UNDERGROUND INJECTION CONTROL
PERMIT APPLICATION

Ute Tribal # 08-12
2100' FSL & 515' FWL
Sec. 8, T5S-R3W
Duchesne County, Utah
API # 43-013-31164

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
Attachment No. 12	MIT procedure
Attachment No. 13	Surety Bond letter

SUMMARY DOCUMENT
UIC WELL APPLICATION
Ute Tribal 08-12
API # 43-013-31164

The following document contains information provided in support of the application for the conversion of the Ute Tribal 08-12 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 08-12 is 2100' FSL & 515' FWL NW/SW Sec. 8, 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 08-12 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 Tribe as indicated by yellow shading. The AOR has Ute Tribal 07-09, and Ute Tribal 08-05 well(s) located in its ¼ mile radius.

(4) Petroglyph proposes to utilize the Ute Tribal 08-12 as an injection well for enhanced recovery in the Antelope Creek Field.

(5) Injection Zone – The injection intervals are between 3759' and 5739' 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 08-12 is 398 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 07-09, the most recent analysis of the water being injected into the Green River formation at this location is 10392 mg/L TDS. This analysis is also included in Attachment No. 5.

(7) A summary of completion data from the Ute Tribal 08-12 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 08-12 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 08-12 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 **1772**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 08-12:
1772psi = (0.88psi/ft - 0.43(1.00)) 3937ft

(12) Three wellbore diagrams for the Ute Tribal 08-12 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.

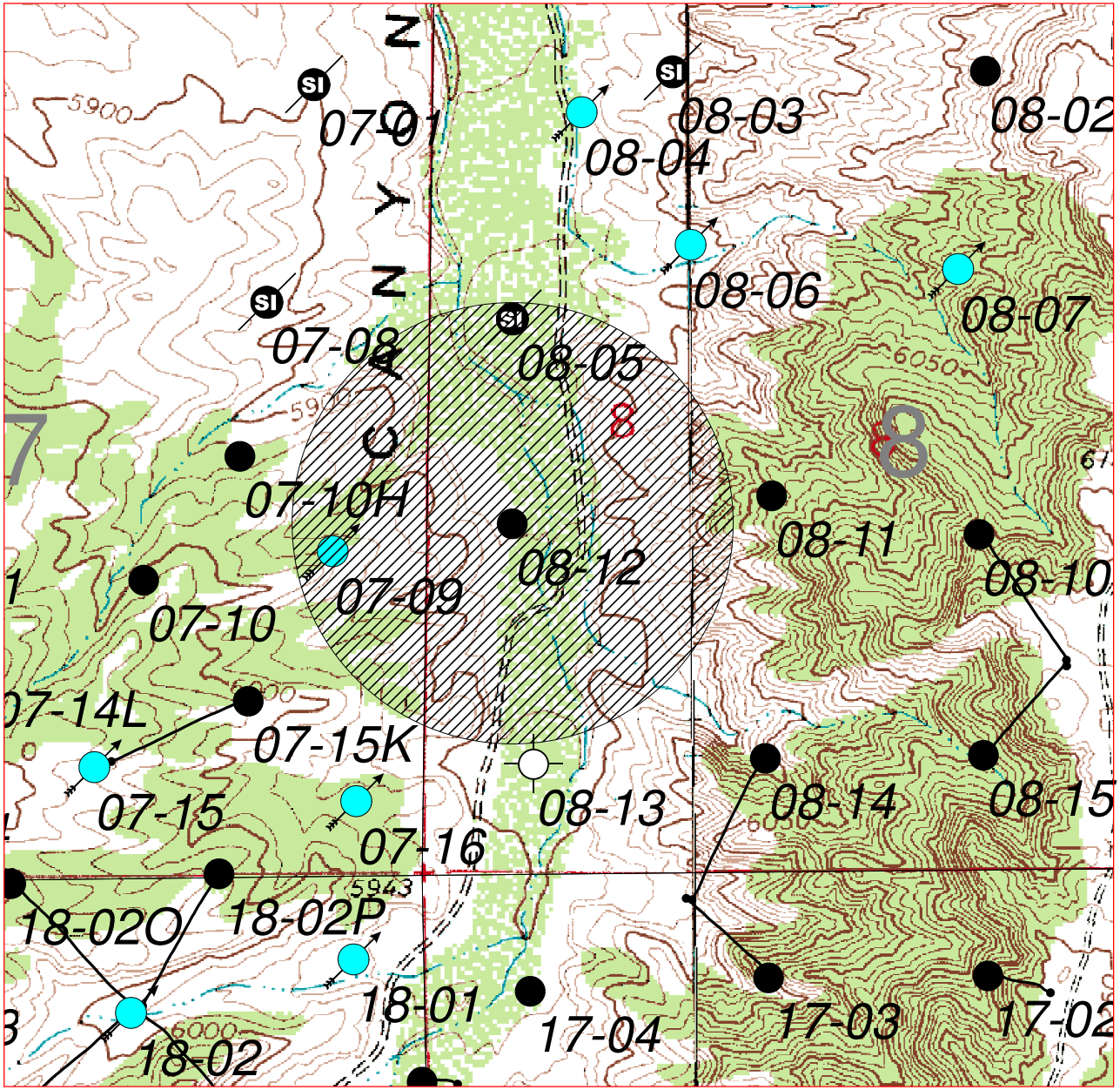
(15) Petroglyph will give proof of financial responsibility by posting a surety bond for the UIC well prior to final permit approval. A copy of this letter is contained in Attachment No. 13.

(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



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 08-12 Area Map

Hack 9-15-06

Revised by:
JG 3/24/15

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

\\PEI-GEO\Utah Regional\CTI\ 08-12 area map.gmp

ATTACHMENT NO. 2

SITE MAP

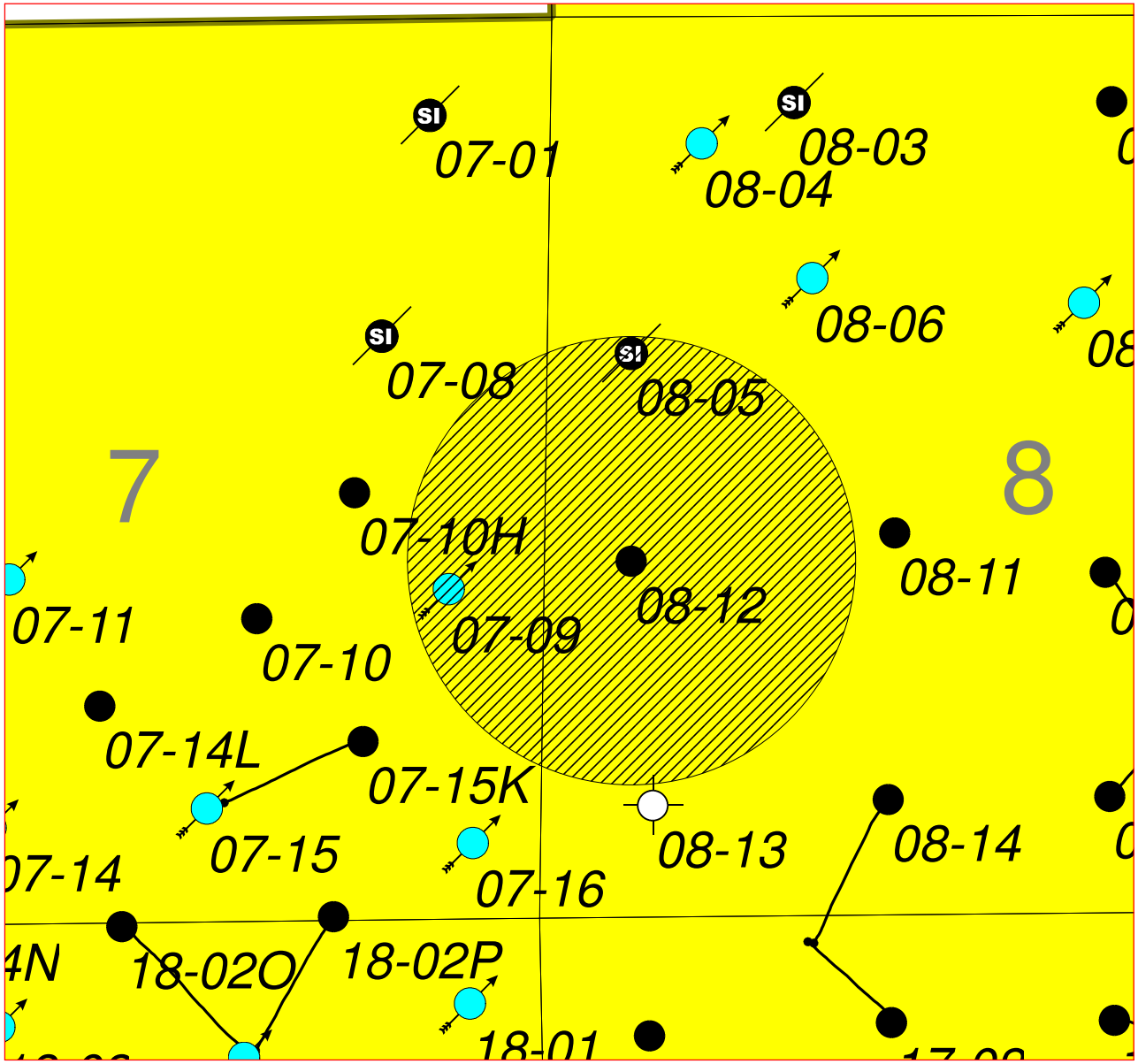
RADIUS MAP OF ADJACENT WELLS

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 08-12 Plat and Quarter-mile radius map. Ute Indian lands under Petroglyph lease shown in yellow

Hack 9-15-06

Revised by:
JG 3/24/15

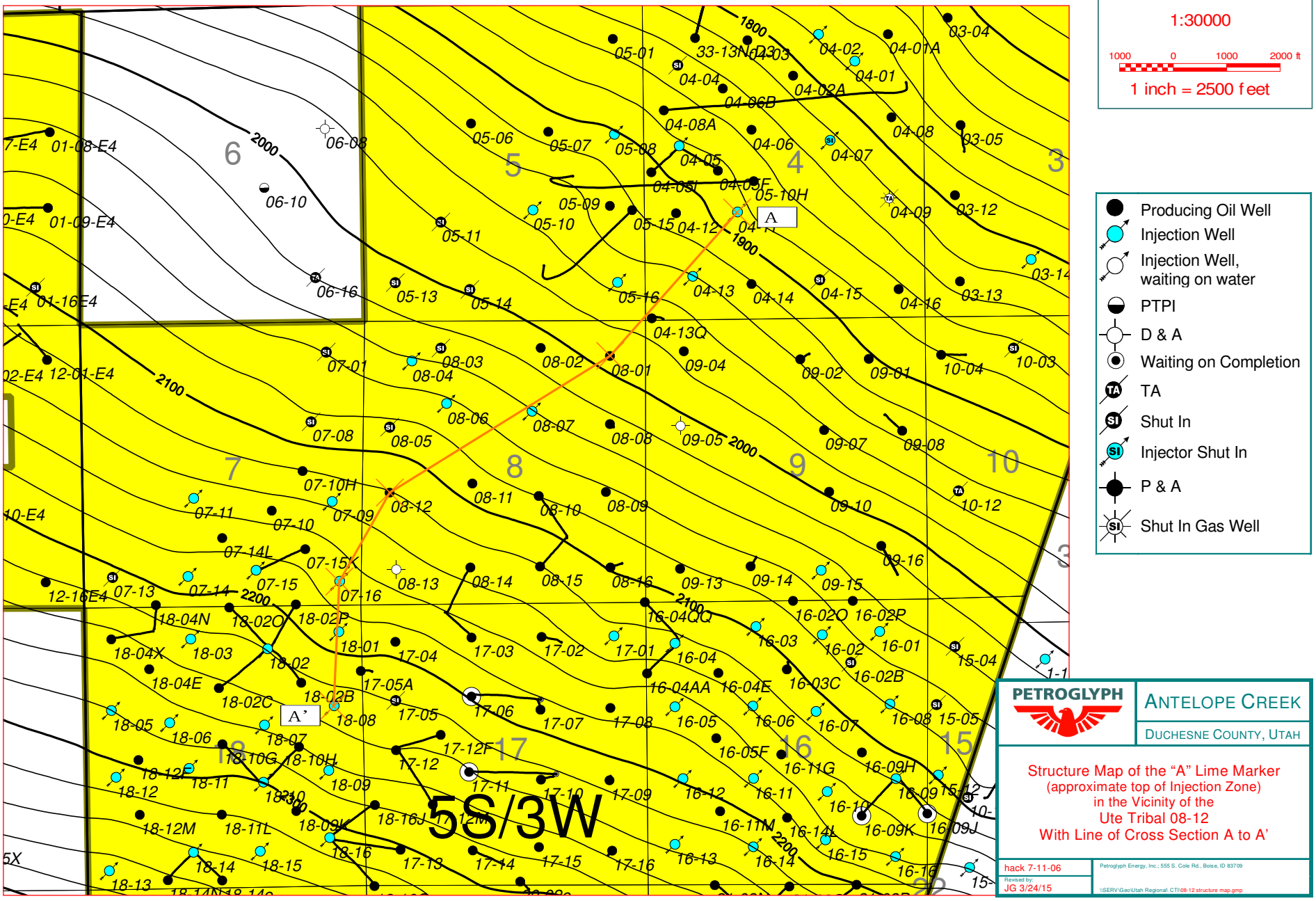
Petroglyph Energy, Inc.; 960 Broadway Ave. Suite 500 PO Box 70019 Boise, ID 83707

\\PEI-GEO\Utah Regional\CTI\ 08-12 quarter mile map.gmp

ATTACHMENT NO. 3

MAP OF THE A-LIME MARKER SURFACE

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



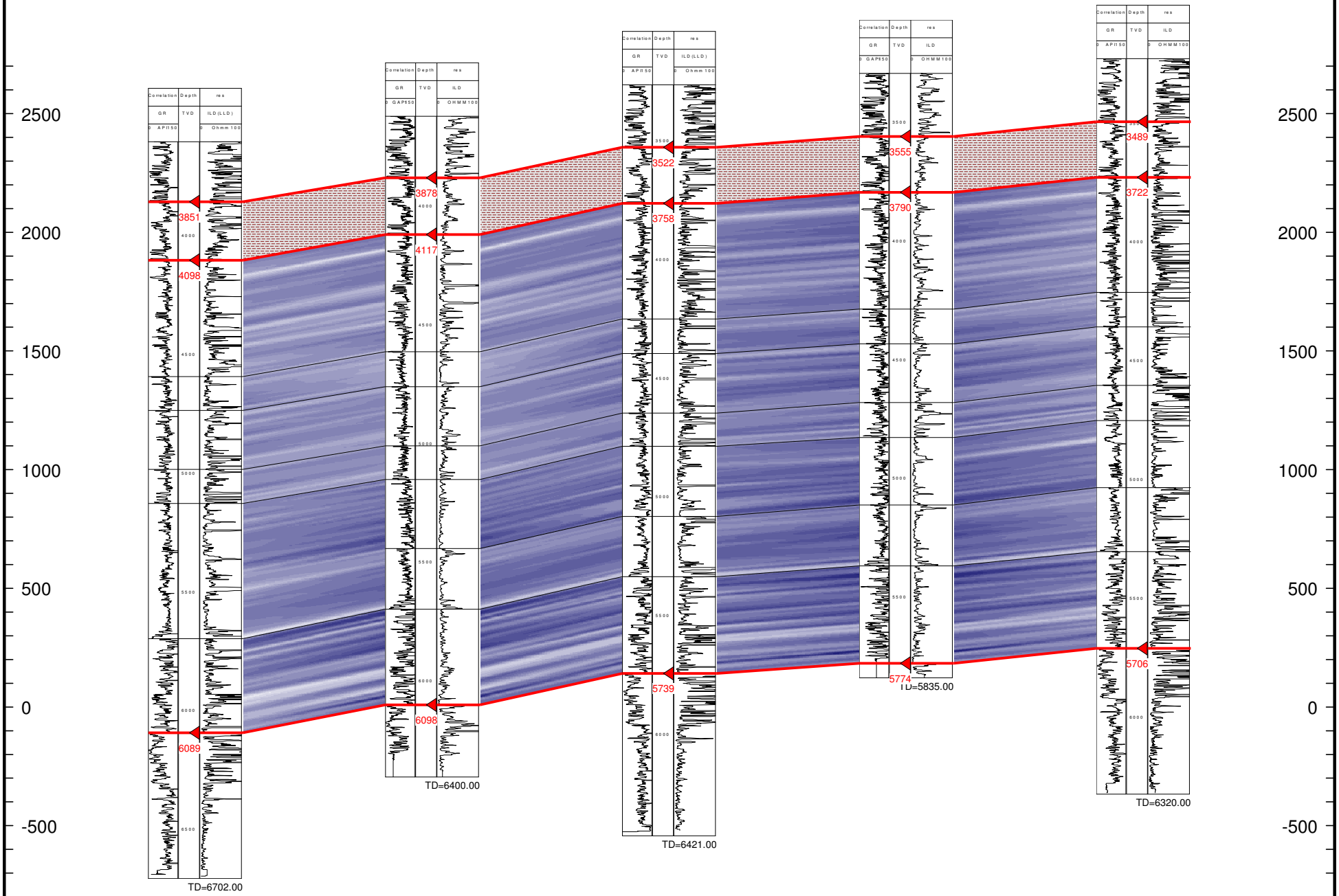
ATTACHMENT NO. 4

CROSS SECTIONS OF THE INJECTION FORMATION

Structural Cross Section A to A' in the Vicinity of Ute Tribal 08-12

43013308780000 — 3584 ft — 43013315680000 — 4856 ft — 43013311640000 — 1919 ft — 43013314630000 — 2337 ft — 43013308810000

43013308780000	43013315680000	43013311640000	43013314630000	43013308810000
PETROGLYPH OPERATING COMPANY INC	PETROGLYPH OPERATING COMPANY INC	PETROGLYPH OPERATING	PETROGLYPH OPERATING COMPANY INC	PETROGLYPH OPERATING COMPANY INC
Ute Tribal 04-11	Ute Tribal 08-01	Ute Tribal 08-12	Ute Tribal 07-16	Ute Tribal 18-08
1999 FSL 1738 FWL	660 FNL 660 FEL	2100 FSL 515 FWL	440 FSL 410 FEL	1929 FNL 612 FEL
TWP: 5 S - Range: 3 W - Sec. 4	TWP: 5 S - Range: 3 W - Sec. 8	TWP: 5 S - Range: 3 W - Sec. 8	TWP: 5 S - Range: 3 W - Sec. 7	TWP: 5 S - Range: 3 W - Sec. 18



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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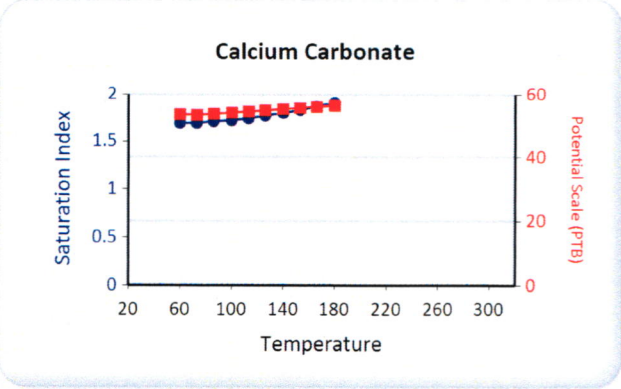
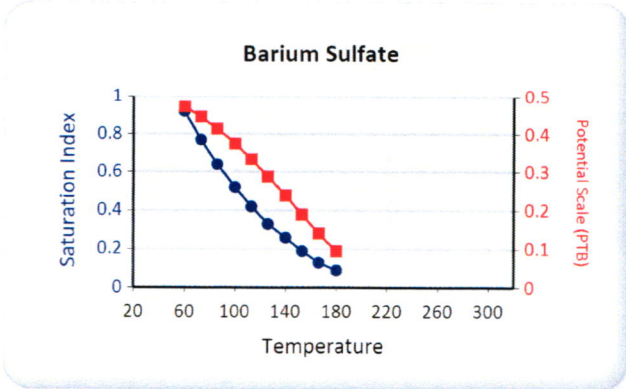
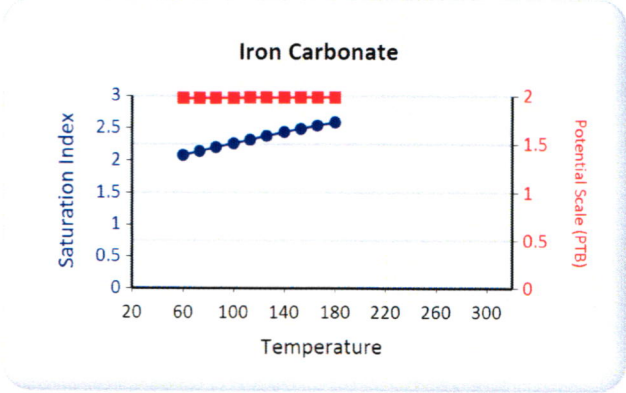
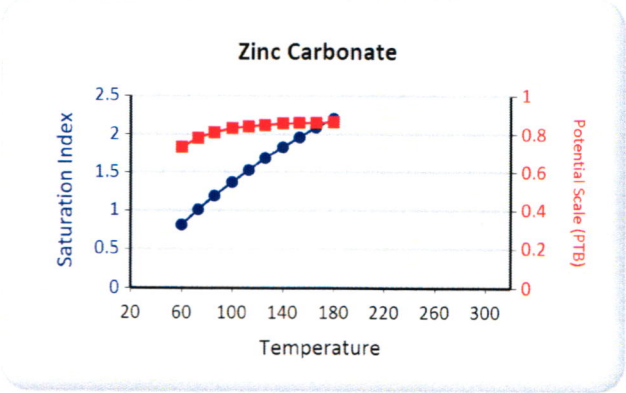
Water Analysis Report









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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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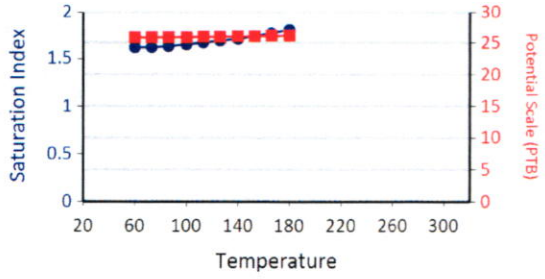
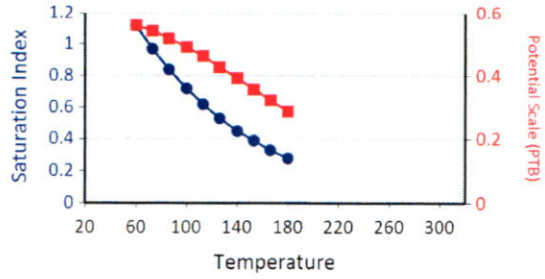
Water Analysis Report

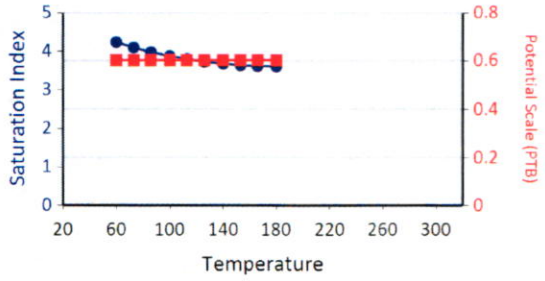
Calcium Carbonate



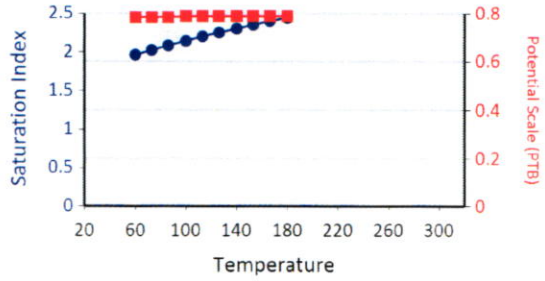
Barium Sulfate



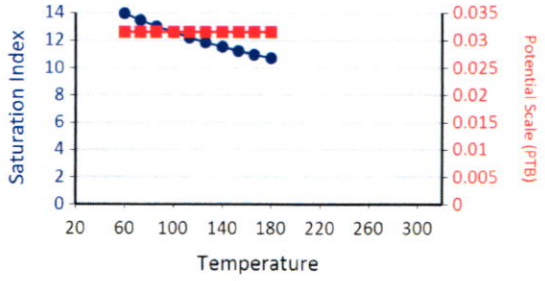
Iron Sulfide



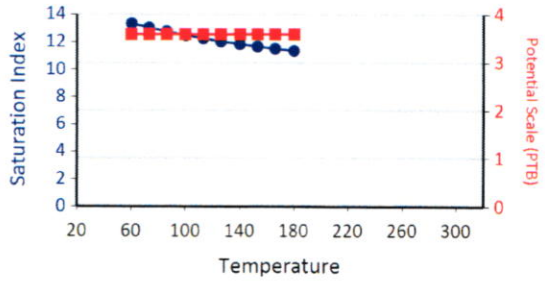
Iron Carbonate



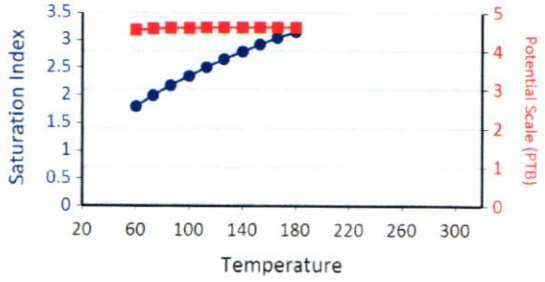
Lead Sulfide



Zinc Sulfide



Zinc Carbonate



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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

