	100
Array Induction Sonde	AHIS - BA	100
HILT high-Resolution Mechanical Sonde	HRMS - B	830
HILT Rxo Gamma-ray Device	HRGD -	818
HILT Nuclear Back-Scatter Detector	HILT -	
HILT Nuclear Short-Spacing Detector	HILT -	
HILT Nuclear Long-Spacing Detector	HILT -	
Micro Cylindrically Focused Log Device	MCFL -	

Auxiliary Equipment

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Electronics Calibration Check - Thru Cal Mag. & Phase

Icbx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6235		0.6050	55.81		71.00
	Before	0.6232			56.80		
1	Master	1.278		1.270	54.71		70.00
	Before	1.277			55.71		
2	Master	0.6344		0.6230	50.99		66.00
	Before	0.6337			52.00		
3	Master	0.7182		0.7040	50.20		65.00
	Before	0.7179			51.22		
4	Master	1.342		1.337	43.97		59.00
	Before	1.342			45.01		

5	Master	1.954	1.955	42.09	57.00
	Before	1.953		43.16	
6	Master	1.953	1.955	42.09	57.00
	Before	1.951		43.16	
7	Master	1.393	1.415	38.45	53.00
	Before	1.394		39.70	

60.00 % (Minimum) (Nominal) 140.0 % (Maximum)

Nom -60.00 (Minimum) (Nominal) Nom + 60.00 (Maximum)

Master: Calibration out of date Jun 15 08:08 1996 Before: Sep 27 16:59 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Electronics Calibration Check - Auxiliary

Phase	AIT-H SPA Plus MV	Value	Phase	AIT-H SPA Zero MV	Value
Master		993.0	Master		-0.2287
Before		993.3	Before		-0.2027

941.0 (Minimum) 990.5 (Nominal) 1040 (Maximum)

-50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)

Phase	AIT-H Temperature Plus V	Value	Phase	AIT-H Temperature Zero V	Value
Master		0.9198	Master		-0.0002239
Before		0.9201	Before		-0.0001948

0.8700 (Minimum) 0.9150 (Nominal) 0.9600 (Maximum)

-0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)

Master: Calibration out of date Jun 15 08:08 1996 Before: Sep 27 16:59 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V	Value	Phase DEG
0	1.016	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.4351	-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.014	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.4877	-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.017	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	-0.07914	-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.015	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	-0.01529	-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	0.9943	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	-0.08327	-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	1.007	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	-0.3508	-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	1.014	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.01955	-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.026	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	-0.3622	-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: Calibration out of date Jun 15 08:08 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M	Value	X Sonde Error Correction MM/M
0	-117.3	-231.0 (Minimum) -56.00 (Nominal) 119.0 (Maximum)	-242.4	-2250 (Minimum) 0 (Nominal) 2250 (Maximum)
1	162.8	114.0 159.0 204.0	281.1	-625.0 0 625.0

		(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)
2	107.8	66.00	111.0	156.0	103.4	-350.0	0	350.0
3	60.03	39.00	64.00	89.00	-8.335	-250.0	0	250.0
4	24.85	15.00	25.00	35.00	-7.819	-63.00	0	63.00
5	13.28	4.000	14.00	24.00	3.205	-50.00	0	50.00
6	9.377	5.000	10.00	15.00	5.059	-30.00	0	30.00
7	-0.4773	-5.000	0	5.000	10.05	-30.00	0	30.00

Master Calibration out of date Jun 15 08 08 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse - Mag. Real. Imag (Minimum)	(Nominal)	(Maximum)	Value	Fine - Mag. Real. Imag (Minimum)	(Nominal)	(Maximum)
0	1.100	0.6000	1.000	1.400	1.098	0.6000	1.000	1.400
1	1.100	0.6000	1.000	1.400	1.099	0.6000	1.000	1.400
2	1.100	0.6000	1.000	1.400	1.099	0.6000	1.000	1.400

Master Calibration out of date Jun 15 08 08 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio (Minimum)	(Nominal)	(Maximum)	Value	Phase	SS Window Ratio (Minimum)	(Nominal)	(Maximum)	Value	Phase	LS Window Ratio (Minimum)	(Nominal)	(Maximum)	Value
Before	0.9340	0.9832	1.032	0.9849	Before	0.4483	0.4719	0.4955	0.4738	Before	0.2822	0.2970	0.3119	0.2966

Phase	BS Window Sum CPS (Minimum)	(Nominal)	(Maximum)	Value	Phase	SS Window Sum CPS (Minimum)	(Nominal)	(Maximum)	Value	Phase	LS Window Sum CPS (Minimum)	(Nominal)	(Maximum)	Value
Before	15310	16120	16920	16110	Before	11160	11740	12330	11680	Before	1538	1619	1700	1606

Before Sep 24 05 44 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Photo-multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V (Minimum)	(Nominal)	(Maximum)	Value	Phase	SS PM High Voltage (Command) V (Minimum)	(Nominal)	(Maximum)	Value	Phase	LS PM High Voltage (Command) V (Minimum)	(Nominal)	(Maximum)	Value
Before	1341	1441	1541	1491	Before	1534	1634	1734	1638	Before	1765	1865	1965	1874

Before Sep 24 05 44 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution % (Minimum)	(Nominal)	(Maximum)	Value	Phase	SS Crystal Resolution % (Minimum)	(Nominal)	(Maximum)	Value	Phase	LS Crystal Resolution % (Minimum)	(Nominal)	(Maximum)	Value
Before	11.54	12.54	13.54	12.63	Before	8.305	9.305	10.30	9.515	Before	9.018	10.02	11.02	9.936

Before Sep 24 05 44 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3856	Before		3807	Before		3625
3565 (Minimum)	3875 (Nominal)	4185 (Maximum)	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)

Before Sep 16 15 02 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		7 853	Before		11.82
6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)	9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)

Before Sep 24 05 42 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		57 45	Before		183 2	Before		165 0
0 (Minimum)	30 00 (Nominal)	120 0 (Maximum)	166 6 (Minimum)	183 2 (Nominal)	199 9 (Maximum)	150 0 (Minimum)	165 0 (Nominal)	180 0 (Maximum)

Before Sep 24 05 58 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25 80	Master		26.10
Before		25 78	Before		24.94
5.000 (Minimum)	25.80 (Nominal)	40.00 (Maximum)	5 000 (Minimum)	26.10 (Nominal)	40.00 (Maximum)

Master: Aug 2 02:04 1996 Before: Sep 24 05 43 1996

High resolution Integrated Logging Tool-CTS

Wellsite Calibration

Accelerometer Calibration

Phase	Z-Axis Acceleration F/S2	Value
Before		32 09
31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)

Before: Sep 27 16:59 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6235		0.6050	55.81		71 00
1	Master	1 278		1.270	54 71		70 00
2	Master	0 6344		0 6230	50.99		66 00
3	Master	0 7182		0.7040	50 20		65 00
4	Master	1.342		1.337	43.97		59 00
5	Master	1.954		1.955	42.09		57.00
6	Master	1.953		1.955	42.09		57.00
7	Master	1.393		1.415	38 45		53 00
			60.00 % (Minimum) (Nominal) 140.0 % (Maximum)			Nom -60.00 (Minimum) (Nominal) Nom + 60.00 (Maximum)	

Master: Calibration out of date Jun 15 08:08 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Electronics Calibration Check - Auxilliary

Phase	AIT-H SPA Plus MV	Value	Phase	AIT-H SPA Zero MV	Value
Master		993 0	Master		-0.2287
941 0	990 5	1040	-50 00	0	50.00

Phase	AIT-H Temperature Plus V			Value
Master	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)	0.9198

Phase	AIT-H Temperature Zero V			Value
Master	-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)	-0.0002239

Master: Calibration out of date Jun 15 08:08 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG		
0	1.016	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.4351	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.014	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.4877	3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.017	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.07914	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.015	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.01529	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9943	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.08327	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	1.007	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.3508	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.014	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.01955	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.026	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.3622	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master Calibration out of date Jun 15 08:08 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	-117.3	-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)	-242.4	-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	162.8	114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)	281.1	-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	107.8	66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)	103.4	-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	60.03	39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)	-8.335	-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	24.85	15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)	-7.819	-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	13.28	4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)	3.205	-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.377	5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)	5.059	-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-0.4773	-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)	10.05	-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: Calibration out of date Jun 15 08:08 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Mud Gain Correction

Idx	Value	Coarse - Mag, Real, Imag			Value	Fine - Mag, Real, Imag		
0	1.100	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)	1.098	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
1	1.100	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)	1.099	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
2	1.100	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)	1.099	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)

Master. Calibration out of date Jun 15 08:08 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Inversion results

Phase	Rho Aluminium G/C3			Value	Phase	Rho Magnesium G/C3			Value
Master	2.586 (Minimum)	2.596 (Nominal)	2.606 (Maximum)	2.599	Master	1.676 (Minimum)	1.686 (Nominal)	1.696 (Maximum)	1.686

Phase	Pe Aluminium			Value	Phase	Pe Magnesium			Value
Master	2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)	2.550	Master	2.660 (Minimum)	2.760 (Nominal)	2.860 (Maximum)	2.775

Master. Jul 31 15:04 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %			Value	Phase	SS Average Deviation %			Value	Phase	LS Average Deviation %			Value
Master	-0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)	0.2217	Master	-1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)	0.6695	Master	-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)	0.3227

Phase	BS Max Deviation %			Value	Phase	SS Max Deviation %			Value	Phase	LS Max Deviation %			Value
Master	-1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)	0.6642	Master	-2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)	1.694	Master	-3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)	1.154

Master Jul 31 15:04 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr (Tank) CPS			Value	Phase	Thermal Far Corr (Tank) CPS			Value	Phase	CNTC CFTC (Tank)			Value
Master	5000 (Minimum)	6031 (Nominal)	7200 (Maximum)	5764	Master	2075 (Minimum)	2793 (Nominal)	3125 (Maximum)	2415	Master	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)	2.387

Master Aug 2 02:04 1996

COMPANY:	PETROGLYPH OPERATING COMPANY, INC.	BOTTOM LOG INTERVAL	6462 F
		SCHLUMBERGER DEPTH	6480 F
WELL:	UTE TRIBAL 03-12	DEPTH DRILLER	6474 F
FIELD:	ANTELOPE CREEK	KELLY BUSHING	5964 F
COUNTY:	DUCHESNE	DRILL FLOOR	5963 F
STATE:	UTAH	GROUND LEVEL	5954 F

LITHO DENSITY

Schlumberger

COMPENSATED NEUTRON
GAMMA RAY LOG

COMPANY: **PETROGLYPH OPERATING COMPANY, INC.**

WELL: **UTE TRIBAL 03-12**

FIELD: **ANTELOPE CREEK**

COUNTY: **DUCHESNE** STATE: **UTAH**

Schlumberger

ARRAY INDUCTION with Linear Correlation GAMMA RAY LOG

Field: ANTELOPE CREEK
Location: 2272' FNL 575' FWL
Well: UTE TRIBAL 03-12
Company: PETROGLYPH OPERATING

LOCATION

2272' FNL 575' FWL		Elev.:	K.B. 5964 F
NW/SW			G.L. 5954 F
			D.F. 5963 F
Permanent Datum:	GROUND LEVEL	Elev.:	5954 F
Log Measured From:	KELLY BUSHING	10.0 F	above Perm. Datum
Drilling Measured From:	KELLY BUSHING		

API Serial No.	SECTION	TOWNSHIP	RANGE
	3	5S	3W

Logging Date		27-SEP-1996			
Run Number		ONE			
Depth Driller		6474 F			
Schlumberger Depth		6480 F			
Bottom Log Interval		6472 F			
Top Log Interval		252 F			
Casing Driller Size @ Depth		8.625 IN	@	280 F	@
Casing Schlumberger		252 F			
Bit Size		7.875 IN			
Type Fluid In Hole		KCL WATER			
Density	Viscosity	8.4 LB/G	0 S		
Fluid Loss	PH	0 C3	10.4		
Source Of Sample		MUD TANK			
RM @ Measured Temperature		2.750 OHMM	@	65 DEGF	@
RMF @ Measured Temperature		3.250 OHMM	@	65 DEGF	@
RMC @ Measured Temperature		0 OHMM	@	65 DEGF	@
Source RMF	RMC	MUD TANK			
RM @ MRT	RMF @ MRT	1.373 @ 137	1.622	@ 137	@
Maximum Recorded Temperatures		137 DEGF			
Circulation Stopped	Time	27-SEP-1996		14:00	
Logger On Bottom	Time	27-SEP-1996		17:40	
Unit Number	Location	8426	VERNAL, UT		
Recorded By		BRIAN WYLIE			
Witnessed By		GENE SEARLE			

RECEIVED
NOV 2 0 1996
DIV. OF OIL, GAS & MINING

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hlumberger	
In Hole	
Viscosity	
PH	
f Sample	
asured Temperature	
easured Temperature	
easured Temperature	
MF RMC	
T RMF @ MRT	
Recorded Temperatures	
Stopped Time	
Bottom Time	
er Location	
By	
By	

Run 1

Run 2

Run 3

Run 4

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO CLAUSE 4 OF OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

OTHER SERVICES1	OTHER SERVICES2
OS1 POROSITY	OS1:
OS2 LOG	OS2:
OS3	OS3:
OS4	OS4:
OS5	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
SANDSTONE MATRIX: 2.68	
THIS LOG CREATED USING THE	
PLATFORM EXPRESS TOOLSTRING.	
BOWSPRING RUN ON NEUTRON.	
TWO 1.5 INCH STANDOFFS RUN ON AIT-H.	
REDUCED DLIS FILE SENT TO HUB FOR PC FLOPPY.	
DRILLERS CASING GIVEN AS 250 FT BY DRILLER	
CREW: SUNKEES / CRITTON	
THANK YOU FOR CHOOSING SCHLUMBERGER WELL SERVICES.	
RUN 1	RUN 2
SERVICE ORDER # 646594	SERVICE ORDER #:
PROGRAM VERSION: 7C0-427	PROGRAM VERSION:
FLUID LEVEL:	FLUID LEVEL:

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1 | RUN 2

SURFACE EQUIPMENT

TCM-AB
GSR-U/Y
NCT-B
CNB-AB

NCS-VB

DOWNHOLE EQUIPMENT

PEH-A
PEH-A

40.8

AH-64
AH-64

HGNS HTEM
HMCA
TelStatus
CTEM

39.0

HILTB-CTS
HGNSC-B
HMCA
TCC-B
HGNS-H
NLS-KL
NSR-F
HACCZ
HCNT
HGR
HRCC-B 828
HRMS-B 830
HRGD 818
GLS-VJ 1867
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
AIT-H 100
AHIS-BA 100
BOW-SPR
NPV-N

Gamma-Ray — 37.6 — 36.9

37.6

Neutron F — 31.1
Neutron N — 30.6

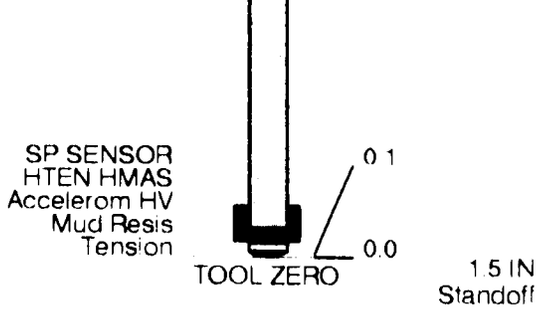
HGNS sens — 28.2

HRCC cart — 24.2

MCFL — 18.6
HILT cali — 18.3
HRDD-LS
HRDD-SS
HRDD-BS — 17.8

1.5 IN
Standoff

Induction
Temperatu
Power Sup — 7.9



MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Output DLIS Files

DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	100.5 FT
REDUCED_HIP	HILTC .069	FN:11	FIELD	27-SEP-1996 18:15	6492.0 FT	100.5 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 2419.07 F3

Cement Volume = 1397.04 F3 (assuming 5.50 IN casing O.D.)

Computed from 6474.0 FT to 280.0 FT using data channel(s) HCAL

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

PIP SUMMARY

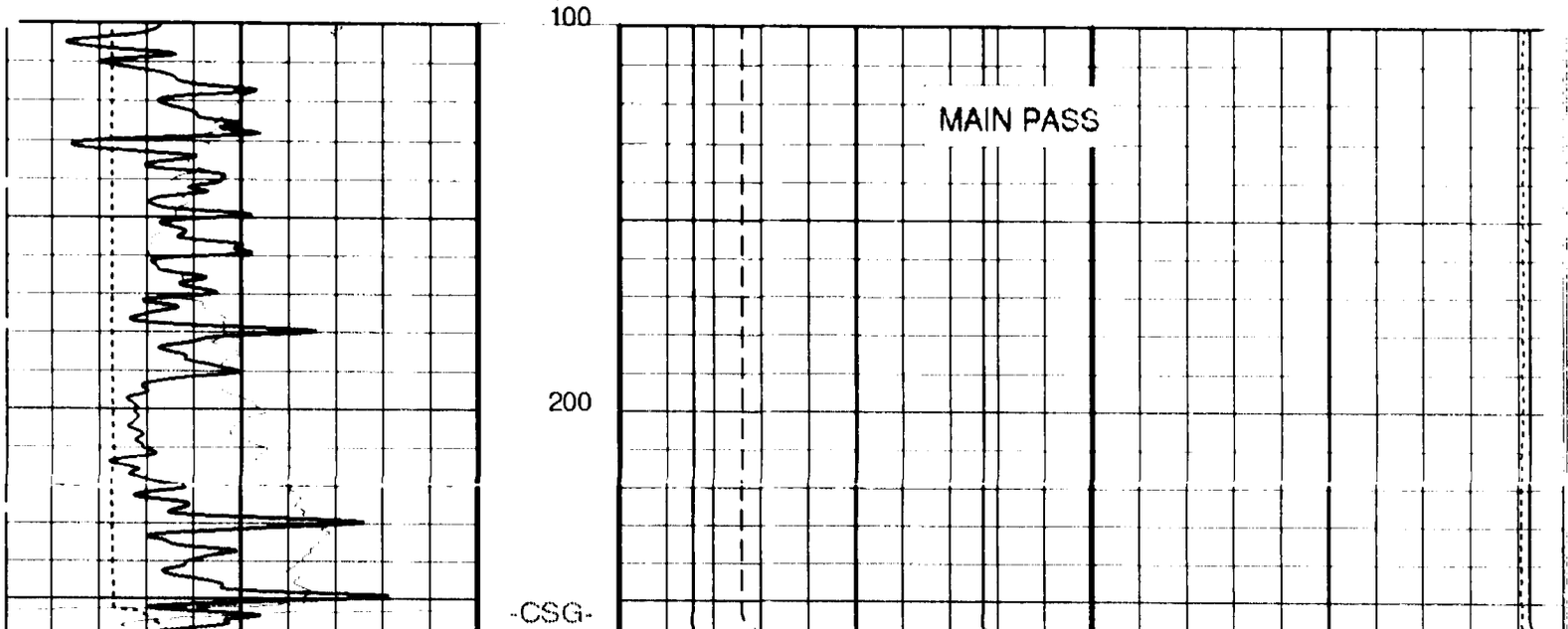
- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

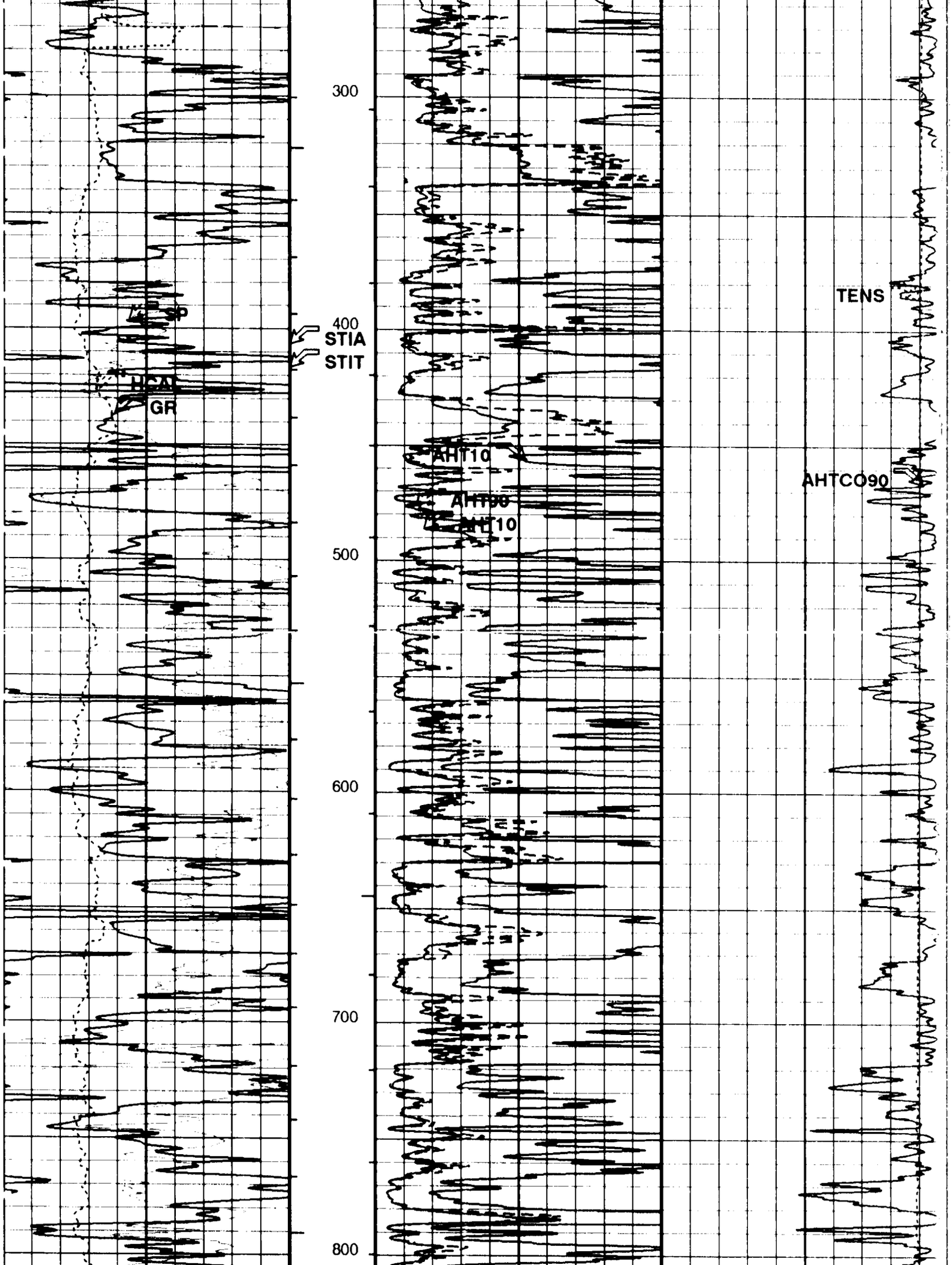
Time Mark Every 60 S

Caliper (HCAL) (IN)	Tool/Tot. Drag From D3T to STIA	AIT-H 10 Inch Investigation (AHT10) (OHMM)
6 — 16		0 — 20

Gamma Ray (GR) (GAPI)	Cable Drag From STIA to STIT	AIT-H 90 Inch Investigation (AHT90) (OHMM)	Tension (TENS) (LBF)
0 — 150		0 — 100	10000 — 0

SP (SP) (MV)	Stuck Stretch (STIT) (F)	AIT-H 10 Inch Investigation (AHT10) (OHMM)	AIT-H 90 Inch Investigation Conductivity (AHTCO90) (MM/M)
-80 — 20	0 — 50	0 — 100	500 — 0