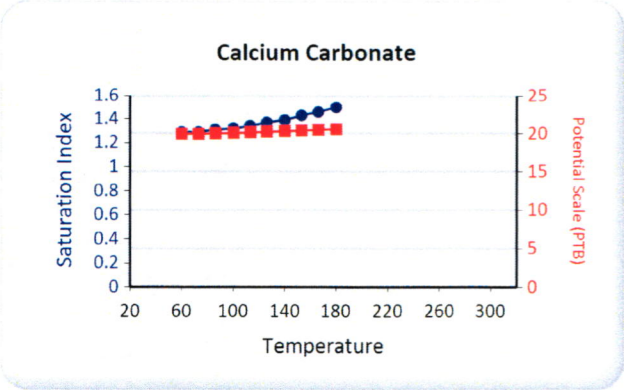
Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	5277.36	Chloride (Cl):	7000.00
Potassium (K):	65.03	Sulfate (SO_4):	0.00
Magnesium (Mg):	7.80	Bicarbonate (HCO_3):	2196.00
Calcium (Ca):	24.60	Carbonate (CO_3):	
Strontium (Sr):	5.20	Acetic Acid (CH_3COO)	
Barium (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):	

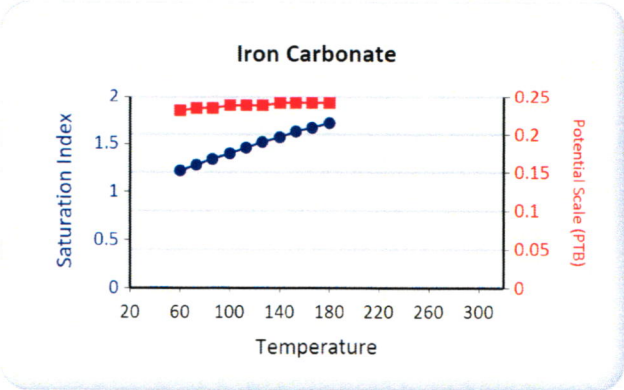
Notes:

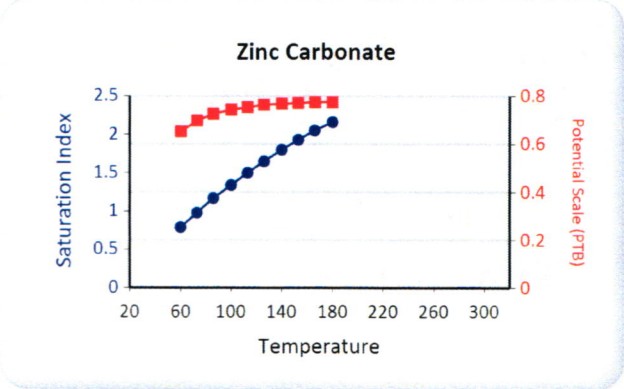
(PTB = Pounds per Thousand Barrels)

		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 07-09 INJ, DUCHESNE**	Lab Tech:	**Gary Winegar**
Sample Point:	**WELLHEAD**		
Sample Date:	**1/7/2015**		
Sample ID:	**WA-297541**		

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):	1.0042
pH:	8.10
Calculated TDS (mg/L):	10391.85
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	5.00

Analysis @ Properties in Sample Specifics			
Cations	***mg/L***	***Anions***	***mg/L***
Sodium (Na):	3189.82	Chloride (Cl):	5000.00
Potassium (K):	47.08	Sulfate (SO_4):	74.00
Magnesium (Mg):	19.87	Bicarbonate (HCO_3):	1976.00
Calcium (Ca):	37.32	Carbonate (CO_3):	
Strontium (Sr):	5.82	Acetic Acid (CH_3COO)	
Barium (Ba):	8.79	Propionic Acid (C_2H_5COO)	
Iron (Fe):	3.47	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.83	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.06	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.11	Silica (SiO_2):	28.68

Notes:
B=6.16 Al=.11 Li=1.81

(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	1.17	27.83	1.47	5.04	3.20	1.91	2.04	2.50	0.00	0.00	0.00	0.00	0.00	0.00	10.65	0.43
88.00	157.00	1.16	27.38	1.39	5.01	3.10	1.91	2.06	2.50	0.00	0.00	0.00	0.00	0.00	0.00	10.44	0.43
97.00	300.00	1.18	27.67	1.31	4.96	3.04	1.91	2.11	2.50	0.00	0.00	0.00	0.00	0.00	0.00	10.28	0.43
106.00	443.00	1.20	27.96	1.24	4.91	2.99	1.91	2.16	2.51	0.00	0.00	0.00	0.00	0.00	0.00	10.13	0.43
115.00	585.00	1.22	28.26	1.18	4.86	2.96	1.91	2.20	2.51	0.00	0.00	0.00	0.00	0.00	0.00	9.99	0.43
124.00	728.00	1.25	28.56	1.12	4.80	2.92	1.91	2.25	2.51	0.00	0.00	0.00	0.00	0.00	0.00	9.86	0.43
133.00	871.00	1.27	28.86	1.06	4.75	2.90	1.91	2.30	2.51	0.00	0.00	0.00	0.00	0.00	0.00	9.74	0.43
142.00	1014.00	1.30	29.16	1.02	4.69	2.88	1.91	2.35	2.51	0.00	0.00	0.00	0.00	0.00	0.00	9.63	0.43
151.00	1157.00	1.34	29.45	0.97	4.63	2.87	1.91	2.39	2.51	0.00	0.00	0.00	0.00	0.00	0.00	9.52	0.43
160.00	1300.00	1.37	29.73	0.93	4.58	2.87	1.91	2.44	2.51	0.00	0.00	0.00	0.00	0.00	0.00	9.43	0.43

		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	0.65	0.43	11.78	0.02	0.00	0.00	0.00	0.00	6.28	2.67
88.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.46	11.46	0.02	0.00	0.00	0.00	0.00	6.28	2.67
97.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.48	11.19	0.02	0.28	1.85	0.00	0.00	6.52	2.67
106.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.50	10.94	0.02	0.69	4.32	0.00	0.00	6.77	2.68
115.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.51	10.71	0.02	1.10	6.83	0.14	1.16	7.03	2.68
124.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	1.21	0.52	10.49	0.02	1.52	9.38	0.37	2.73	7.30	2.68
133.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	1.31	0.53	10.28	0.02	1.94	11.95	0.60	4.31	7.58	2.69
142.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42	0.54	10.08	0.02	2.36	14.51	0.84	5.88	7.86	2.69
151.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	1.51	0.54	9.90	0.02	2.78	17.03	1.08	7.44	8.15	2.69
160.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.54	9.72	0.02	3.21	19.47	1.32	8.95	8.45	2.70

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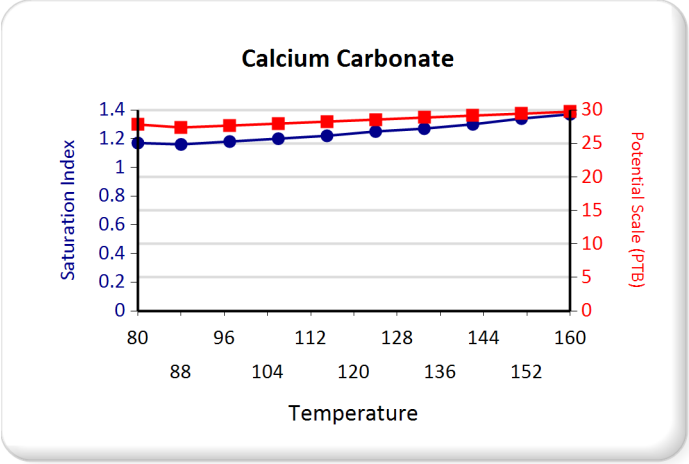
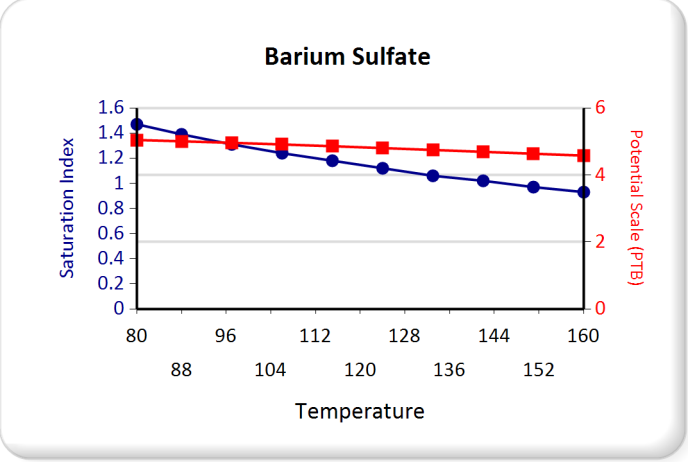
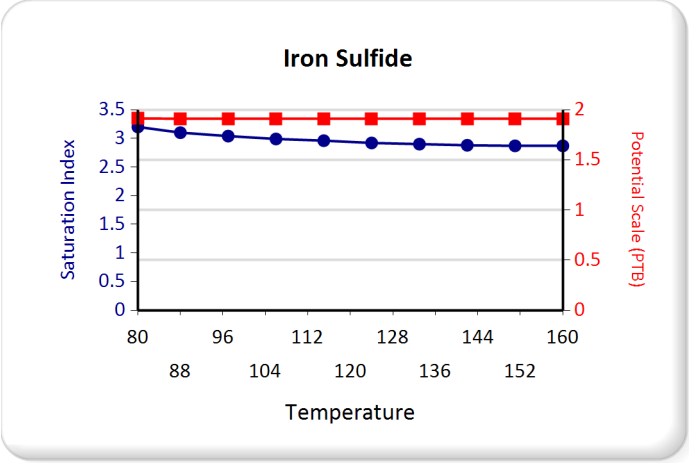
Water Analysis Report

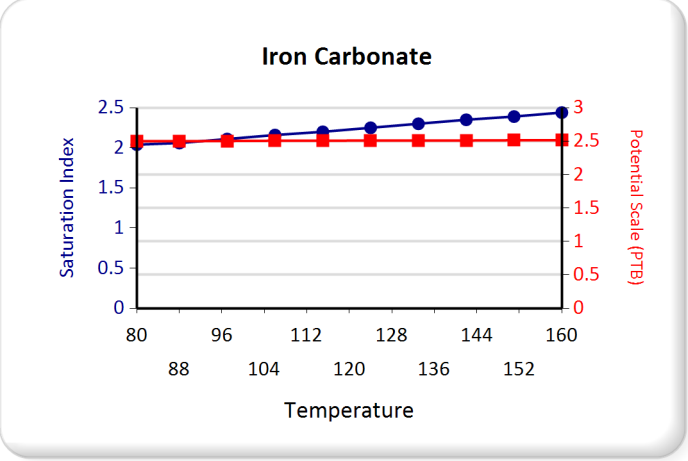
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Fe Silicate

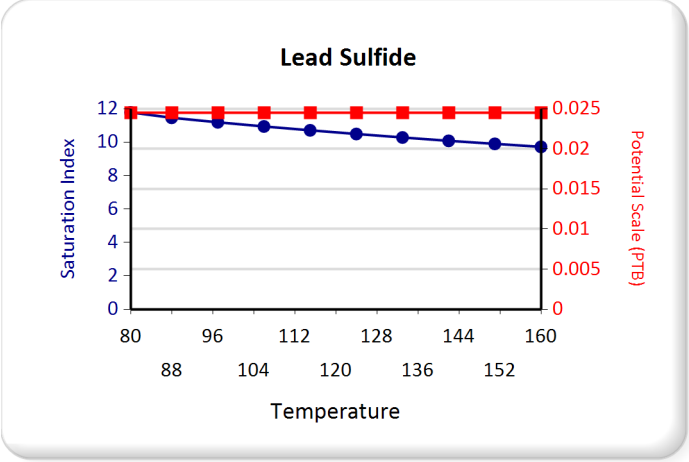
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate

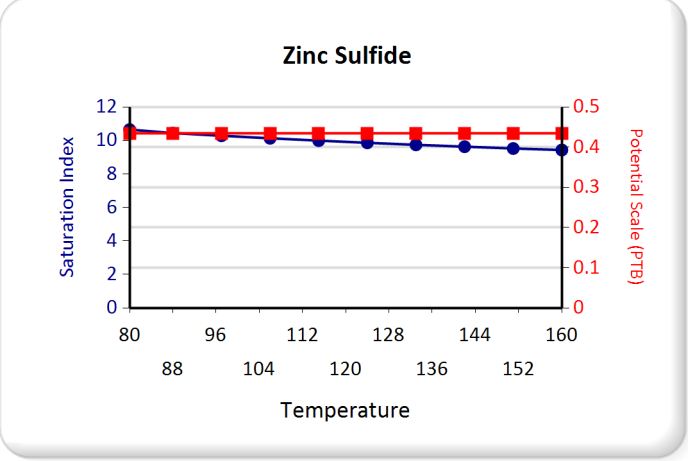












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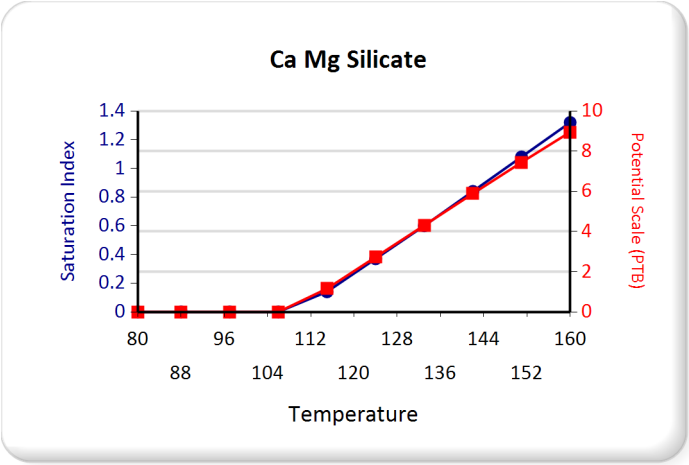
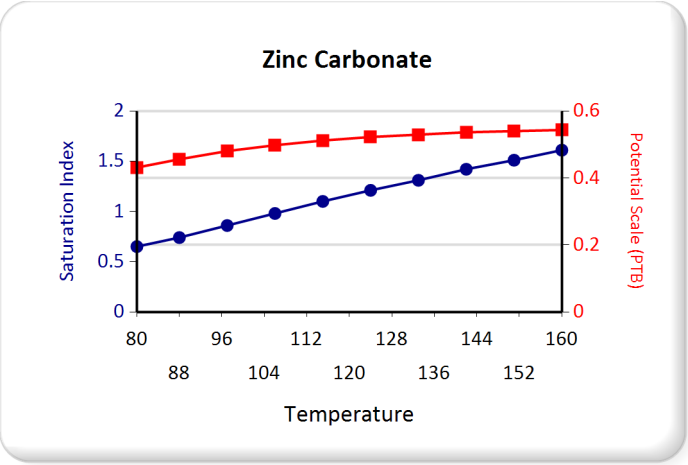
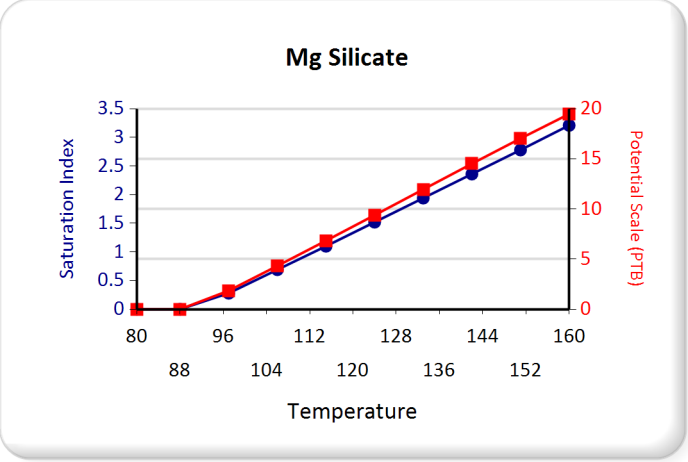
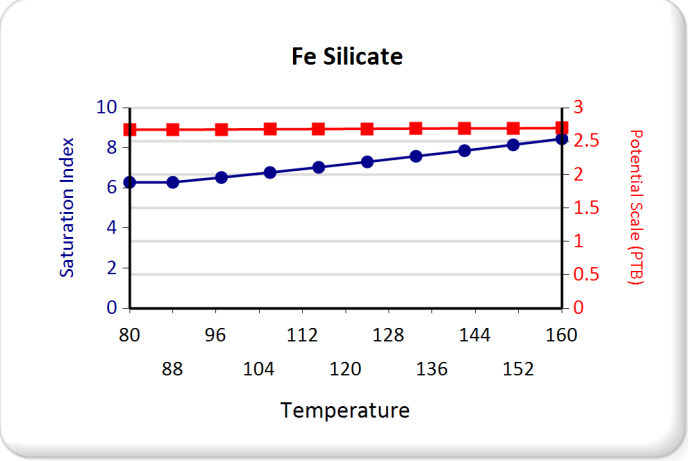
Water Analysis Report









ATTACHMENT NO. 6

COMPLETION DATA FOR ALL WELLS IN THE AOR

Well Completion Data
Ute Tribal 08-12

	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 08-12	**8-5/8**	**285**	**250**	**surface**	**5-1/2**	**5923**	**1375**	**2450'**
Ute Tribal 07-09	8-5/8	270	165	surface	5-1/2	6144	600	930
Ute Tribal 08-05	8-5/8	265	265	surface	5-1/2	6436	1450	surface

ATTACHMENT NO. 7

CBL FOR THE UIC WELL

POMRENKE

Acoustic Cement Bond Log VDL

FILE NO.

RECEIVED
FEB 23 1987
DIVISION OF
OIL, GAS & MINING

COMPANY COORS ENERGY COMPANY

WELL UTE TRIBAL 4-8

FIELD ANTELOPE CREEK

COUNTY DUCHESNE STATE UTAH

LOCATION: NW/4 - SW/4
515' FWL - 2100' FSL

SEC 8 TWP 5S RGE 3W

Other Services
GAMMA RAY
DELTA TIME
CCL

Permanent Datum GROUND LEVEL Elev. 5866
Log Measured from KELLY BUSHING, 15 Ft. Above Permanent Datum
Drilling Measured from KELLY BUSHING

Elevations:
KB 5881
DF 5880
GL 5866

Date	12-18-86	CSG. RECORD	Surface	Protection	Production	Liner
Run No.	ONE	Size			5 1/2"	
Depth-Driller	6420	Wt./Ft.				
Depth-Logger	5815	Grade				
Bottom Logged Int.	5811	Type Joint				
Top Logged Int.	SURFACE	Top			SURFACE	
Ft. Measured	5811	Bottom			T.D.	
Type Fluid in Csg.	WATER	PRIMARY CEMENTING DATA				
Density of Fluid	N/A	Type Cement				
Fluid Level	SURFACE	Vol. of Cement				
Max. Temp. Deg. F.	N/A	Additive				
Tool Series No.	SIF	% Additive				
Tool Diam.	3.125	Retarder				
Standoff Size	CENTERED	% Retarder				
Logging Speed	30 FPM	Slurry Wt.				
R/A Log Type	SCINT.	Water Loss				
T.C.	2	Drlg. Mud Type				
Sens. Setting	133	Drlg. Mud Wt.				
API Units/Div.	10	PRIMARY CEMENTING PROCEDURE				
Truck or Unit No.	303	Started Pumping	HR.	DATE	Preceding Fluid	
Location	ROOSEVELT	Plug on Bottom			Vol. Bbls.	
Opr. Rig Time	2 HRS.	Pres. Released			Returns: Full Partial None	
Recorded by	WISE	Started Bond Log			Pipe Rot. During Pumping: Yes No	
Witnessed by	MR. SIMONTON	Finished Bond Log			Pipe Rot. After Plugdown: Yes No	

FOLD HERE

REMARKS LOG RAN UNDER 0# SURFACE PRESSURE.