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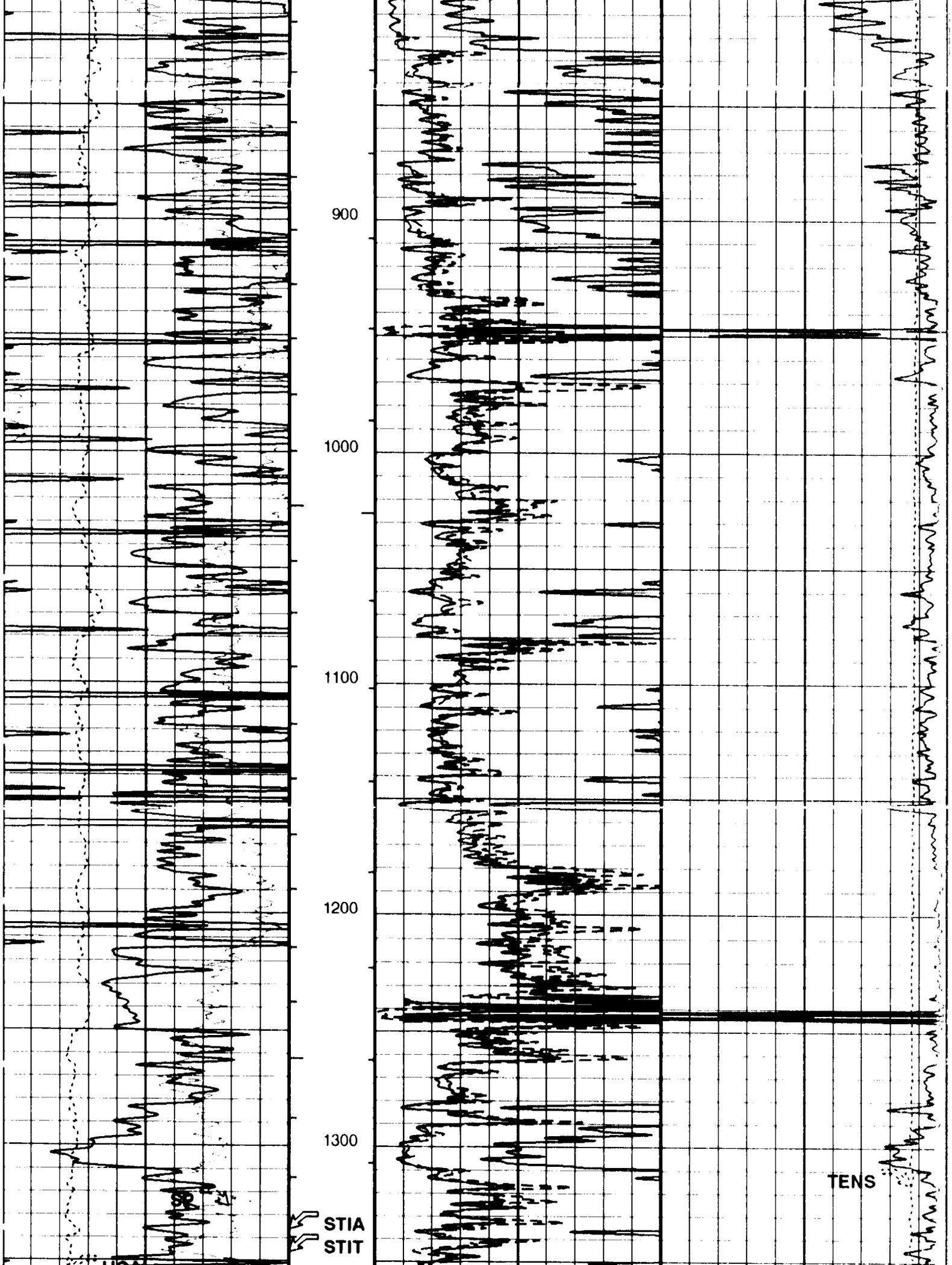
500
600
700
800
SP
STIA
STIT
HCAL
GR
AHT10
AHT90
AHT10
TENS
AHTCO90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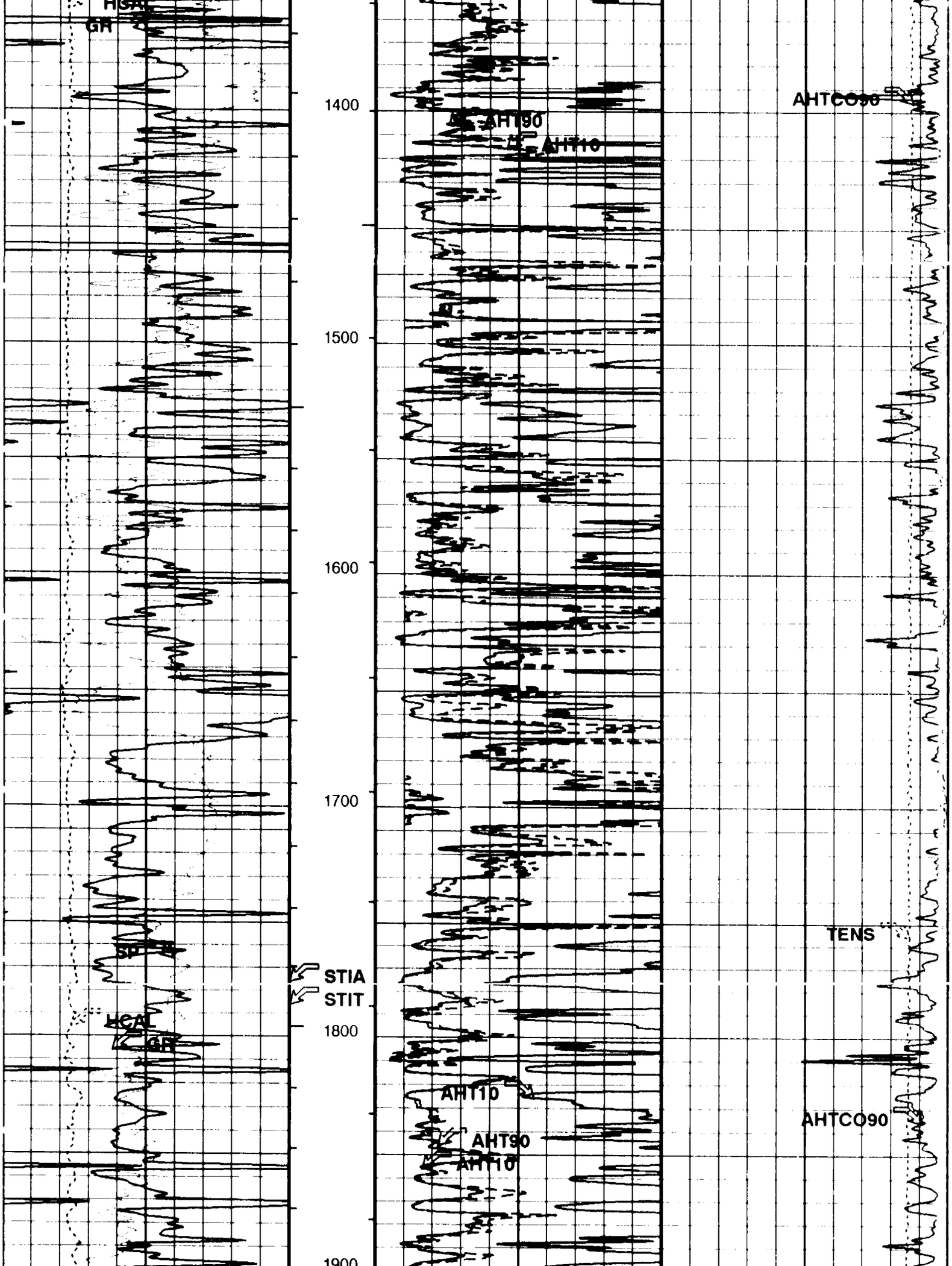
1100
1200
1300
SP
STIA
STIT
TENS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GR
1400
AHT90
AHT10
AHTCO90
1500
1600
1700
TENS
SP
STIA
STIT
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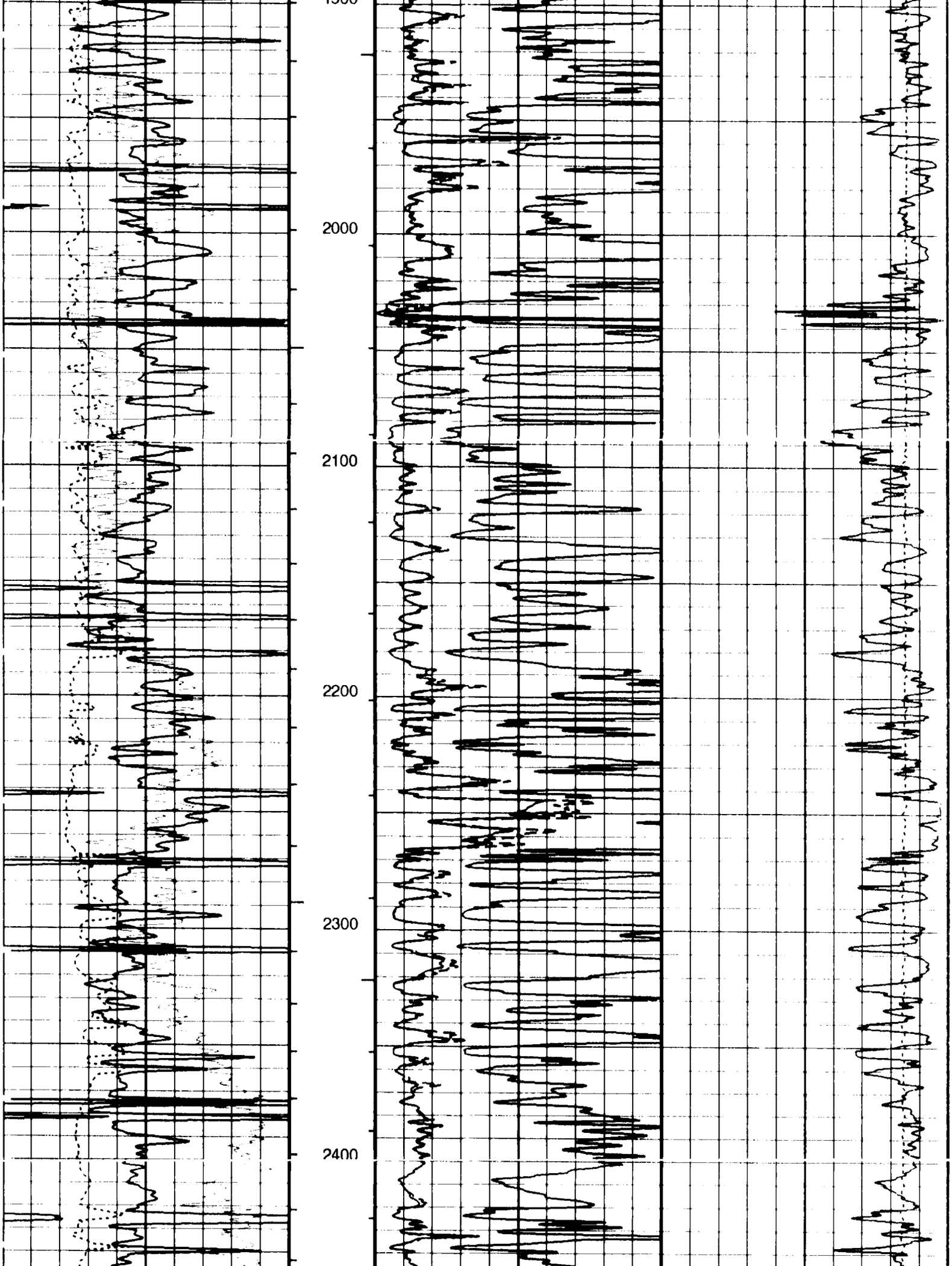
AHTCO90
AHT90
AHT10
1900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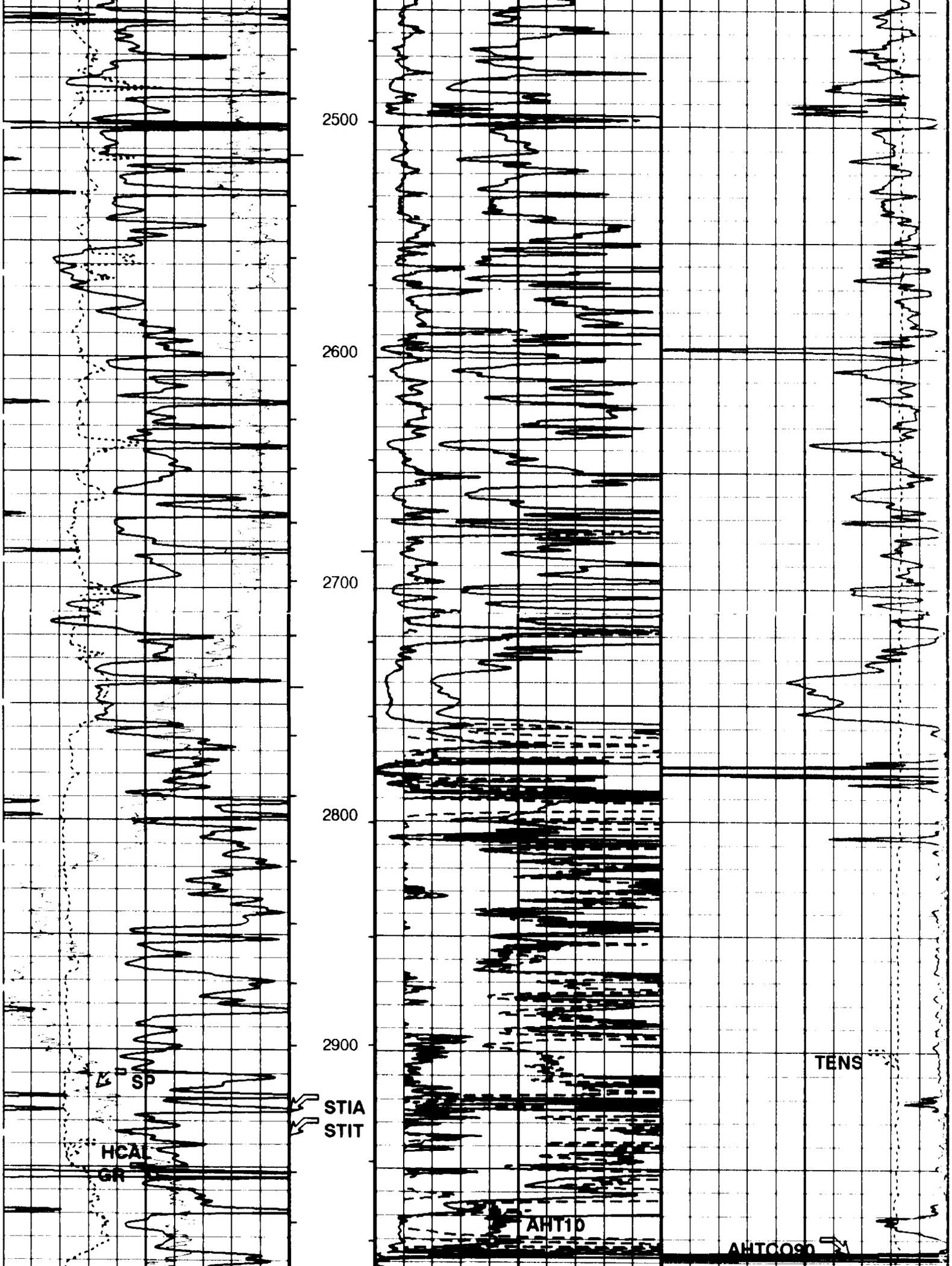
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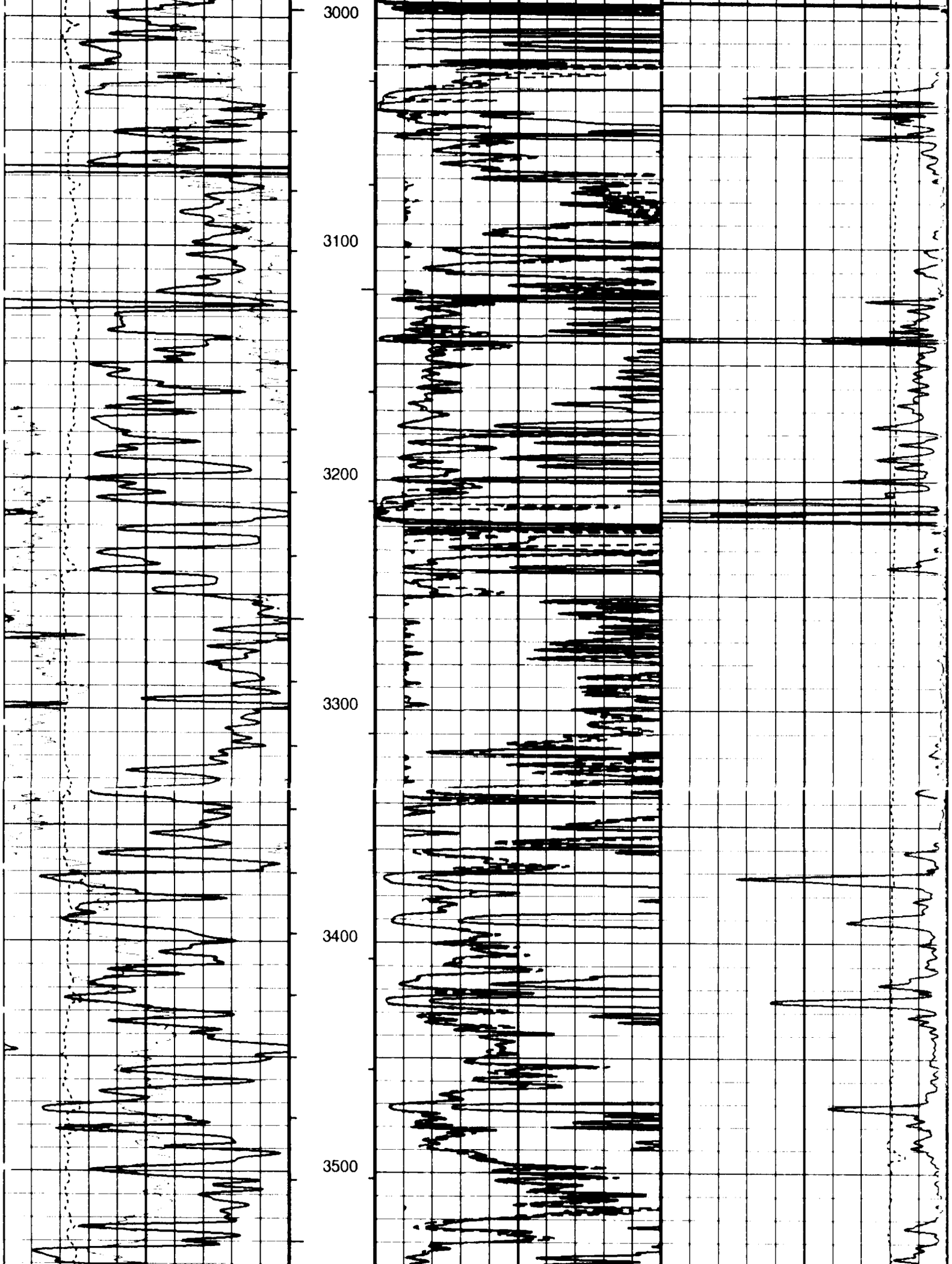
2800
2900
SP
STIA
STIT
HCAL
GR
AHT10
TENS
AHTCO90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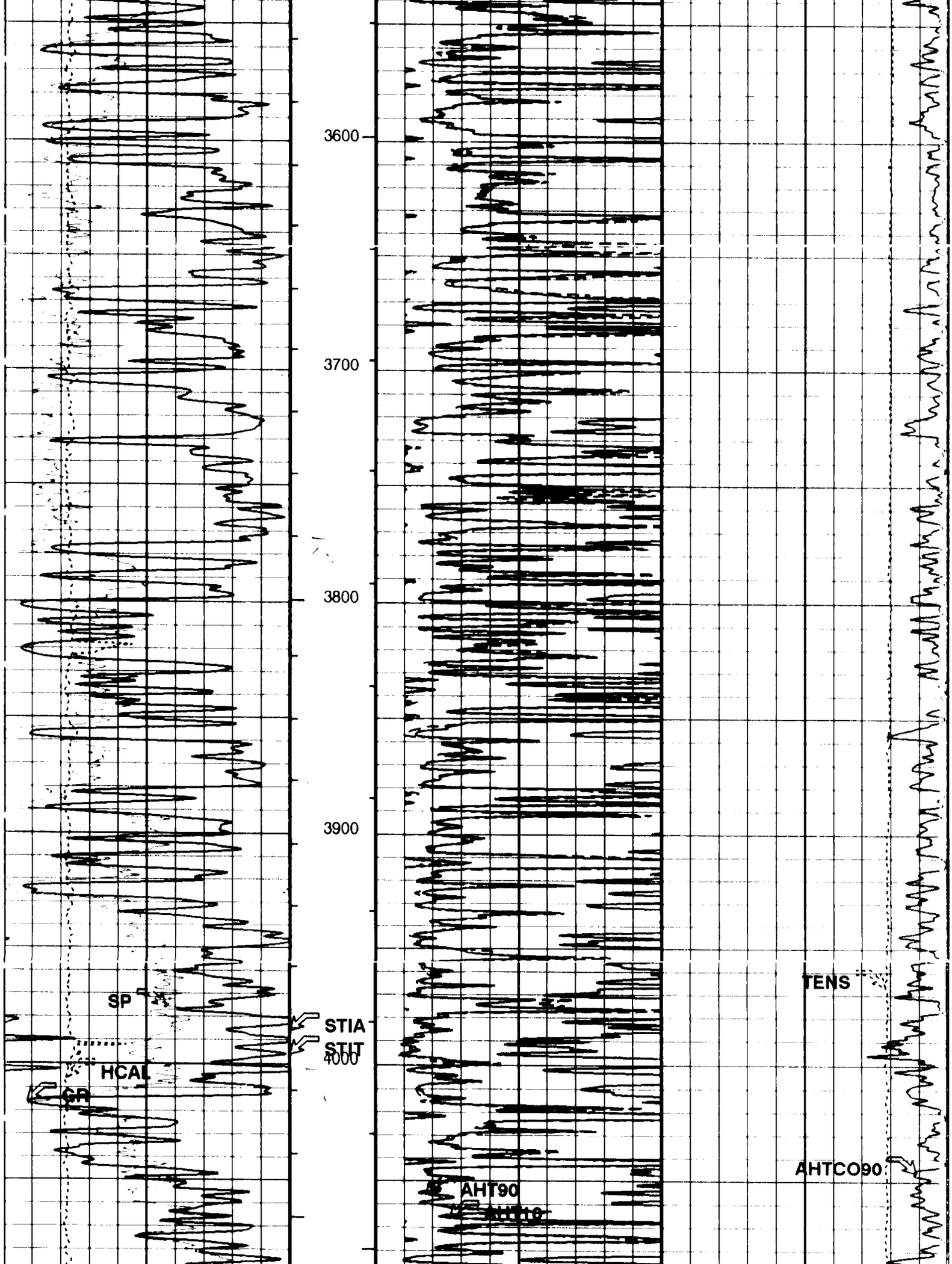
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3900
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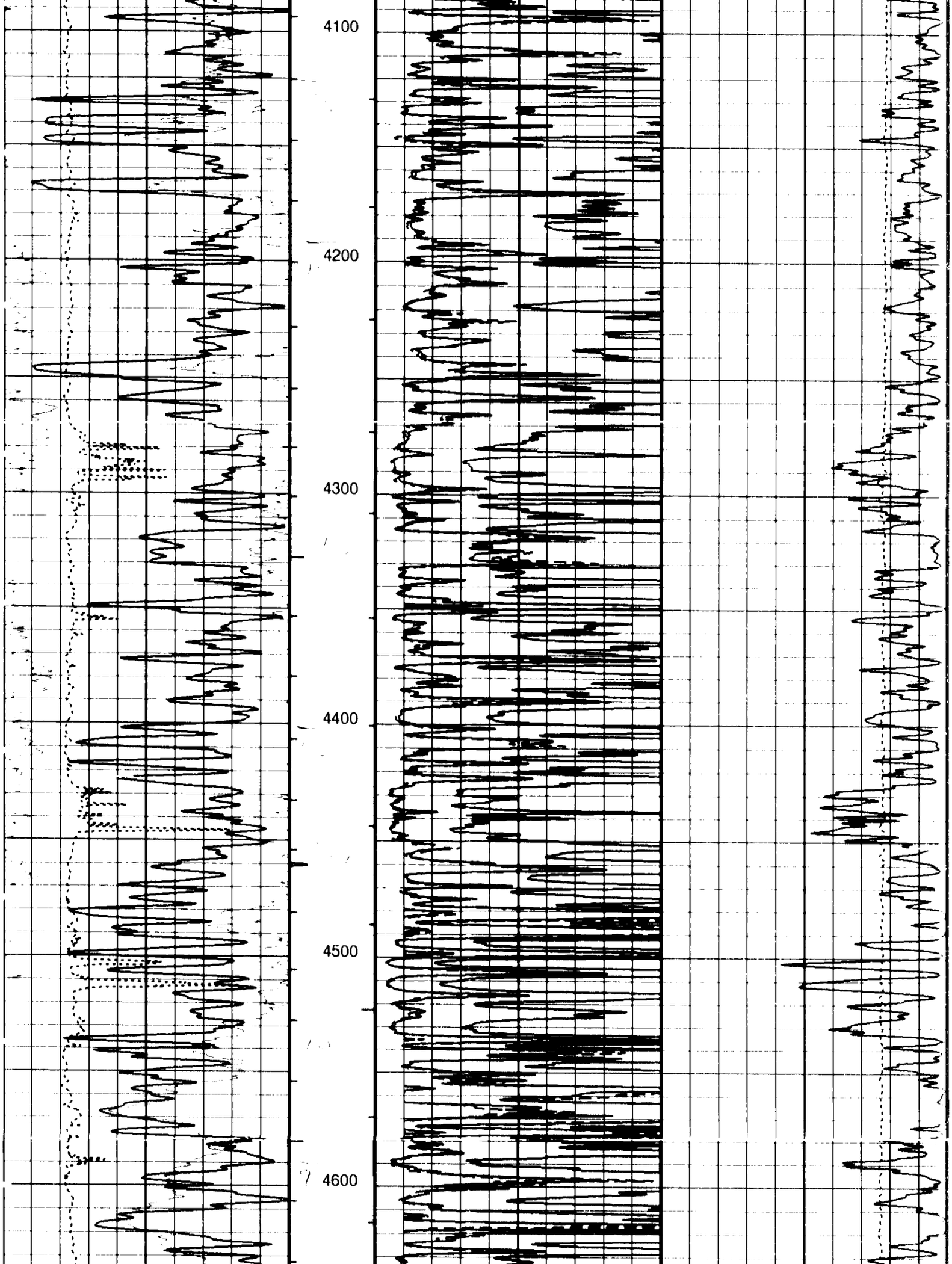
SP
STIA
STIT
HCAL
GR
AHT90
AHT10
TENS
AHTCO90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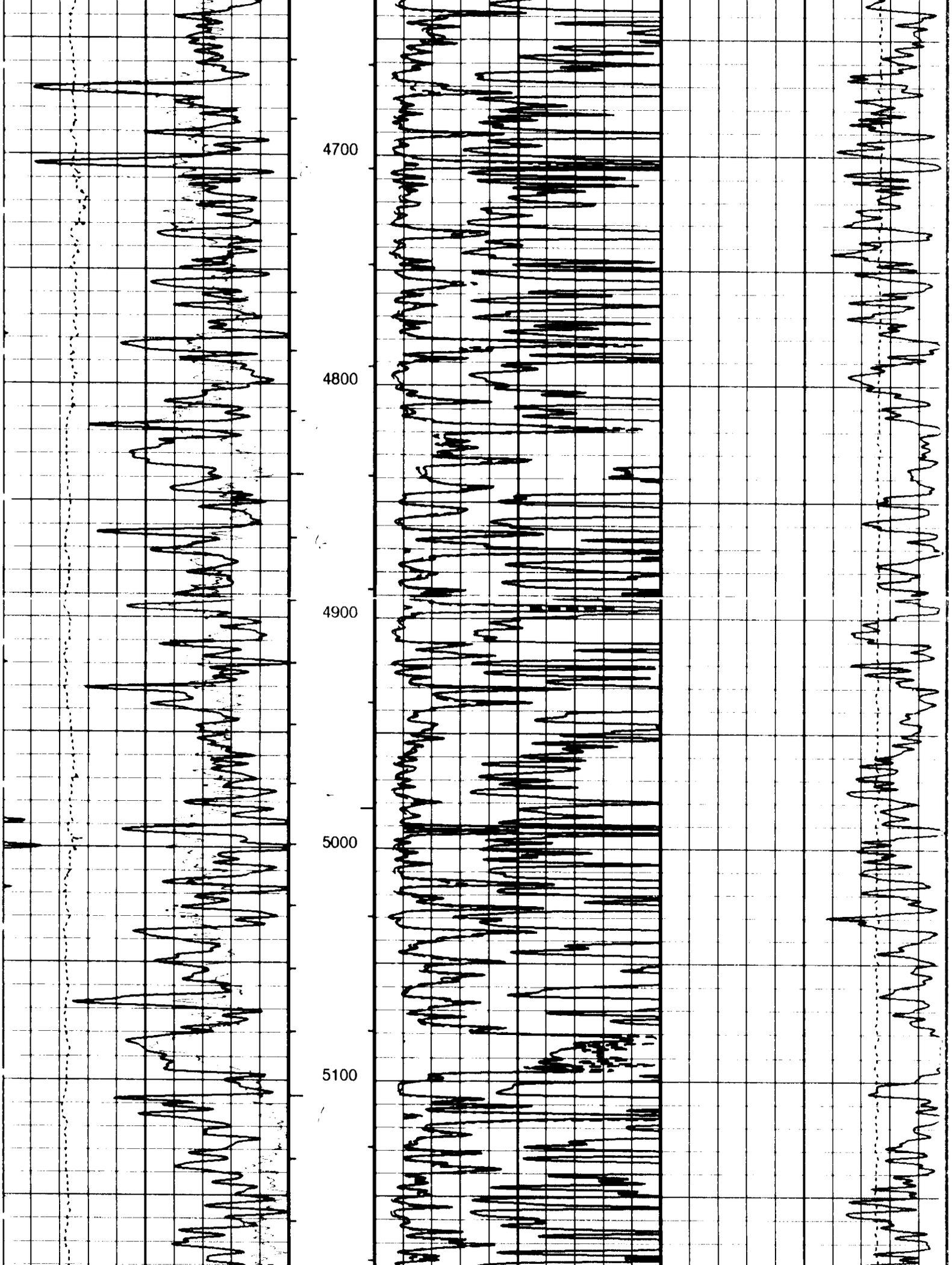
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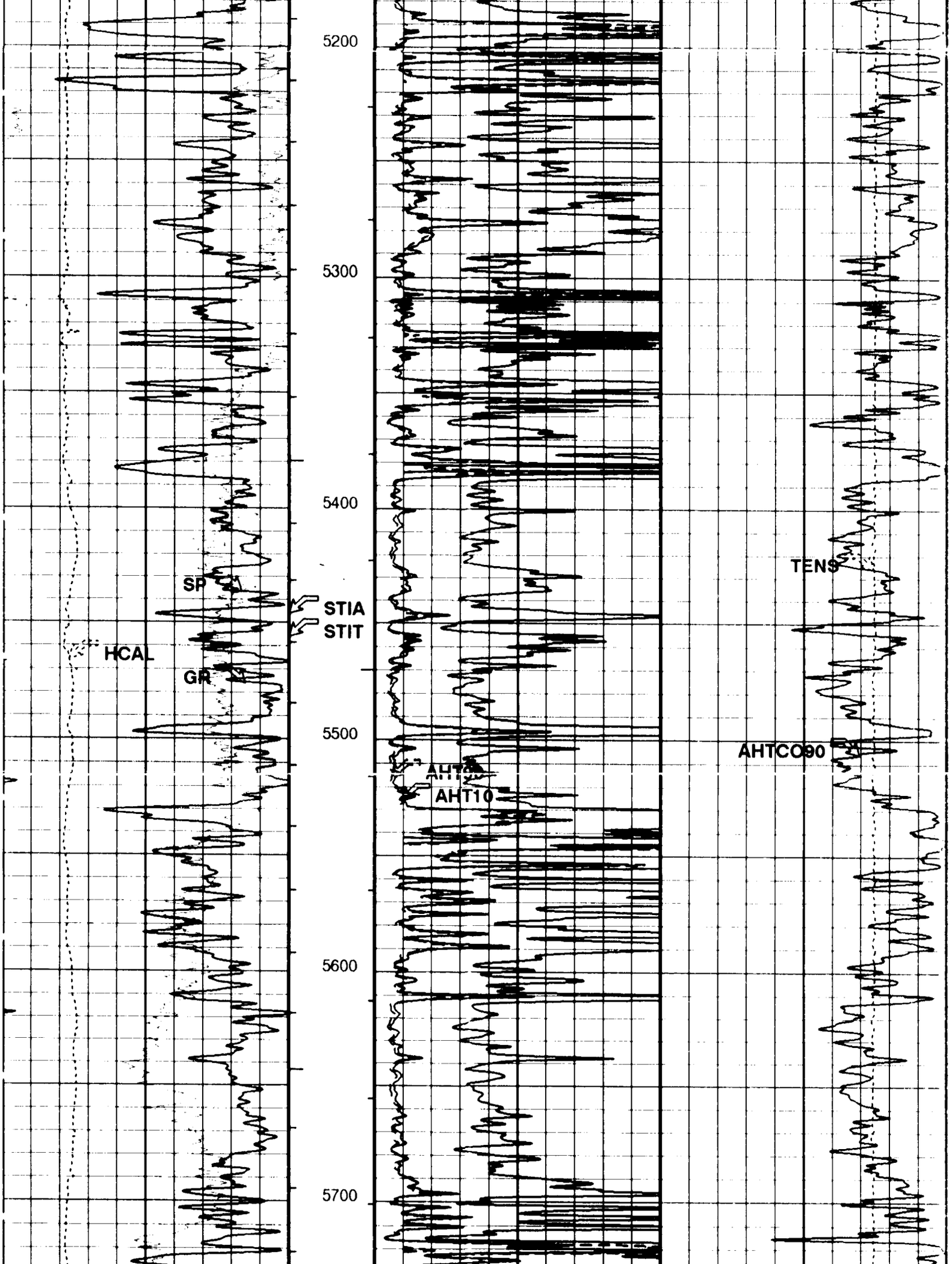
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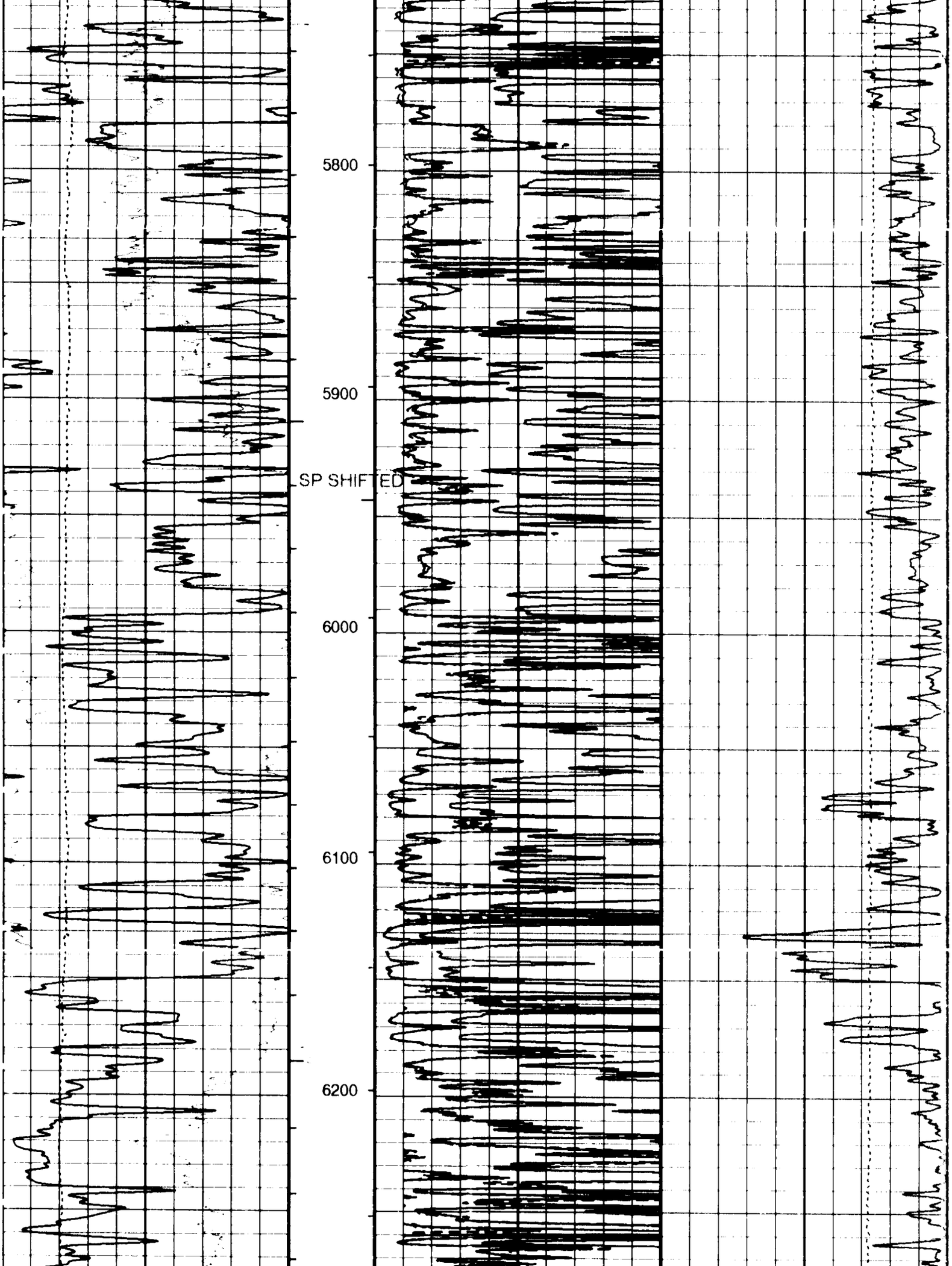
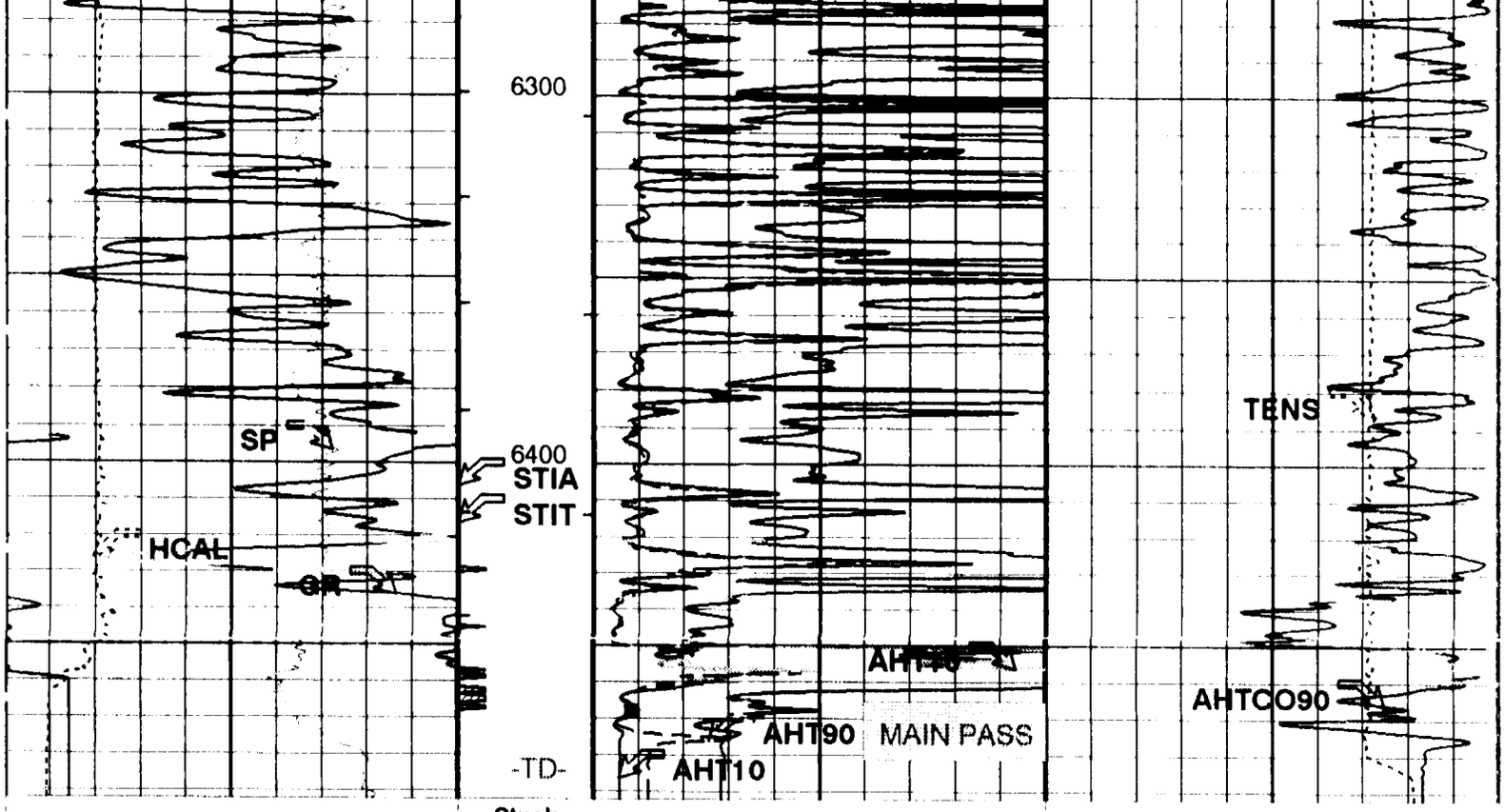
5500
5600
5700
SP
STIA
STIT
HCAL
GR
AHT10
TENS
AHTCO90