Scratcher Depths

Centralizer Depths

SQUEEZE JOB DETAIL

Squeeze No.	1	2	3	4
Date				
Depth Interval				
Type Cement				
Vol. of Cement				
Additive				
% Additive				
Retarder				

% Retarder				
Slurry Wt.				
Preceding Fluid				
Vol. Preceding Fluid				
Breakdown Pressure				
Max. Pres. — Stage 1				
" " " 2				
" " " 3				
Final Max. Pressure				
Time Brkdn. (hr.-date)				
Pumping Stopped				
Pres. Released				
Started Bond Log				
Finished Bond Log				

Pressure read at: Surface _____ Bottom Hole _____

SEQUENCE OF CEMENT BOND LOGS

Log run following:	CBL Run		CBL Run
Surface Casing Cement		Squeeze No. 1	
Protection Casing Cement		Squeeze No. 2	
Production Casing Cement		Squeeze No. 3	
Liner Cement		Squeeze No. 4	

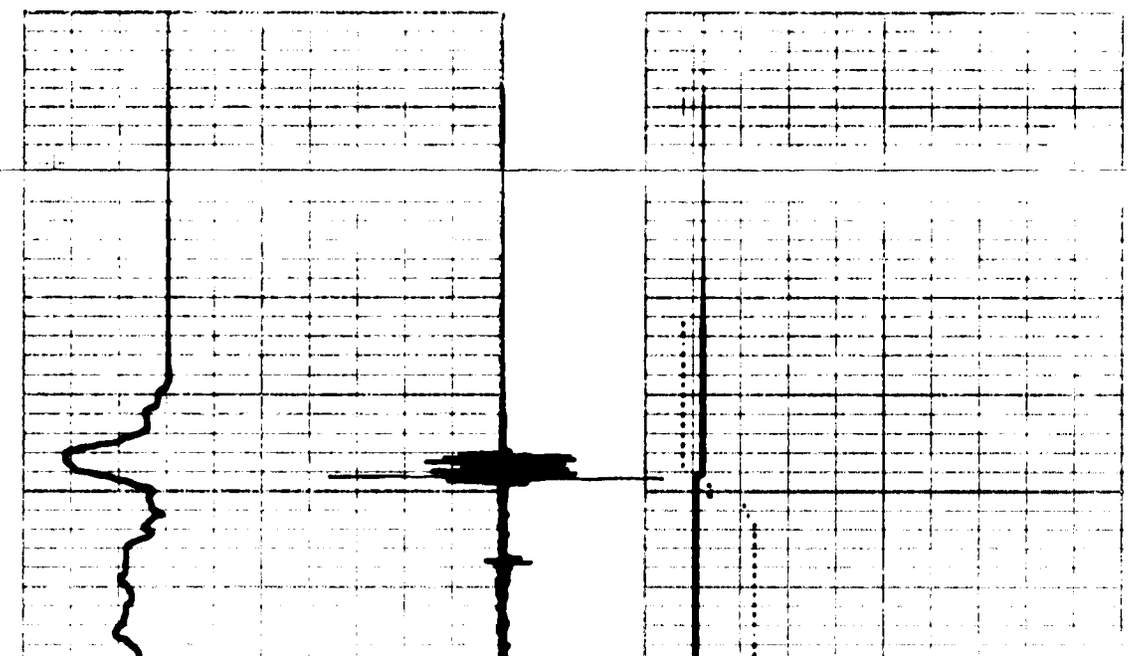
AVERAGE WELL DRIFT

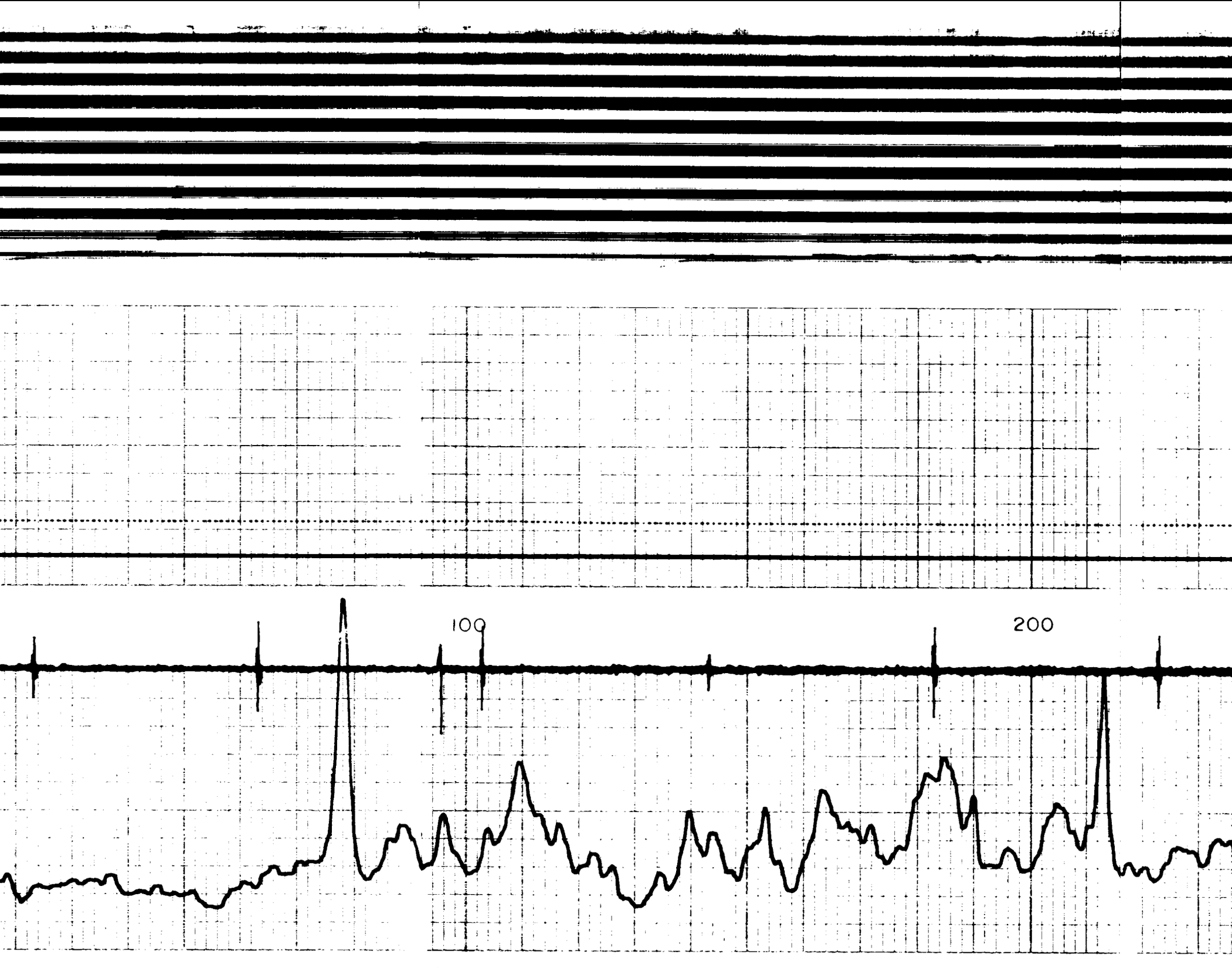
____ ° from ____ to ____

____ ° from ____ to ____

____ ° from ____ to ____

GAMMA RAY	DEPTH	COMPRESSION WAVE AMPLITUDE	VARIABLE DENSITY
RADIATION INTENSITY INCREASES →		AMPLITUDE INCREASES →	
		DELTA TIME 140 MICROSECONDS 40	
0 100		0 50	100 1100
API UNITS		MILLIVOLTS	MICROSECONDS

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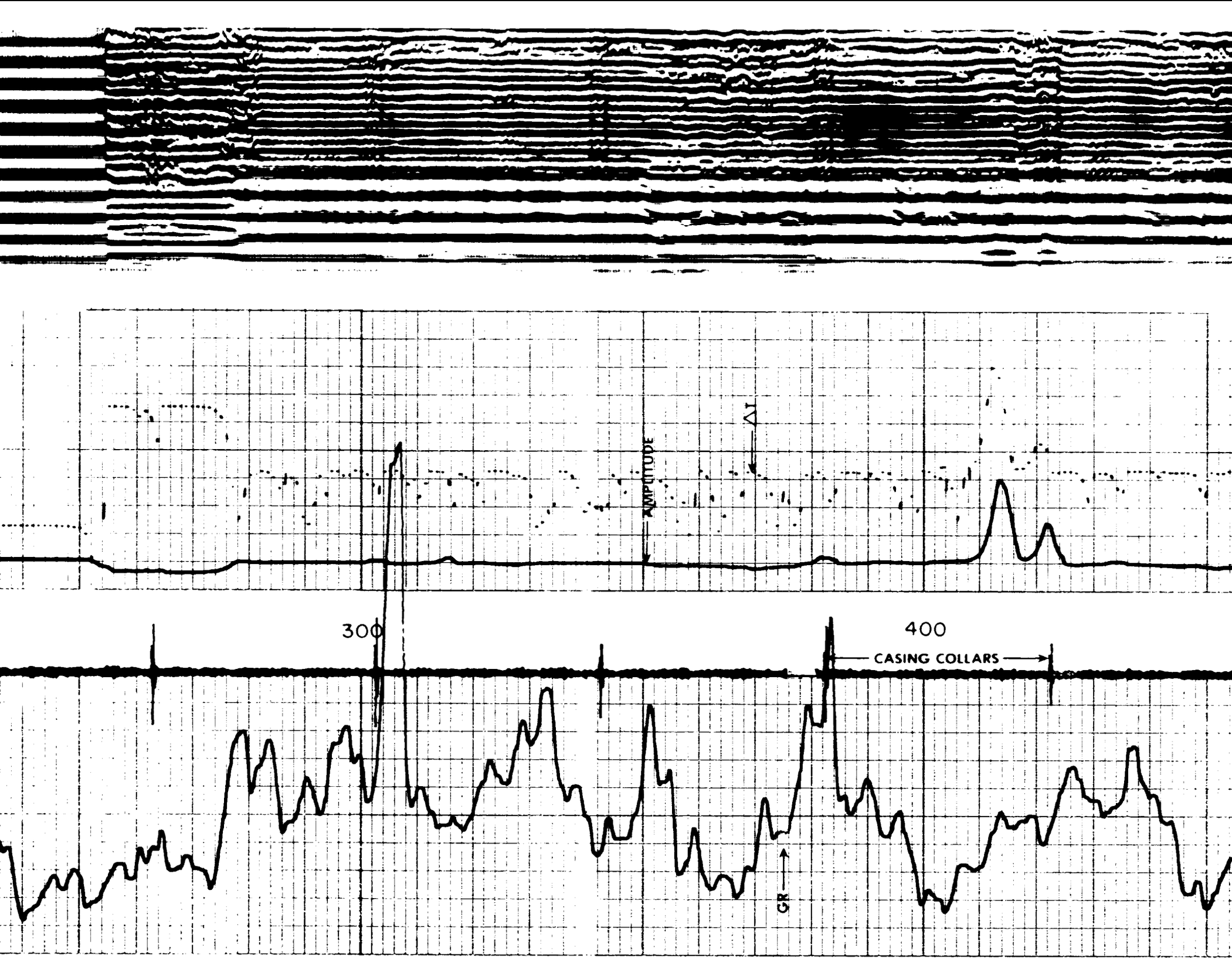
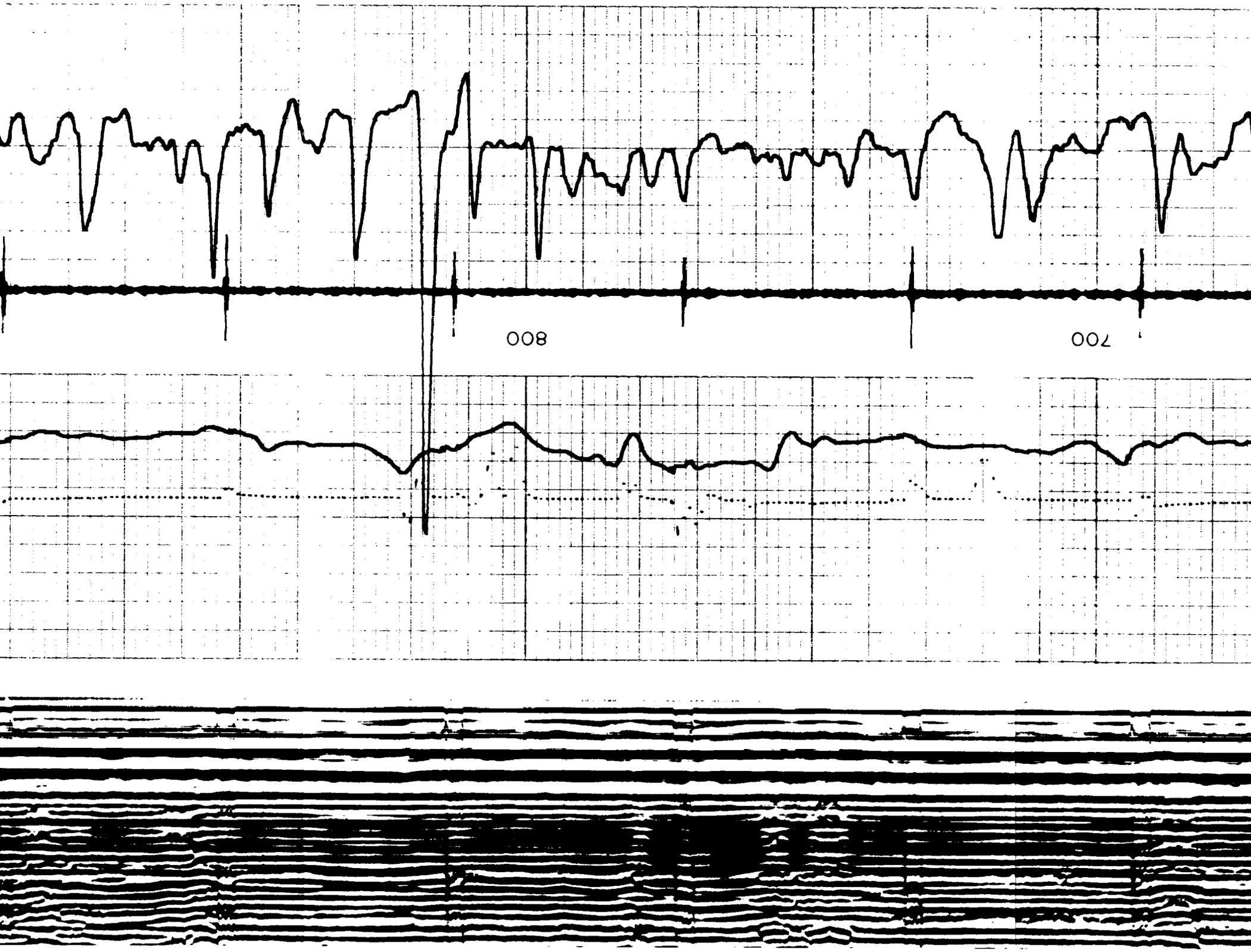
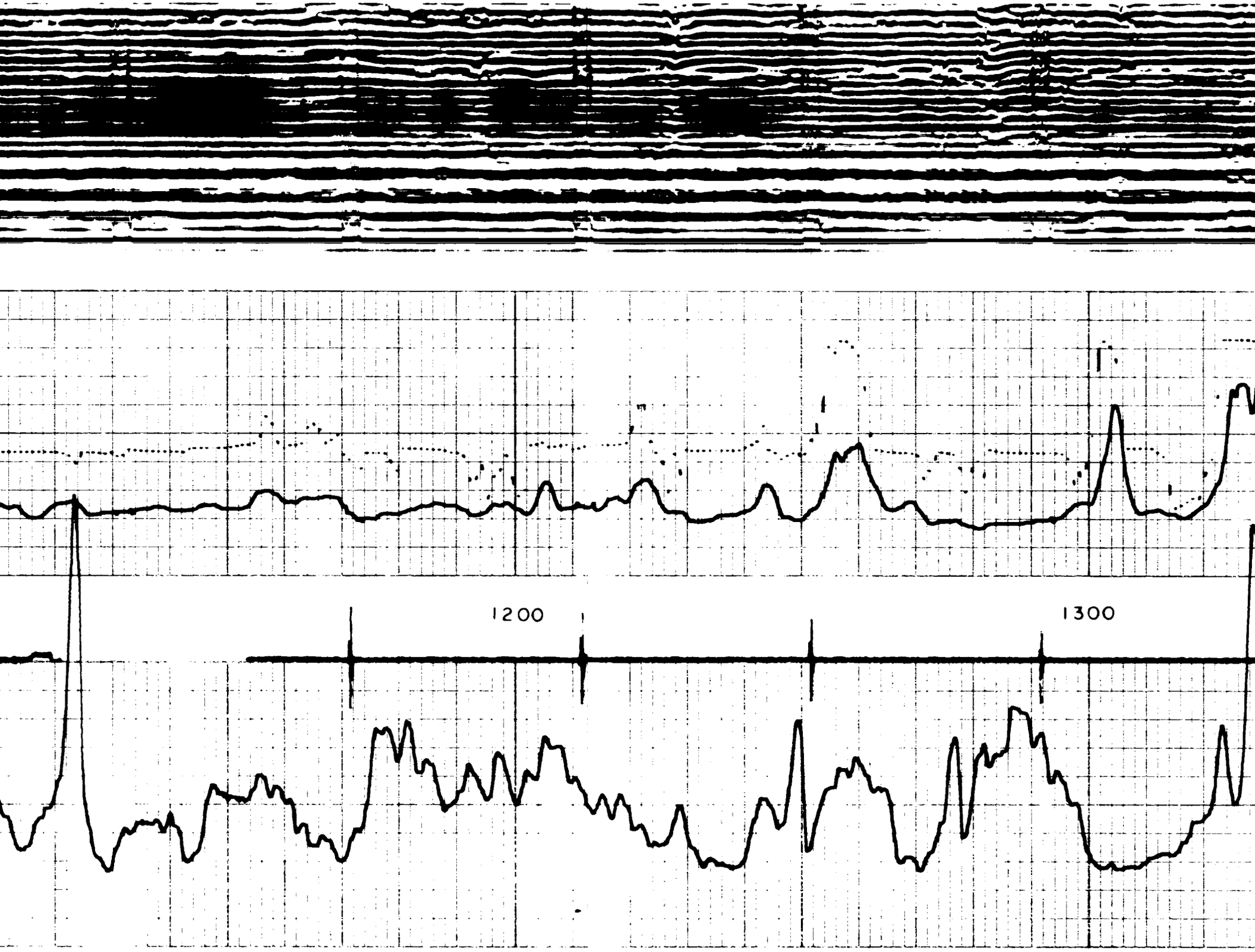

AMPLITUDE
ΔT
300
400
CASING COLLARS
GR

500
600


800
700

0011
0001
006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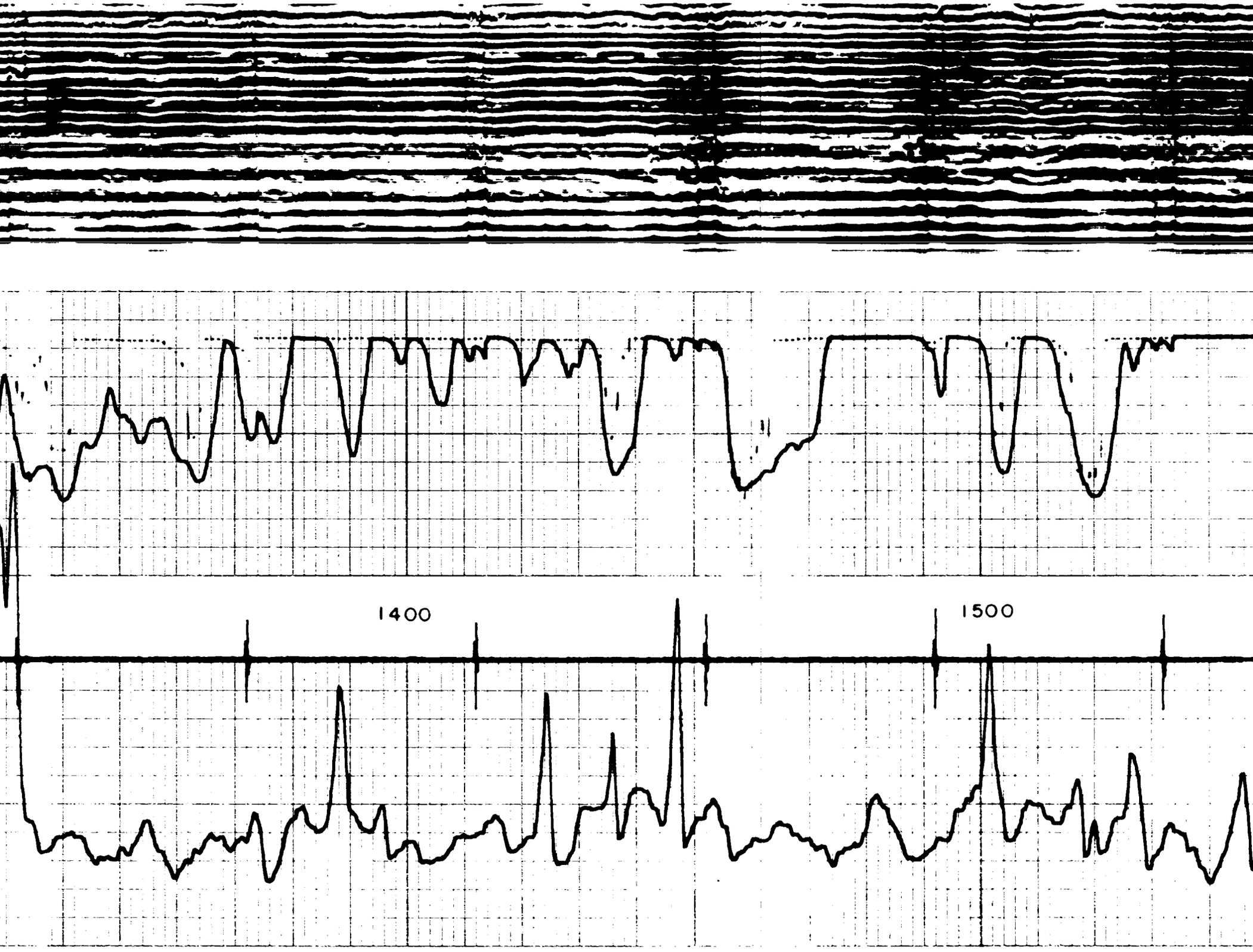
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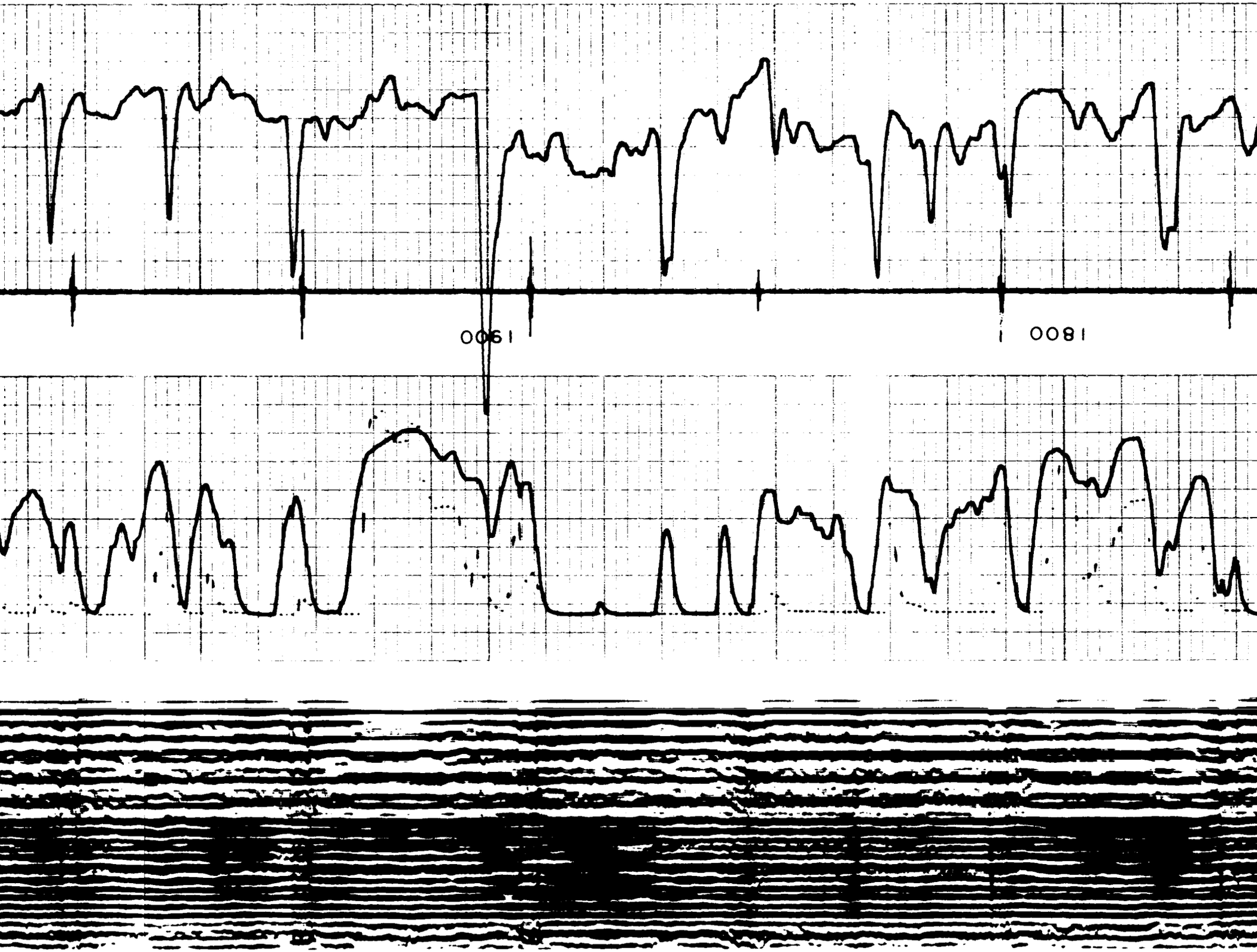
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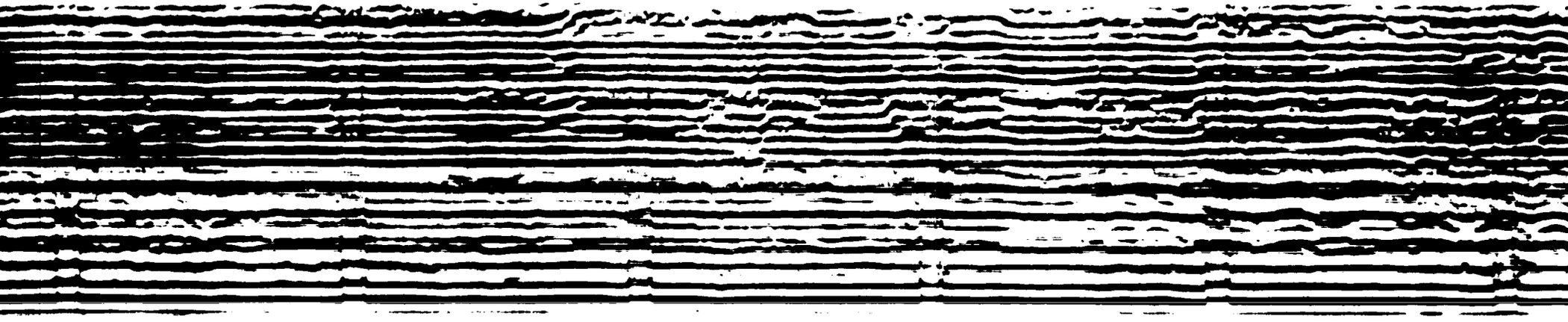