5800
5900
SP SHIFTED
6000
6100
6200



PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
AHBHM	AIT-H Bhole Correction Mode	2_ComputeStandoff	
AHCDE	AIT-H Casing Detection Enable	Yes	
AHCEN	AIT-H Tool Centering Flag (in Borehole)	Eccentered	
AHCSED	AIT-H Casing Shoe Estimated Depth	-50000	FT
AHMRF	AIT-H Mud Resistivity Factor	1	
AHSTA	AIT-H Tool Standoff	1.5	IN
BHT	Bottom Hole Temperature (used in calculations)	150	DEGF
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	8.40	LB/G
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	1.000000e-02	DF/F
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HMPCO	HILT RTSC Measure points correction	NO	
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSTI	STI Uses HILT Acceleration	YES	

MST	Mud Sample Temperature	65.00	DEGF
SHT	Surface Hole Temperature	60	DEGF
SPNV	SP Next Value	0	MV
STKT	STI Stuck Threshold	2.5	FT
TD	Total Depth	6474	FT

Format: AIT-LINEAR Vertical Scale: 2" per 100' Graphics File Created: 27-SEP-1996 18:15

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

Output DLIS Files

DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15
REDUCED_HIP	HILTC .069	FN:11	FIELD	27-SEP-1996 18:15

Output DLIS Files

DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT
REDUCED_HIP	HILTC .069	FN:11	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 2419.07 F3

Cement Volume = 1397.04 F3 (assuming 5.50 IN casing O.D.)

Computed from 6474.0 FT to 280.0 FT using data channel(s) HCAL

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Tension (TENS) 10000 (LBF) 0

AIT-H 90 Inch Investigation (AHT90) 0.2 (OHMM) 2000

AIT-H 60 Inch Investigation (AHT60) 0.2 (OHMM) 2000

Caliper (HCAL) 6 (IN) 16

Tool/Tot. Drag From D3T to STIA

AIT-H 30 Inch Investigation (AHT30) 0.2 (OHMM) 2000

Gamma Ray (GR) 0 (GAPI) 150

Cable Drag From STIA to STIT

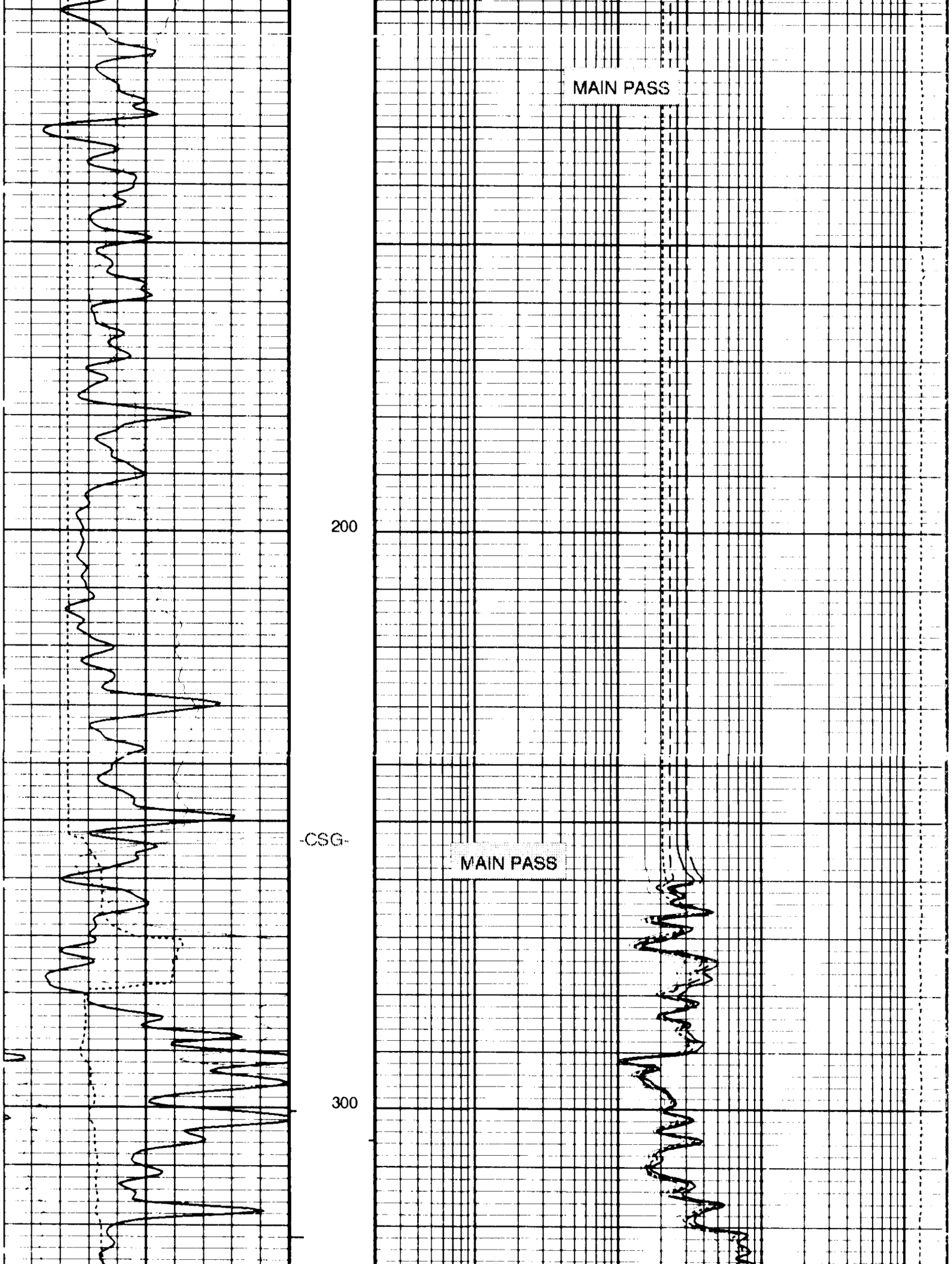
AIT-H 20 Inch Investigation (AHT20) 0.2 (OHMM) 2000

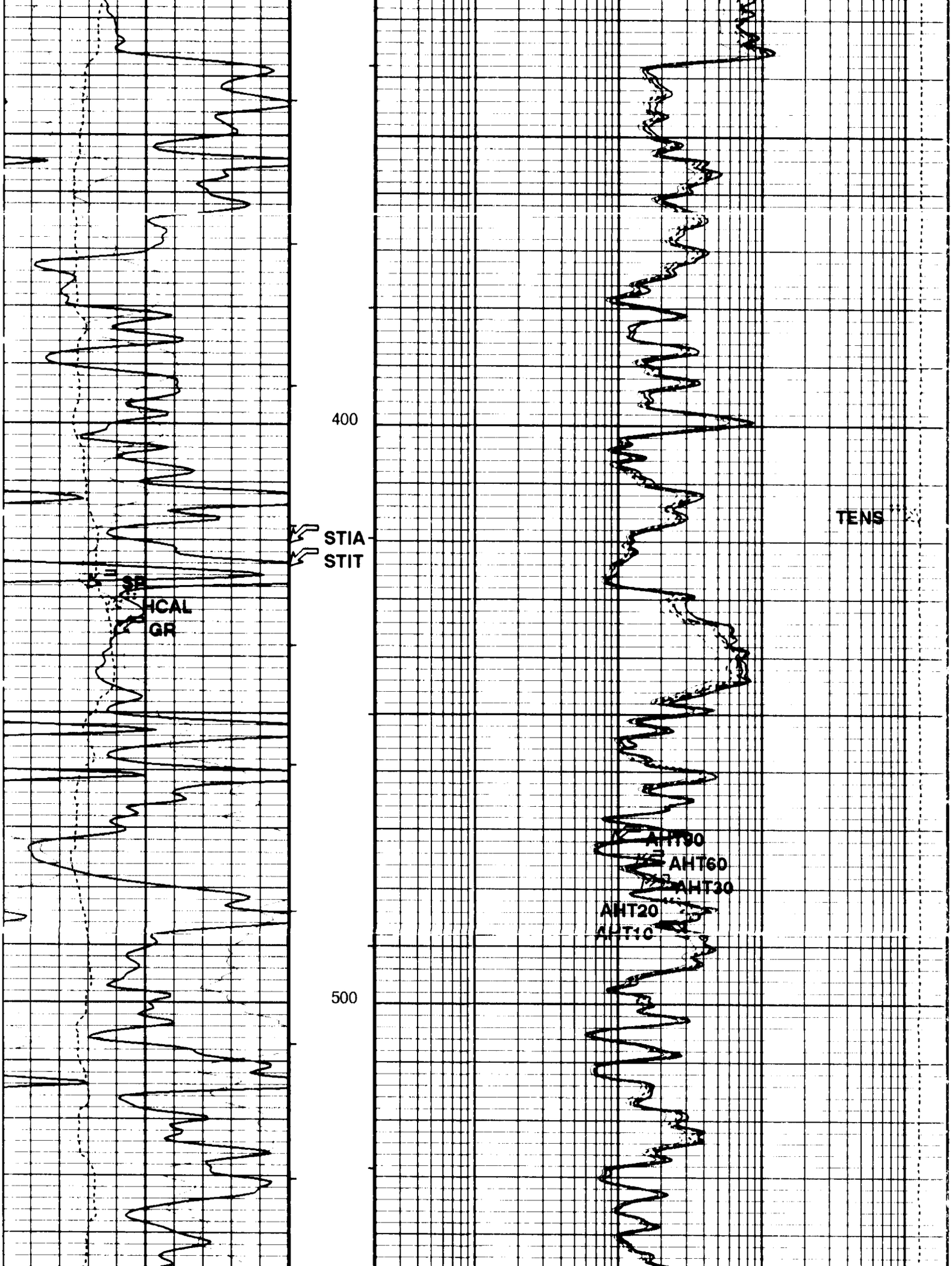
SP (SP) -80 (MV) 20

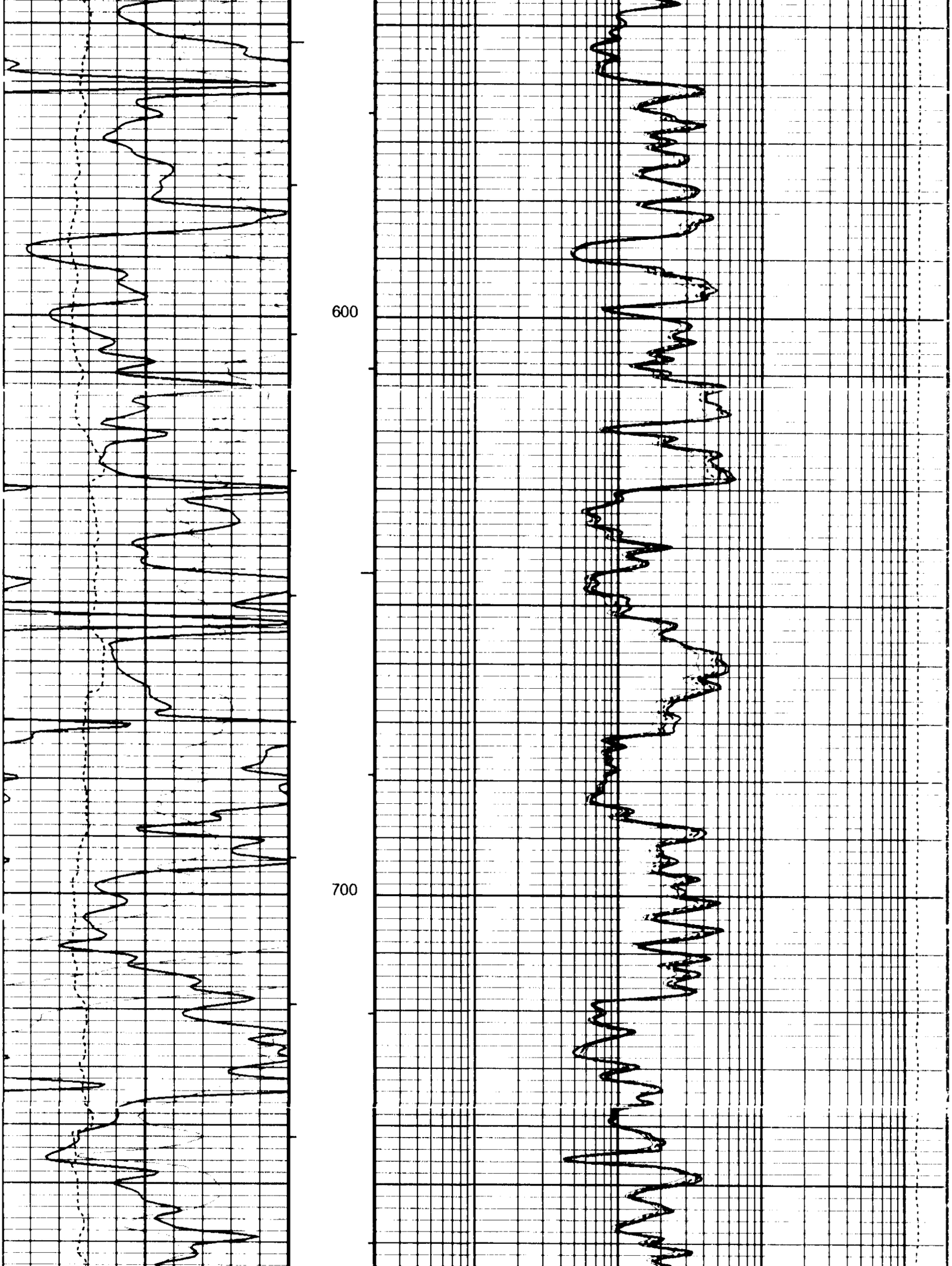
Stuck Stretch (STIT) 0 (F) 50

AIT-H 10 Inch Investigation (AHT10) 0.2 (OHMM) 2000

100


MAIN PASS
200
-CSG-
MAIN PASS
300


400
500
STIA
STIT
SP
HCAL
GR
TENS
AHT90
AHT60
AHT30
AHT20
AHT10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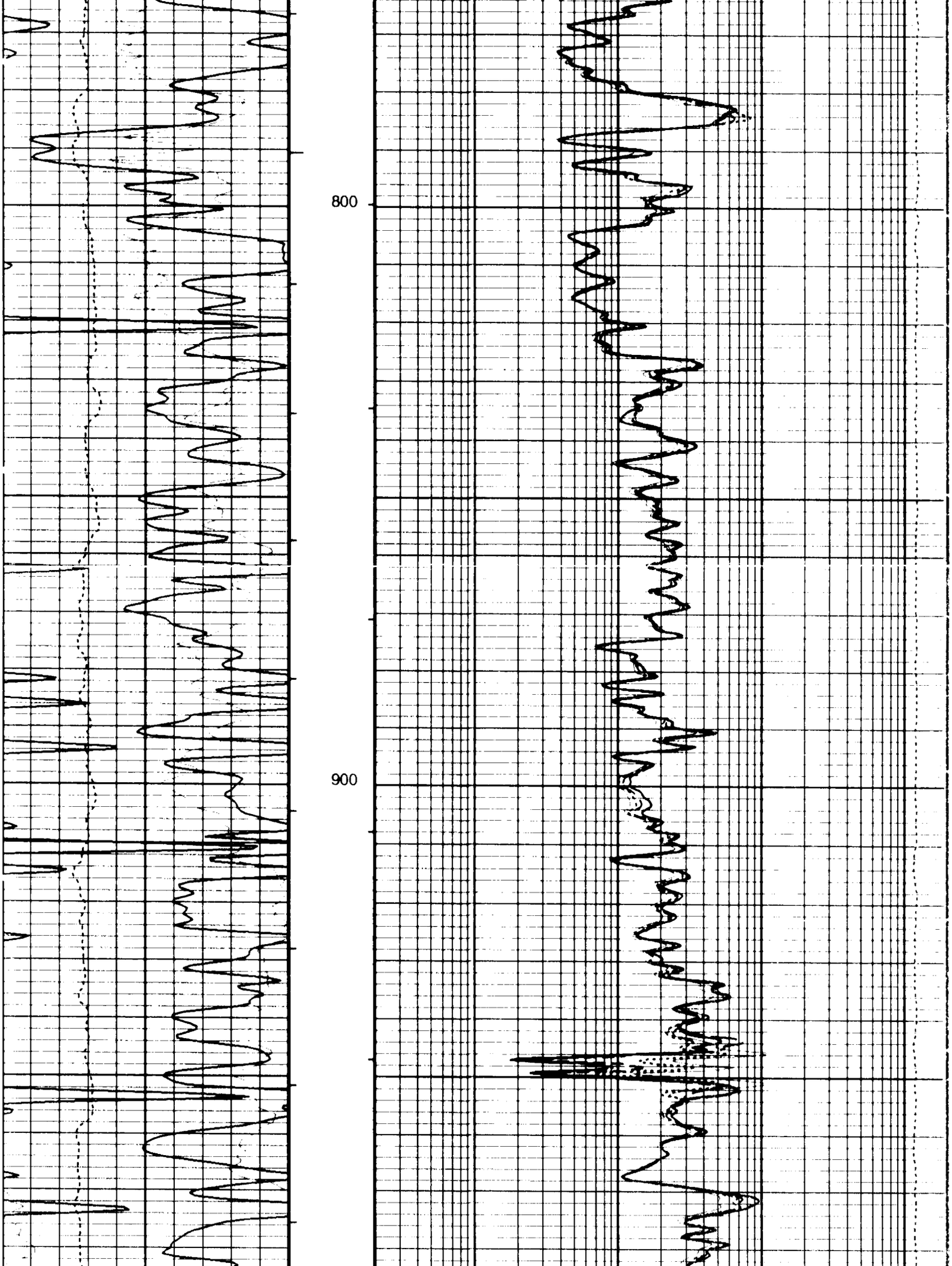
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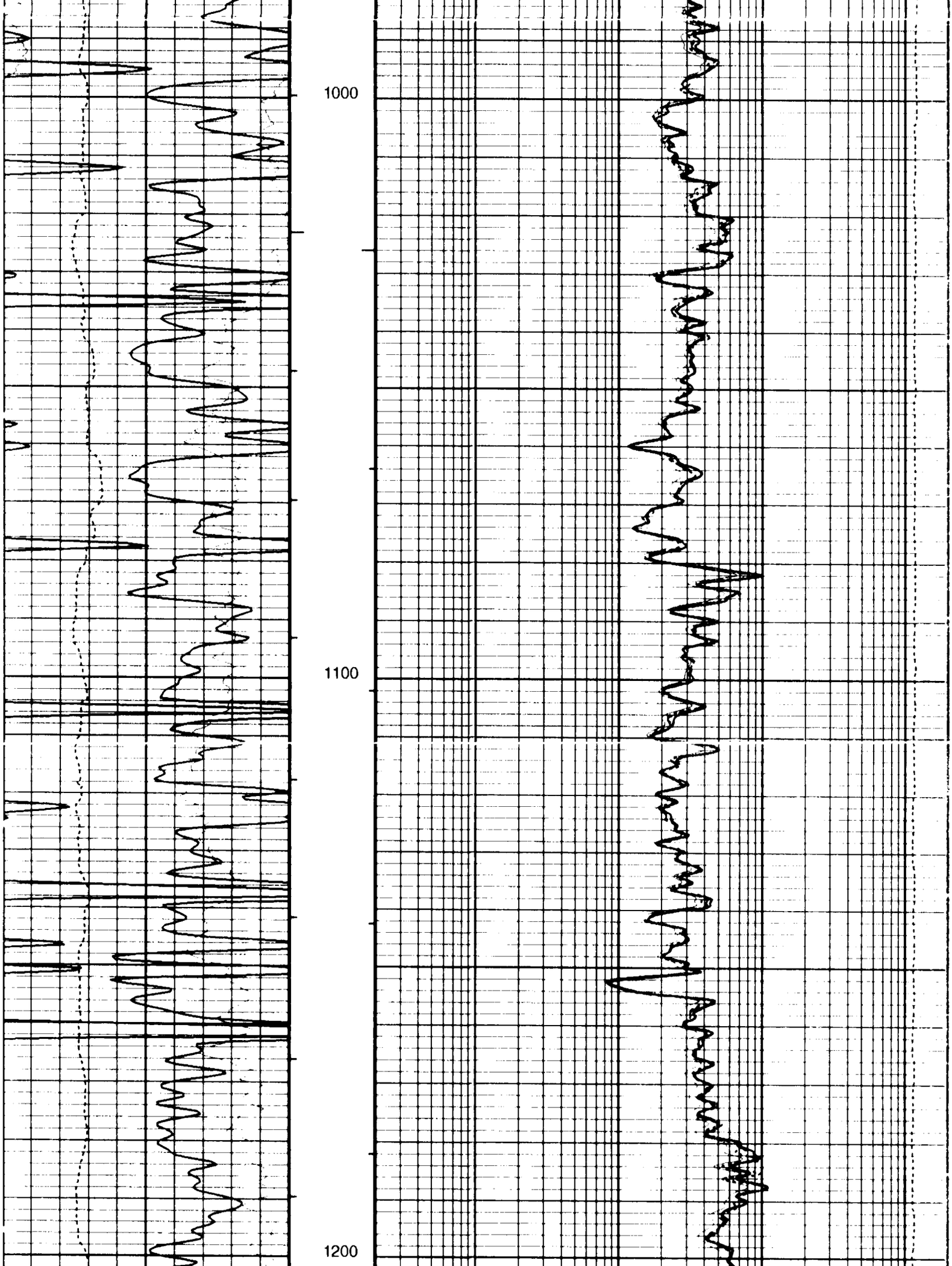
1000
1100
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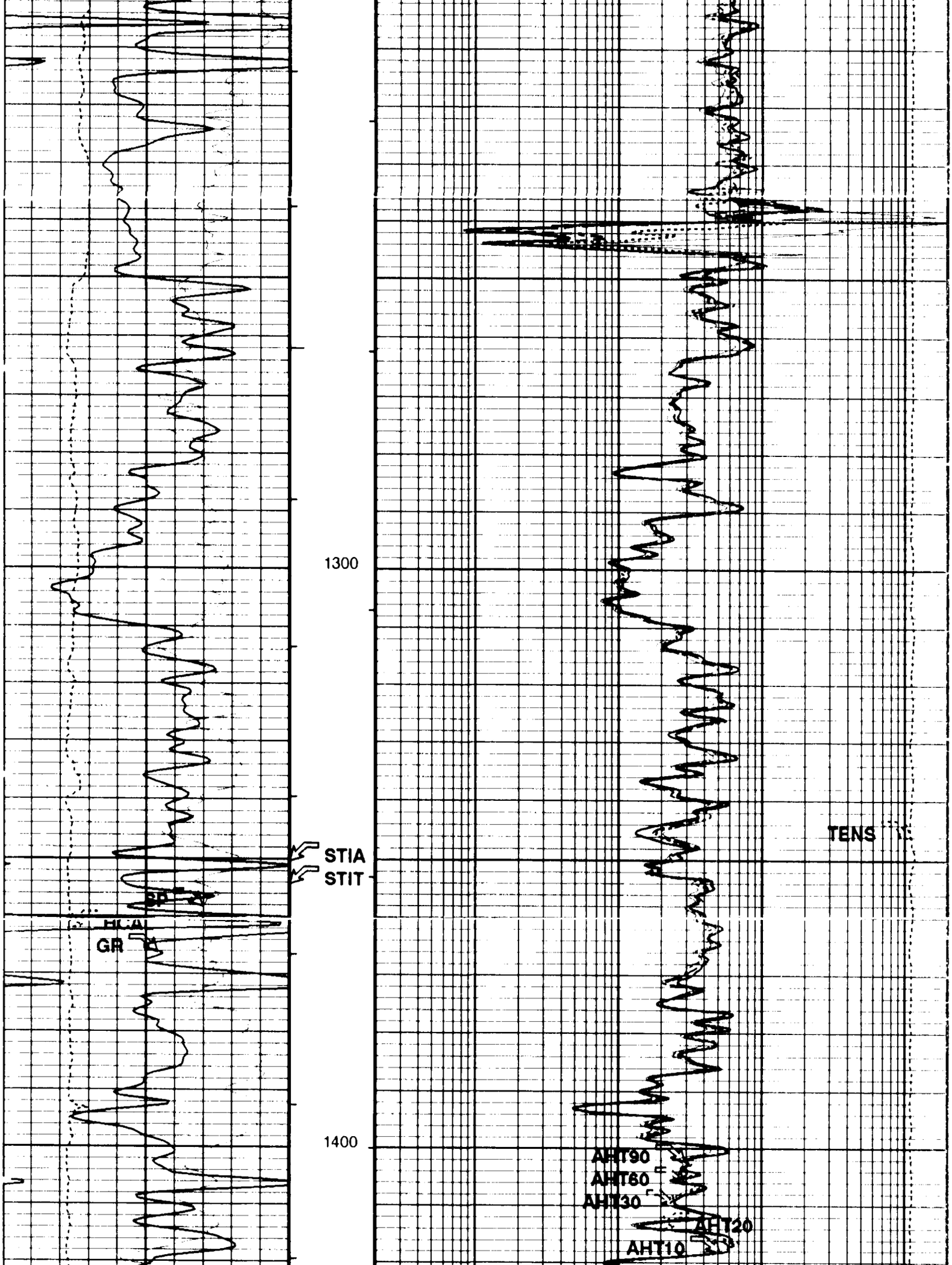
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STIT
SP
GR
TENS
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AHT90
AHT60
AHT30
AHT20
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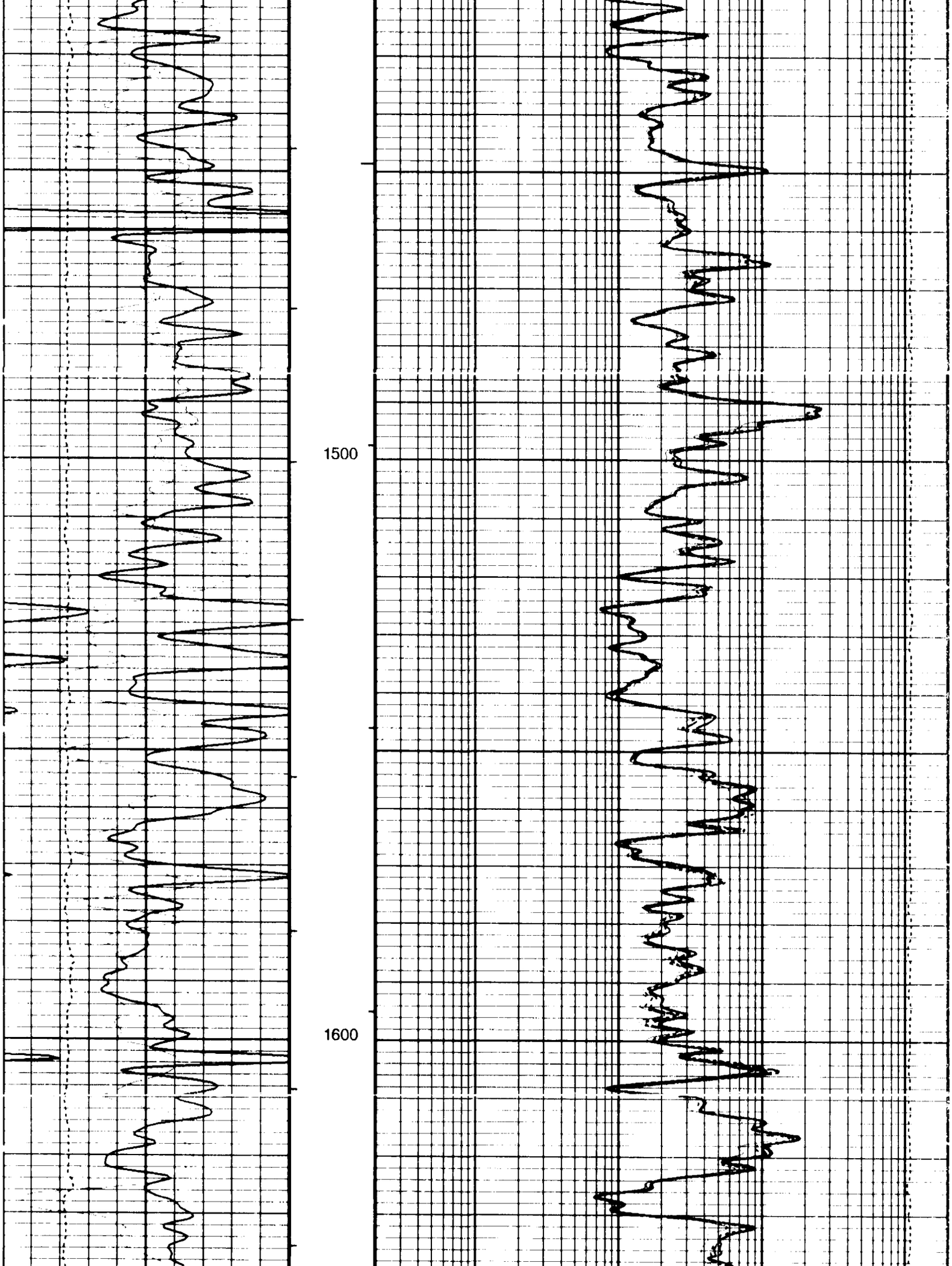
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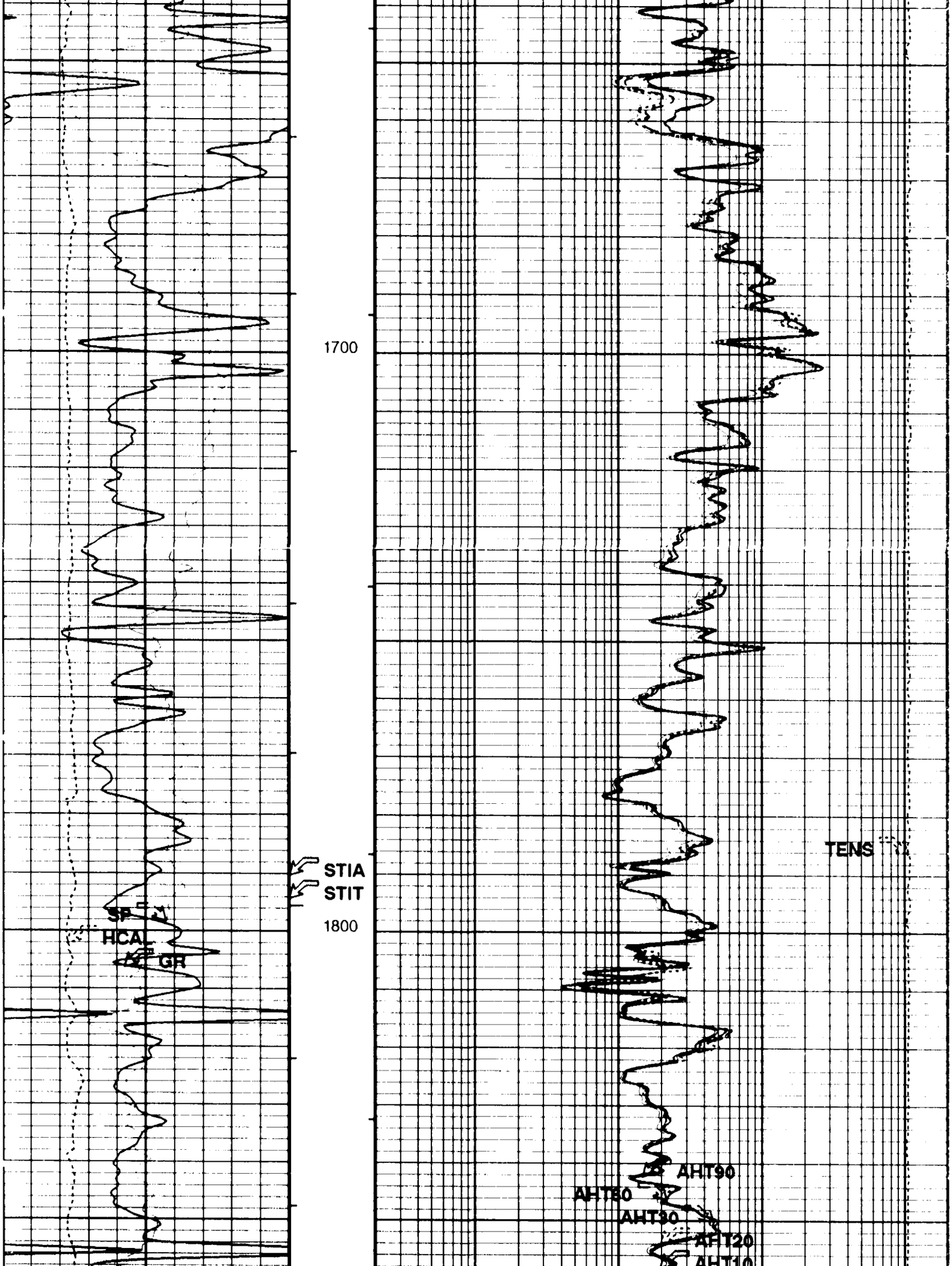
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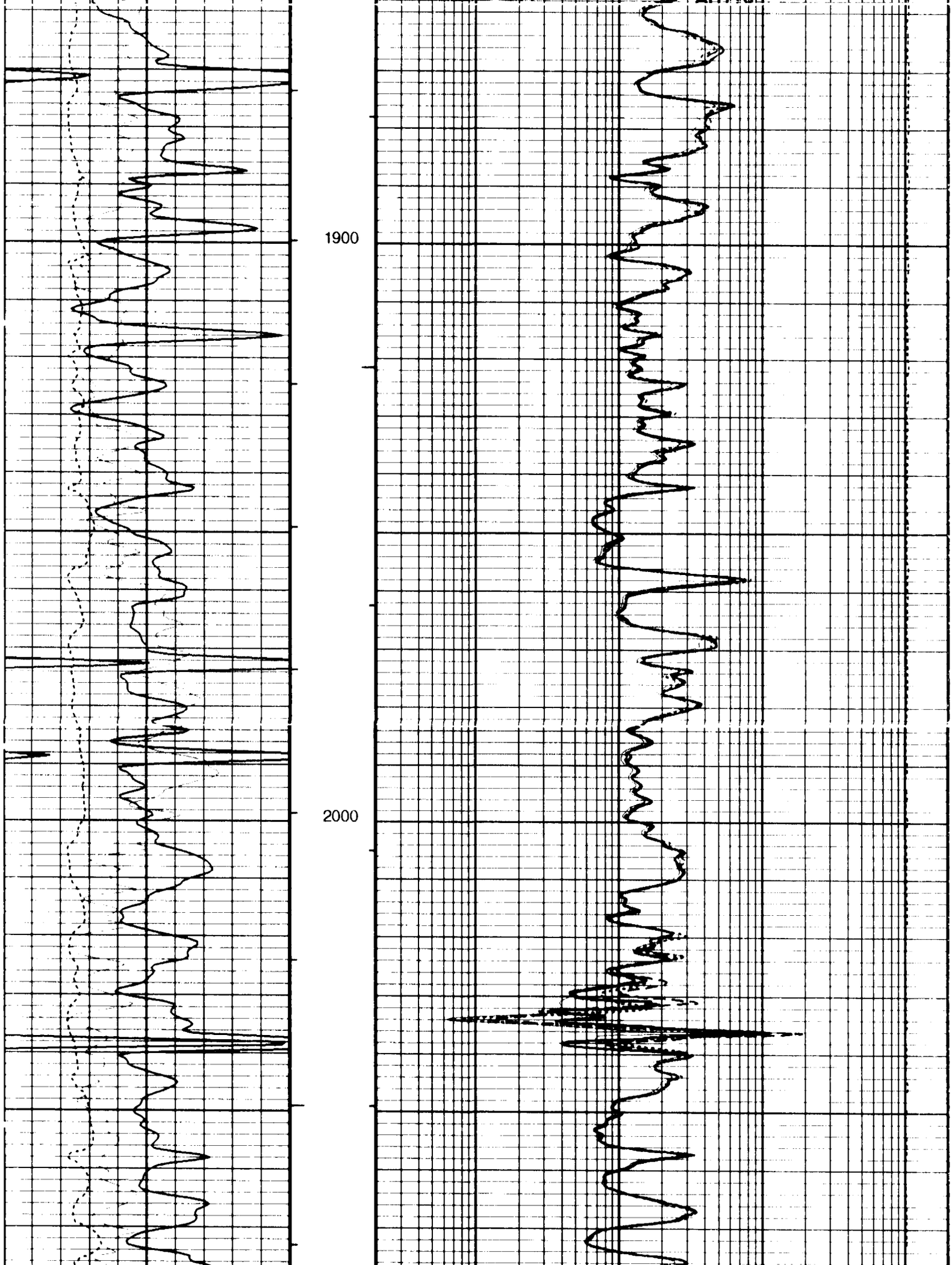
STIA
STIT
1800
SP
HCAL
GR
TENS
AHT90
AHT60
AHT30
AHT20