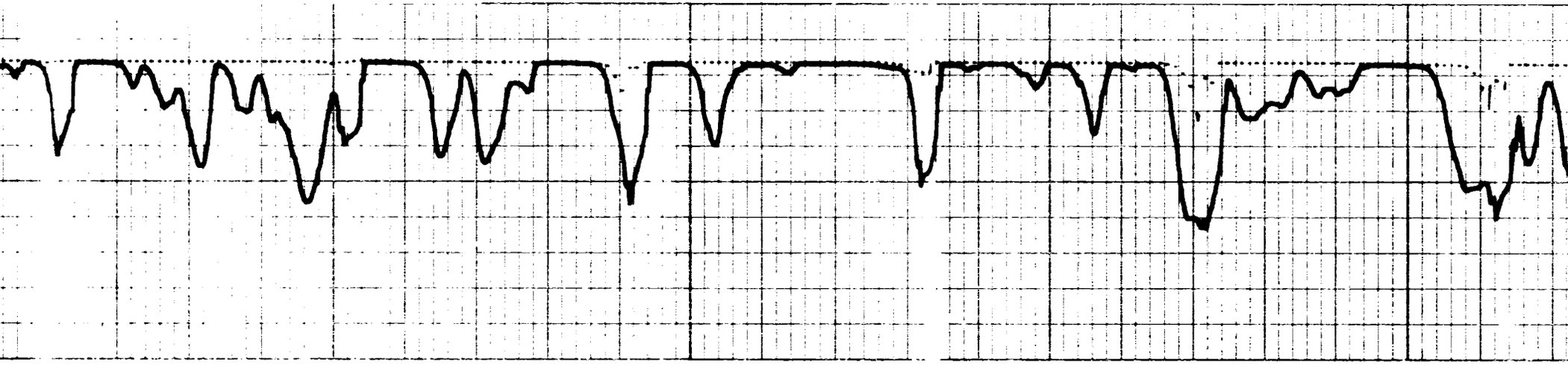

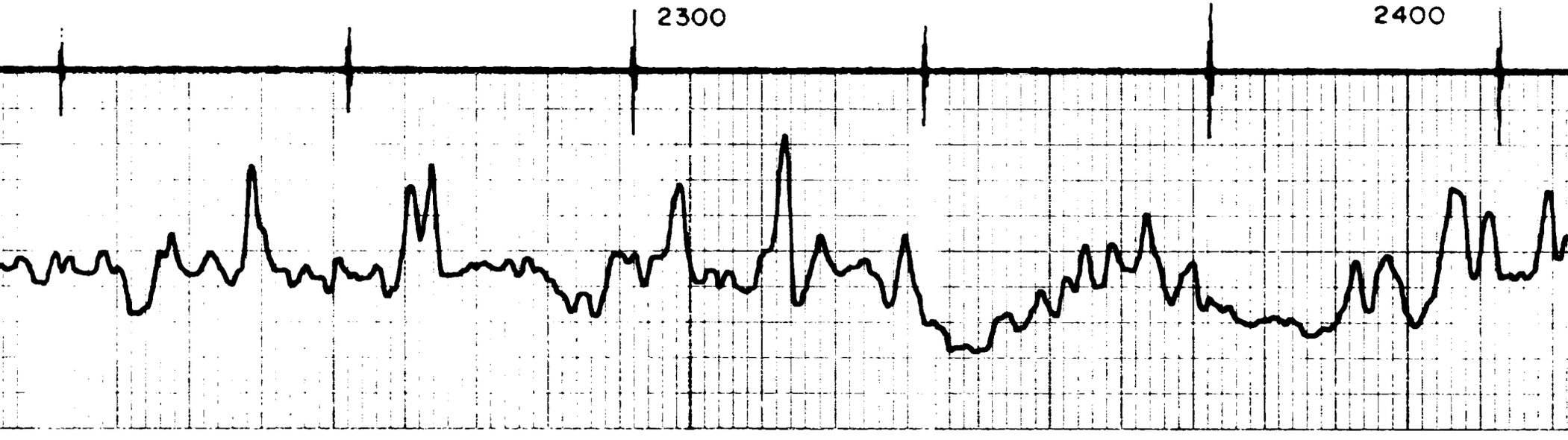
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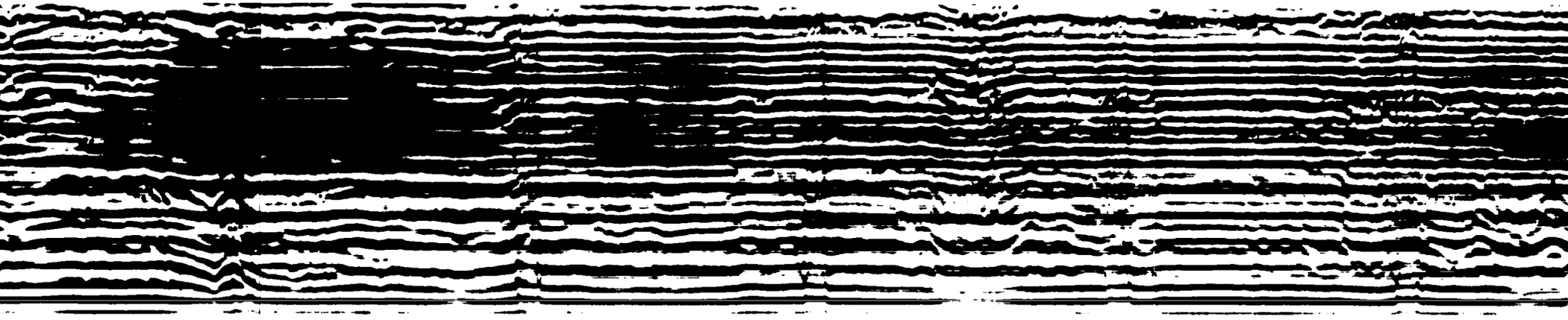

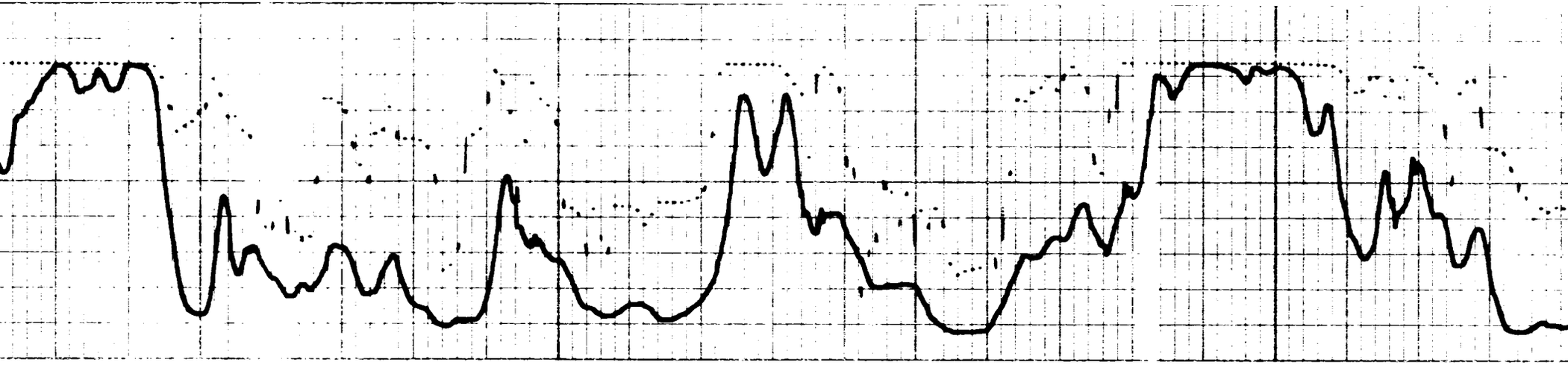

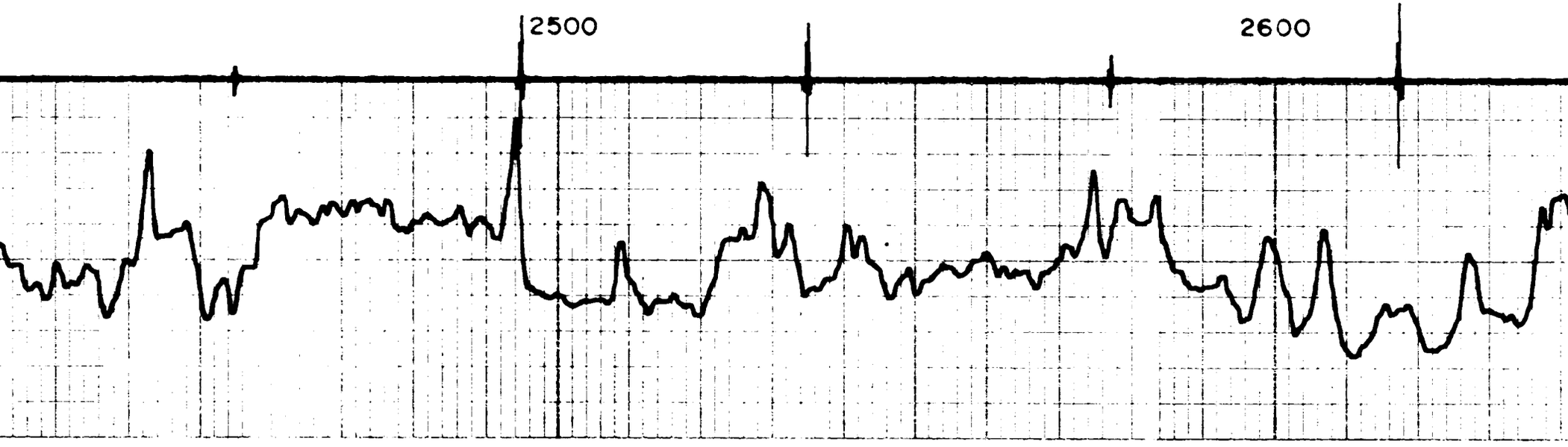
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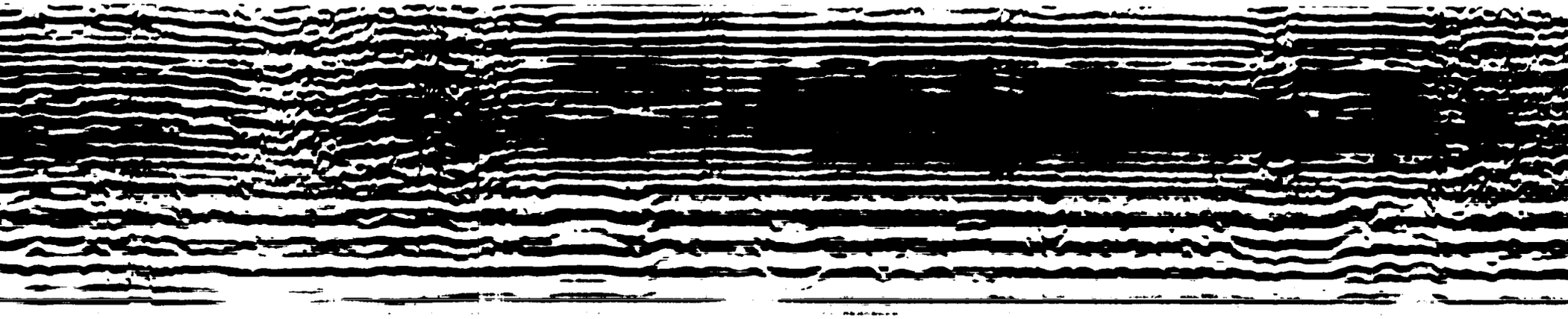

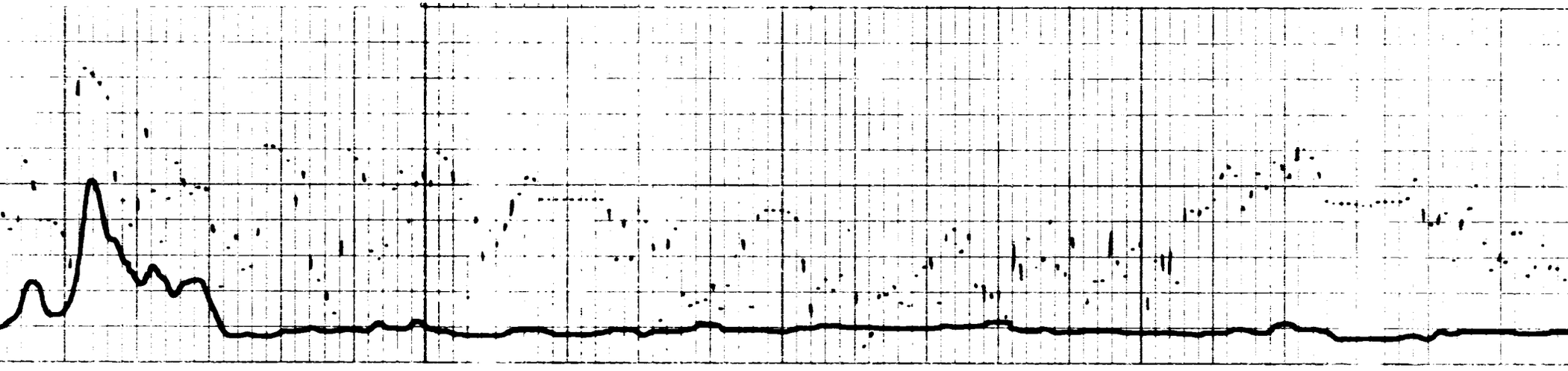

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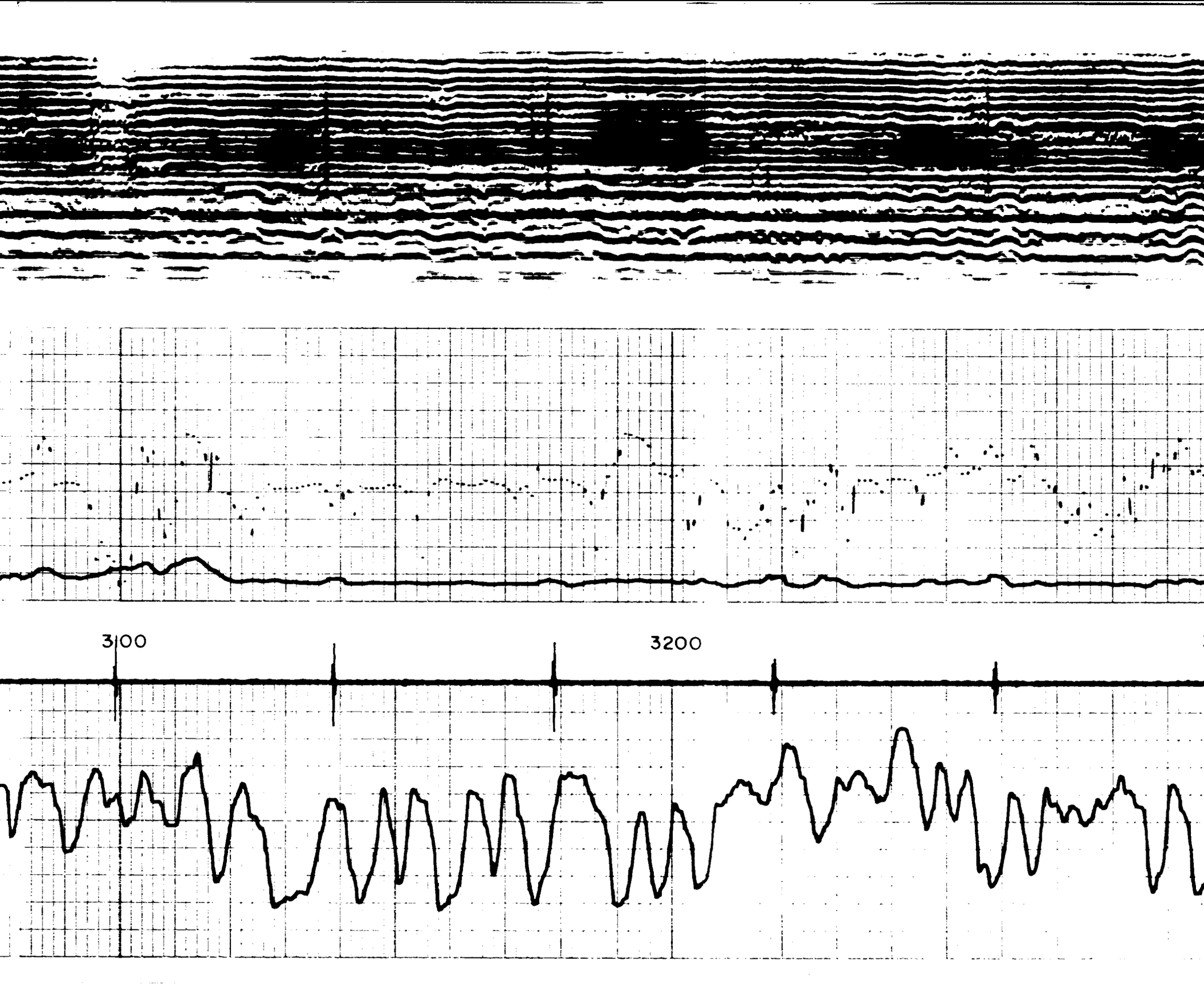
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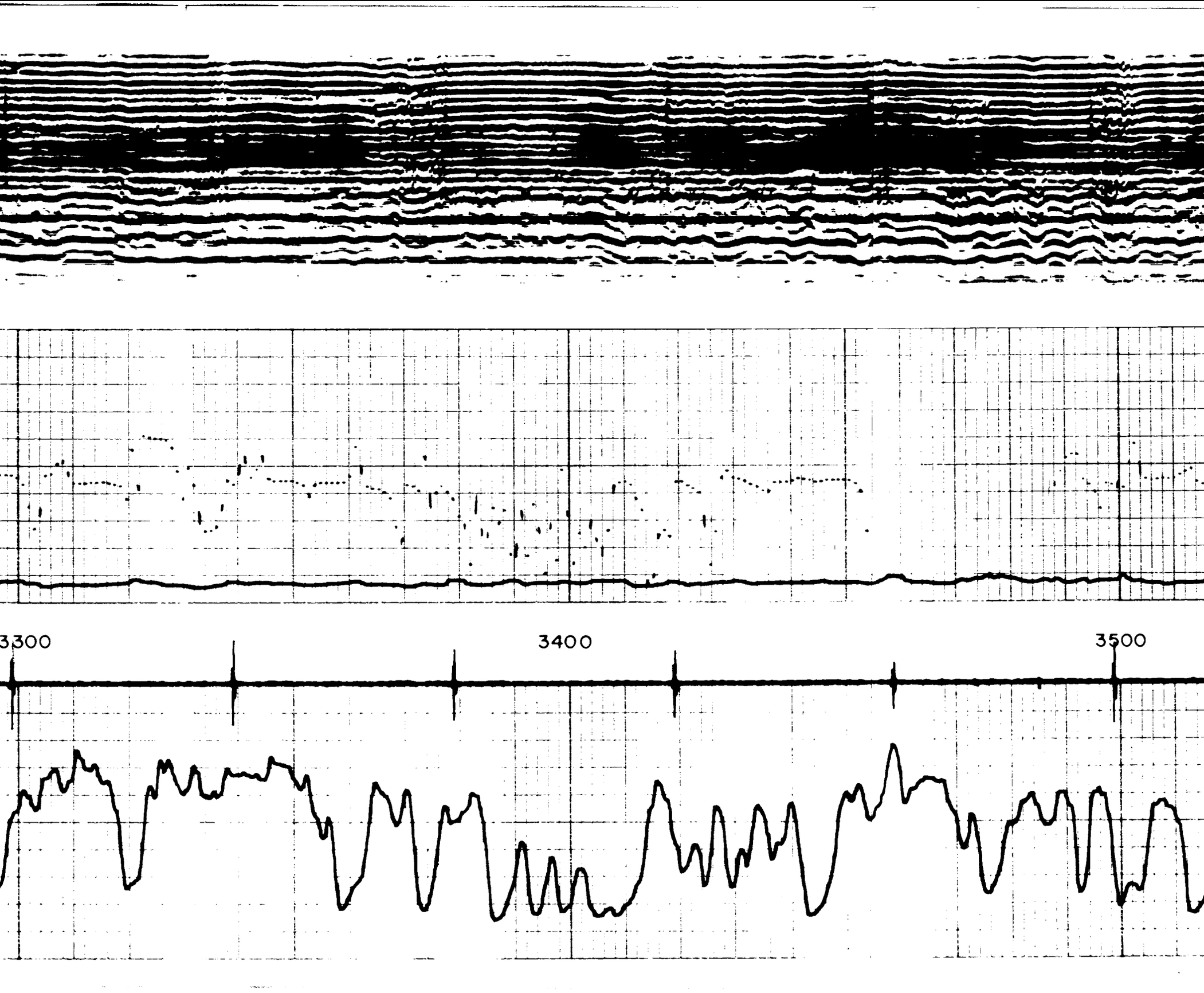
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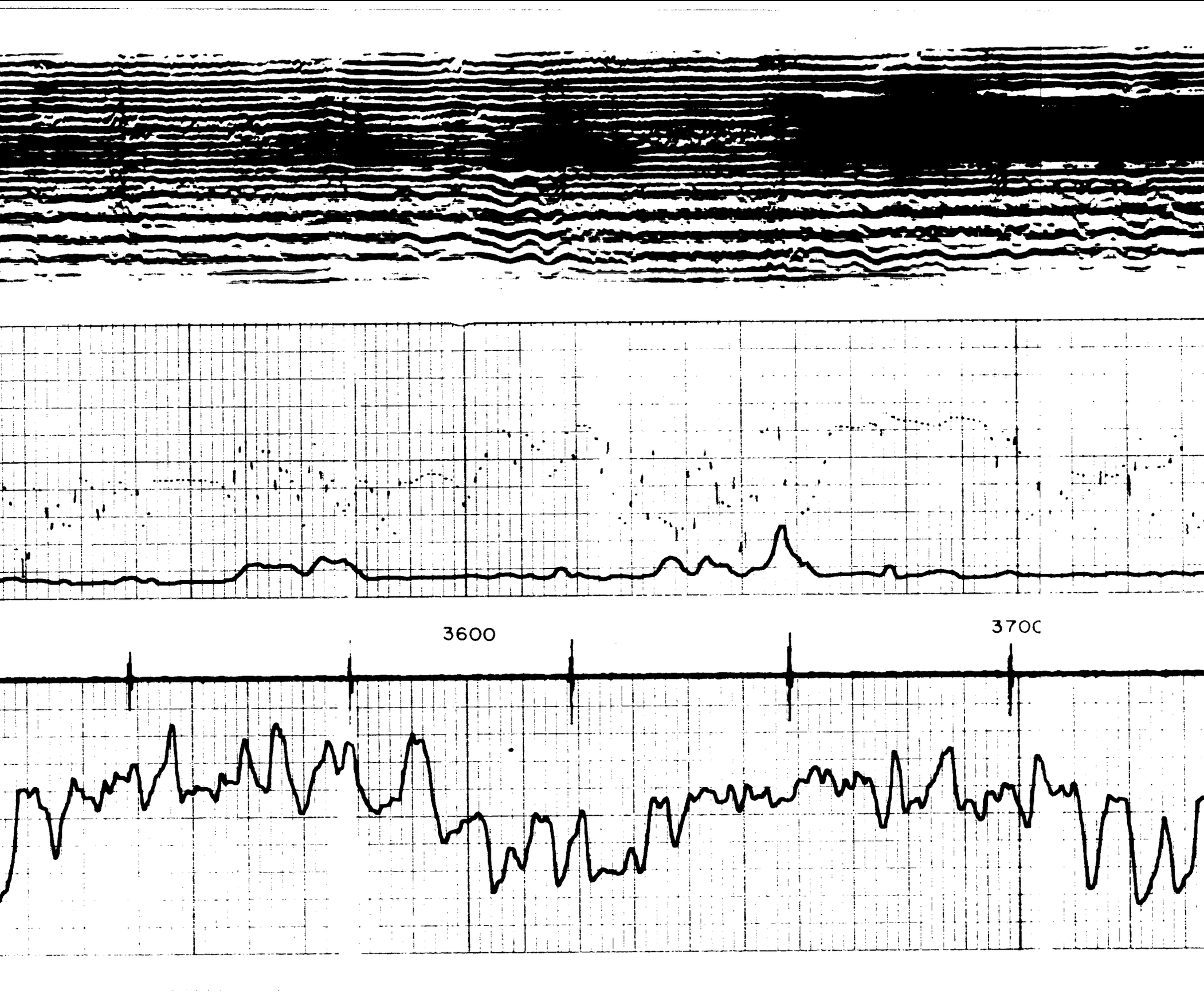
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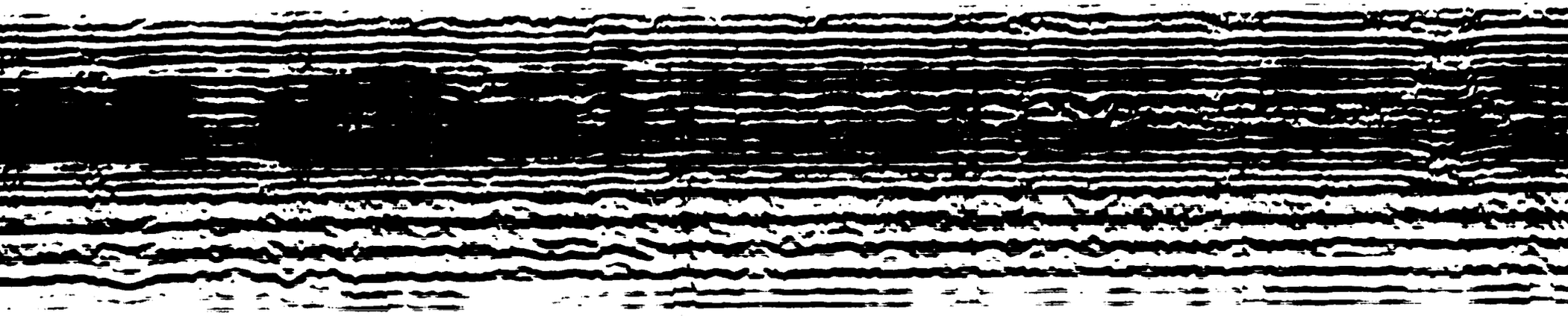