AHT10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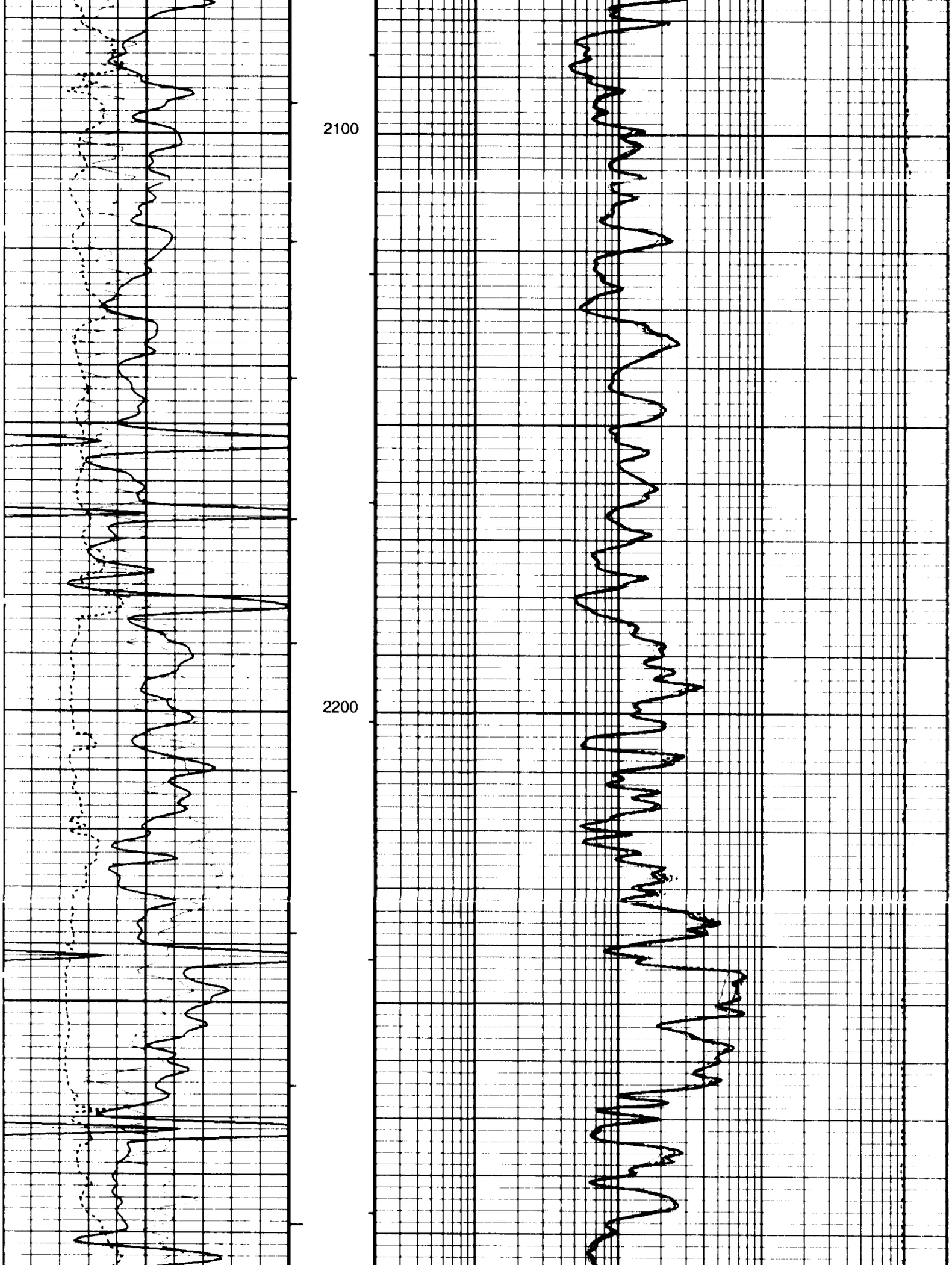
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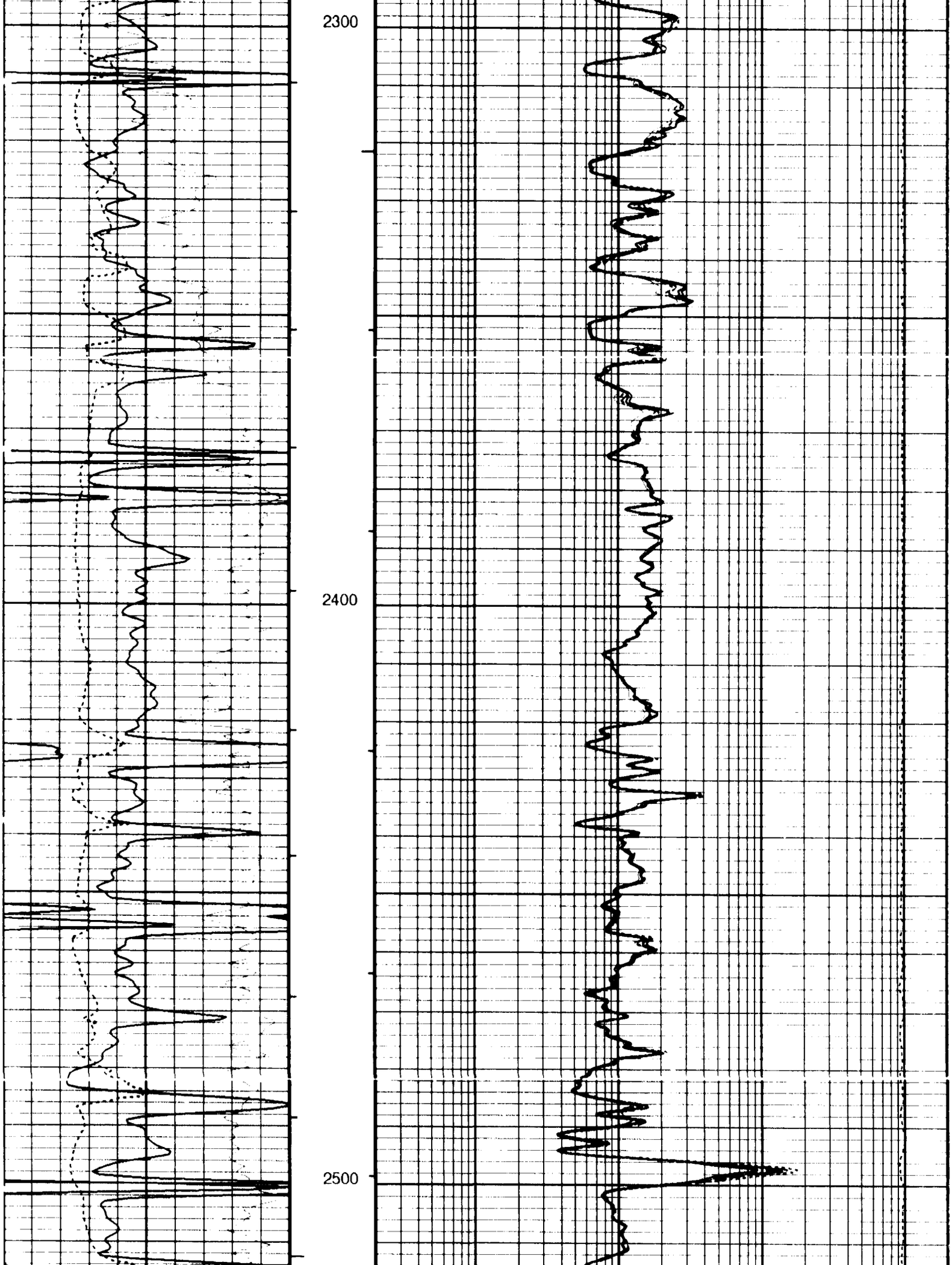
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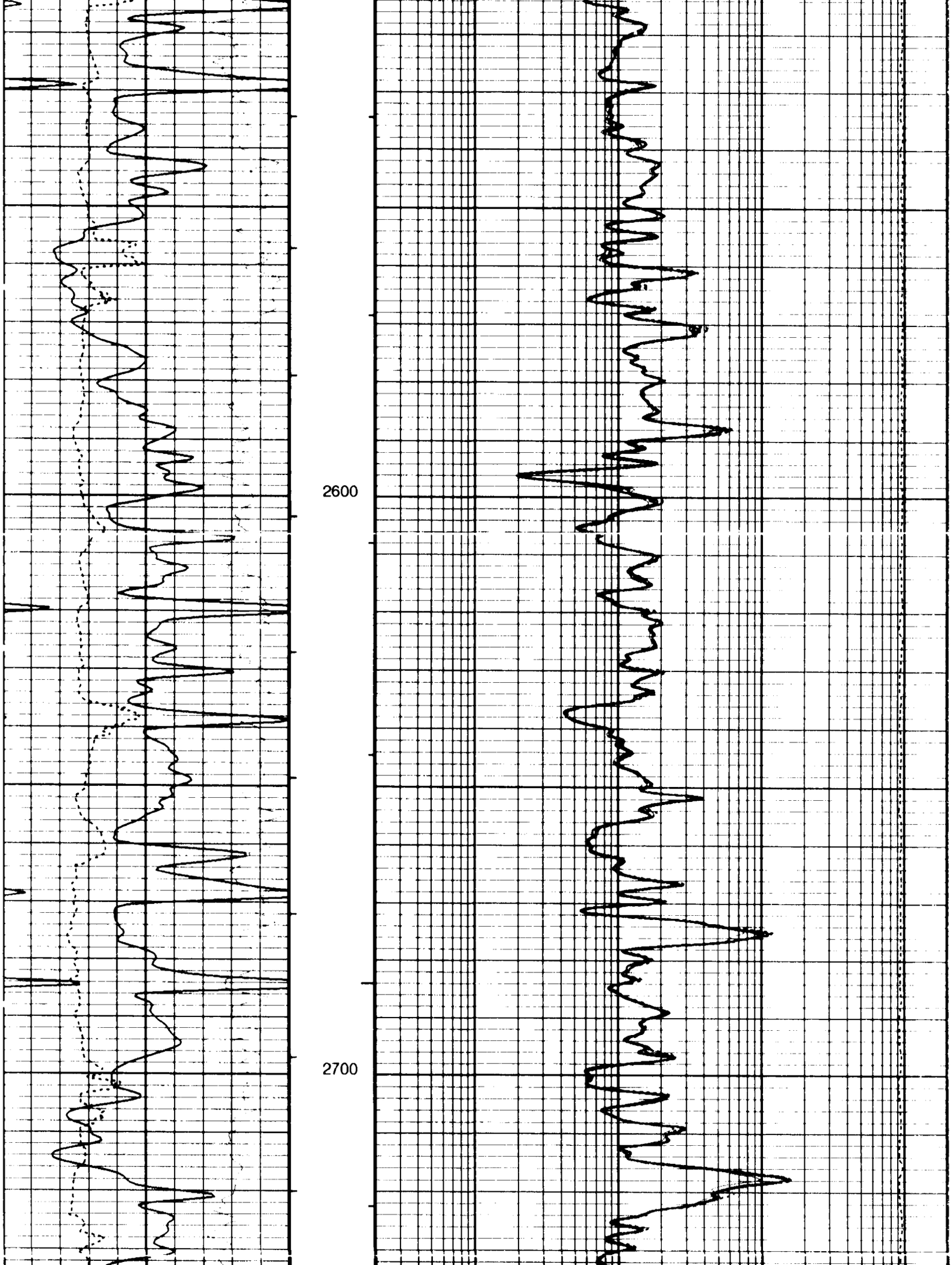
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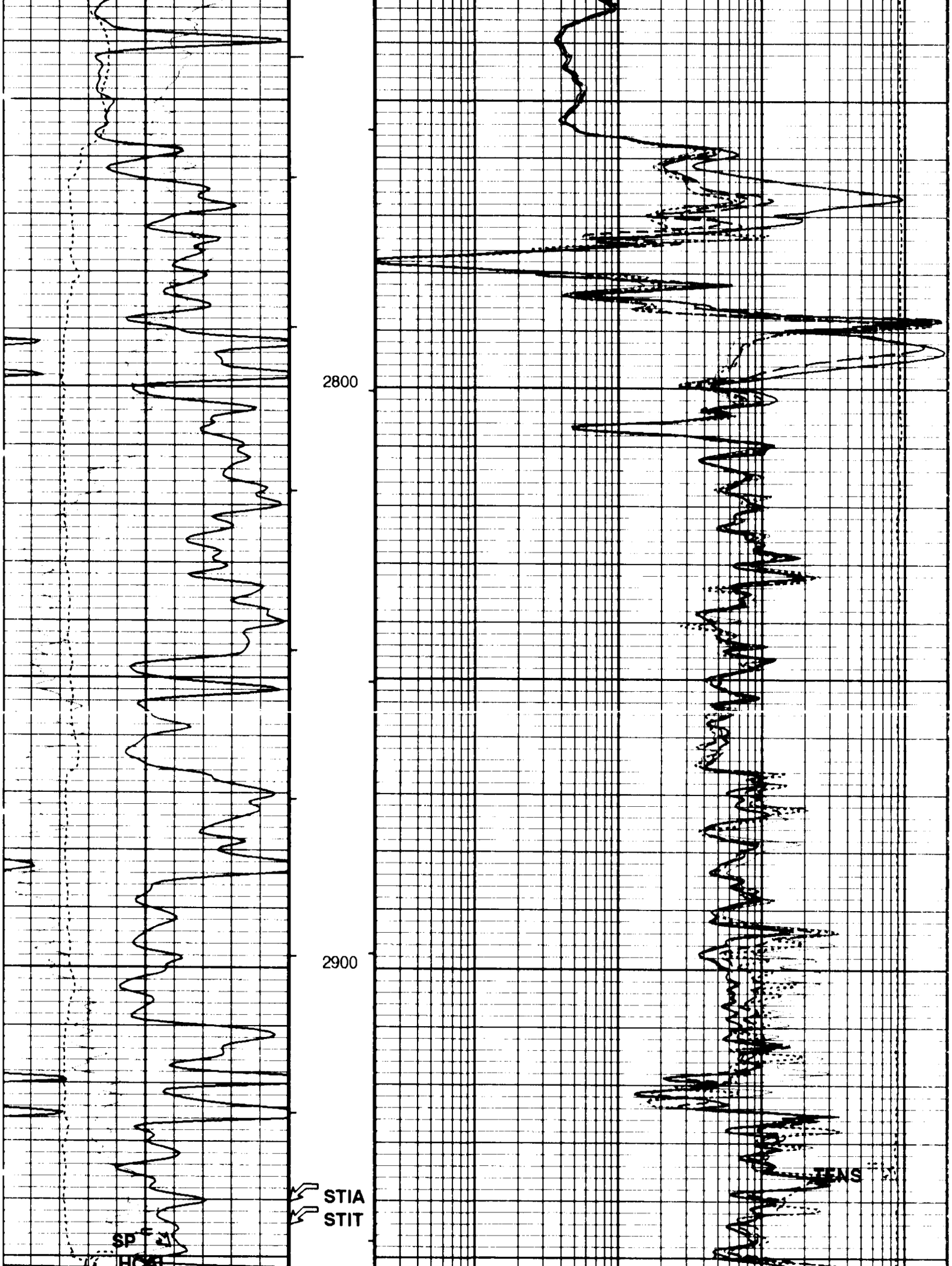
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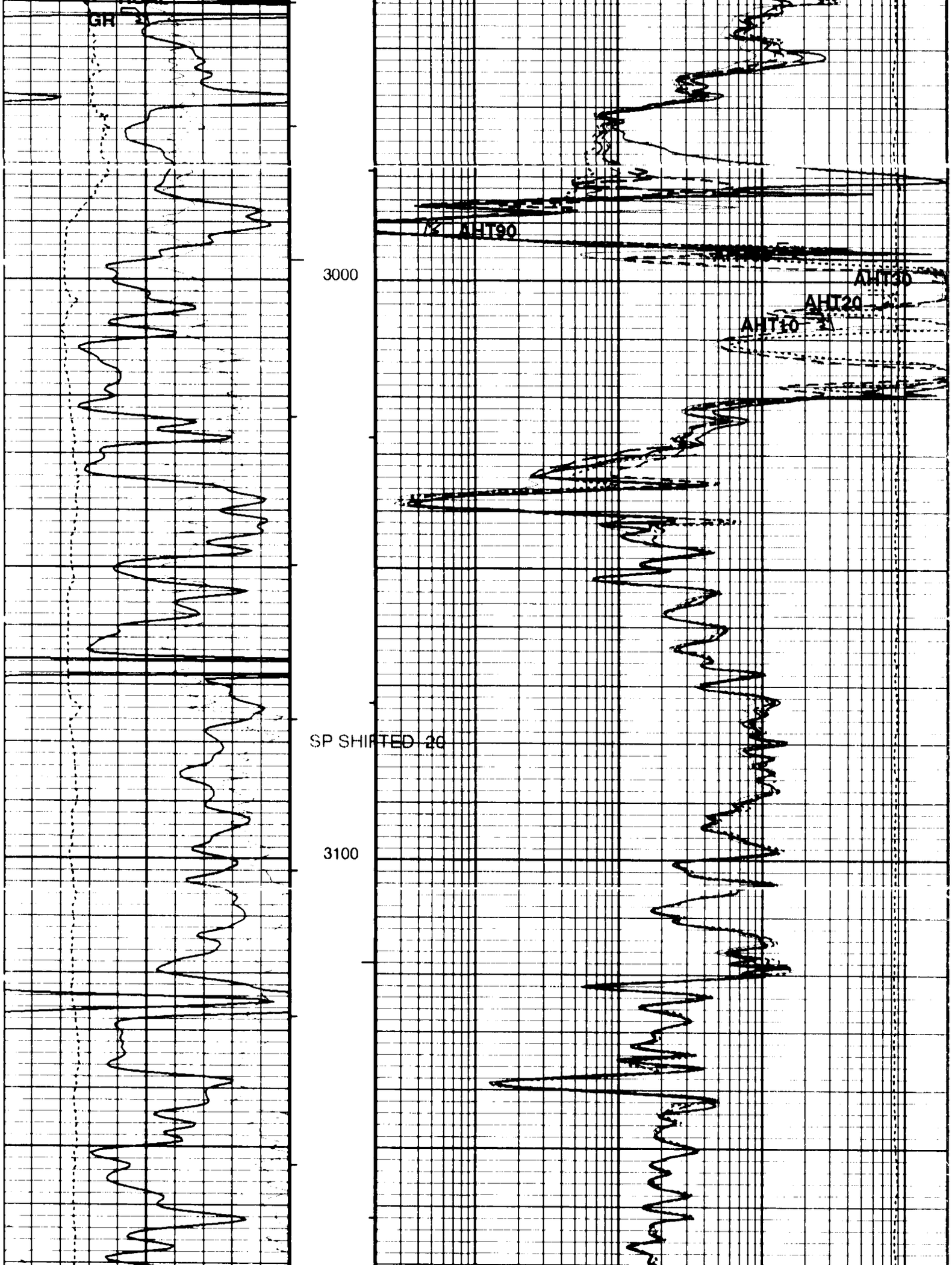
STIA
STIT
SP
TENS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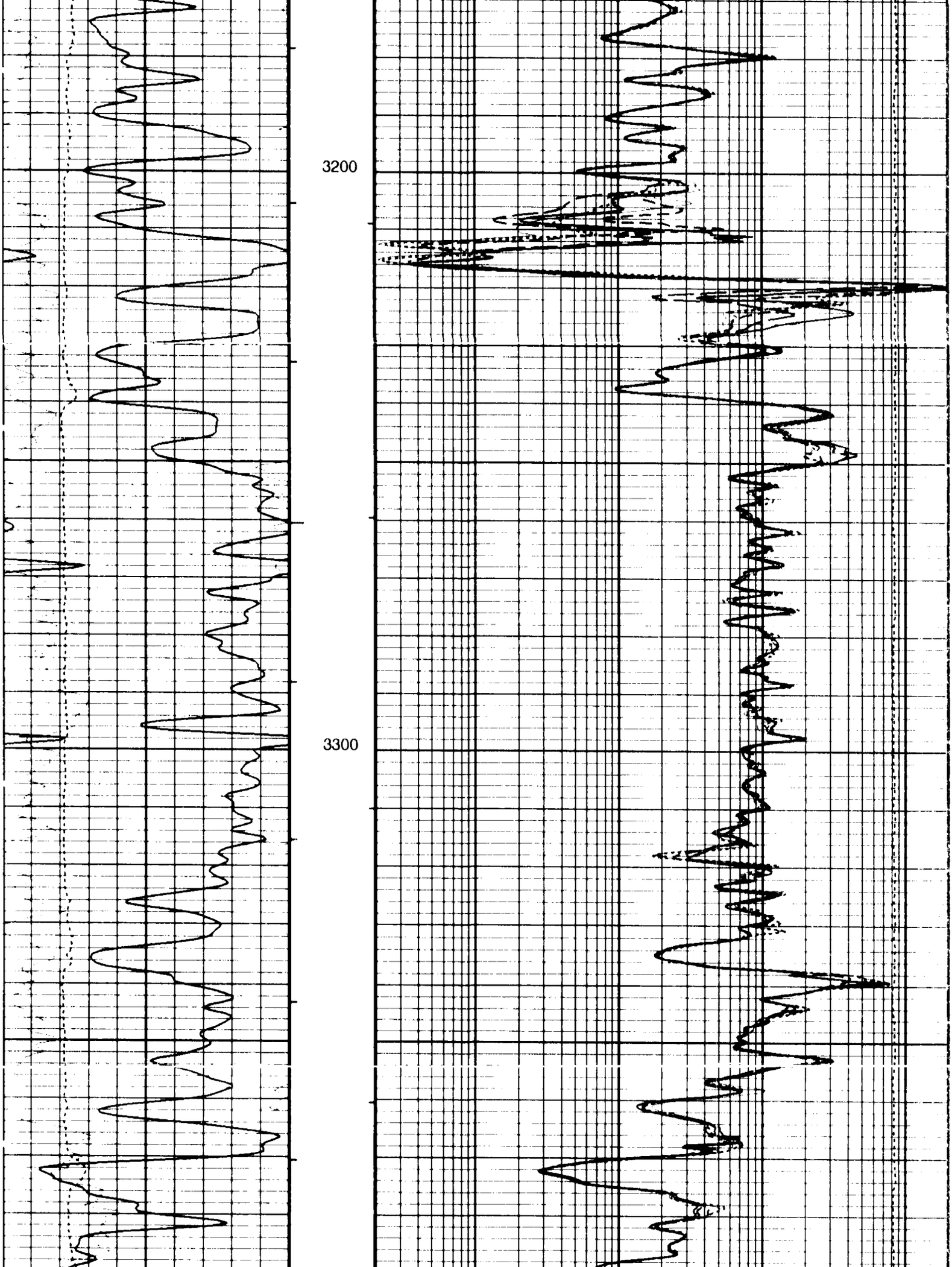
AHT30
AHT20
AHT10
3000
SP SHIFTED 20
3100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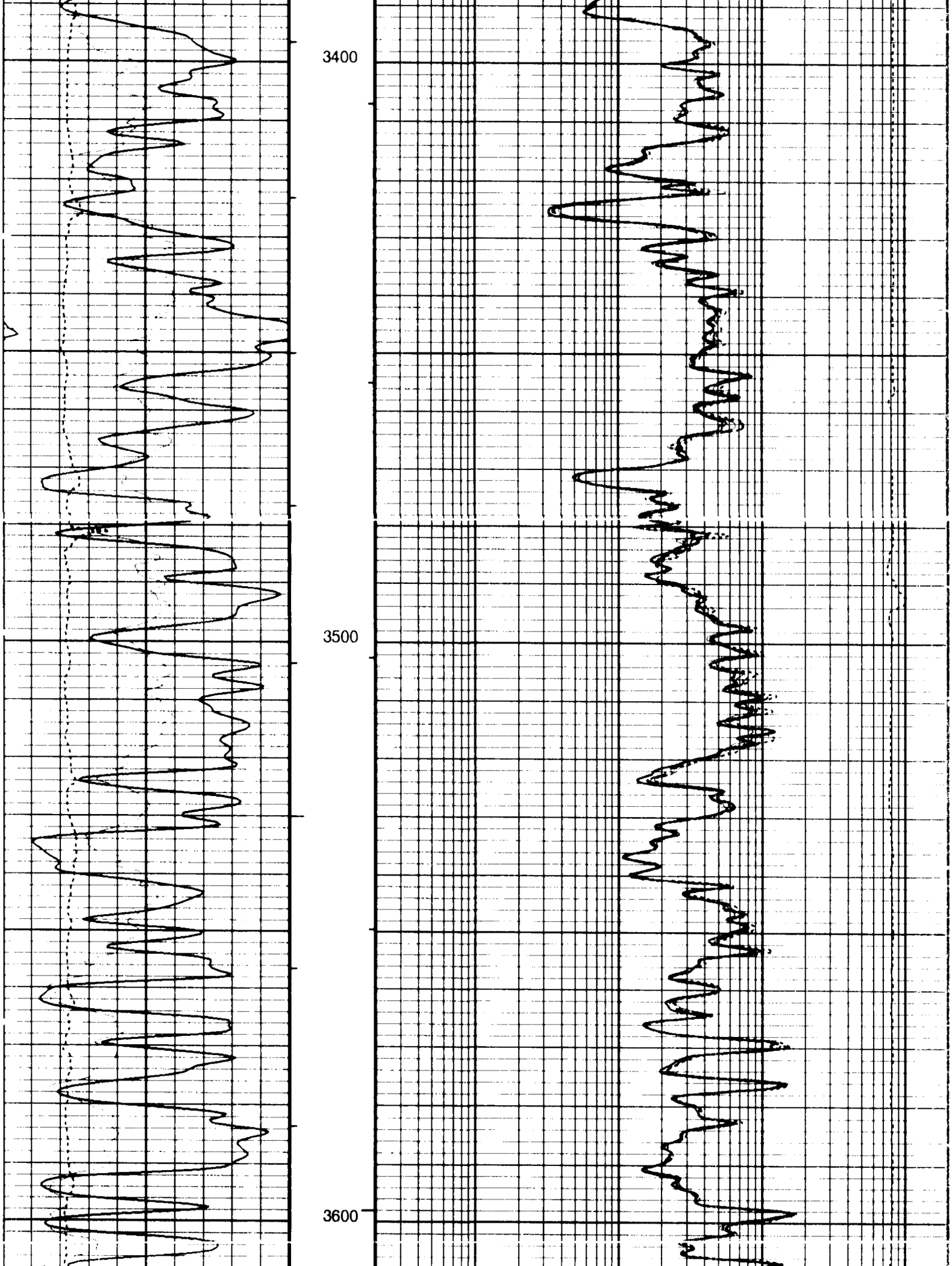
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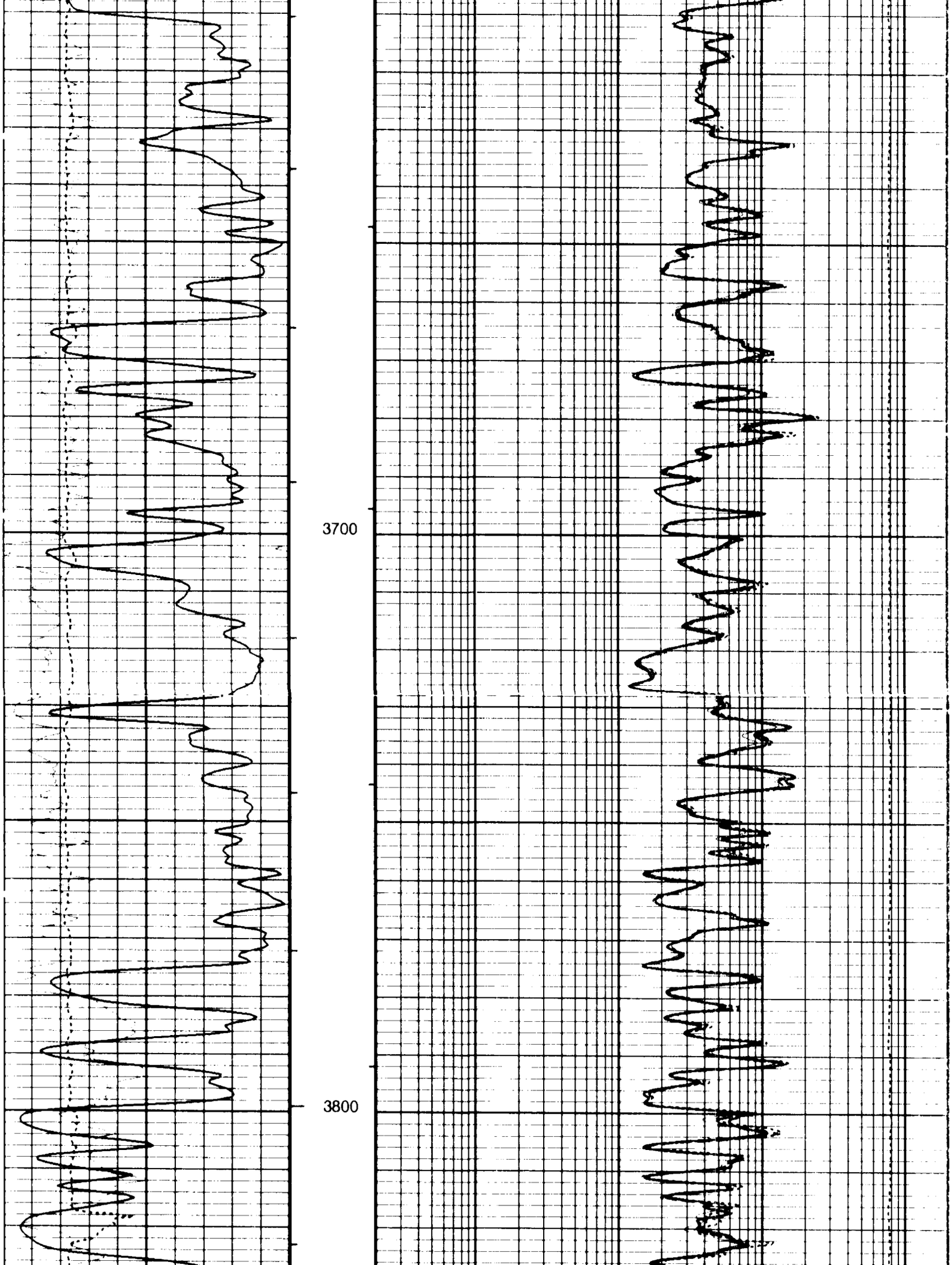
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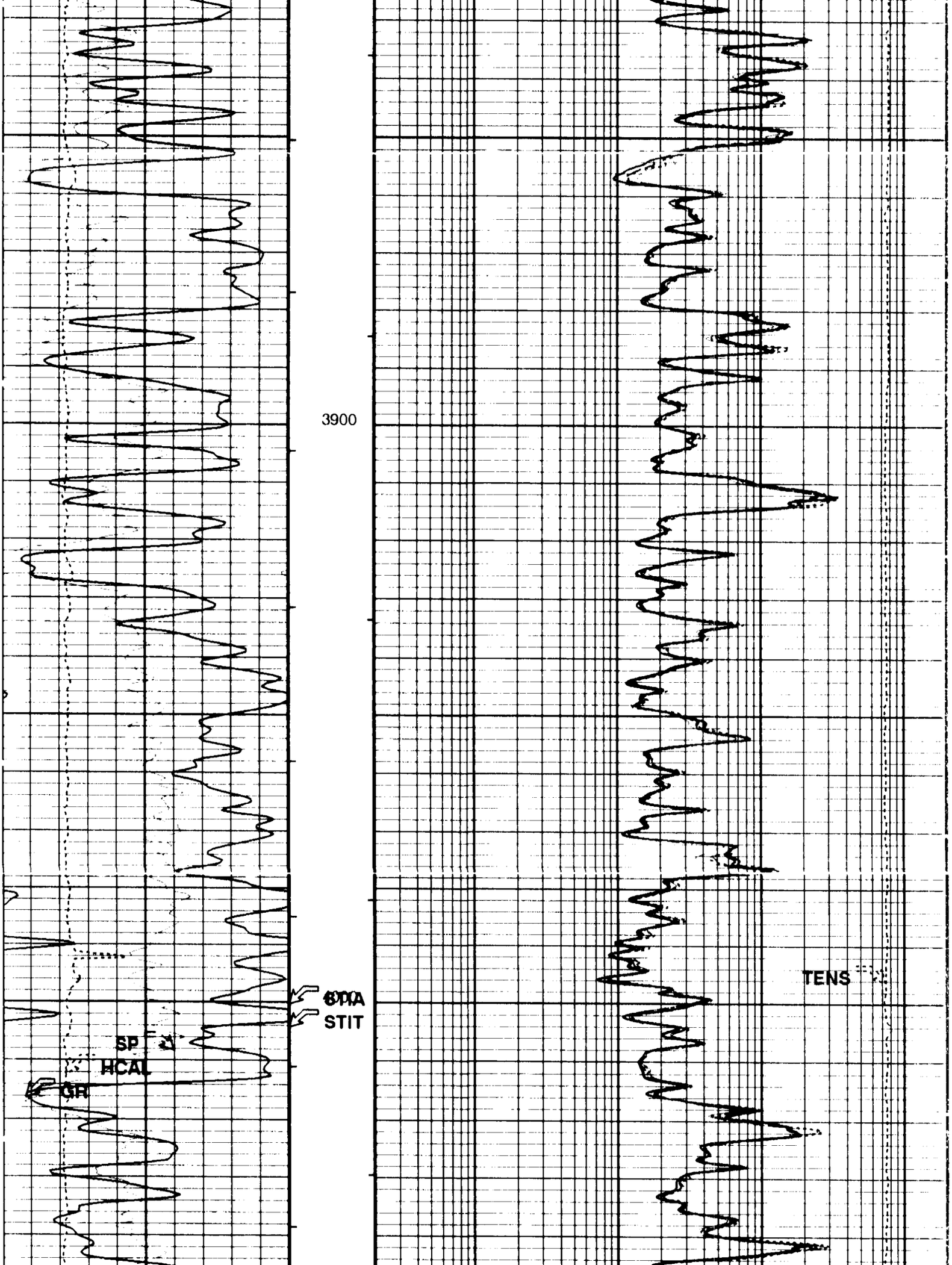
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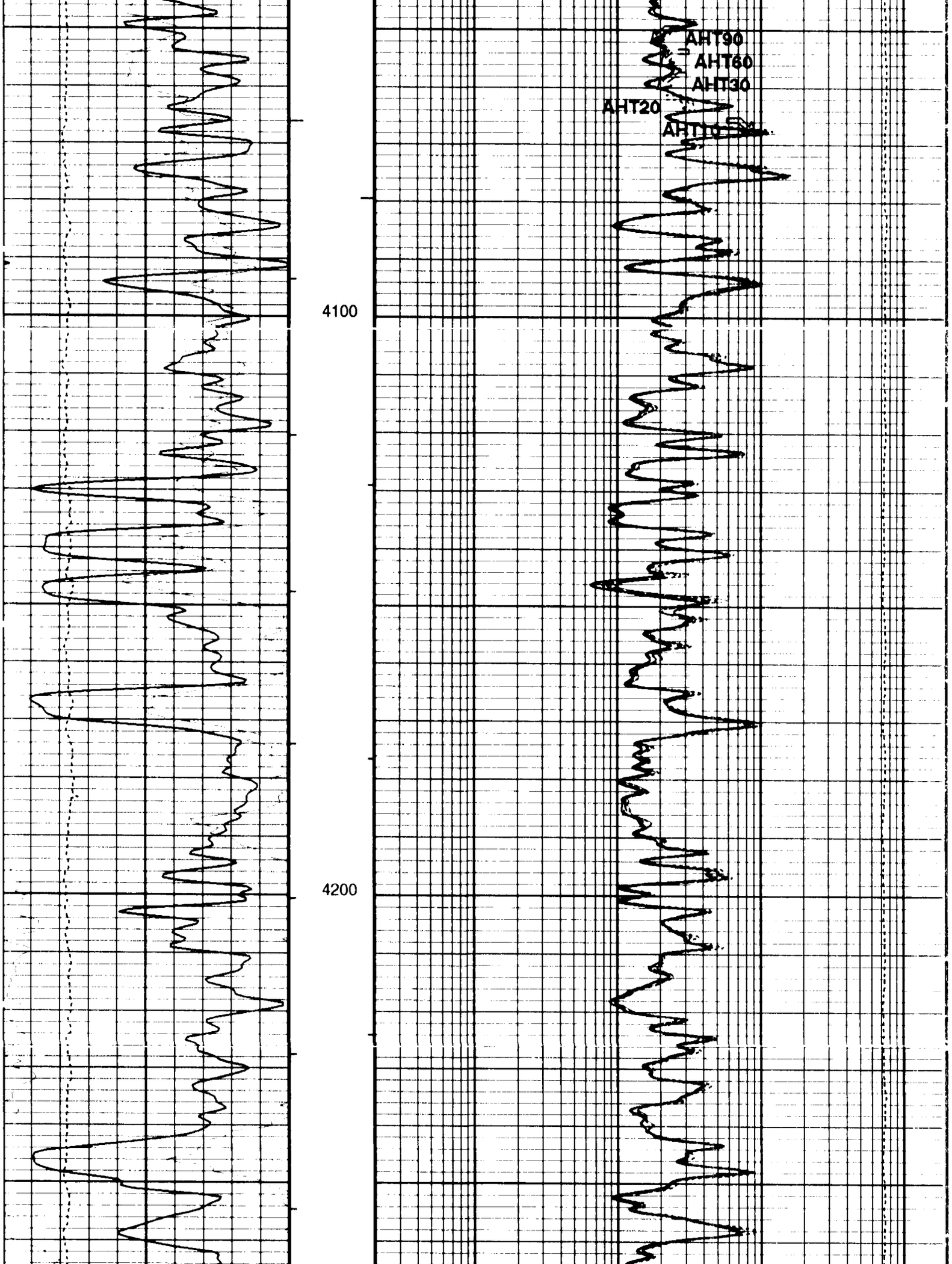
STIT
SP
HCAL
GR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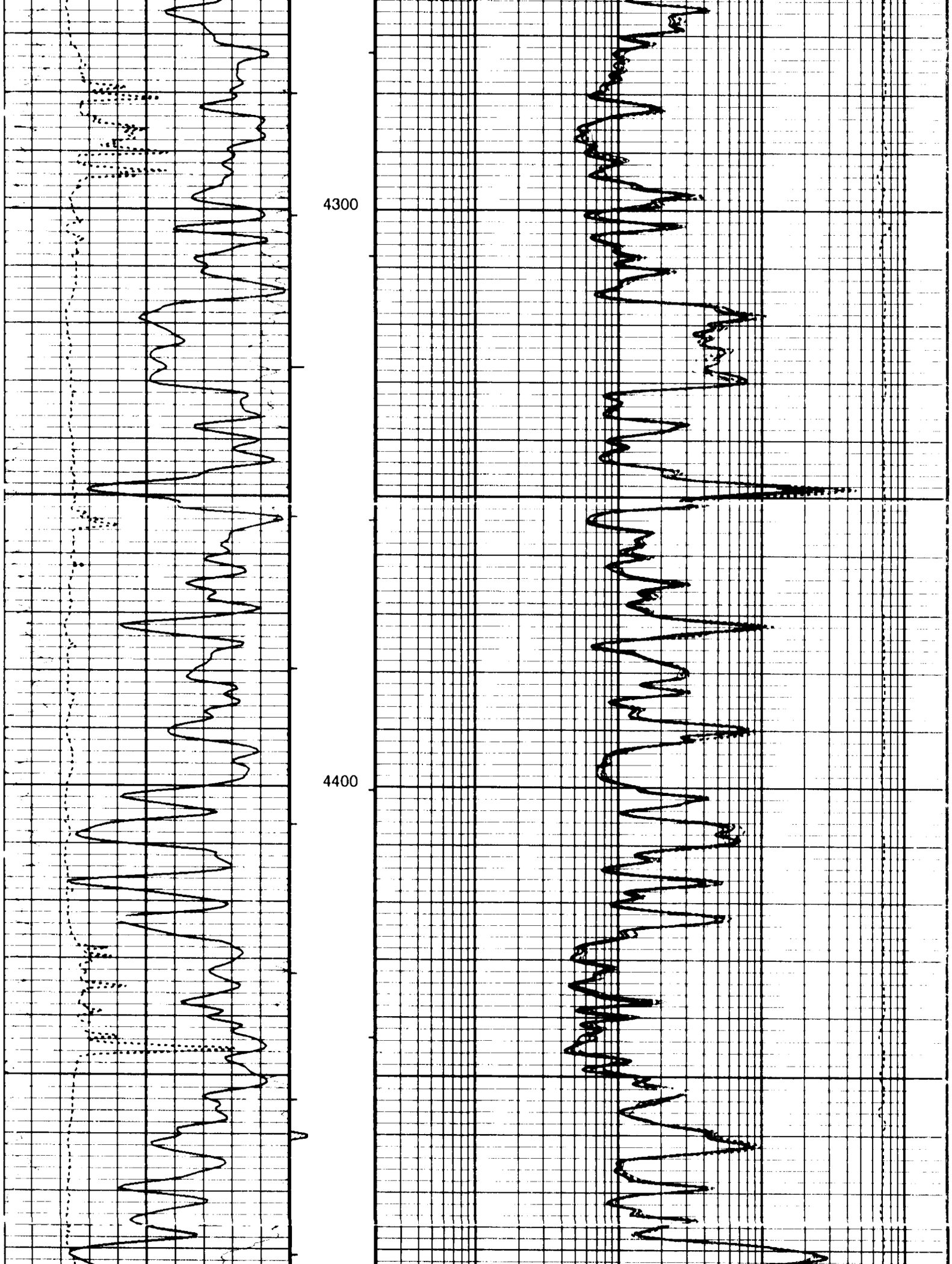