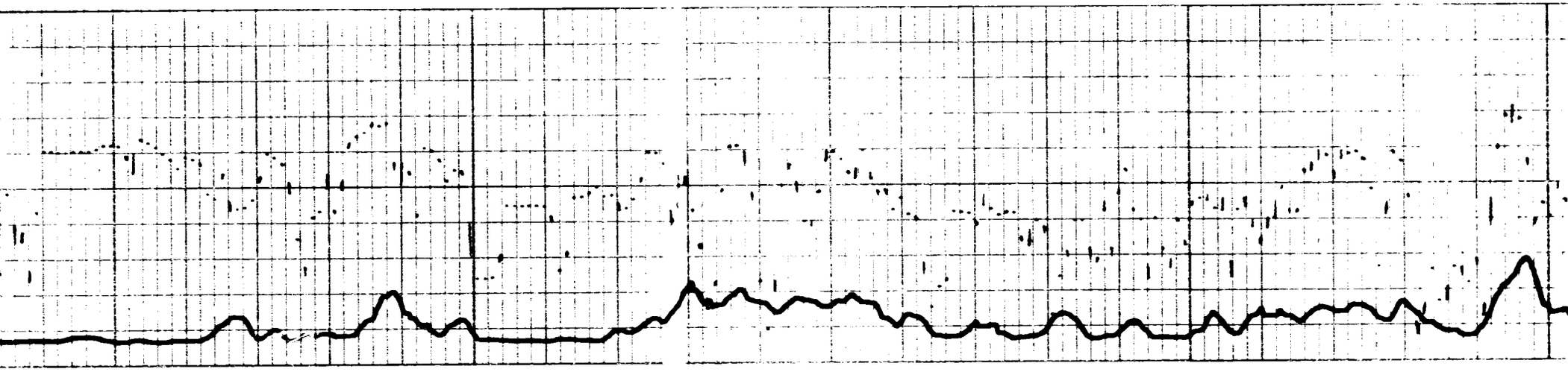

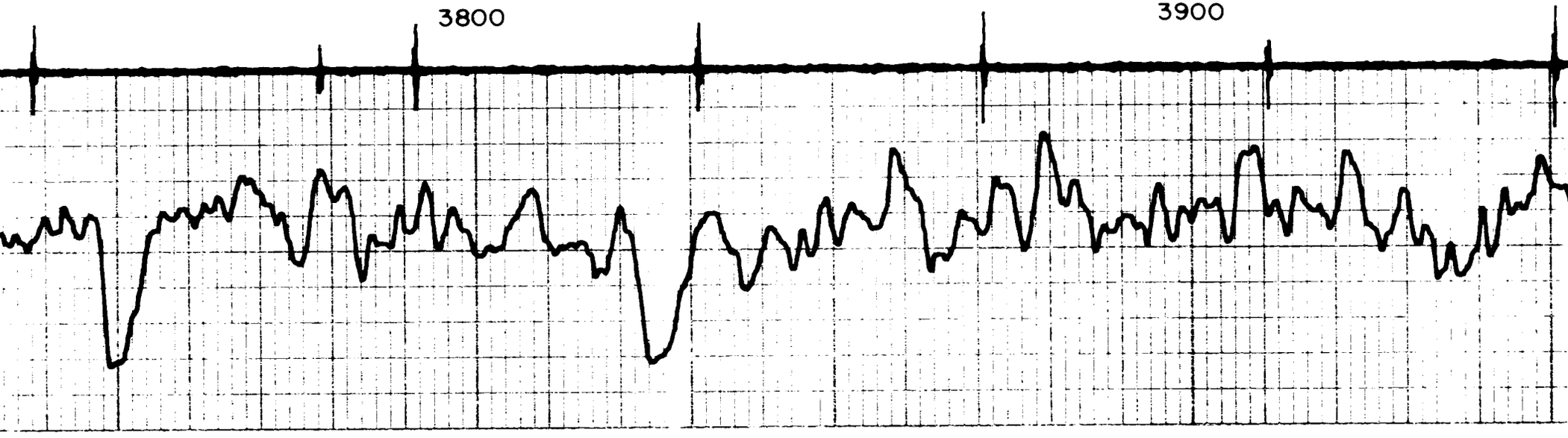
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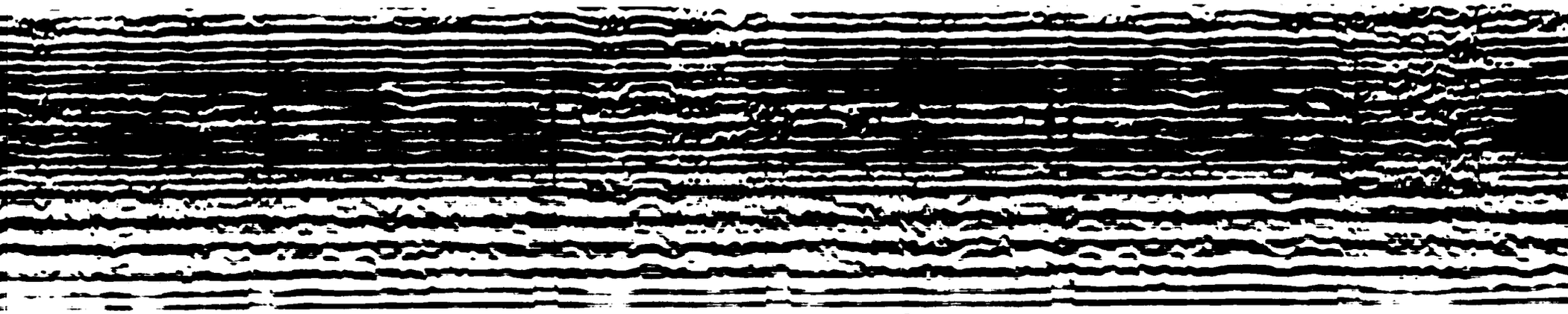

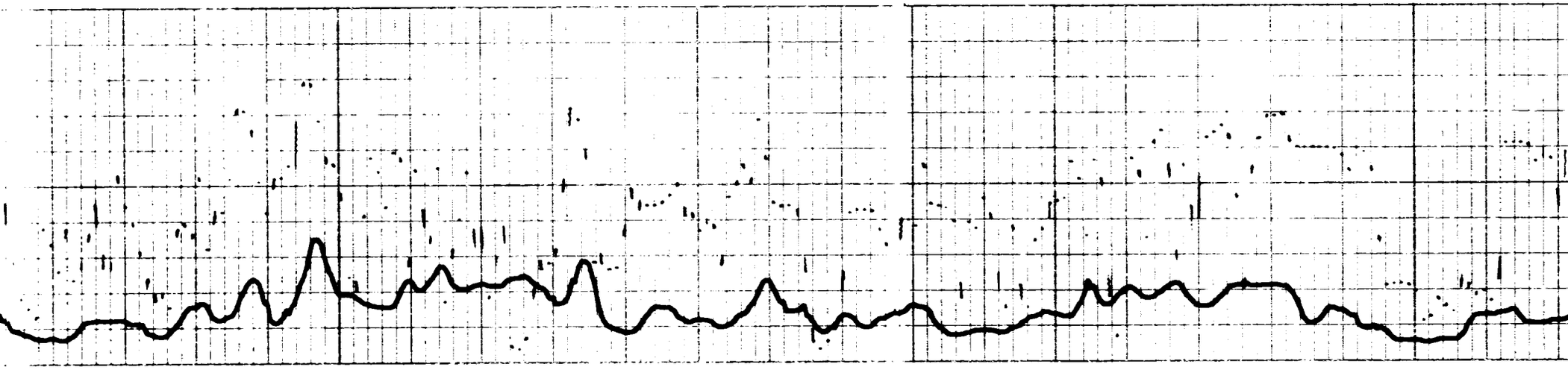

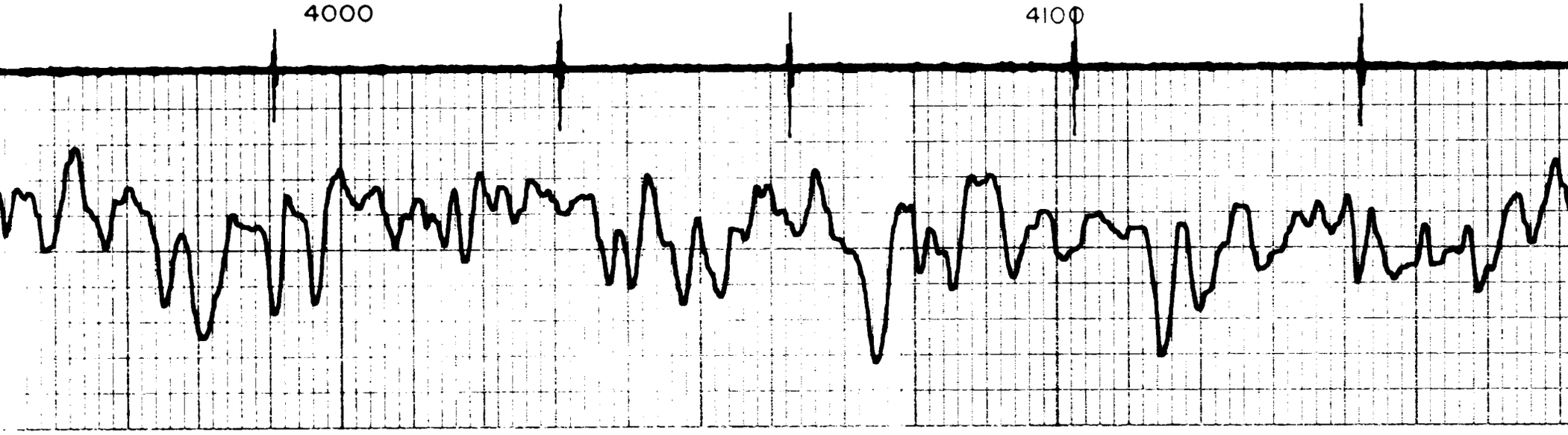
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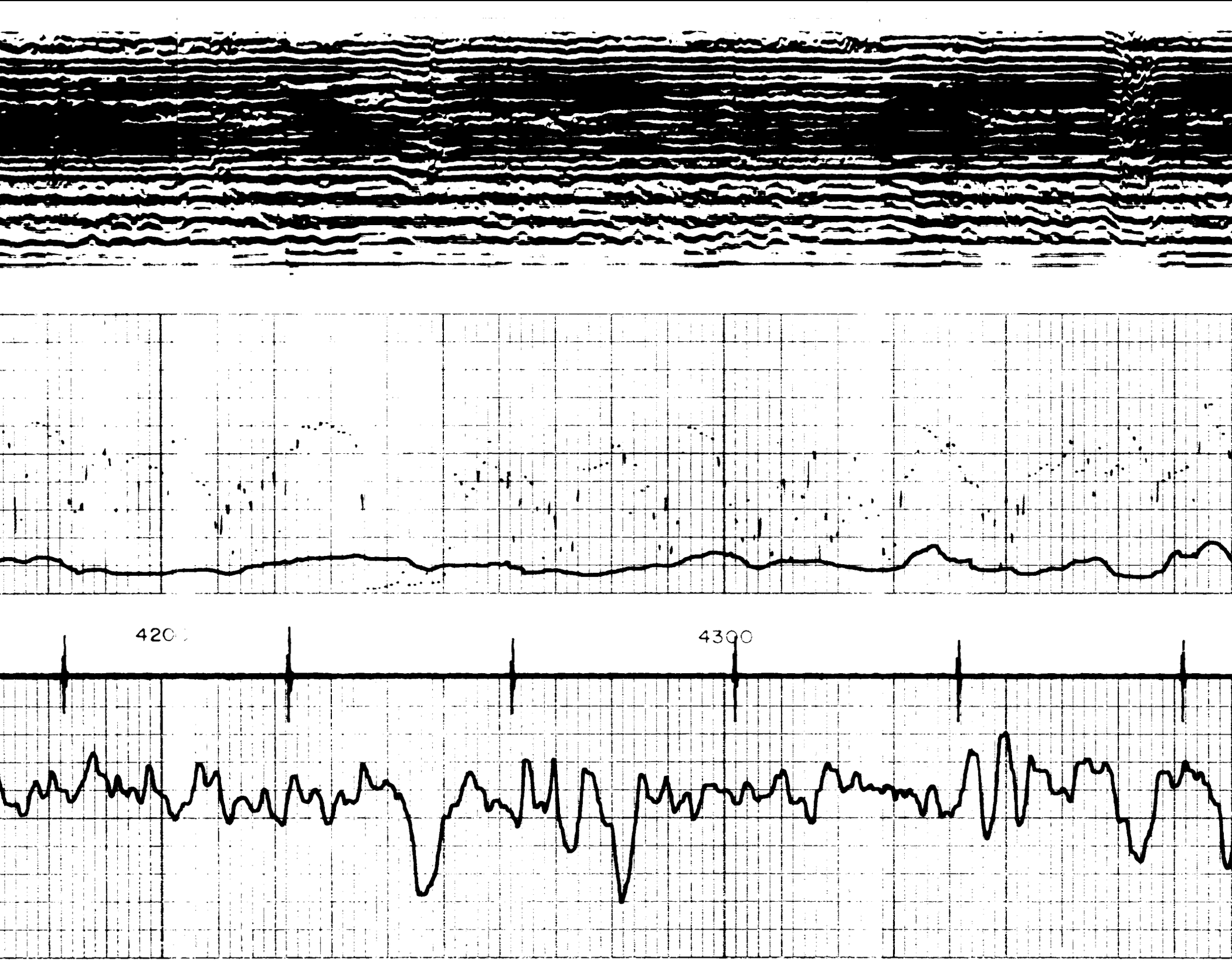
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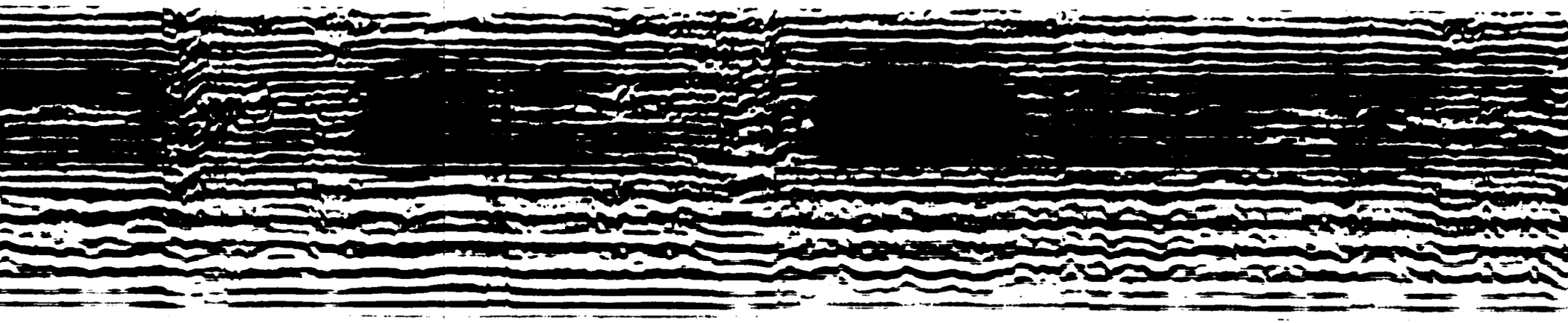

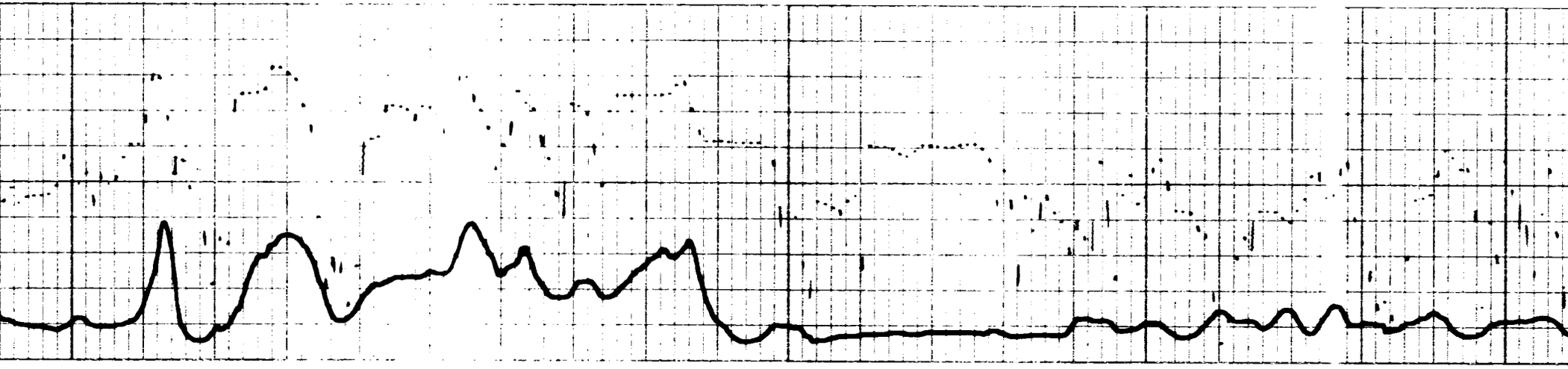

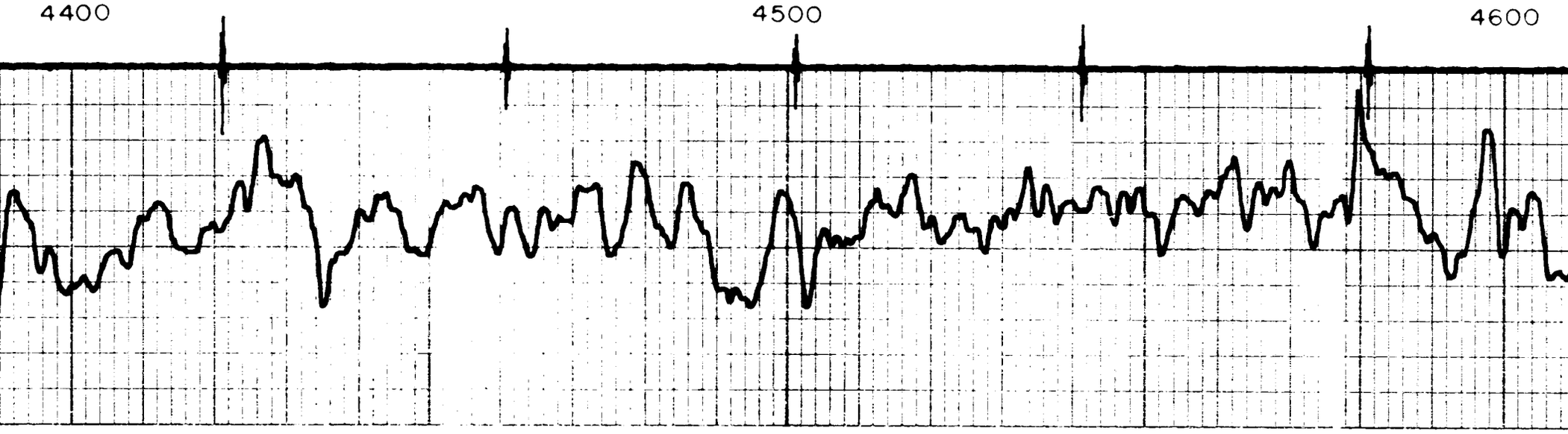
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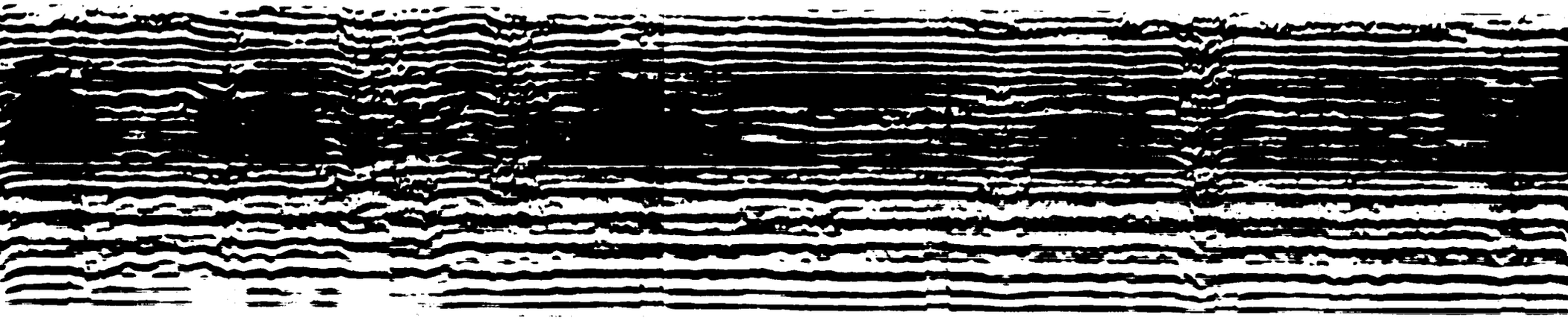

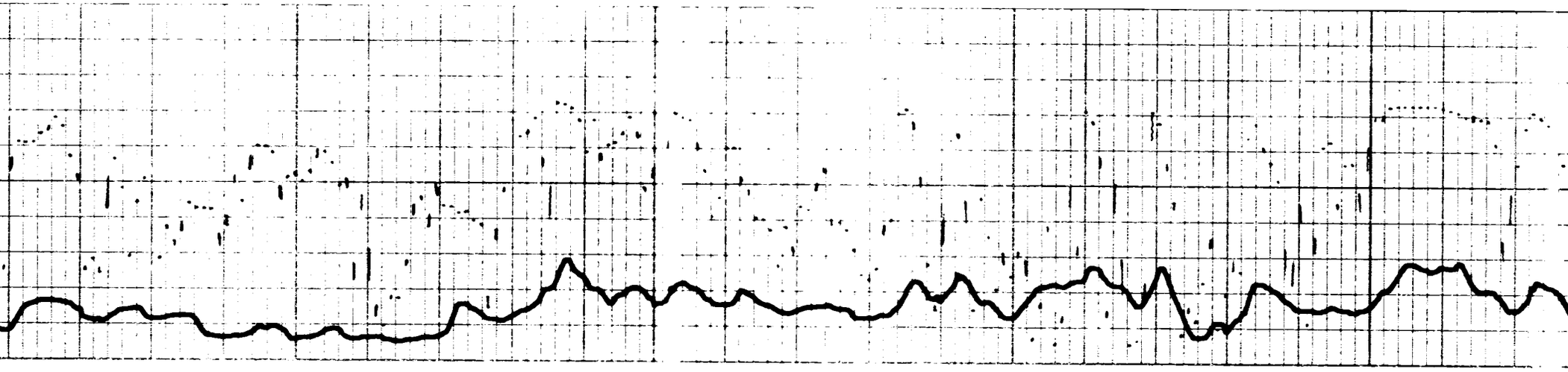

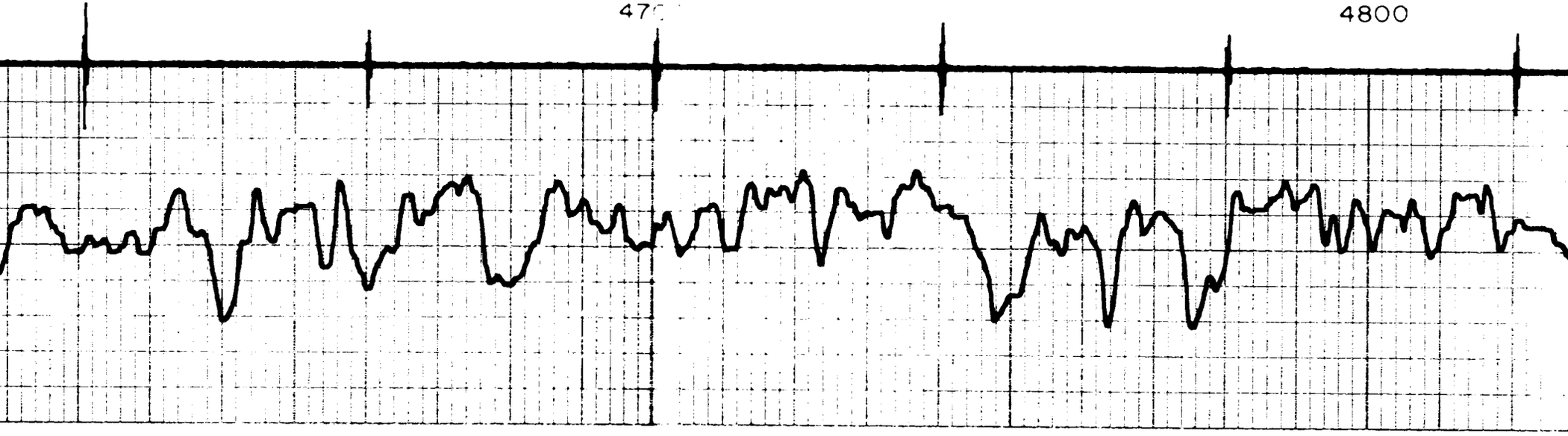
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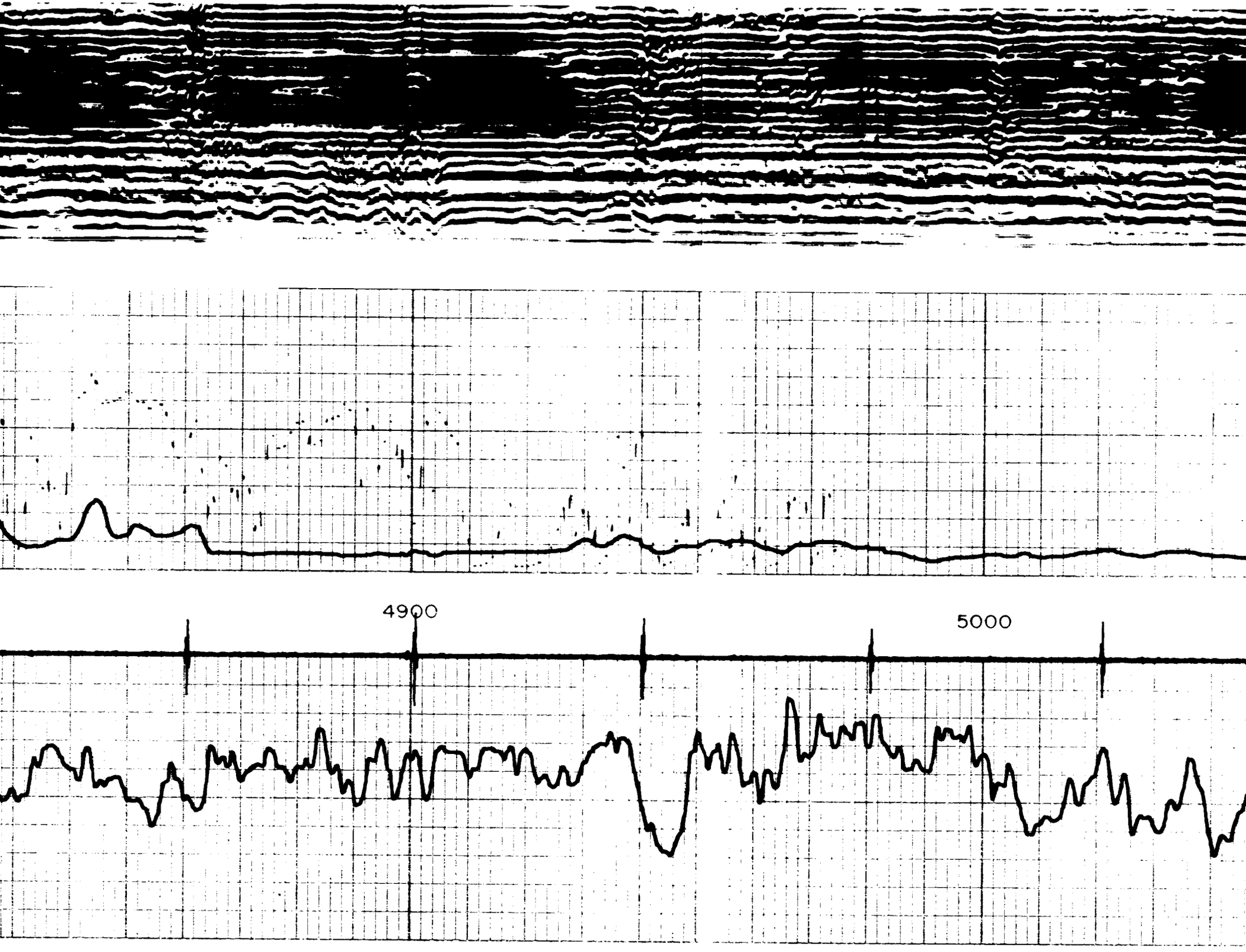
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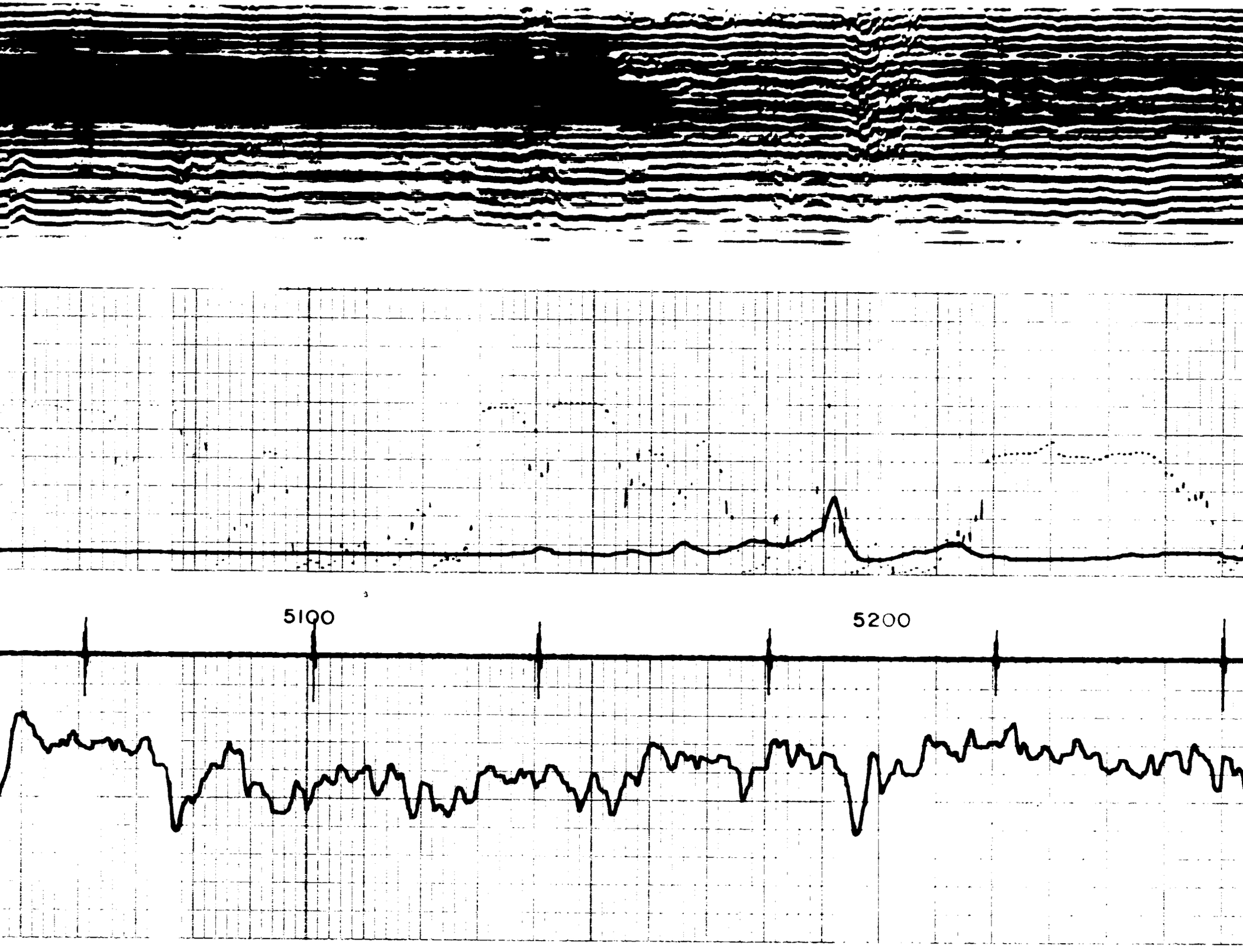
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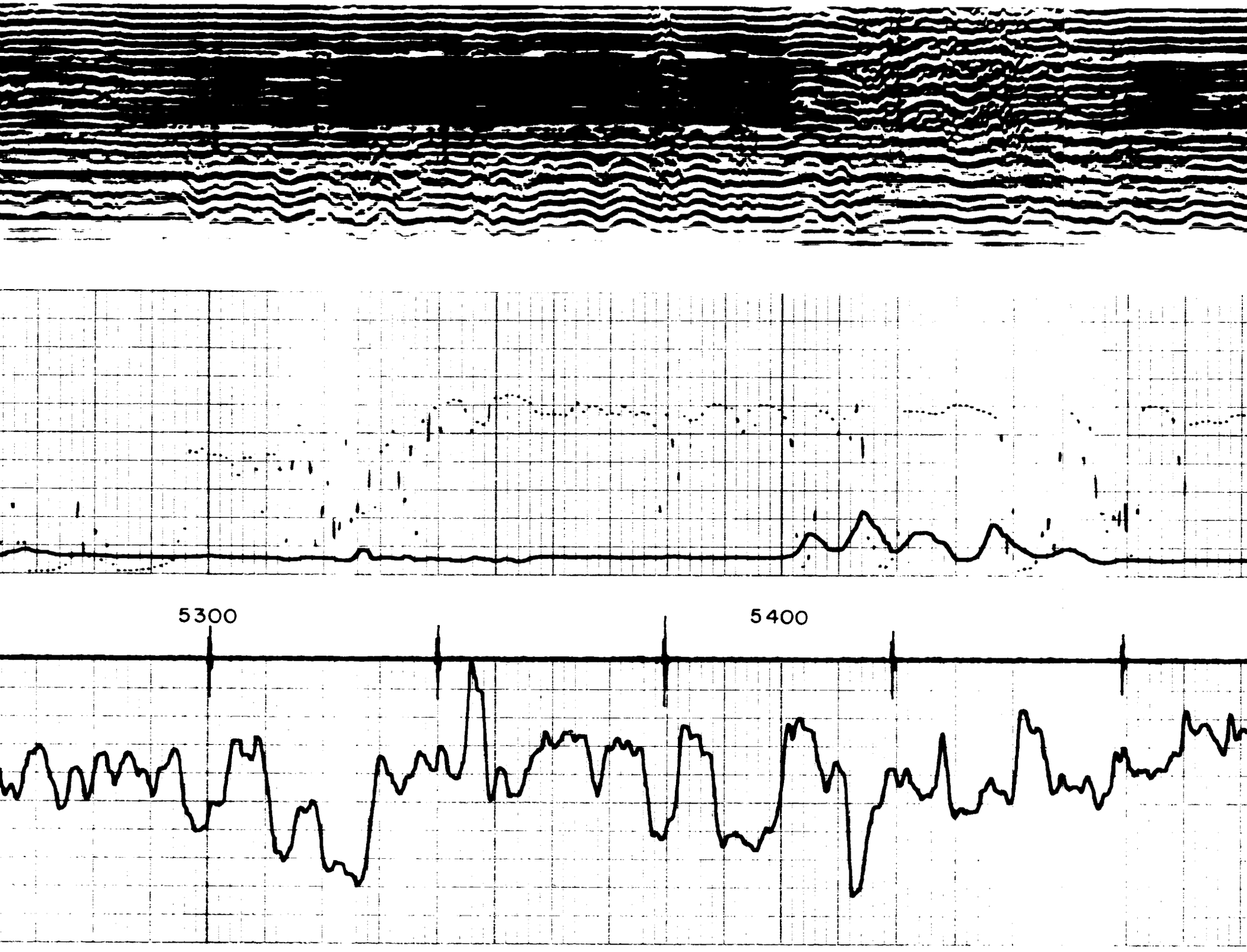
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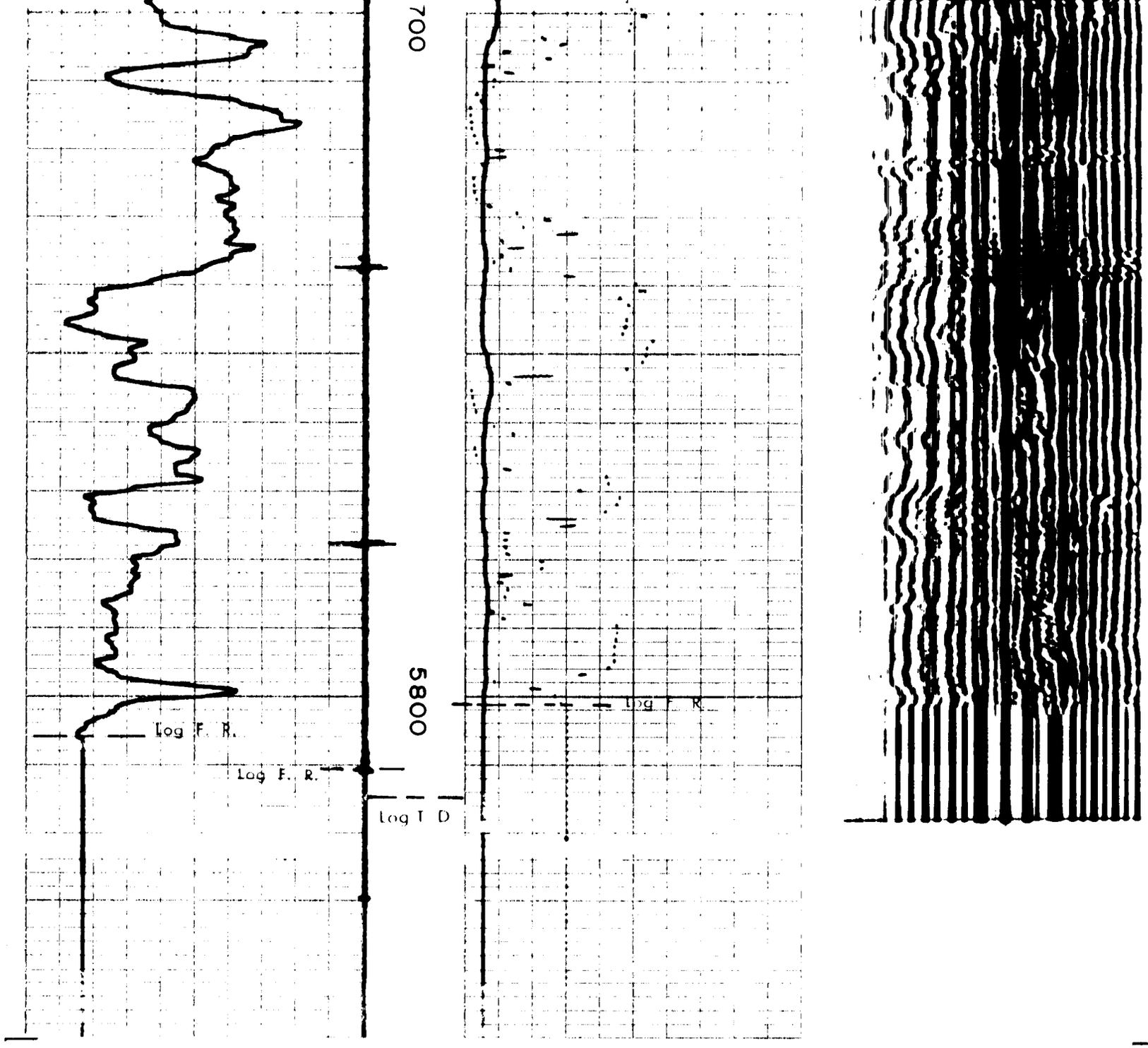
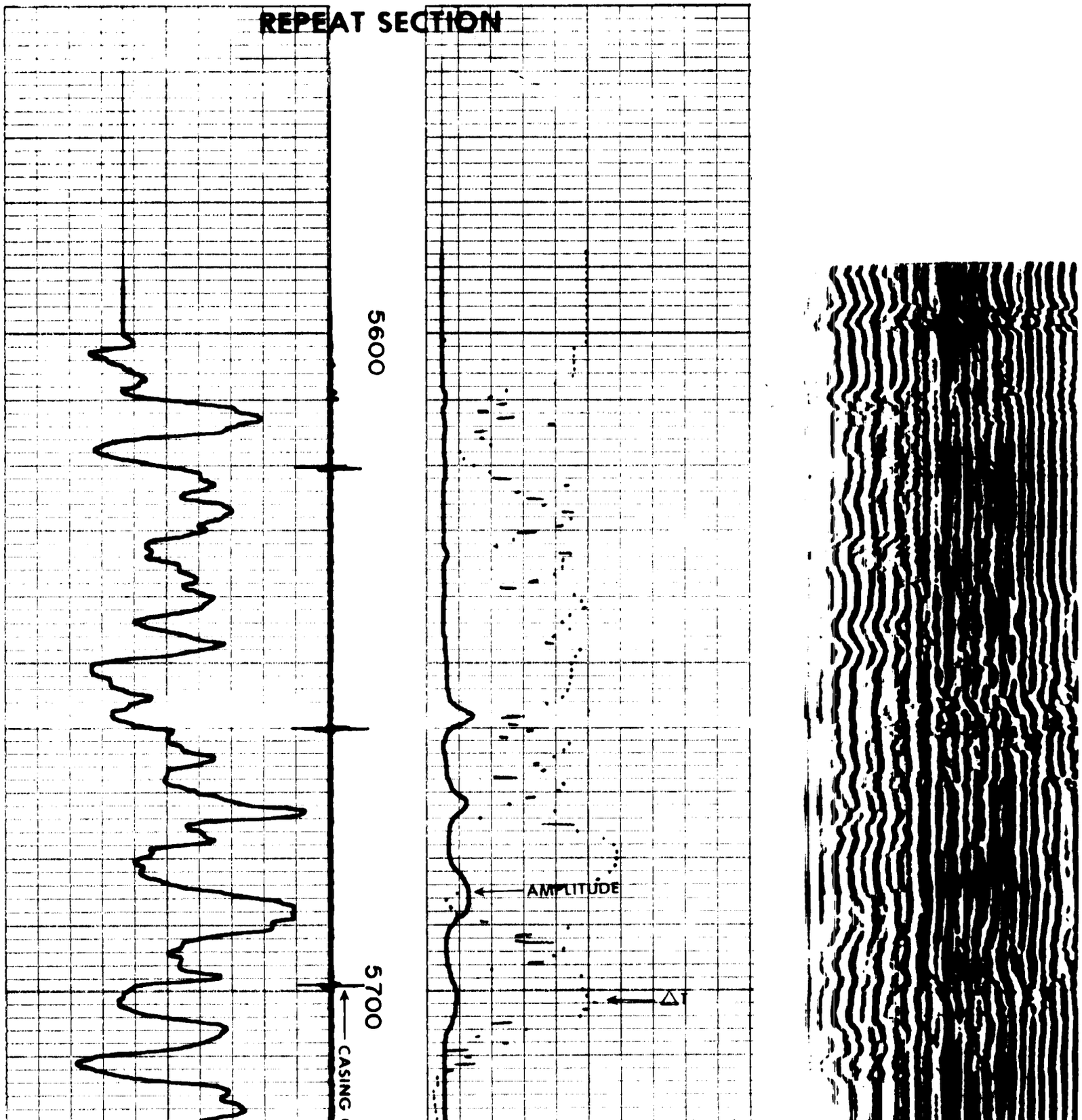
GR
CASING COLLARS
AMPLITUDE
ΔT

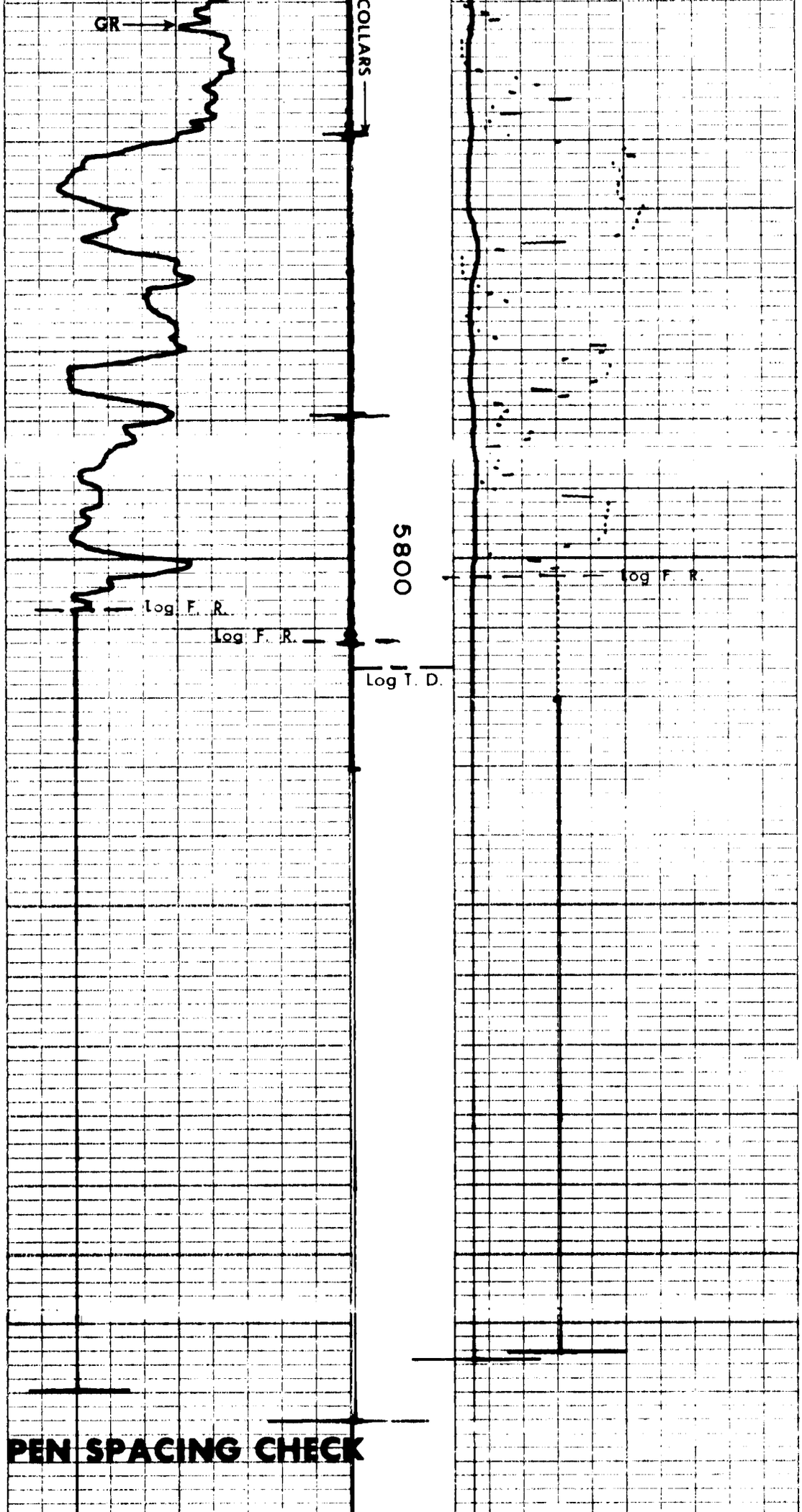


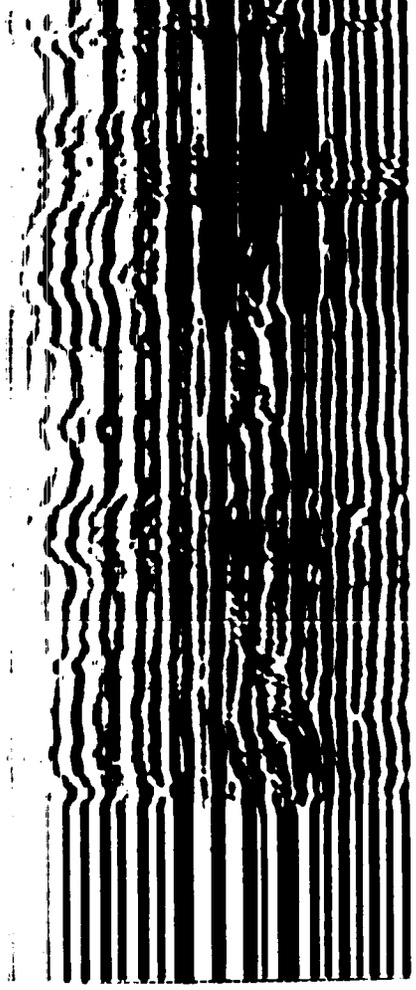
API UNITS		MILLIVOLTS	MICROSECONDS
0 100		0 50	100 1100
RADIATION INTENSITY INCREASES →		140 MICROSECONDS 40 DELTA TIME AMPLITUDE INCREASES →	
	DEPTH	COMPRESSION WAVE	VARIABLE DENSITY

GAMMA RAY	DEPTH	AMPLITUDE	VARIABLE DENSITY

Company	COORS ENERGY COMPANY	**Drillers T.D.**	6420
Well	UTE TRIBAL 4-8	**Log F.R.**	5811
Field	ANTELOPE CREEK	**Log T.D.**	5815
County	DUCHESNE	**Elevations:**	
State	UTAH	**K.B.** 5881 **D.F.** 5880	**G.L.** 5866







PEN SPACING CHECK

CALIBRATION

API UNITS OF CALIB. STD.	340
SENSITIVITY READING	4
MULTIPLIER	X1
ZERO SUPPRESSION	0
TIME CONSTANT	5
MEASURED CHART DIVISIONS	9

ATTACHMENT NO. 8

OPEN HOLE LOG FOR THE UIC WELL

BEST COPY AVAILABLE

VART.