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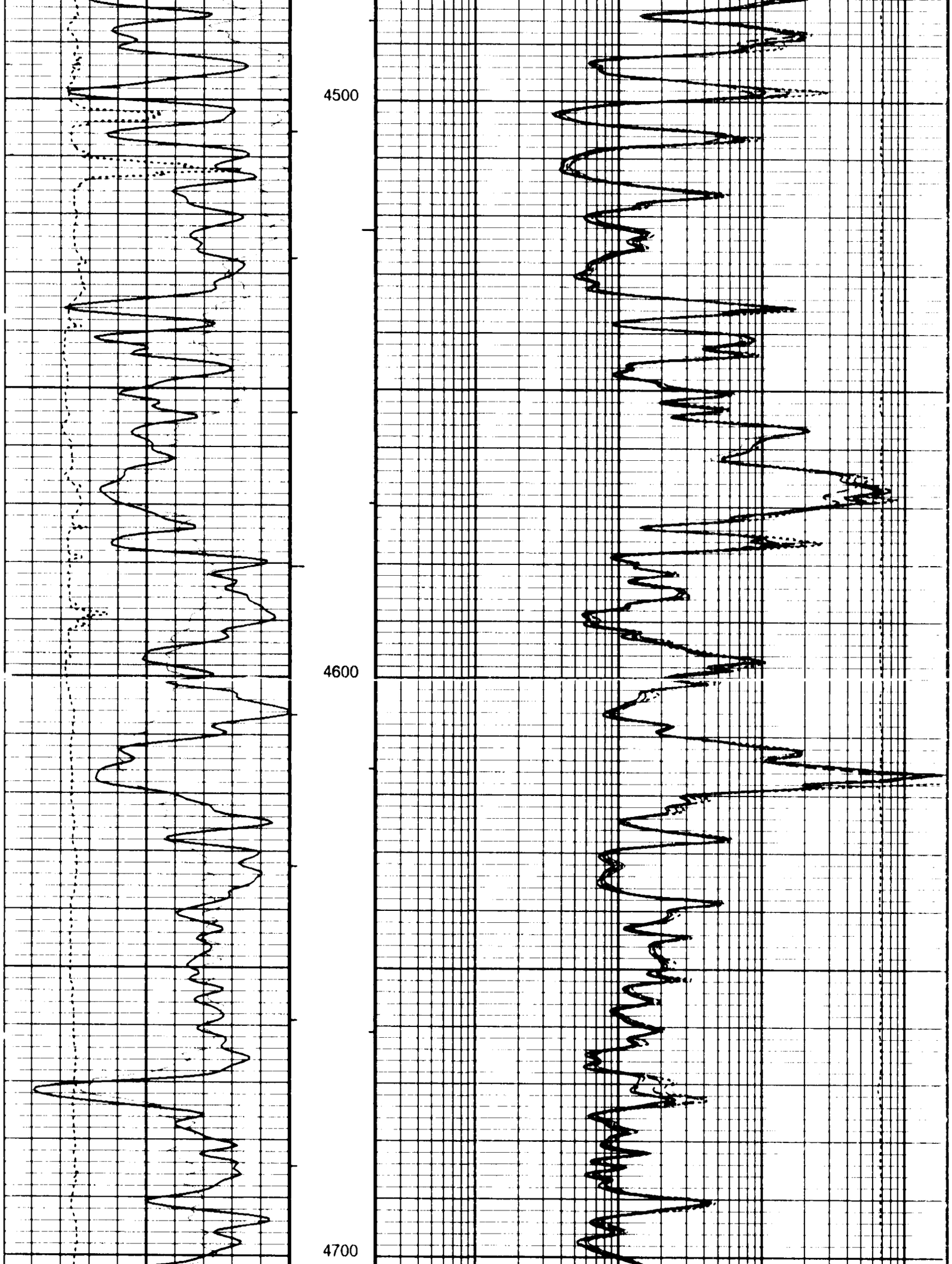
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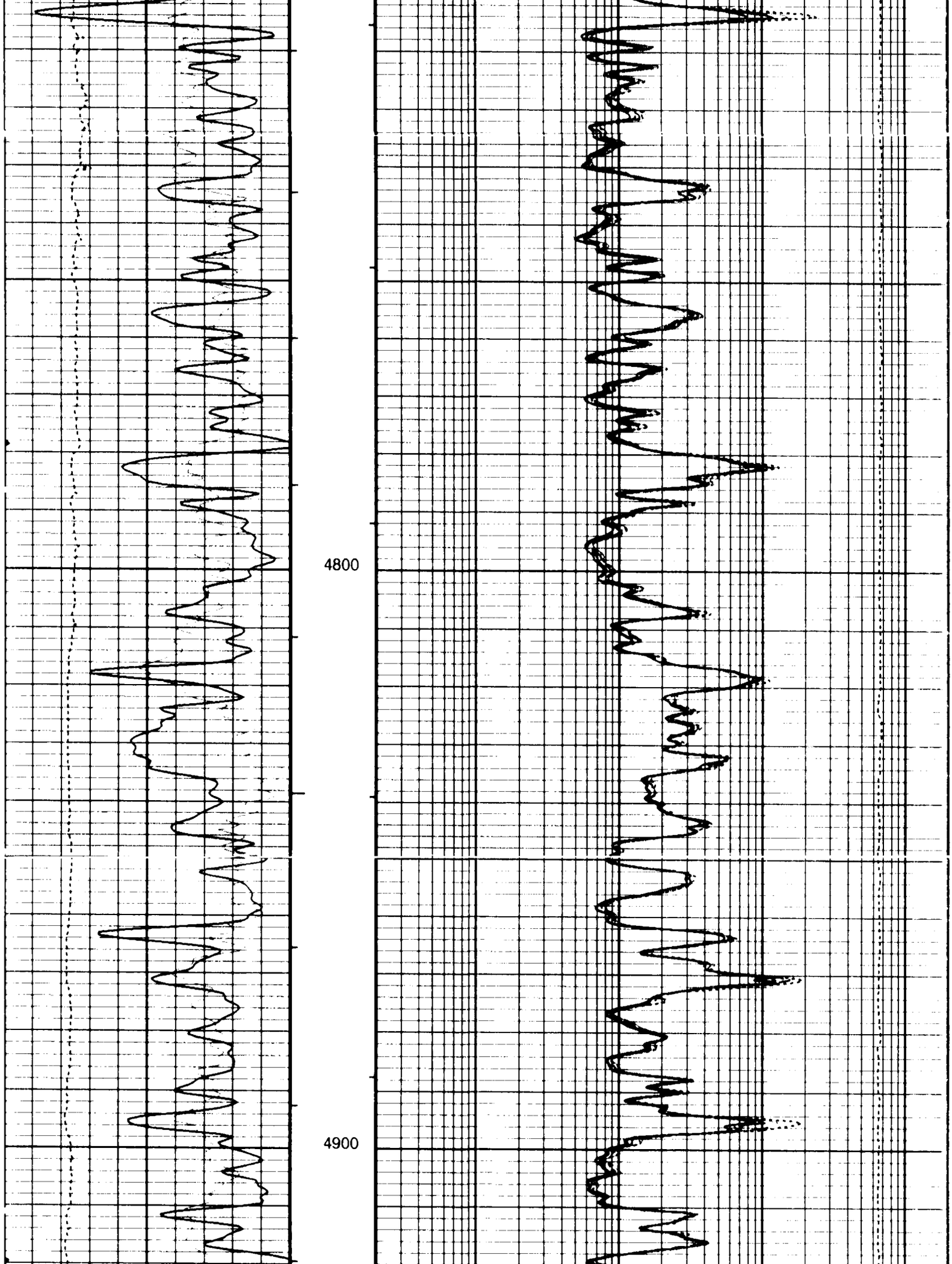
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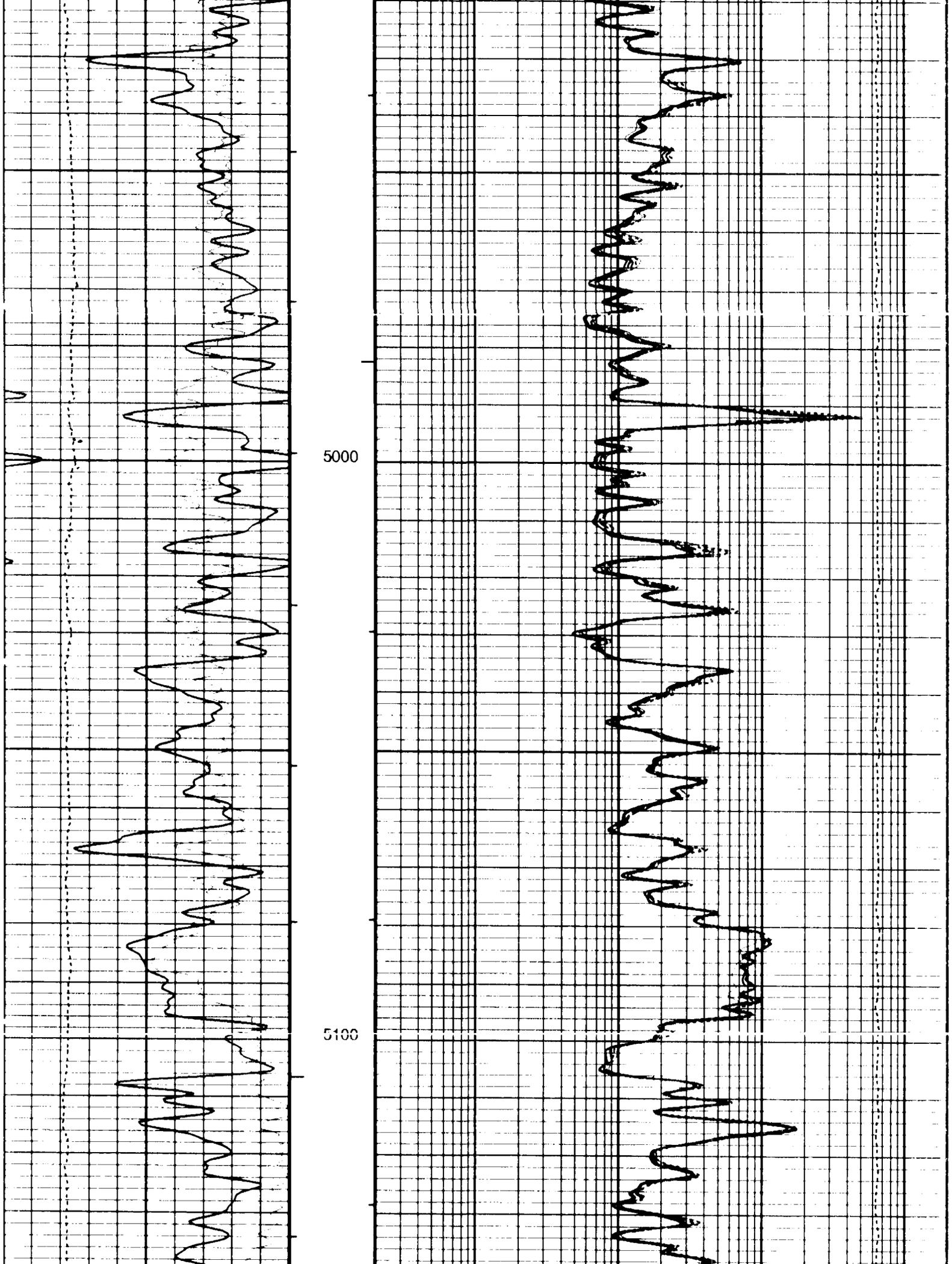
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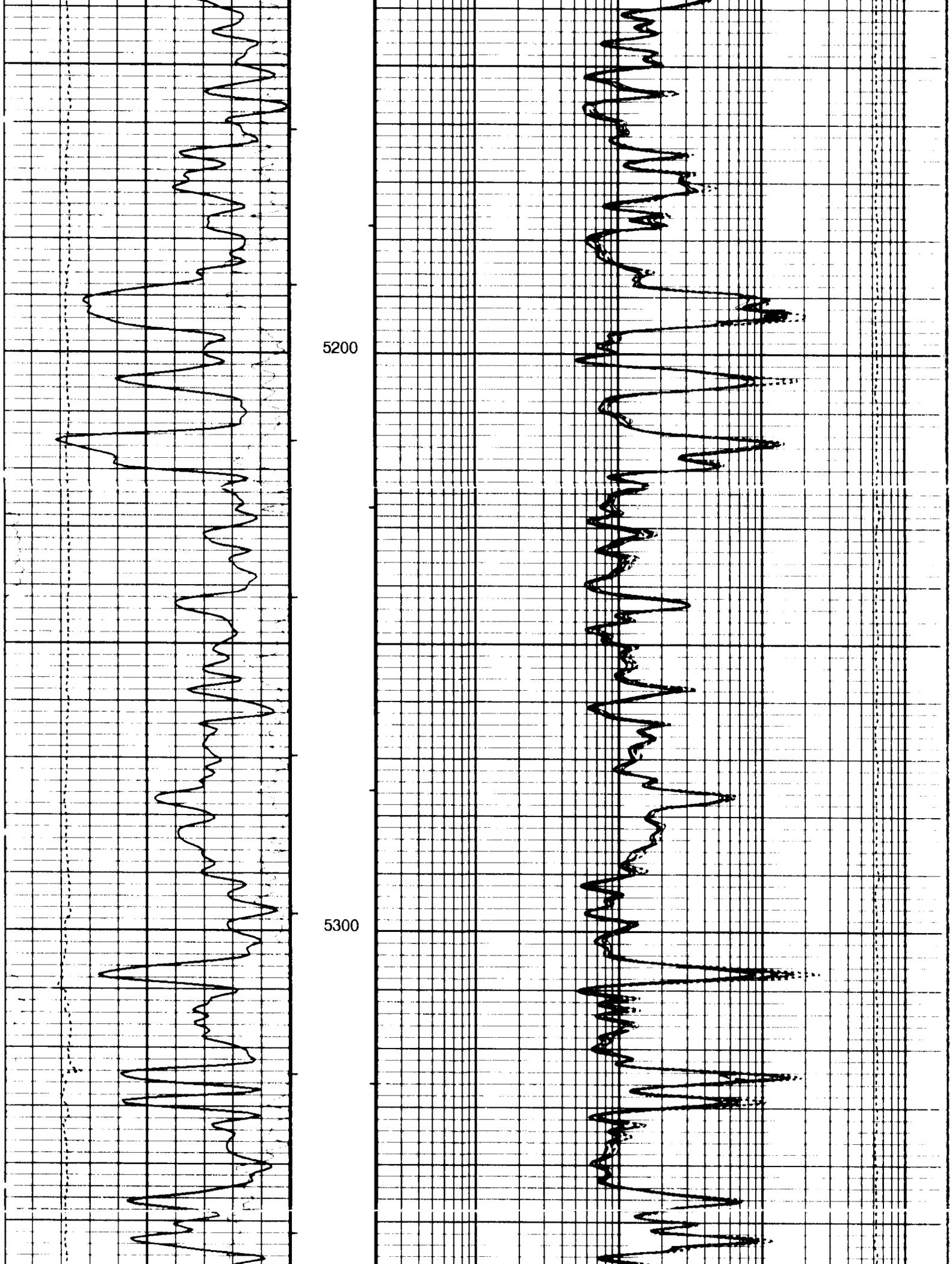
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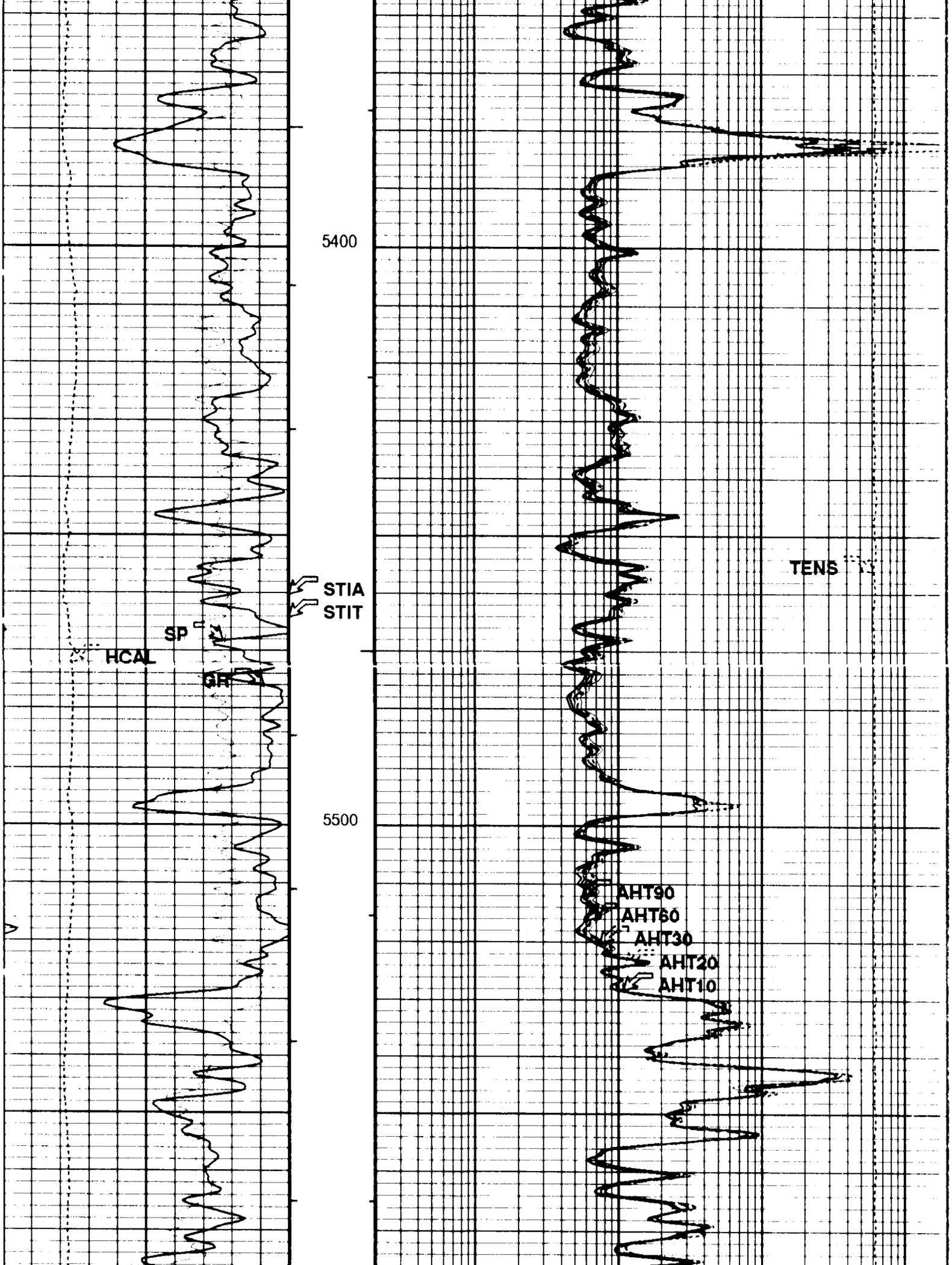
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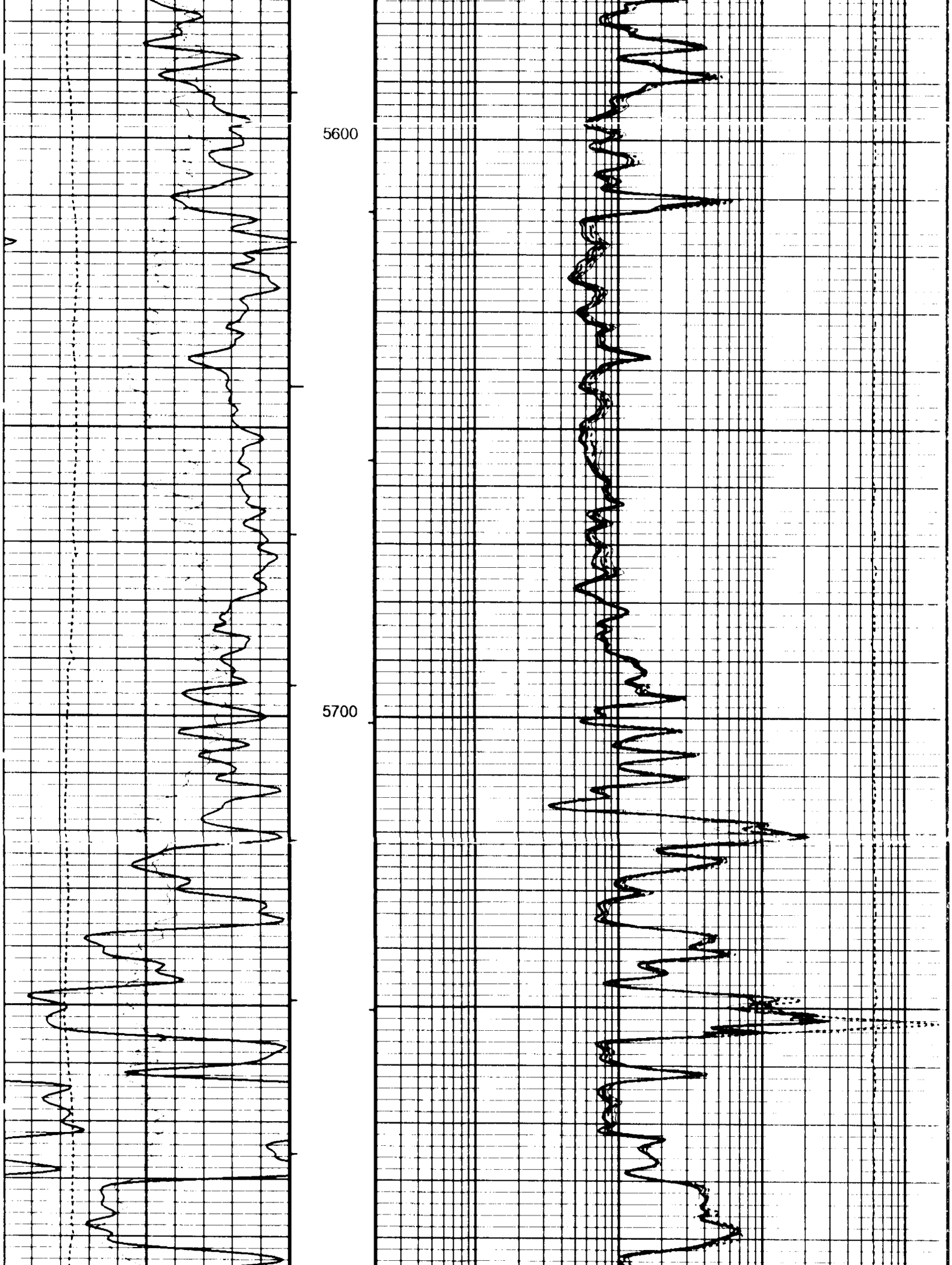
STIA
STIT
SP
HCAL
GR
TENS
AHT90
AHT60
AHT30
AHT20
AHT10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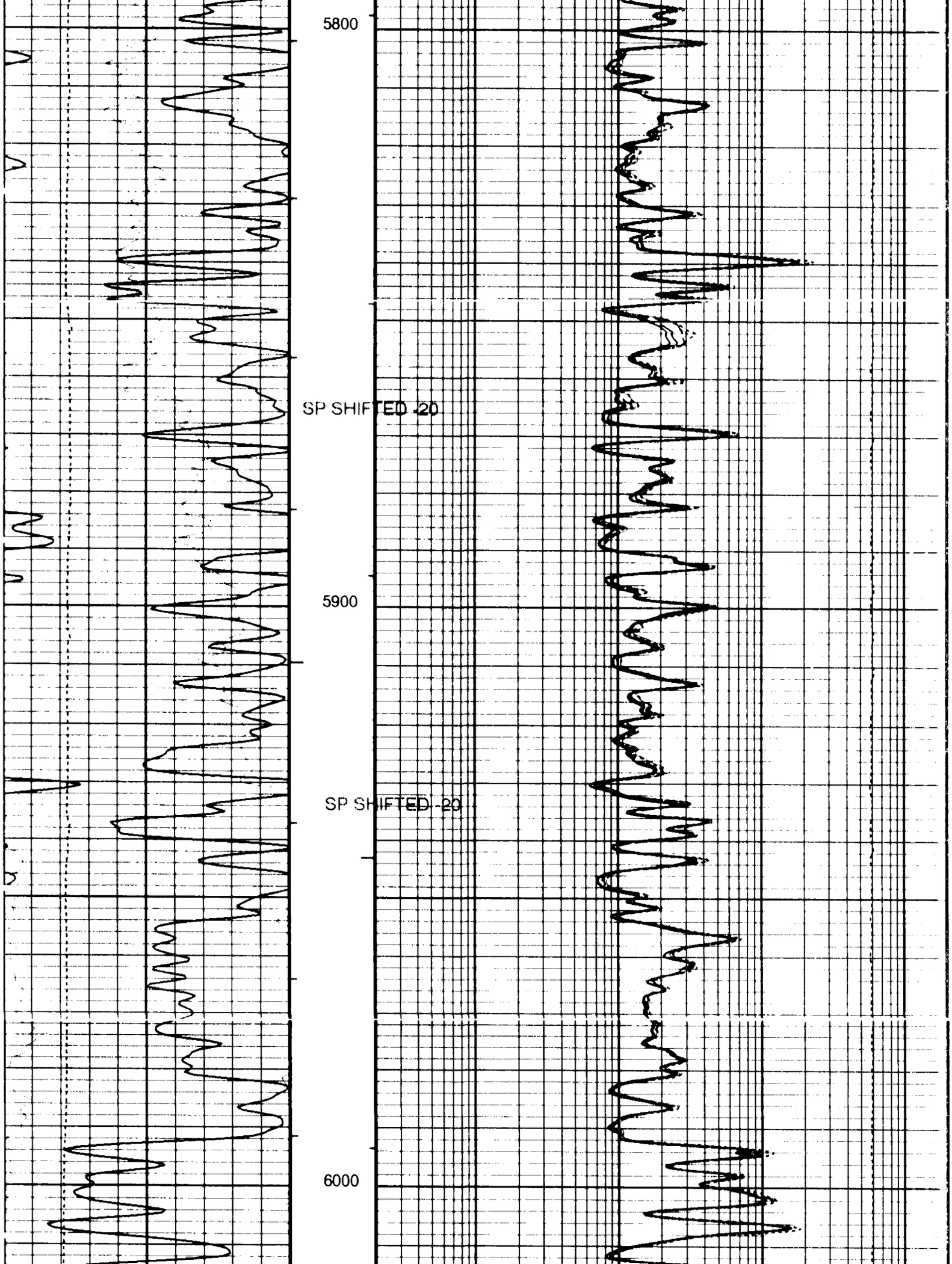
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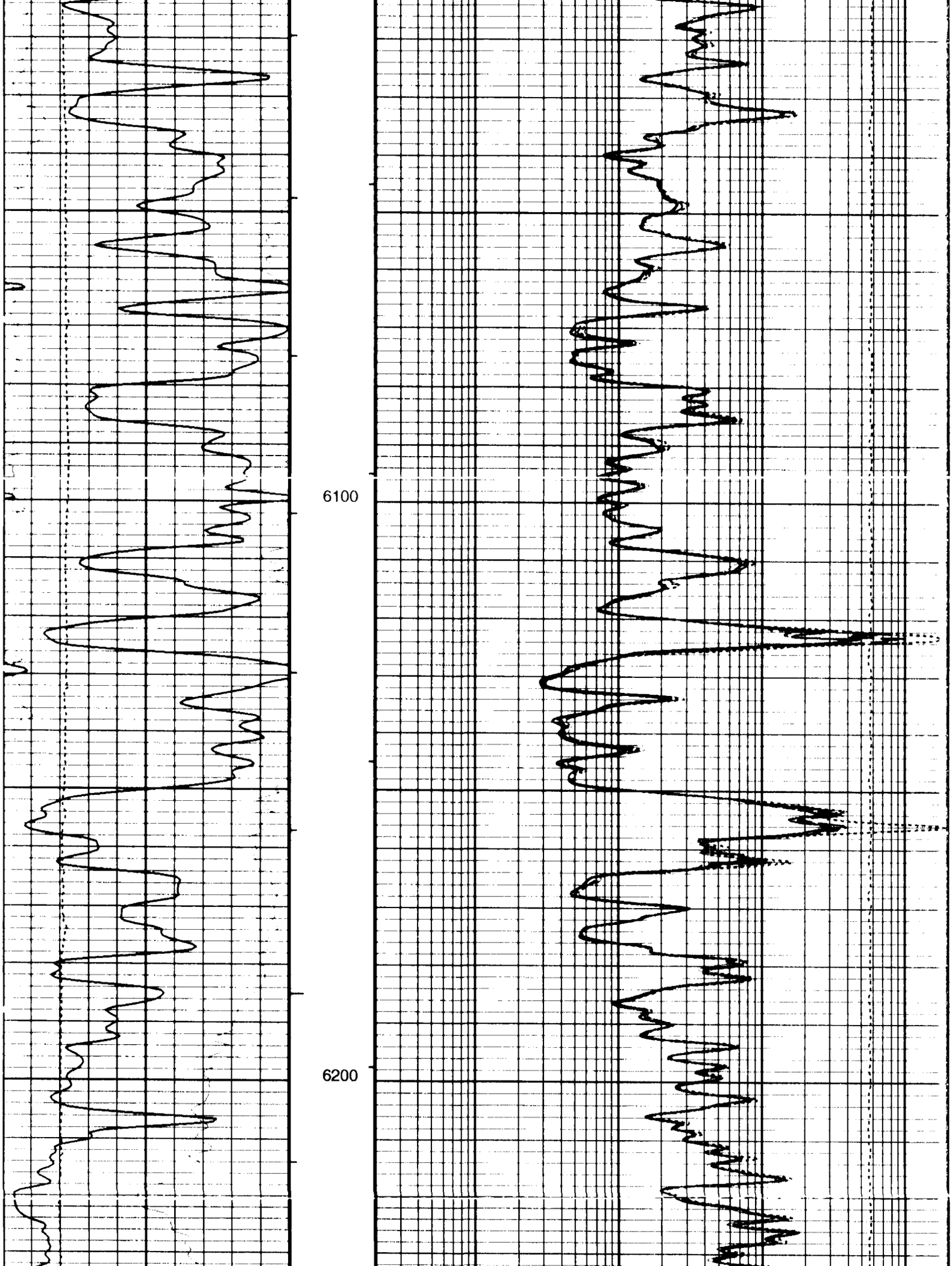
SP SHIFTED -20
5900
SP SHIFTED -20
6000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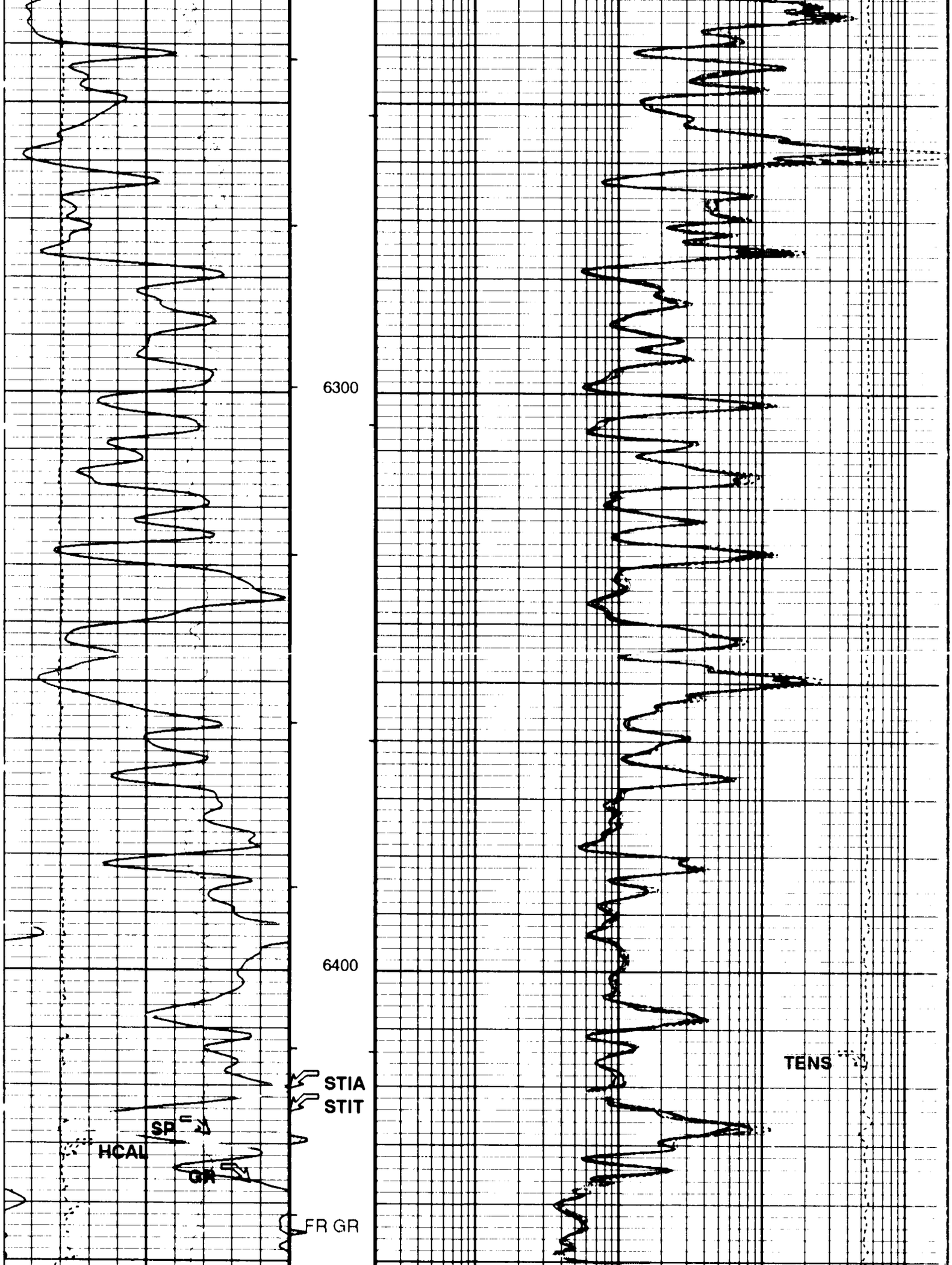
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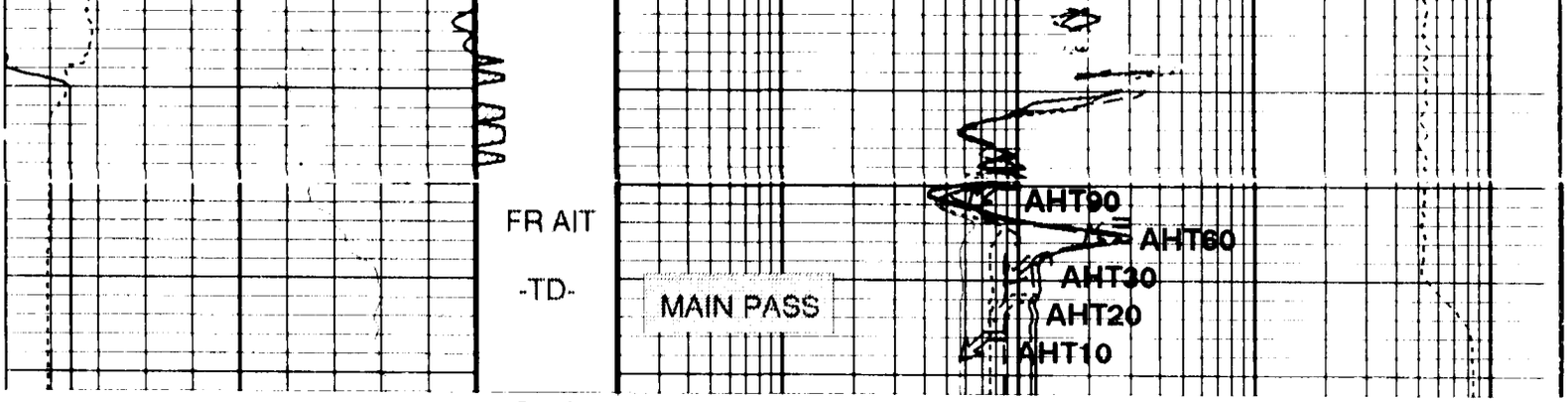
STIA
STIT
SP
HCAL
GR
FR GR
TENS



SP (SP) (MV) -80 20	Stuck Stretch (STIT) 0 (F) 50	AIT-H 10 Inch Investigation (AHT10) (OHMM) 0.2 2000	
Gamma Ray (GR) (GAPI) 0 150	Cable Drag From STIA to STIT	AIT-H 20 Inch Investigation (AHT20) (OHMM) 0.2 2000	
Caliper (HCAL) (IN) 6 16	Tool/Tot. Drag From D3T to STIA	AIT-H 30 Inch Investigation (AHT30) (OHMM) 0.2 2000	
		AIT-H 60 Inch Investigation (AHT60) (OHMM) 0.2 2000	
		AIT-H 90 Inch Investigation (AHT90) (OHMM) 0.2 2000	
			Tension (TENS) (LBF) 10000 0

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with tool # 100 (AHTNO)

...Acquired data from HILT/HAIT

***** Bhole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)

Tool is run in ECCENTERED mode with a tool stand-off of 1.50 IN. Bit Size is 7.88 IN.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HCAL Mud Resistivity (GRSE): AHMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT) 60.000 DEGF Bottom Temperature (BHT) 150.000 DEGF

Total Depth (TD) 6474.000 FT

***** AIT-H Answer Product processing control parameters *****

(AHAPL): 2_BholeCorr_BasicLogs

(AHBHM): 2_ComputeStandoff (AHBLM): 3_One_and_Two

Parameters

DLIS Name	Description	Value
AHBHM	AIT-H Bhole Correction Mode	2_ComputeStandoff
AHCDE	AIT-H Casing Detection Enable	Yes
AHCEN	AIT-H Tool Centering Flag (in Borehole)	Eccentered

AHCSED	AIT-H Casing Shoe Estimated Depth	-50000	FT
AHMRF	AIT-H Mud Resistivity Factor	1	
AHSTA	AIT-H Tool Standoff	1.5	IN
BHT	Bottom Hole Temperature (used in calculations)	150	DEGF
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	8.40	LB/G
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	1.000000e-02	DF/F
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HMPCO	HILT RTSC Measure points correction	NO	
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSTI	STI Uses HILT Acceleration	YES	
MST	Mud Sample Temperature	65.00	DEGF
SHT	Surface Hole Temperature	60	DEGF
SPNV	SP Next Value	0	MV
STKT	STI Stuck Threshold	2.5	FT
TD	Total Depth	6474	FT

Format: AIT-TWO Vertical Scale: 5" per 100' Graphics File Created: 27-SEP-1996 18:15

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

Speed Corrected - Depth Matched LOG

Output DLIS Files

DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15
REDUCED_HIP	HILTC .069	FN:11	FIELD	27-SEP-1996 18:15

Input DLIS Files

DEFAULT	HILTC .067	FN:6	FIELD	27-SEP-1996 17:33	6486.0 FT	6136.5 FT
DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT

Output DLIS Files

DEFAULT	HILTC .072	FN:14	FIELD	27-SEP-1996 20:37
REDUCED_HIP	HILTC .072	FN:15	FIELD	27-SEP-1996 20:37

Integrated Hole/Cement Volume Summary

Hole Volume = 118.22 F3

Cement Volume = 62.13 F3 (assuming 5.50 IN casing O.D.)

Computed from 6474.0 FT to 6134.5 FT using data channel(s) HCAL

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
- Integrated Cement Volume Minor Pip Every 10 F3
- Integrated Cement Volume Major Pip Every 100 F3

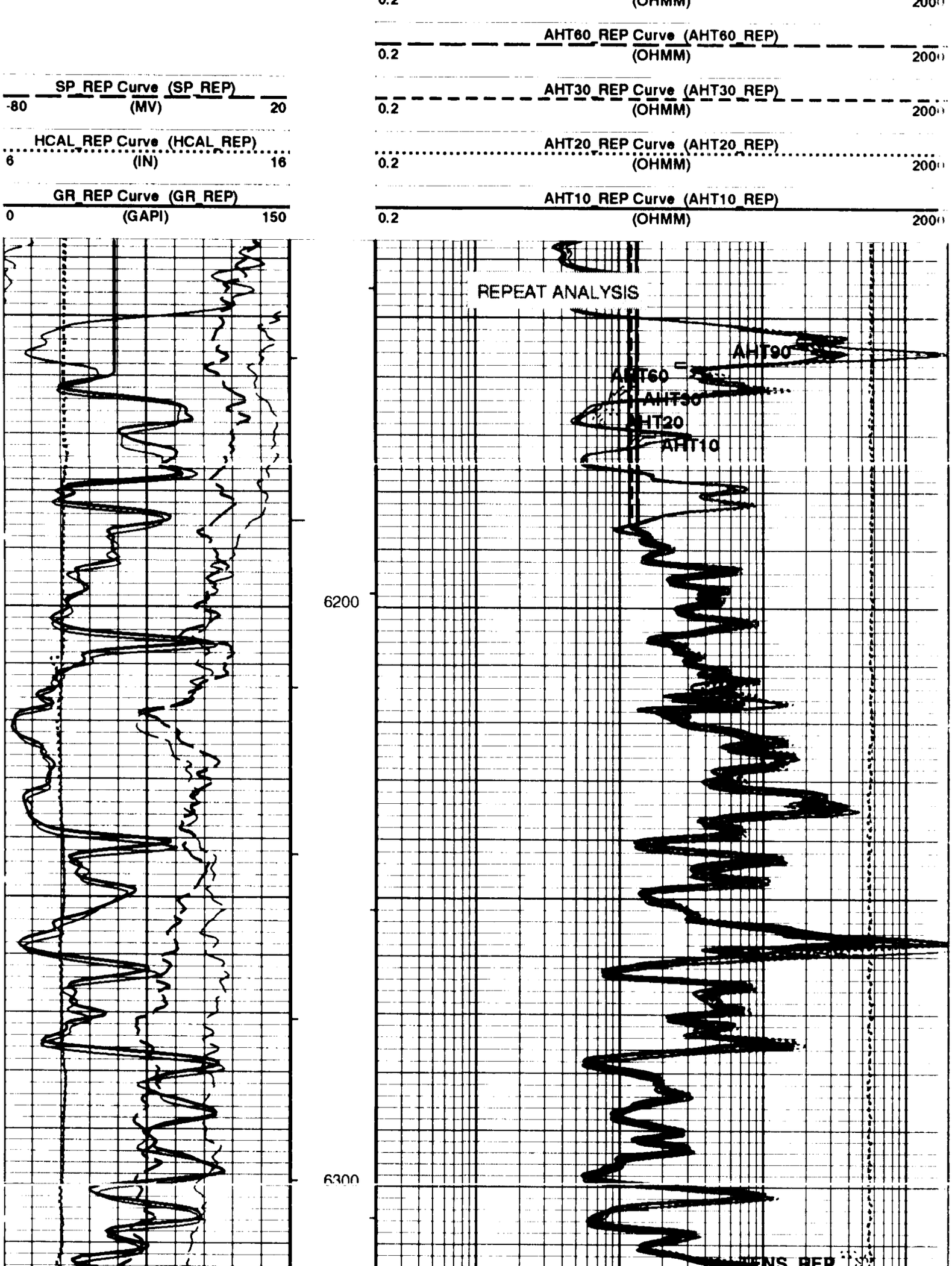
Time Mark Every 60 S

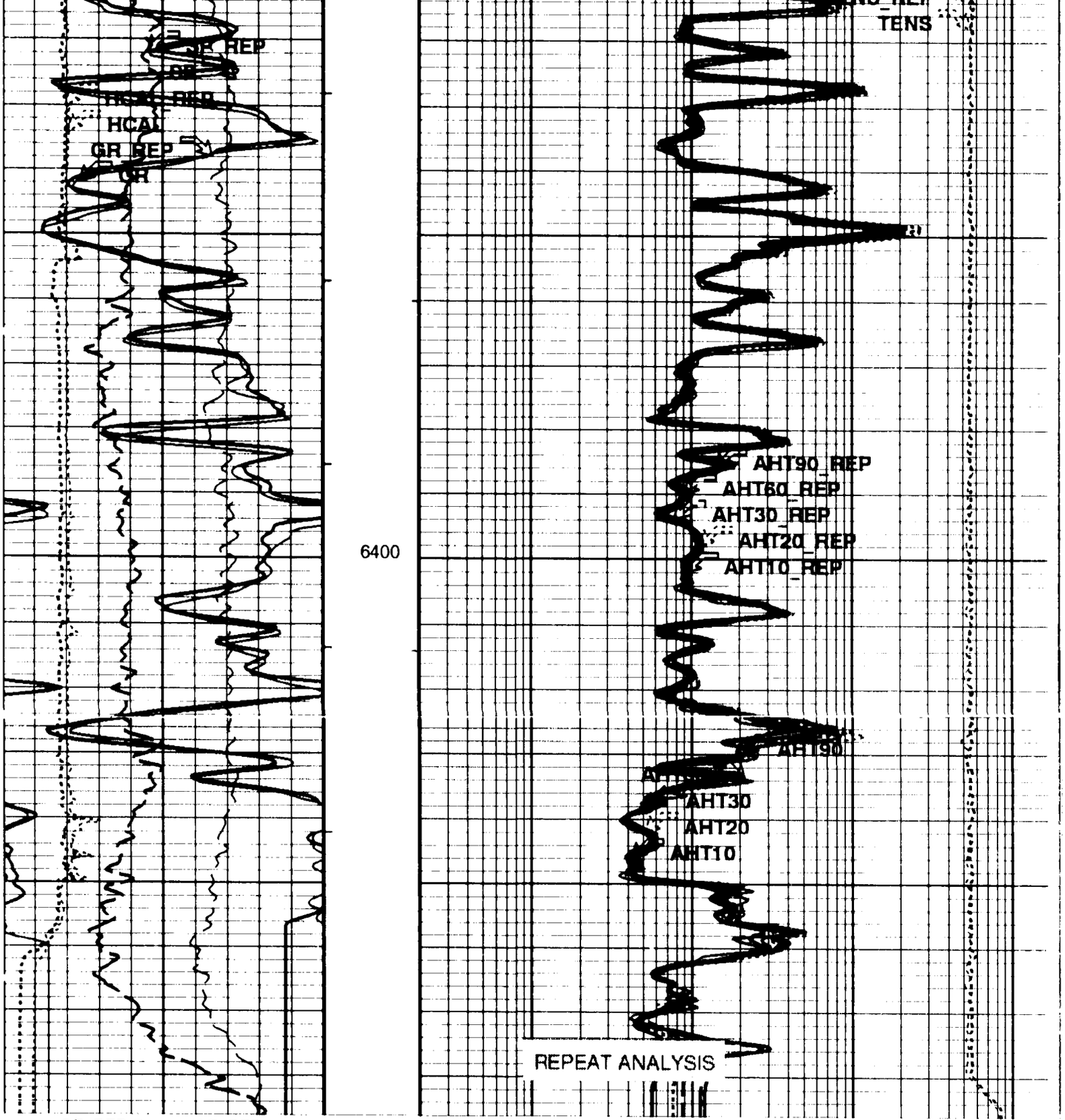
TENS_REP Curve (TENS_REP)

10000 (LBF) 0

AHT90_REP Curve (AHT90_REP)

0.2 (OHMM)


SP_REP Curve (SP_REP)
-80 (MV) 20
HCAL_REP Curve (HCAL_REP)
6 (IN) 16
GR_REP Curve (GR_REP)
0 (GAPI) 150
AHT90_REP Curve (AHT90_REP)
0.2 (OHMM) 2000
AHT60_REP Curve (AHT60_REP)
0.2 (OHMM) 2000
AHT30_REP Curve (AHT30_REP)
0.2 (OHMM) 2000
AHT20_REP Curve (AHT20_REP)
0.2 (OHMM) 2000
AHT10_REP Curve (AHT10_REP)
0.2 (OHMM) 2000
REPEAT ANALYSIS
AHT90
AHT60
AHT30
AHT20
AHT10
6200
6300



GR_REP Curve (GR_REP)
0 (GAPI) 150

HCAL_REP Curve (HCAL_REP)
6 (IN) 16

SP_REP Curve (SP_REP)
-80 (MV) 20

AHT10_REP Curve (AHT10_REP)
0.2 (OHMM) 2000

AHT20_REP Curve (AHT20_REP)
0.2 (OHMM) 2000

AHT30_REP Curve (AHT30_REP)
0.2 (OHMM) 2000

AHT60_REP Curve (AHT60_REP)
0.2 (OHMM) 2000

AHT90_REP Curve (AHT90_REP)
0.2 (OHMM) 2000

TENS_REP Curve (TENS_REP)
10000 (LBF)

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with tool # 100 (AHTNO)
...Acquired data from HILT/HAIT

***** Bhole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)
Tool is run in ECCENTERED mode with a tool stand-off of 1.50 IN. Bit Size is 7.88 IN.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HCAL Mud Resistivity (GRSE): AHMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT)	60.000 DEGF	Bottom Temperature (BHT)	150.000 DEGF
Total Depth (TD)	6474.000 FT		
Form Factor Exponent (FEXP)	2.000	Form Factor Numerator (FNUM)	1.000
Mud Filtrate Sample Resistivity (RMFS)	3.250 OHMM	Mud Filtrate Sample Temperature (MFST)	65.000 DEGF
Resitivity Connate Water (RW)	1.000 OHMM		

***** AIT-H Answer Product processing control parameters *****

Playback Mode: NORMAL

Parameters

DLIS Name	Description	Value	
AHBHM	AIT-H Bhole Correction Mode	2_ComputeStandoff	
AHCDE	AIT-H Casing Detection Enable	Yes	
AHCEN	AIT-H Tool Centering Flag (in Borehole)	Eccentered	
AHCSED	AIT-H Casing Shoe Estimated Depth	-50000	FT
AHMRF	AIT-H Mud Resistivity Factor	1	
AHSTA	AIT-H Tool Standoff	1.5	IN
BHT	Bottom Hole Temperature (used in calculations)	150	DEGF
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset	0.0	FT
DORI	Depth Offset Repeat Analysis	0.0	FT
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	1.000000e-02	DF/F
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HMPCO	HILT RTSC Measure points correction	NO	
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSTI	STI Uses HILT Acceleration	YES	
MST	Mud Sample Temperature	65.00	DEGF
PP	Playback Processing	NORMAL	
SHT	Surface Hole Temperature	60	DEGF
SPNV	SP Next Value	0	MV
TD	Total Depth	6474	FT

Format: AIT-RPT Vertical Scale: 5" per 100' Graphics File Created: 27-SEP-1996 20:37

OP System Version: 7C0-427

DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
PERT	RPCVX-680		

Speed Corrected - Depth Matched LOG

Input DLIS Files

DEFAULT	HILTC .067	FN:6	FIELD	27-SEP-1996 17:33	6486.0 FT	6136.5 FT
DEFAULT	HILTC .069	FN:10	FIELD	27-SEP-1996 18:15	6492.0 FT	99.2 FT

Output DLIS Files

DEFAULT	HILTC .072	FN:14	FIELD	27-SEP-1996 20:37
REDUCED_HIP	HILTC .072	FN:15	FIELD	27-SEP-1996 20:37

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag & Phase							
Master: Calibration out of date Jun 15 08:08 1996 Before: Sep 27 16:59 1996							
Thru Cal Magnitude - 0	0	0.6235	0.6232	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	1.278	1.277	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	0.6344	0.6337	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	0.7182	0.7179	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	1.342	1.342	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	1.954	1.953	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	1.953	1.951	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	1.393	1.394	N/A	N/A	N/A	V
Phase - 0	0	55.81	56.80	N/A	N/A	N/A	DEG
Phase - 1	0	54.71	55.71	N/A	N/A	N/A	DEG
Phase - 2	0	50.99	52.00	N/A	N/A	N/A	DEG
Phase - 3	0	50.20	51.22	N/A	N/A	N/A	DEG
Phase - 4	0	43.97	45.01	N/A	N/A	N/A	DEG
Phase - 5	0	42.09	43.16	N/A	N/A	N/A	DEG
Phase - 6	0	42.09	43.16	N/A	N/A	N/A	DEG
Phase - 7	0	38.45	39.70	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Auxilliary							
Master: Calibration out of date Jun 15 08:08 1996 Before: Sep 27 16:59 1996							
AIT-H SPA Plus	990.5	993.0	993.3	N/A	N/A	N/A	MV
AIT-H SPA Zero	0	-0.2287	-0.2027	N/A	N/A	N/A	MV
AIT-H Temperature Plus	0.9150	0.9198	0.9201	N/A	N/A	N/A	V
AIT-H Temperature Zero	0	-0.0002239	-0.0001948	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Test Loop Gain Correction							
Master: Calibration out of date Jun 15 08:08 1996							
Test Loop Gain Magnitude - 0	0	1.016	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 1	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 2	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 3	0	1.015	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 4	0	0.9943	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 5	0	1.007	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 6	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 7	0	1.026	N/A	N/A	N/A	N/A	V
Phase - 0	0	0.4351	N/A	N/A	N/A	N/A	DEG
Phase - 1	0	0.4877	N/A	N/A	N/A	N/A	DEG
Phase - 2	0	-0.07914	N/A	N/A	N/A	N/A	DEG
Phase - 3	0	-0.01529	N/A	N/A	N/A	N/A	DEG
Phase - 4	0	-0.08327	N/A	N/A	N/A	N/A	DEG
Phase - 5	0	-0.3508	N/A	N/A	N/A	N/A	DEG
Phase - 6	0	0.01955	N/A	N/A	N/A	N/A	DEG
Phase - 7	0	-0.3622	N/A	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Sonde Error Correction							
Master: Calibration out of date Jun 15 08:08 1996							
R Sonde Error Correction - 0	0	-117.3	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 1	0	162.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 2	0	107.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 3	0	60.03	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 4	0	24.85	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 5	0	13.28	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 6	0	9.377	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 7	0	-0.4773	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 0	0	-242.4	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 1	0	281.1	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 2	0	103.4	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 3	0	-8.335	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 4	0	-7.819	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 5	0	3.205	N/A	N/A	N/A	N/A	MM/M

X Sonde Error Correction - 6	0	5.059	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 7	0	10.05	N/A	N/A	N/A	N/A	MM/M

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Mud Gain Correction
Master: Calibration out of date Jun 15 08:08 1996

Coarse - Mag, Real, Imag - 0	0	1.100	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 1	0	1.100	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 2	0	1.100	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 0	0	1.098	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 1	0	1.099	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 2	0	1.099	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Stab Measurement Summary
Before: Sep 24 05:44 1996

BS Window Ratio	0.9832	N/A	0.9849	N/A	N/A	N/A	
BS Window Sum	16120	N/A	16110	N/A	N/A	N/A	CPS
SS Window Ratio	0.4719	N/A	0.4738	N/A	N/A	N/A	
SS Window Sum	11740	N/A	11680	N/A	N/A	N/A	CPS
LS Window Ratio	0.2970	N/A	0.2986	N/A	N/A	N/A	
LS Window Sum	1619	N/A	1606	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations
Before: Sep 24 05:44 1996

BS PM High Voltage (Command)	1441	N/A	1491	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1634	N/A	1638	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1865	N/A	1874	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Crystal Quality Resolutions Calibration
Before: Sep 24 05:44 1996

BS Crystal Resolution	12.54	N/A	12.63	N/A	N/A	N/A	%
SS Crystal Resolution	9.305	N/A	9.515	N/A	N/A	N/A	%
LS Crystal Resolution	10.02	N/A	9.938	N/A	N/A	N/A	%

High resolution Integrated Logging Tool-CTS Wellsite Calibration - MCFL Calibration
Before: Sep 16 15:02 1996

Raw B0 Resistivity	3875	N/A	3855	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3807	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3825	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-CTS Wellsite Calibration - HILT Caliper Calibration
Before: Sep 24 05:42 1996

HILT Caliper Zero Measurement	8.000	N/A	7.853	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	11.82	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Detector Calibration
Before: Sep 24 05:58 1996

Gamma Ray Background	30.00	N/A	57.45	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	183.2	N/A	183.2	N/A	N/A	16.66	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Zero Measurement
Master: Aug 2 02:04 1996 Before: Sep 24 05 43 1996

CNTC Background	25.80	25.80	25.78	N/A	N/A	3.870	CPS
CFTC Background	26.10	26.10	24.94	N/A	N/A	3.915	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Accelerometer Calibration
Before: Sep 27 16:59 1996

Z-Axis Acceleration	32.19	N/A	32.09	N/A	N/A	N/A	F 32

High resolution Integrated Logging Tool-CTS Master Calibration - Inversion results
Master: Jul 31 15:04 1996

Rho Aluminium	2.596	2.599	--	--	--	--	G C3
Rho Magnesium	1.686	1.686	-	--	--	-	G C3
Pe Aluminium	2.570	2.550	--	--	--	--	
Pe Magnesium	2.760	2.775	--	--	-	--	

High resolution Integrated Logging Tool-CTS Master Calibration - Deviation Summary
Master: Jul 31 15:04 1996

BS Average Deviation	0	0.2217	--	--	-	--	%
BS Max Deviation	0	0.6642	--	--	--	--	%
SS Average Deviation	0	0.6695	--	--	--	--	%
SS Max Deviation	0	1.694	--	--	--	--	%
LS Average Deviation	0	0.3227	--	--	-	--	%
LS Max Deviation	0	1.354	--	--	-	-	%

High resolution Integrated Logging Tool-CTS Master Calibration - Tank Measurement
Master: Aug 2 02:04 1996

Thermal Near Corr. (Tank)	6031	5764	--	--	--	--	CPS
Thermal Far Corr. (Tank)	2793	2415	--	--	--	--	CPS
CNTC/CFTC (Tank)	2.159	2.387	--	--	--	--	

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature	83.0	DEGF
Thermal Housing Size	3.375	IN.