COMPENSATED DENSITY COMPENSATED NEUTRON LOG

FILING NO.

COMPANY COORS ENERGY COMPANY

WELL UTE TRIBAL NO. 4-8 4301331164

FIELD ANTELOPE CREEK

COUNTY DUCHESNE STATE UTAH

LOCATION 515' F W/L 2100' F S/L NW SW

SEC 8 TWP 5S RGE 3W

Other Services DLL, RHC

Permanent Datum GL Elev. 5866

Log Measured from KB 15 Ft. Above Perm. Datum

Drilling Measured from KB

Elev. KB 5881 DF -- GL 5866

Date	12-6-86
Run No.	One
Depth – Driller	6420
Depth-Logger	6404
Bottom logged interval	6402
Top logged interval	309
Type fluid in hole	KCL
Density / Visc.	8.8 / 27
pH / Fluid Loss	11.0 / --
Max rec. temp., deg F.	160 °F
Source of Samples	Flowline
Rm @ Meas. Temp.	.104 @82.3F
Rmf @ Meas. Temp.	.165 @54.7F
Rmc @ Meas. Temp.	.293 @60.8F
Source Rmf / Source Rmc	M / M
Time: End Circulation	0315 Hours
Time: Logger on Bottom	1714 Hours
Recorded By	Grenier
Witnessed By	Mr. Ballou

Bore-Hole Record

Run No.	Bit	From	To
One	12 1/4	Surface	300
	7 7/8	300	6420

Casing Record

Size	Wgt.	From	To
8 5/8	--	Surface	300

FOLD HERE

EQUIPMENT DATA

Run No.	Logging Unit	Location	Gamma Ray Tool No.	Compensated Density Tool No.	Compensated Density Source No.	Compensated Density Source Type	Compensated Density Source Stg.	Compensated Neutron Tool No.	Compensated Neutron Source No.	Compensated Neutron Source Type	Compensated Neutron Source Stg.
One	7570	Vernal	804	97	91	Cs. 137	2 Curie	108	657	AmBe	20
										241	Curie

CALIBRATION DATA

Run No.	Gamma Ray Bkg. cps	Gamma Ray Std. cps	Compensated Density Magnesium LS	Magnesium SS	Aluminum LS	Aluminum SS	Test Block LS	Test Block SS	Caliper L. Ring	Caliper S. Ring	Compensated Neutron Calibrator LS	Calibrator SS	Caliper L. Ring	Caliper S. Ring
One														

SEE DIGITAL CALIBRATION

LOGGING DATA

Run No.	General Depth From	General Depth To	Speed FPM	Gamma Ray TC	Gamma Ray API PER LOG DIV.	Compensated Density TC	Compensated Density Matrix Density	Compensated Density Fluid Density	Compensated Neutron TC	Compensated Neutron Matrix Type	Const. "K"	Temp. Grad.	Salinity PPM NaCL	Surf. Temp.
One	6402	309	23	Auto	20	Auto	2.68	1.1	Auto	Sd	.962	--	31000	55

REMARKS:

NOTICE Gearhart Industries, Inc. cannot and does not guarantee the accuracy or correctness of any log data or of any interpretation thereof and shall not be liable or responsible for any loss, cost, damage or expense incurred or sustained by Customer resulting from any log data or interpretation made by Gearhart Industries, Inc. or any of its agents, servants or employees. Neither log data nor interpretation thereof should be relied upon as the sole basis for any drilling, completion, well treatment or production decision or any other procedure. Unless there is presently in effect a master or other specific or general contract intended to extend and apply hereto, this Log is provided in accordance with Gearhart Industries, Inc.'s General Terms and Conditions as set out in its current price schedule.

GEARHART INDUSTRIES, INC.

12-06-86 19:51 308.5 359172 0152-05 0 18

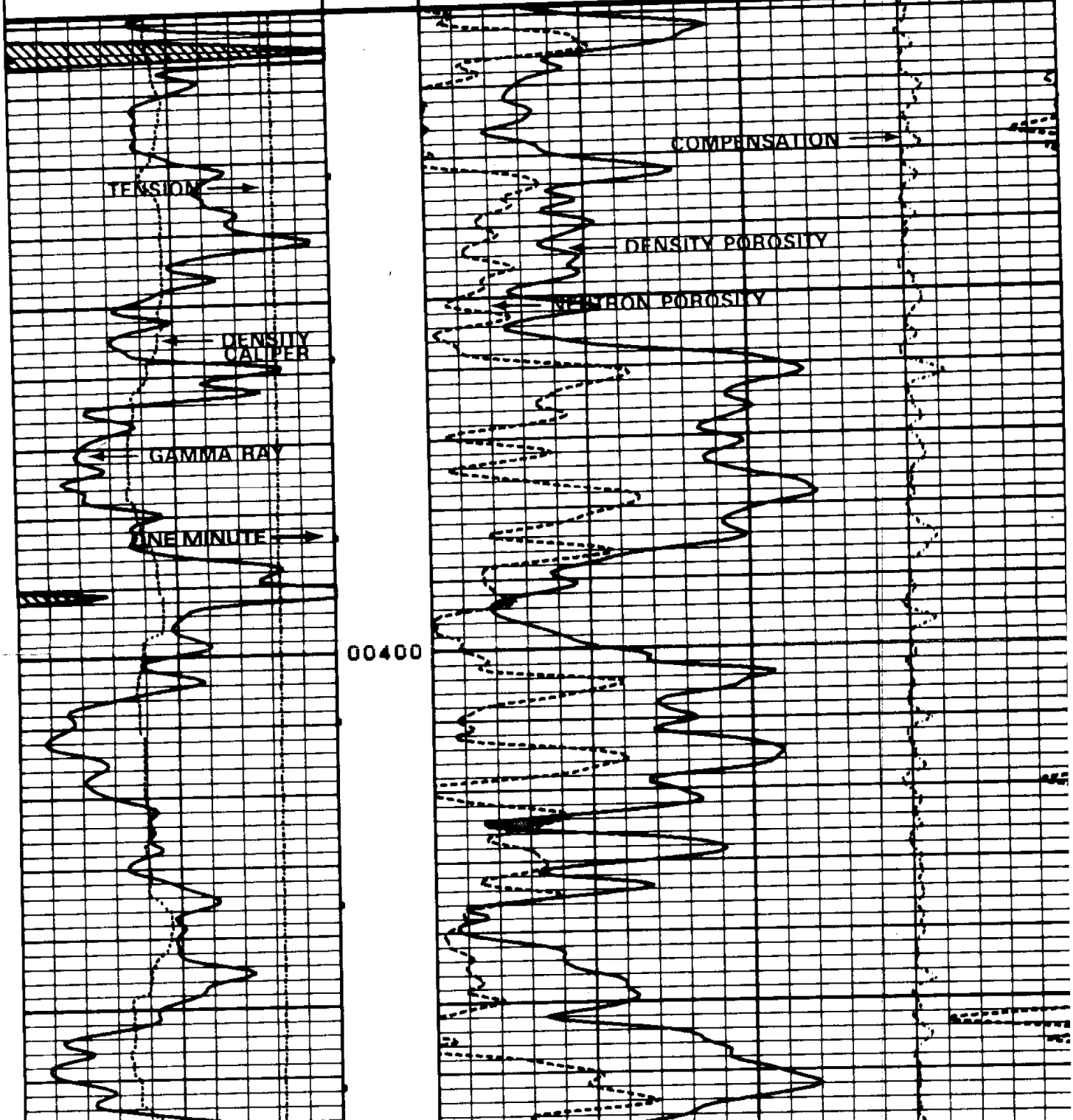
-0.25 ΔP(G/CC) 0.25

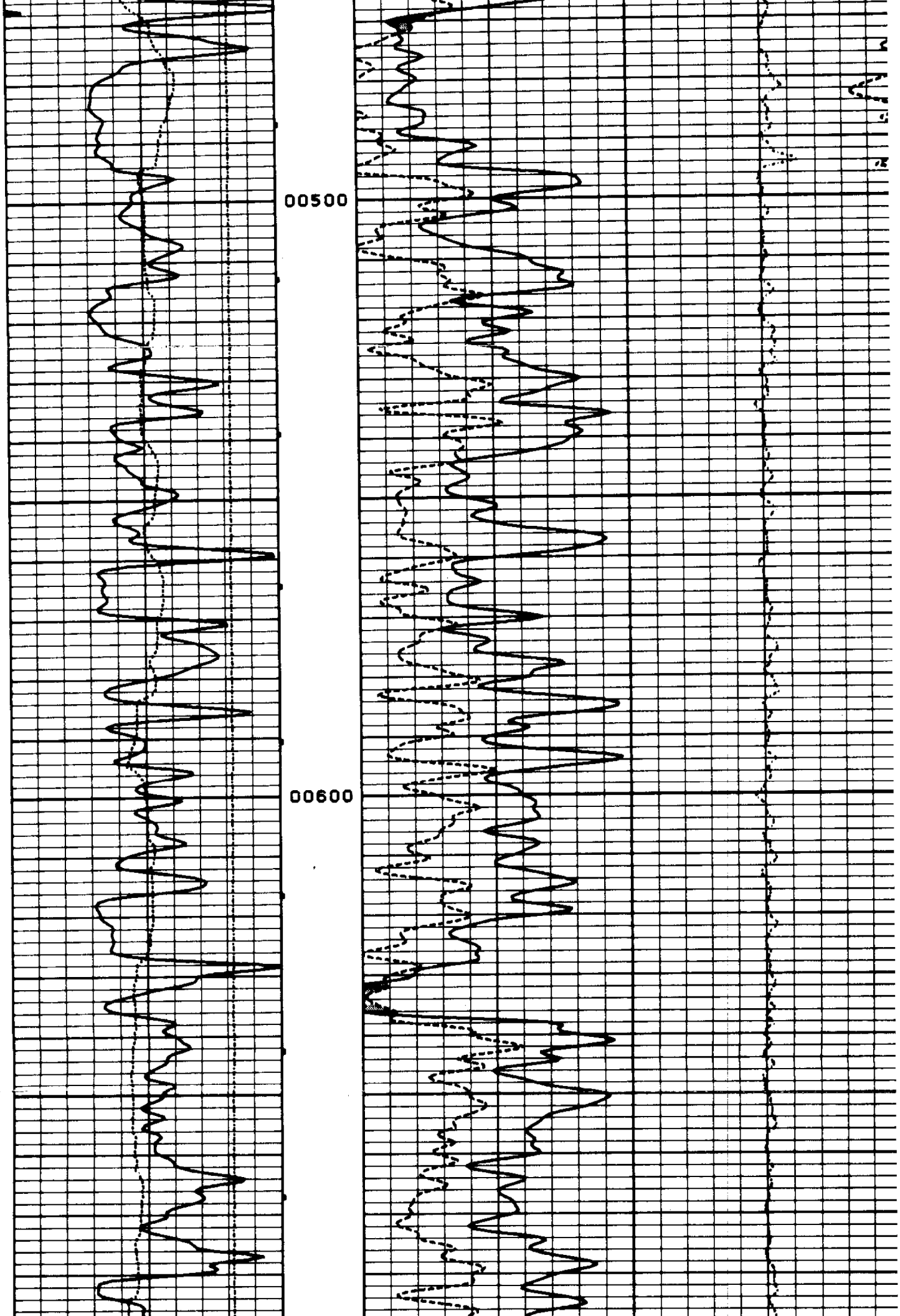
0 GR (API) 200

30 ø-CNS.SD -10

6 CAL-X (IN) 16

30 ø-CDL -10

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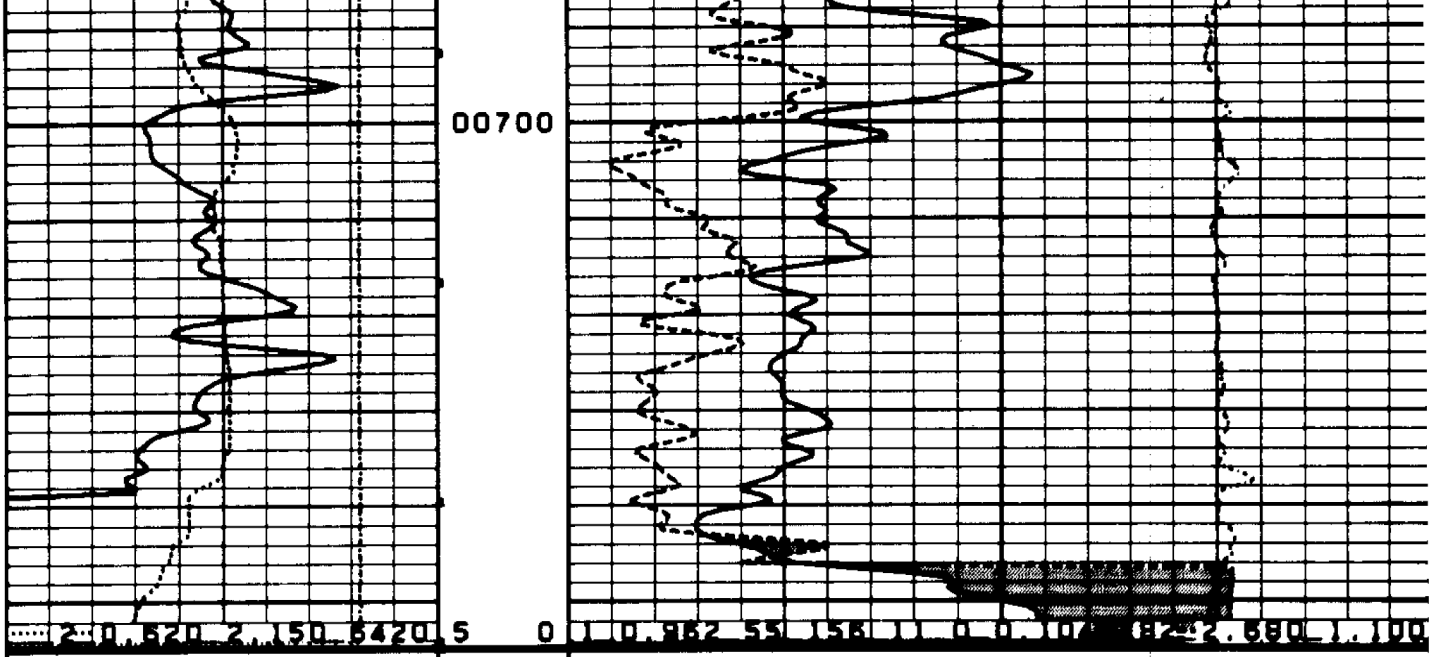
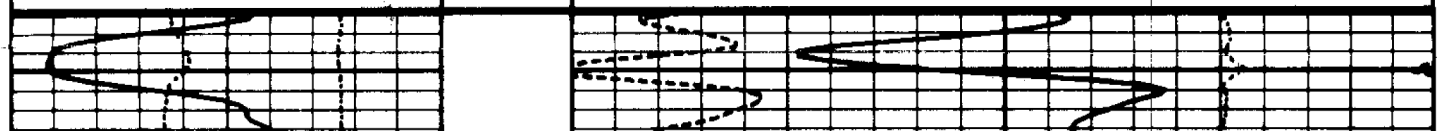


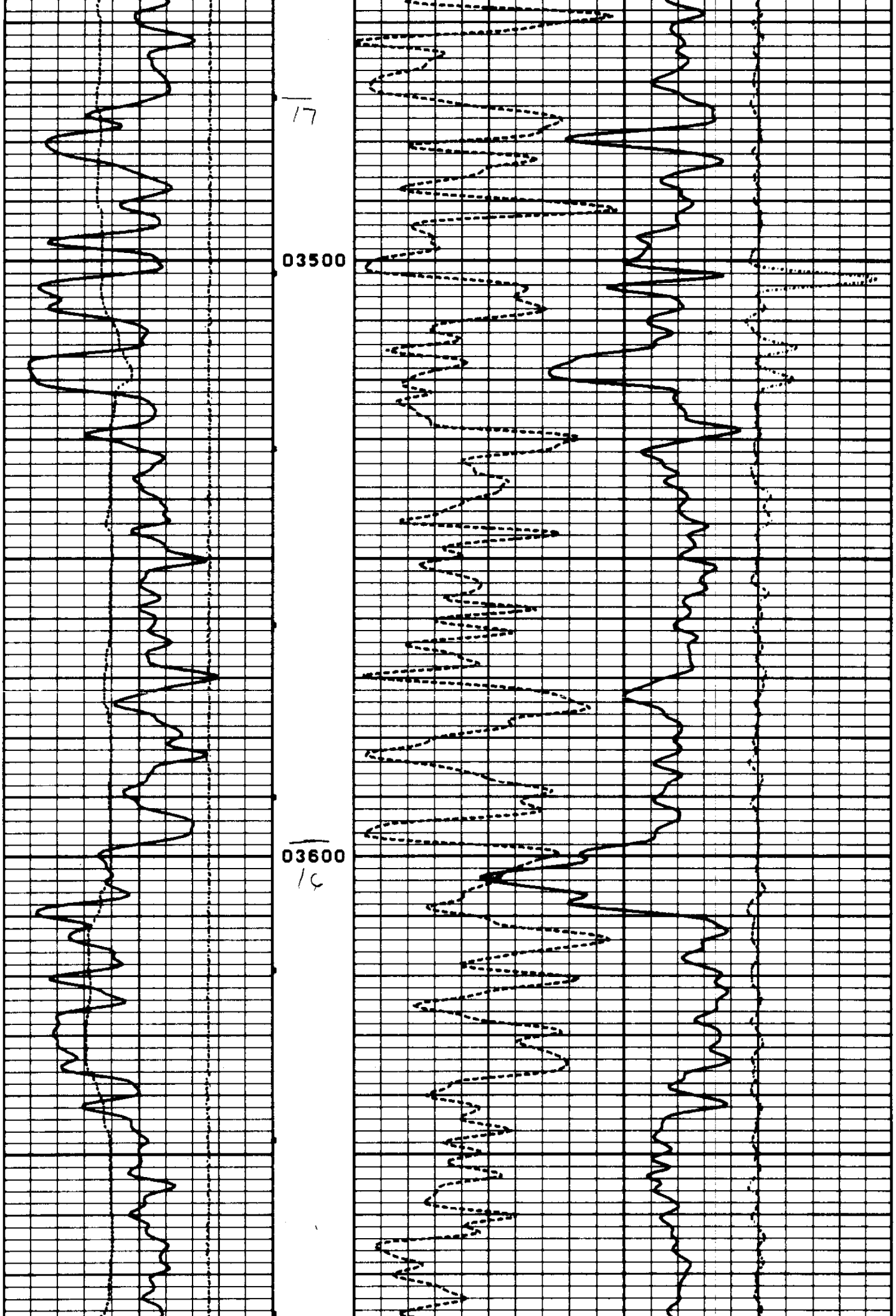
0 GR (API) 200		-0.25 ΔP(G/CC) 0.25
		30 ø-CNS.SD -10
6 CAL-X (IN) 16		30 ø-CDL -10