High resolution Integrated Logging Tool-CTS / Equipment Identification

Primary Equipment:

Array Induction Tool - H	AIT - H	100
Array Induction Sonde	AHIS - BA	100
HILT high-Resolution Mechanical Sonde	HRMS - B	830
HILT Rxo Gamma-ray Device	HRGD -	818
HILT Nuclear Back-Scatter Detector	HILT -	
HILT Nuclear Short-Spacing Detector	HILT -	
HILT Nuclear Long-Spacing Detector	HILT -	
Micro Cylindrically Focused Log Device	MCFL -	

Auxiliary Equipment:

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Electronics Calibration Check - Thru Cal Mag & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6235		0.6050	55.81		71.00
	Before	0.6232			56.80		
1	Master	1.278		1.270	54.71		70.00
	Before	1.277			55.71		
2	Master	0.6344		0.6230	50.99		66.00
	Before	0.6337			52.00		
3	Master	0.7162		0.7040	50.20		65.00
	Before	0.7179			51.22		
4	Master	1.342		1.337	43.97		59.00
	Before	1.342			45.01		
5	Master	1.954		1.955	42.09		57.00
	Before	1.953			43.16		
6	Master	1.953		1.955	42.09		57.00
	Before	1.951			43.16		
7	Master	1.393		1.415	38.45		53.00
	Before	1.394			39.70		

Thru Cal Magnitude V	Phase DEG
60.00 % (Minimum)	Nom -60.00 (Minimum)
(Nominal)	(Nominal)
140.0 % (Maximum)	Nom + 60.00 (Maximum)

Master Calibration out of date Jun 15 08:08 1996 Before Sep 27 16:59 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Electronics Calibration Check - Auxiliary

Phase	AIT-H SPA Plus MV	Value
Master		993.0
Before		993.3

941.0 (Minimum) 990.5 (Nominal) 1040 (Maximum)

Phase	AIT-H SPA Zero MV	Value
Master		-0.2287
Before		-0.2027

-50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)

Phase	AIT-H Temperature Plus V	Value
Master		0.9198
Before		0.9201

0.8700 (Minimum) 0.9150 (Nominal) 0.9600 (Maximum)

Phase	AIT-H Temperature Zero V	Value
Master		-0.0002239
Before		-0.0001948

-0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)

Master Calibration out of date Jun 15 08:08 1996 Before Sep 27 16:59 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG		
0	1.016	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.4351	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.014	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.4877	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.017	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.07914	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.015	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.01529	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9943	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.08327	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	1.007	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.3508	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.014	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.01955	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.026	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.3622	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master Calibration out of date Jun 15 08 08 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM M			Value	X Sonde Error Correction MM/M		
0	-117.3	-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)	-242.4	-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	162.8	114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)	281.1	-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	107.8	66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)	103.4	-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	60.03	39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)	-8.335	-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	24.85	15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)	-7.819	-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	13.28	4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)	3.205	-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.377	5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)	5.059	-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-0.4773	-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)	10.05	-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master Calibration out of date Jun 15 08 08 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse - Mag, Real, Imag			Value	Fine - Mag, Real, Imag		
0	1.100	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)	1.098	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)

1	1.100	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		1.099	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		
2	1.100	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		1.099	0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		

Master Calibration out of date Jun 15 08:08 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio			Value	Phase	SS Window Ratio			Value	Phase	LS Window Ratio			Value
Before	0.9340 (Minimum)	0.9832 (Nominal)	1.032 (Maximum)	0.9849	Before	0.4483 (Minimum)	0.4719 (Nominal)	0.4955 (Maximum)	0.4738	Before	0.2822 (Minimum)	0.2970 (Nominal)	0.3119 (Maximum)	0.2986
Phase	BS Window Sum CPS			Value	Phase	SS Window Sum CPS			Value	Phase	LS Window Sum CPS			Value
Before	15310 (Minimum)	16120 (Nominal)	16920 (Maximum)	16110	Before	11160 (Minimum)	11740 (Nominal)	12330 (Maximum)	11680	Before	1538 (Minimum)	1619 (Nominal)	1700 (Maximum)	1606

Before Sep 24 05:44 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Photo-multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V			Value	Phase	SS PM High Voltage (Command) V			Value	Phase	LS PM High Voltage (Command) V			Value
Before	1341 (Minimum)	1441 (Nominal)	1541 (Maximum)	1491	Before	1534 (Minimum)	1634 (Nominal)	1734 (Maximum)	1638	Before	1765 (Minimum)	1865 (Nominal)	1965 (Maximum)	1874

Before Sep 24 05:44 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %			Value	Phase	SS Crystal Resolution %			Value	Phase	LS Crystal Resolution %			Value
Before	11.54 (Minimum)	12.54 (Nominal)	13.54 (Maximum)	12.63	Before	8.305 (Minimum)	9.305 (Nominal)	10.30 (Maximum)	9.515	Before	9.018 (Minimum)	10.02 (Nominal)	11.02 (Maximum)	9.938

Before Sep 24 05:44 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM			Value	Phase	Raw B1 Resistivity OHMM			Value	Phase	Raw B2 Resistivity OHMM			Value
Before	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)	3855	Before	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	3807	Before	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	3625

Before Sep 16 15 02 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN			Value	Phase	HILT Caliper Plus Measurement IN			Value
Before	6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)	7.853	Before	9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)	11.82

Before Sep 24 05:42 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI			Value	Phase	Gamma Ray (Jig - Bkg) GAPI			Value	Phase	Gamma Ray (Calibrated) GAPI			Value
Before	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	57.45	Before	166.6 (Minimum)	183.2 (Nominal)	199.9 (Maximum)	183.2	Before	150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)	165.0

Before Sep 24 05 58 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.80	Master		26.10

Phase				Value
Before	5.000 (Minimum)	25.80 (Nominal)	40.00 (Maximum)	25.78

Phase				Value
Before	5.000 (Minimum)	26.10 (Nominal)	40.00 (Maximum)	24.94

Master Aug 2 02 04 1996 Before Sep 24 05 43 1996

High resolution Integrated Logging Tool-CTS
Wellsite Calibration
Accelerometer Calibration

Phase	Z-Axis Acceleration F/S2			Value
Before	31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)	32.09

Before Sep 27 16 59 1996

High resolution Integrated Logging Tool-CTS Master Calibration
Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V			Nominal	Value	Phase DEG		Nominal
0	Master	0.6235				0.6050	55.81			71.00
1	Master	1.278				1.270	54.71			70.00
2	Master	0.6344				0.6230	50.99			66.00
3	Master	0.7182				0.7040	50.20			65.00
4	Master	1.342				1.337	43.97			59.00
5	Master	1.954				1.955	42.09			57.00
6	Master	1.953				1.955	42.09			57.00
7	Master	1.393				1.415	38.45			53.00
			60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)			Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master Calibration out of date Jun 15 08 08 1996

High resolution Integrated Logging Tool-CTS Master Calibration
Electronics Calibration Check - Auxiliary

Phase	AIT-H SPA Plus MV			Value
Master	941.0 (Minimum)	990.5 (Nominal)	1040 (Maximum)	993.0

Phase	AIT-H SPA Zero MV			Value
Master	-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)	-0.2287

Phase	AIT-H Temperature Plus V			Value
Master	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)	0.9198

Phase	AIT-H Temperature Zero V			Value
Master	-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)	-0.0002239

Master Calibration out of date Jun 15 08 08 1996

High resolution Integrated Logging Tool-CTS Master Calibration
Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG		
0	1.016	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.4351	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.014	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.4877	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.017	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.07914	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.015	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.01529	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9943	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-0.08327	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	1.007	0.9500	1.000	1.050	-0.3508	-3.000	0	3.000

		(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)
6	1.014				0.01955			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.026				-0.3622			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master Calibration out of date Jun 15 08 08 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM M			Value	X Sonde Error Correction MM/M		
0	-117.3				-242.4			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	162.8				281.1			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	107.8				103.4			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	60.03				-8.335			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	24.85				-7.819			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	13.28				3.205			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.377				5.059			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-0.4773				10.05			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master Calibration out of date Jun 15 08 08 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Mud Gain Correction

Idx	Value	Coarse - Mag, Real Imag			Value	Fine - Mag, Real, Imag		
0	1.100				1.098			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
1	1.100				1.099			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
2	1.100				1.099			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)

Master Calibration out of date Jun 15 08 08 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Inversion results

Phase	Rho Aluminium G/C3			Value	Phase	Rho Magnesium G/C3			Value
Master				2.599	Master				1.686
	2.586 (Minimum)	2.596 (Nominal)	2.606 (Maximum)			1.676 (Minimum)	1.686 (Nominal)	1.696 (Maximum)	
Phase	Pe Aluminium			Value	Phase	Pe Magnesium			Value
Master				2.550	Master				2.775
	2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)			2.660 (Minimum)	2.760 (Nominal)	2.860 (Maximum)	

Master Jul 31 15 04 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master	-0.6000 (Minimum) / 0 (Nominal) / 0.6000 (Maximum)	0.2217	Master	-1.000 (Minimum) / 0 (Nominal) / 1.000 (Maximum)	0.6695	Master	-1.500 (Minimum) / 0 (Nominal) / 1.500 (Maximum)	0.3227
Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master	-1.600 (Minimum) / 0 (Nominal) / 1.600 (Maximum)	0.6642	Master	-2.500 (Minimum) / 0 (Nominal) / 2.500 (Maximum)	1.694	Master	-3.500 (Minimum) / 0 (Nominal) / 3.500 (Maximum)	1.354

Master Jul 31 15:04 1996

High resolution Integrated Logging Tool-CTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr (Tank) CPS	Value	Phase	CNTC CFTC (Tank)	Value
Master	5000 (Minimum) / 6031 (Nominal) / 7200 (Maximum)	5764	Master	2075 (Minimum) / 2793 (Nominal) / 3125 (Maximum)	2415	Master	2120 (Minimum) / 2159 (Nominal) / 2540 (Maximum)	2.387

Master Aug 2 02:04 1996

COMPANY:	PETROGLYPH OPERATING COMPANY, INC.	BOTTOM LOG INTERVAL	6472 F
		SCHLUMBERGER DEPTH	6480 F
WELL:	UTE TRIBAL 03-12	DEPTH DRILLER	6474 F
FIELD:	ANTELOPE CREEK	KELLY BUSHING	5964 F
COUNTY:	DUCHESNE	DRILL FLOOR	5963 F
STATE:	UTAH	GROUND LEVEL	5954 F

Schlumberger

ARRAY INDUCTION
with Linear Correlation
GAMMA RAY LOG

ATTACHMENT NO. 9

LIST OF OWNERS AND AFFIDAVIT NOTIFICATION

AFFIDAVIT OF MAILING

I, Kevin Dickey, Vice President, Operations, Petroglyph Energy, being first duly sworn, depose and state as follows: On July 24th, 2015, I caused to be mailed by certified mail, postage prepaid, return receipt requested, a copy of the Application to convert 1 well that appears on the attached sheet to water injection for enhanced recovery. It was sent to all parties who have an interest within ¼ mile radius from this well. The attached list contains the names of all parties who were notified.

Dated on this 24th day of July, 2015

Kevin Dickey

Vice President, Operations

Petroglyph Energy

The forgoing affidavit was subscribed and sworn to before me by Kevin Dickey.

This 24 day of July, 2015.

EDNA SYES NOTARY PUBLIC STATE OF IDAHO

Edna Syes

Notary Public

PETROGLYPH EXECUTIVE OFFICES

July 24th, 2015

Mineral, Surface, and Working Interest Owners

To Whom It May Concern,

On July 24th, 2015 Petroglyph Energy Inc. submitted to the Environmental Protection Agency an application requesting approval to convert 19 wells to water injection wells in an enhanced recovery program. The well(s) which were submitted are all located in Antelope Creek Field which is operated under a Cooperative Plan of Development between the Ute Tribe and Petroglyph Energy.

Owners at Well's Location	Owners within Well's ¼ mile radius
Mineral: Ute Tribe	No others
Operator: Petroglyph	No others
Surface: Ute Tribe	No others
Working Interest: Petroglyph 100%	

Anyone who would be directly and adversely affected by the authorization of the underground disposal into the Upper Green River formation may file a written request for a public hearing before the EPA. Logs and additional information on the subject wells are on file with the EPA, Groundwater Program, Mail Code 8P-W-UIC, 1595 Wynkoop St, Denver, Colorado 80202-1129.

Please contact Kevin Dickey at 208-685-7600 if you have any questions.

Sincerely,

Kevin Dickey

Vice President, Operations, Petroglyph Energy

Enclosure

PETROGLYPH OPERATING COMPANY, INC.

960 Broadway Avenue, Suite 500 ▪ P.O. Box 70019 ▪ Boise, Idaho 83707 ▪ (208) 685-7600 ▪ Fax: (208) 685-7605 ▪ www.petroglyphenergy.com

ANTELOPE CREEK FIELD

WELLS TO BE CONVERTED TO INJECTION

Well Name and Number	Footages	Section, Township, and Range
Ute Tribal 03-05	SHL: 2871' FNL & 752' FWL BHL: 2340' FNL & 684' FWL	3, T5S-R3W
Ute Tribal 03-12	2272' FSL & 575' FWL	3, T5S-R3W
Ute Tribal 08-11	2187' FSL 2011' FWL	8, T5S-R3W
Ute Tribal 08-12	2100' FSL & 515' FWL	8, T5S-R3W
Ute Tribal 09-01	770' FNL & 1059' FEL	9, T5S-R3W
Ute Tribal 09-04	585' FNL & 722' FWL	9, T5S-R3W
Ute Tribal 10-03	600' FNL & 1650' FWL	10, T5S-R3W
Ute Tribal 17-04	697' FNL & 636' FWL	17, T5S-R3W
Ute Tribal 17-05	1797' FNL & 620' FWL	17, T5S-R3W
Ute Tribal 17-12	2527' FSL & 612' FWL	17, T5S-R3W
Ute Tribal 20-06	2050' FNL & 1950' FWL	20, T5S-R3W
Ute Tribal 20-07	1980' FNL & 1980' FEL	20, T5S-R3W
Ute Tribal 20-11	1959' FSL & 2033' FWL	20, T5S-R3W
Ute Tribal 20-15	574' FSL & 1806' FEL	20, T5S-R3W
Ute Tribal 31-03	422' FNL & 2338' FWL	31, T5S-R3W
Ute Tribal 31-05	1980' FNL & 660' FWL	31, T5S-R3W
Ute Tribal 31-07	1976' FNL & 2168' FEL	31, T5S-R3W
Ute Tribal 31-12	1999' FSL & 748' FWL	31, T5S-R3W
Ute Tribal 36-08-E4	1796' FNL & 713' FEL	36, T5S-R4W

OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 03-05

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						3	5S	3W	NW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes i, ii, iii, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title *(Type or Print)*	B. Phone No. *(Area Code and No.)*
Kevin Dickey Vice President, Operations	(208) 685-7600
C. Signature	D. Date Signed
	07/27/2015

OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

	T/A	C
U		

Read Attached instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 03-12

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						3	5S	3W	SW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes i, ii, iii, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title *(Type or Print)*: Kevin Dickey, Vice President, Operations

B. Phone No. *(Area Code and No.)*: (208) 685-7600

C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 08-11

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						8	5S	3W	SW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes i, ii, iii, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

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A. Name and Title *(Type or Print)*	B. Phone No. *(Area Code and No.)*
Kevin Dickey, Vice President, Operations	(208) 685-7600
C. Signature	D. Date Signed
	07/27/2015

OMB No. 2040-0042 Approval Expires 11/30/2014

EPA

United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 08-12

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						8	5S	3W	SW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

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United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 09-01

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						9	5S	3W	NE				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

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C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

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United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 09-04

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						9	5S	3W	NW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

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C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

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United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

	T/A	C
U		

Read Attached instructions Before Starting

For Official Use Only

Application approved (mo day year)	Date received (mo day year)	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise State: ID ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise State: ID ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started (mo day year):
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 10-03

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Latitude Min	Latitude Sec	Longitude Deg	Longitude Min	Longitude Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						10	5S	3W	NW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

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C. Signature:

D. Date Signed: 07/27/2015

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United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

	T/A	C
U		

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For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 17-04

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Latitude Min	Latitude Sec	Longitude Deg	Longitude Min	Longitude Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						17	5S	3W	NW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

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United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

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Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

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Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise State: ID ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise State: ID ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 17-05

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						17	5S	3W	NW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

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I. EPA ID Number

		T/A	C
U			

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Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

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City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

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Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 17-12

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						17	5S	3W	SW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

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I. EPA ID Number

		T/A	C
U			

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Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started (mo day year):
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 20-06

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Latitude Min	Latitude Sec	Longitude Deg	Longitude Min	Longitude Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						20	5S	3W	NW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

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B. Phone No. *(Area Code and No.)*: (208) 685-7600

C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

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United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

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III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 20-07

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						20	5S	3W	NE				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

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A. Name and Title *(Type or Print)*	B. Phone No. *(Area Code and No.)*
Kevin Dickey, Vice President, Operations	(208) 685-7600
C. Signature	D. Date Signed
	07/27/2015

OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 20-11

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						20	5S	3W	SW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

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B. Phone No. *(Area Code and No.)*: (208) 685-7600

C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

	T/A	C
U		

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise State: ID ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise State: ID ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 20-15

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						20	5S	3W	SE				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

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B. Phone No. *(Area Code and No.)*: (208) 685-7600

C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

	T/A	C
U		

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 31-03

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						31	5S	3W	NW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

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Kevin Dickey, Vice President, Operations	(208) 685-7600
C. Signature	D. Date Signed
	07/27/2015

OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 31-05

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Latitude Min	Latitude Sec	Longitude Deg	Longitude Min	Longitude Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						31	5S	3W	NW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

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Kevin Dickey, Vice President, Operations	(208) 685-7600
C. Signature	D. Date Signed
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OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started mo day year:
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 31-07

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						31	5S	3W	NE				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

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Kevin Dickey, Vice President, Operations	(208) 685-7600
C. Signature	D. Date Signed: 07/27/2015

OMB No. 2040-0042 Approval Expires 11/30/2014

EPA

United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

Application approved (mo day year)	Date received (mo day year)	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019 | Phone Number: (208) 685-7600

City: Boise | State: ID | ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started (mo day year):
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 31-12

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Latitude Min	Latitude Sec	Longitude Deg	Longitude Min	Longitude Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						31	5S	3W	SW				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

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United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

Application approved (mo day year)	Date received (mo day year)	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise State: ID ZIP CODE: 83707

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Owner Name: Petroglyph Energy, Inc.

Street Address: 960 Broadway Ave. Suite 500 PO Box 70019

Phone Number: (208) 685-7600

City: Boise State: ID ZIP CODE: 83707

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

- [x] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

VIII. Well Status *(Mark "x")*

- [x] A. Operating — Date Started (mo day year):
- [x] B. Modification/Conversion
- [ ] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [x] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
111	1	Antelope Creek Ute Tribal 36-08-E4

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Latitude Min	Latitude Sec	Longitude Deg	Longitude Min	Longitude Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
						36	5S	4W	NE				

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

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A. Name and Title *(Type or Print)*: Kevin Dickey, Vice President, Operations

B. Phone No. *(Area Code and No.)*: (208) 685-7600

C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

ATTACHMENT NO. 10

WELL BORE DIAGRAMS FOR THE UIC WELL

Ute Tribal 03-12 Well History

Well History:

Spud Well: 9/21/1996

Completed: 10/21/1996

First Production: 11/13/1996

Tops (KB):

BMSW* Found at 965'

Green River 1490'

A Marker 4170'

X Marker 4671'

Douglas Creek 4818'

B Limestone 5220'

Castle Peak 5723'

Basal Carbonate 6150'

Pefr History

10/15/1996

B10	4566' to 4576'
B11	4615' to 4620'
C08.1	5084' to 5090'
E01.1	5782' to 5784'
E01.1	5789' to 5791'

7/12/2011

B05	4316' to 4330'
B05	4347' to 4350'
B07+	4480' to 4492'
B10	4557' to 4566'
B10	4576' to 4578'
B11	4612' to 4615'
C08.1	5081' to 5084'
C08.1	5090' to 5095'
D3	5380' to 5384'
E01.1	5781' to 5782'
E01.1	5784' to 5789'
E01.1	5791' to 5792'

Petroglyph Operating Co., Inc.

Ute Tribal #03-12

(2272' FSL & 575' FWL)

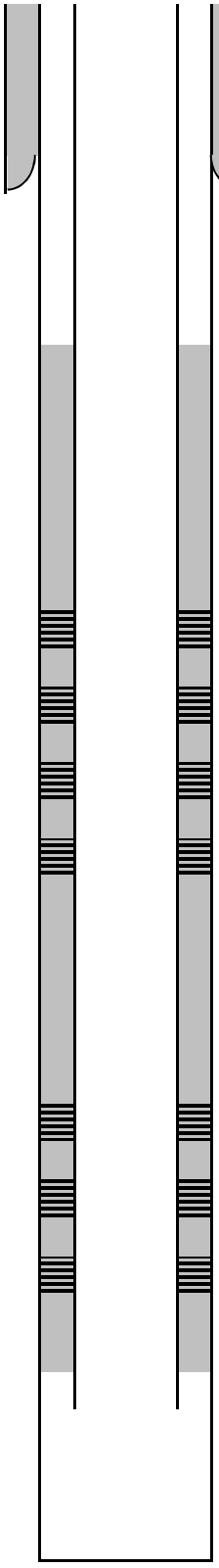
NW SW Section 3, 5S- 3W

Antelope Creek Field

Duchesne Co. Utah

API#: 43013317060000

*Plate 1 Utah Geological Survey Special Study 144. (2012). *BMSW Elevation Contour Map, Uinta Basin, Utah.* [map]. (CA 1:200,000)



(Not to Scale)

GL: 5955'

KB: 5965'

8 5/8" 24# Surface CSG @ 251' KB

cmt'd w/150 sx

Surface Hole size 12 1/4"

Cement top @ 2290'

5 1/2" 15.5# J-55 CSG @ 5963'

cmt'd w/480 sx

Hole Size 7 7/8" bit

Perf's:

B05 4316' to 4330'

B05 4347' to 4350'

B07+ 4480' to 4492'

B10 4566' to 4576'

B11 4612' to 4615'

B11 4615' to 4620'

C08.1 5081' to 5084'

C08.1 5084' to 5090'

C08.1 5090' to 5095'

D3 5380' to 5384'

E01.1 5781' to 5782'

E01.1 5782' to 5784'

E01.1 5784' to 5789'

E01.1 5789' to 5791'

E01.1 5791' 5792'

PBTD @ 5914' KB

TD @ 6473' KB

Ute Tribal 03-12 Injection

Well History:

Spud Well: 9/21/1996

Completed: 10/21/1996

First Production: 11/13/1996

Tops (KB)

BMSW* Found at 965'

Green River 1490'

A Marker 4170'

X Marker 4671'

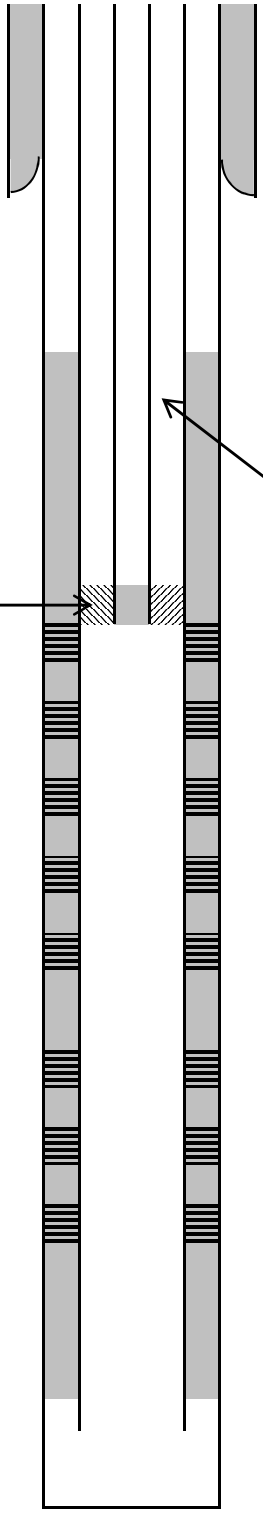
Douglas Creek 4818'

B Limestone 5220'

Castle Peak 5723'

Basal Carbonate 6150'

Injection Packer @ 4226'



GL: 5955'

KB: 5965'

8 5/8" 24# Surface CSG @ 251' KB

cmt'd w/150 sx

Surface Hole size 12 1/4"

Hole Size 7 7/8" bit

Cement top @ 2290'

5 1/2" 15.5# J-55 CSG @ 5963'

cmt'd w/480 sx

Tubing 2 7/8" 6.5# J55

Perf's:

B05 4316' to 4330'

B05 4347' to 4350'

B07+ 4480' to 4492'

B10 4566' to 4576'

B11 4612' to 4615'

B11 4615' to 4620'

C08.1 5081' to 5084'

C08.1 5084' to 5090'

C08.1 5090' to 5095'

D3 5380' to 5384'

E01.1 5781' to 5782'

E01.1 5782' to 5784'

E01.1 5784' to 5789'

E01.1 5789' to 5791'

E01.1 5791' 5792'

PBTD @ 5914' KB

TD @ 6473' KB

Petroglyph Operating Co., Inc.

Ute Tribal #03-12

(2272' FSL & 575' FWL)

NW SW Section 3, 5S- 3W

Antelope Creek Field

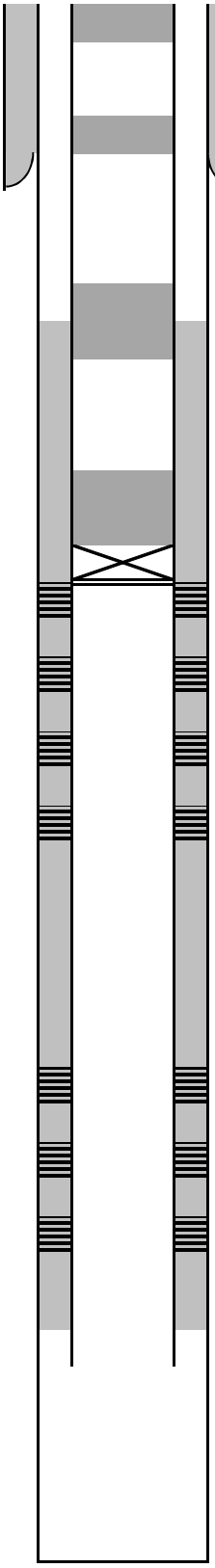
Duchesne Co. Utah

API#: 43013317060000

*Plate 1 Utah Geological Survey Special Study 144. (2012). *BMSW Elevation Contour Map, Uinta Basin, Utah.* [map]. (CA 1:200,000)

(Not to Scale)

Ute Tribal 03-12 Plug and Abandonment



GL: 5955'
KB: 5965'

8sx Class G Cement-50' plug

8 5/8" 24# Surface CSG @ 251' KB
cmt'd w/150 sx

Surface Hole size 12 1/4"

Hole Size 7 7/8" bit

30sx Class G cement-200' plug

Cement top @ 2290'
5 1/2" 15.5# J-55 CSG @ 5963'
cmt'd w/480 sx

Hole Size 7 7/8" bit

30sx Class G cement-200' plug
CIBP @ 4226'

Perf's:
B05 4316' to 4330'
B05 4347' to 4350'
B07+ 4480' to 4492'
B10 4566' to 4576'
B11 4612' to 4615'
B11 4615' to 4620'
C08.1 5081' to 5084'
C08.1 5084' to 5090'
C08.1 5090' to 5095'
D3 5380' to 5384'
E01.1 5781' to 5782'
E01.1 5782' to 5784'
E01.1 5784' to 5789'
E01.1 5789' to 5791'
E01.1 5791' 5792'

Petroglyph Operating Co., Inc.
Ute Tribal #03-12
(2272' FSL & 575' FWL)
NW SW Section 3, 5S- 3W
Antelope Creek Field
Duchesne Co. Utah
API#: 43013317060000

PBTD @ 5914' KB

TD @ 6473' KB

*Plate 1 Utah Geological Survey Special Study 144. (2012). *BMSW Elevation Contour Map, Uinta Basin, Utah,* [map]. (CA 1:200,000)

(Not to Scale)

ATTACHMENT NO. 11

P&A PROCEDURE

Plug and Abandonment Procedure

Ute Tribal 03-12

43-013-31706

1. Obtain authorization from regulatory agencies for P&A procedures.

2. Set deadman. Rig up pulling unit. Rig down wellhead. Install BOP. Release packer. Trip out of hole with tubing and packer.

3. RIH Set CIBP @ 4226‘.

4. Trip in hole with tubing. Establish pump rate, spot 30sxs Class G cement on top of CIBP. This will be a 200’ plug.

5. Raise the tubing to 2290’ and set balanced 200’ cement plug using 30sxs of Class G cement.

6. Raise the tubing to 251’ and set balanced 100’ cement plug using 15sxs of Class G cement.

7. Set balanced 50’ cement plug (8 sxs of Class G cement) from 50’ to surface.

8. Cut off wellhead. Install plate and identification P&A post marker. Weld to casing.

9. File reports with the agencies and reclaim surface locations.

ATTACHMENT NO. 12

MIT PROCEDURE

Mechanical Integrity Test Procedure

Ute Tribal 03-12

43-013-31706

Integrity testing can be accomplished by pressuring up the annulus between the casing and the tubing. The pressure and duration of the test will be as required by the EPA.

Test Procedure Details:

1. Two weeks prior, notify EPA of pending work. Shut well in.
2. Record fluid level with echometer.
3. MIRU Service Unit.
4. POOH laying down rods and pump.
5. ND Wellhead. NU BOPs. POOH laying down 2 7/8" tubing.
6. PU plug and packer and new tubing. RIH and breakdown perfs.
7. POOH. RIH with injection packer to 4226'.
8. Reverse circulate in packer fluid.
9. Set packer and ND BOPs and NU wellhead.
10. Pressure test casing-tubing annulus to 1500psi for 15 minutes.
11. RDMO.
12. Notify EPA of test, wait for approval.
13. Return to injection.

ATTACHMENT NO. 13

SURETY BOND LETTER

SURETY BOND STATEMENT

July 27, 2015

Petroglyph currently operates 111 injection wells in Antelope Creek Field under EPA UIC Area Permit UT2736-00000. The existing wells are covered by UIC Bond No. LPM 4138351.

Prior to final permit approval, Petroglyph will add a rider to the existing bond to include this well along with the other wells being submitted to EPA at this time.

Kevin Dickey

V.P., Operations

Petroglyph Energy, Inc.