12-06-86 19:35 754.5 359172 0152-05 0 18

12-06-86 19:18 3443.5 359172 0152-05 0 17

0 GR (API) 200		-0.25 ΔP(G/CC) 0.25
		30 ø-CNS.SD -10
6 CAL-X (IN) 16		30 ø-CDL -10

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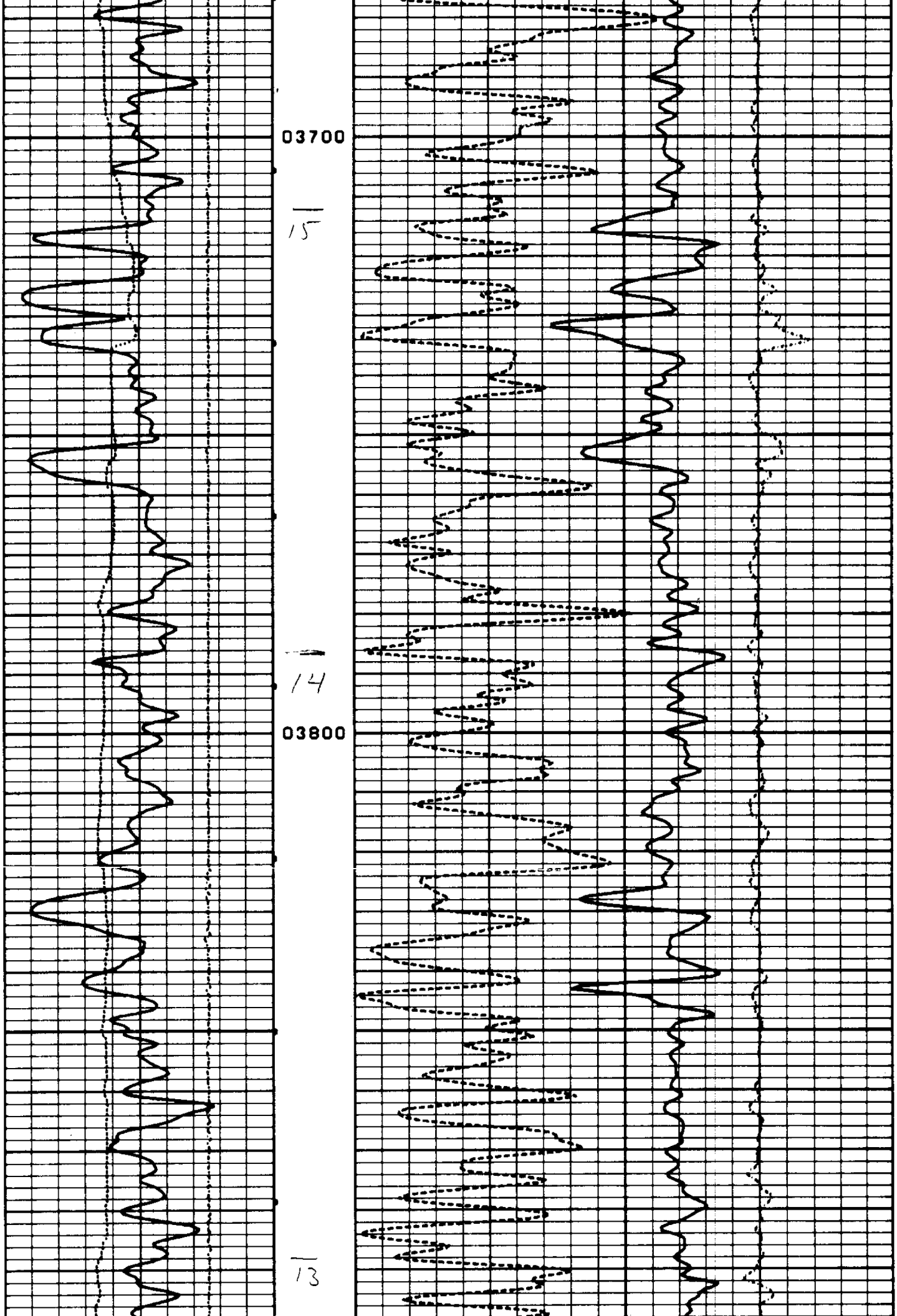
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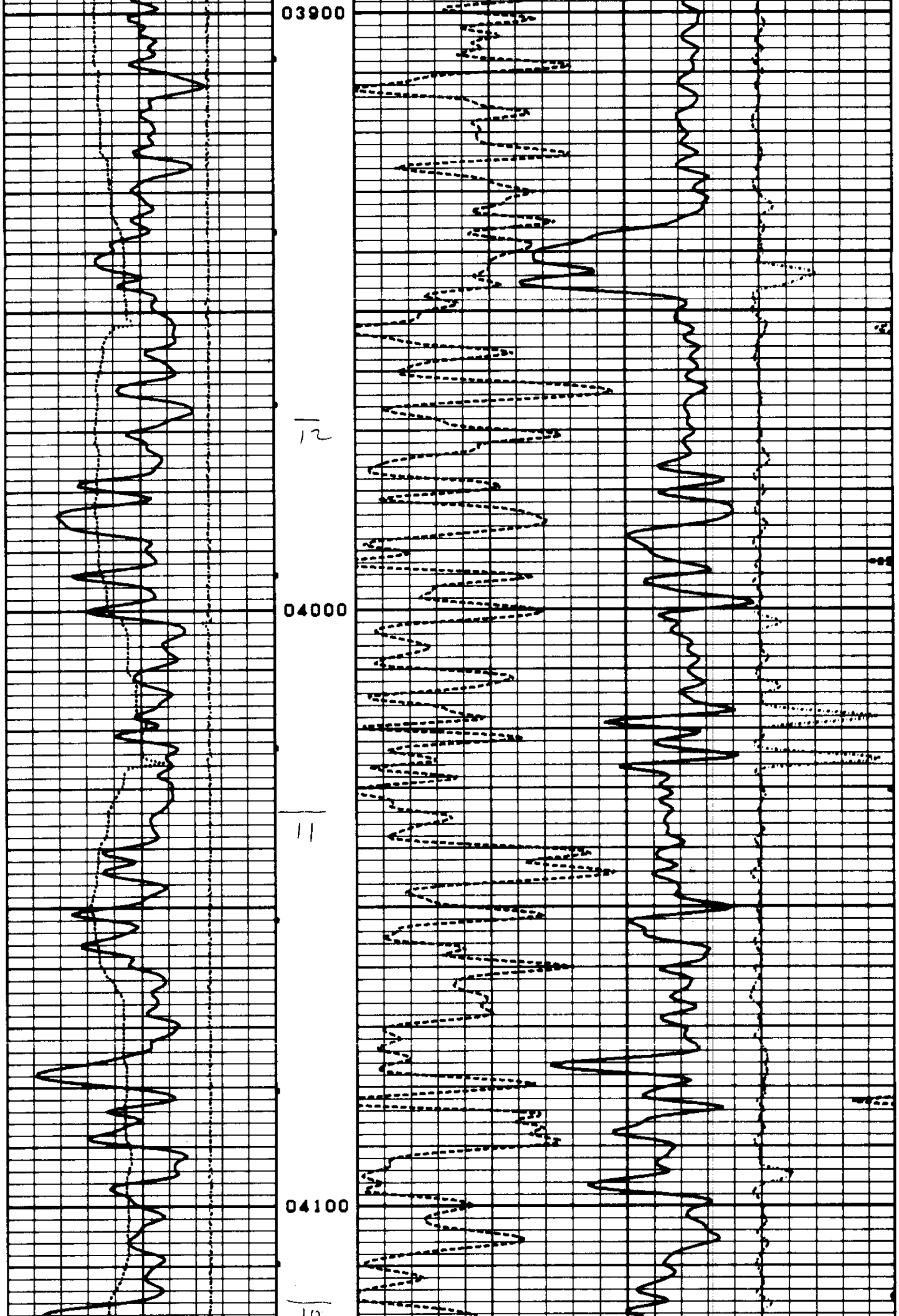
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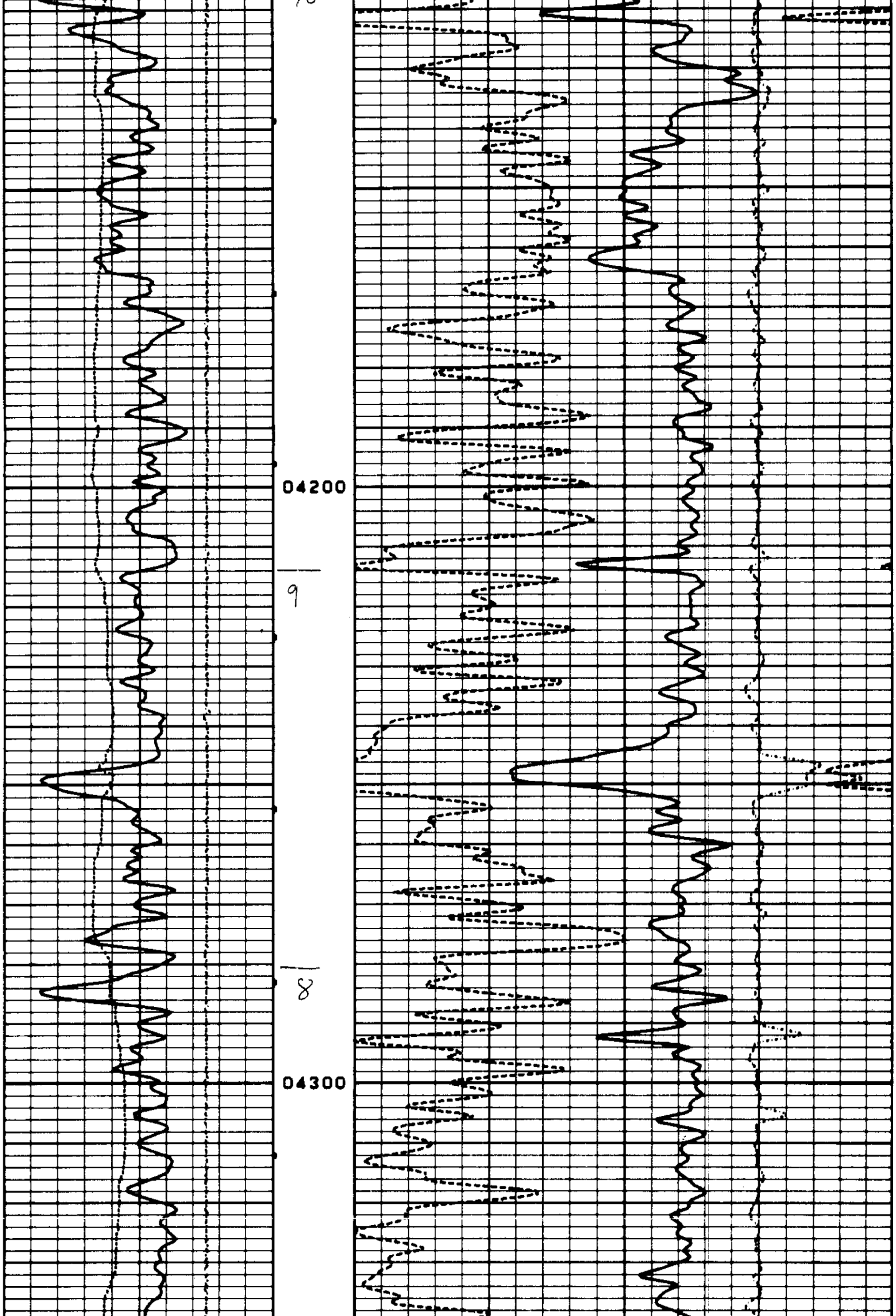
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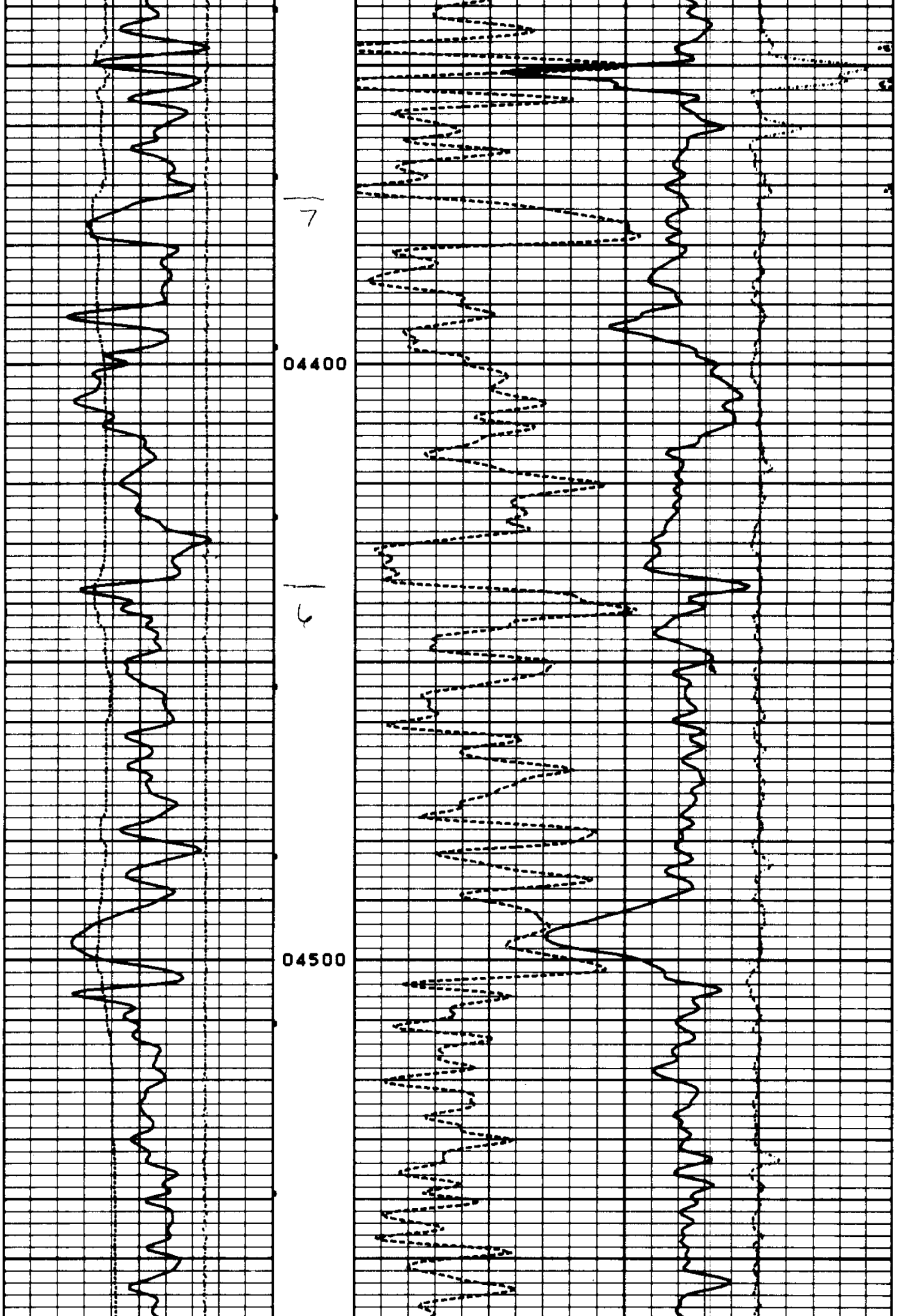
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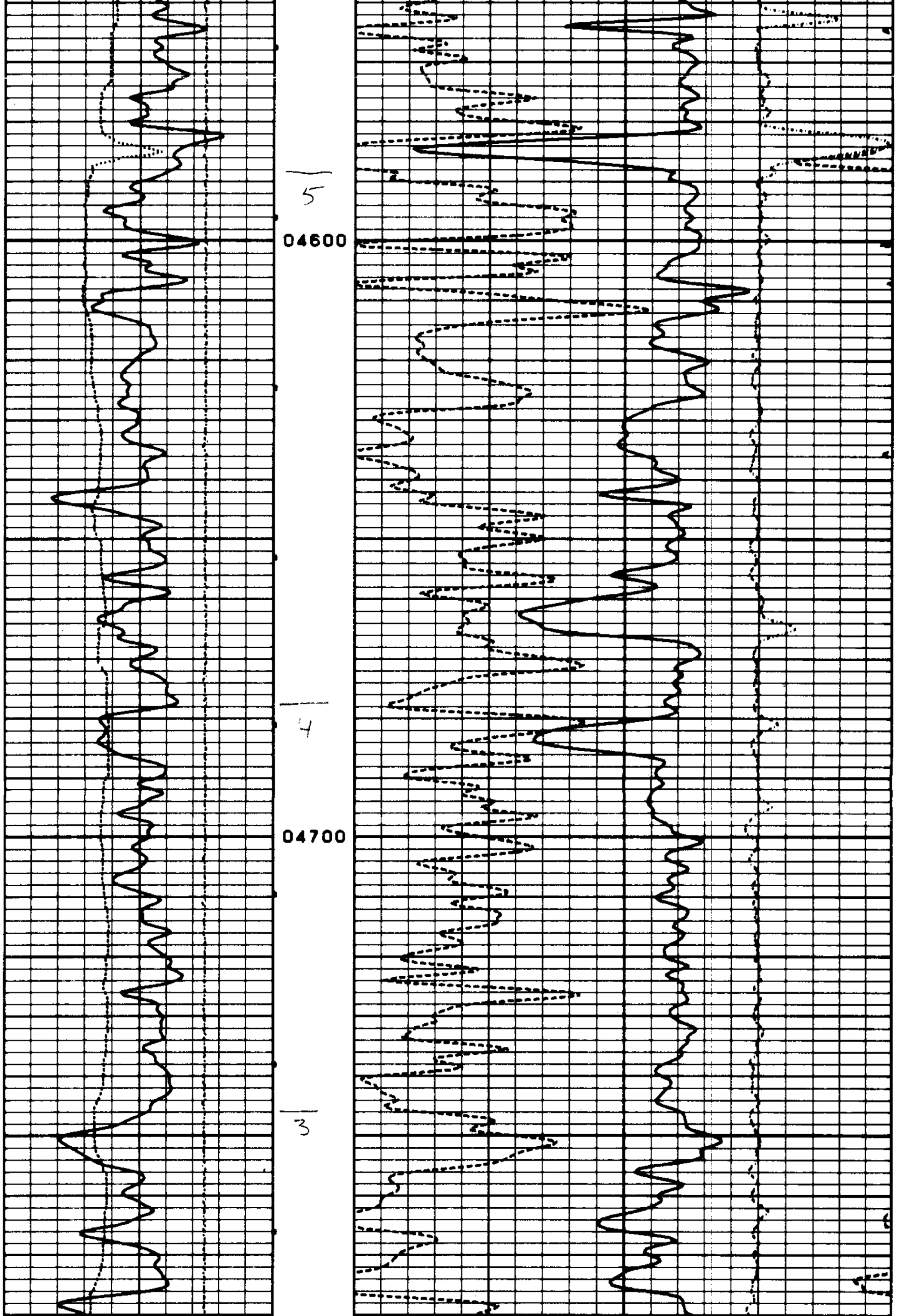
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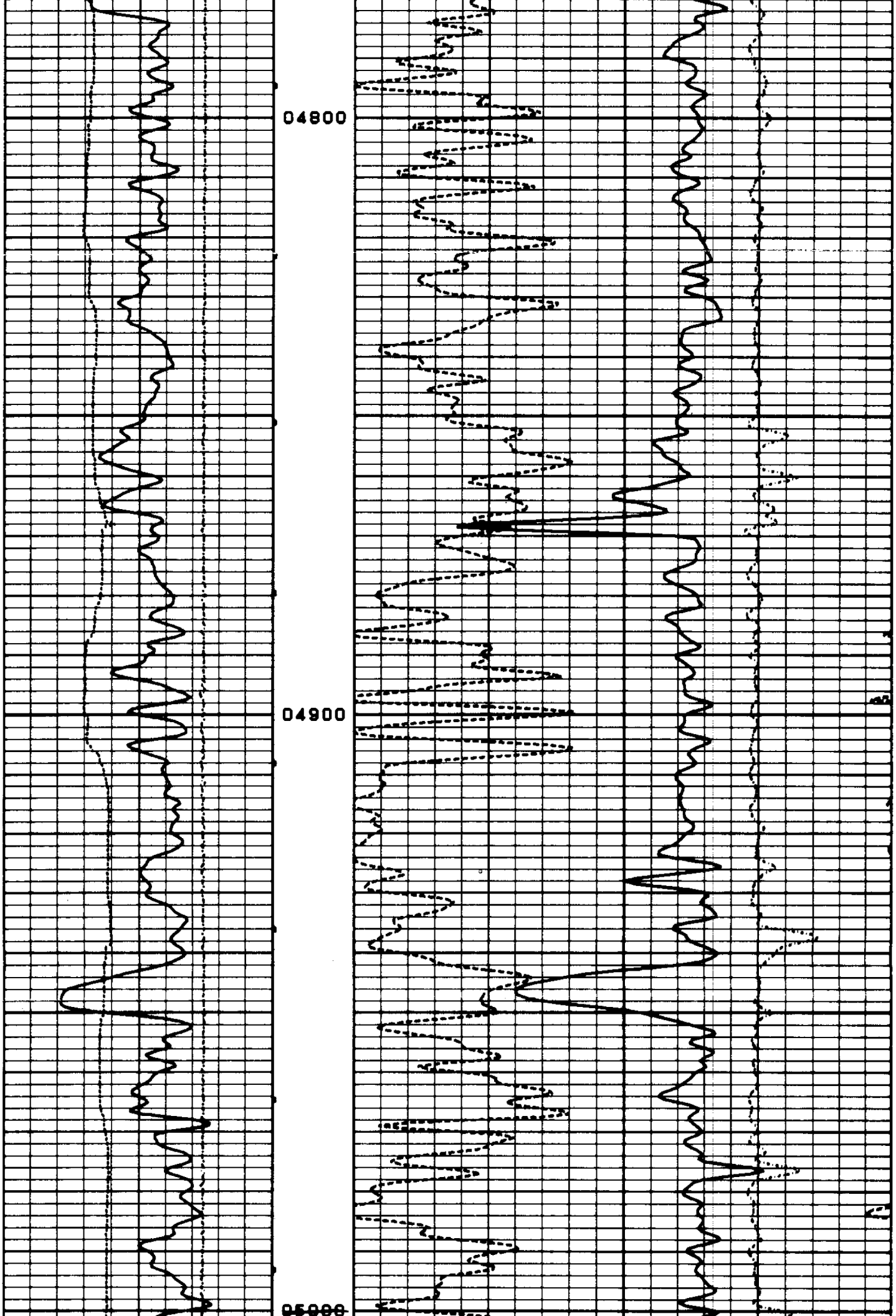
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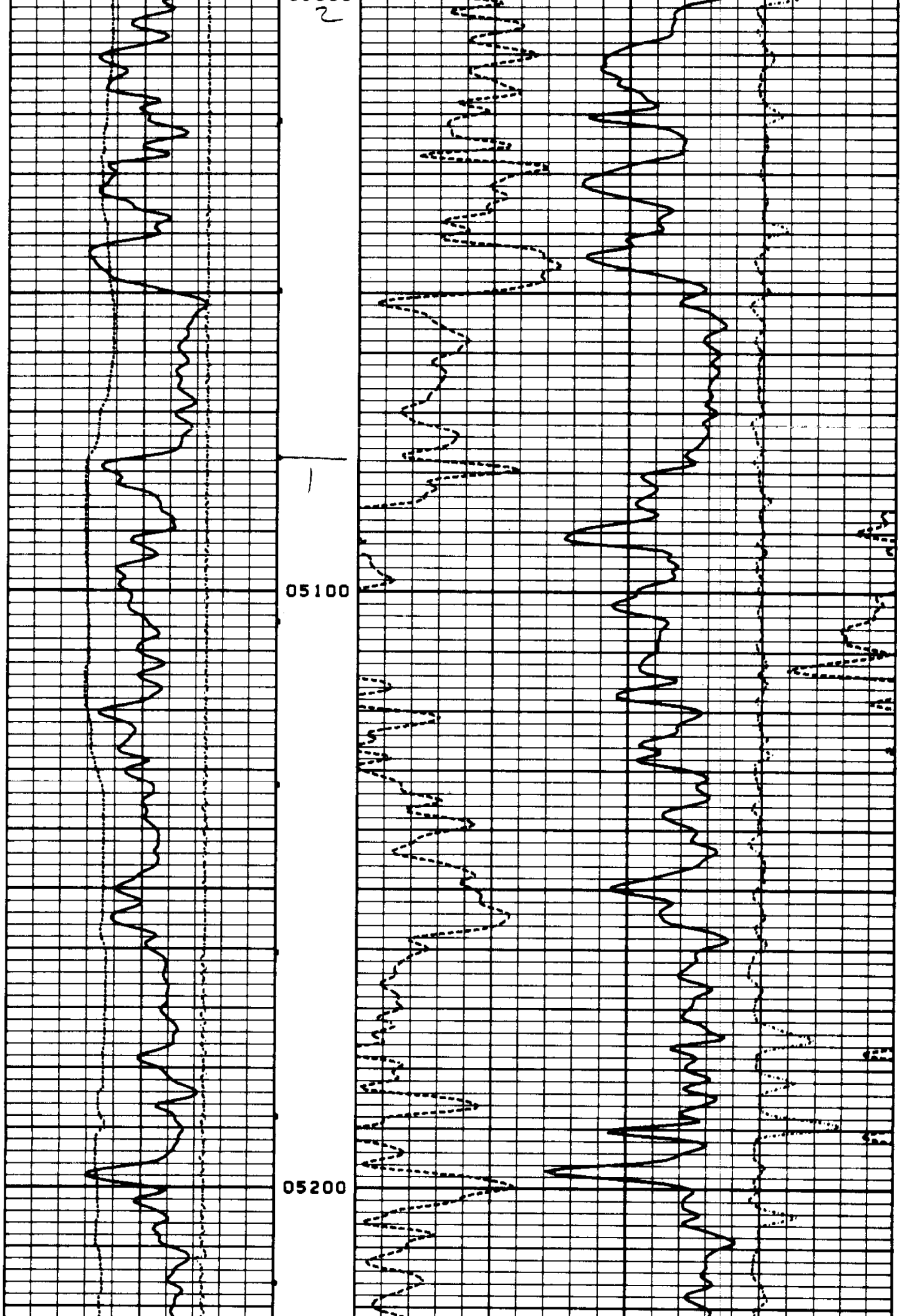
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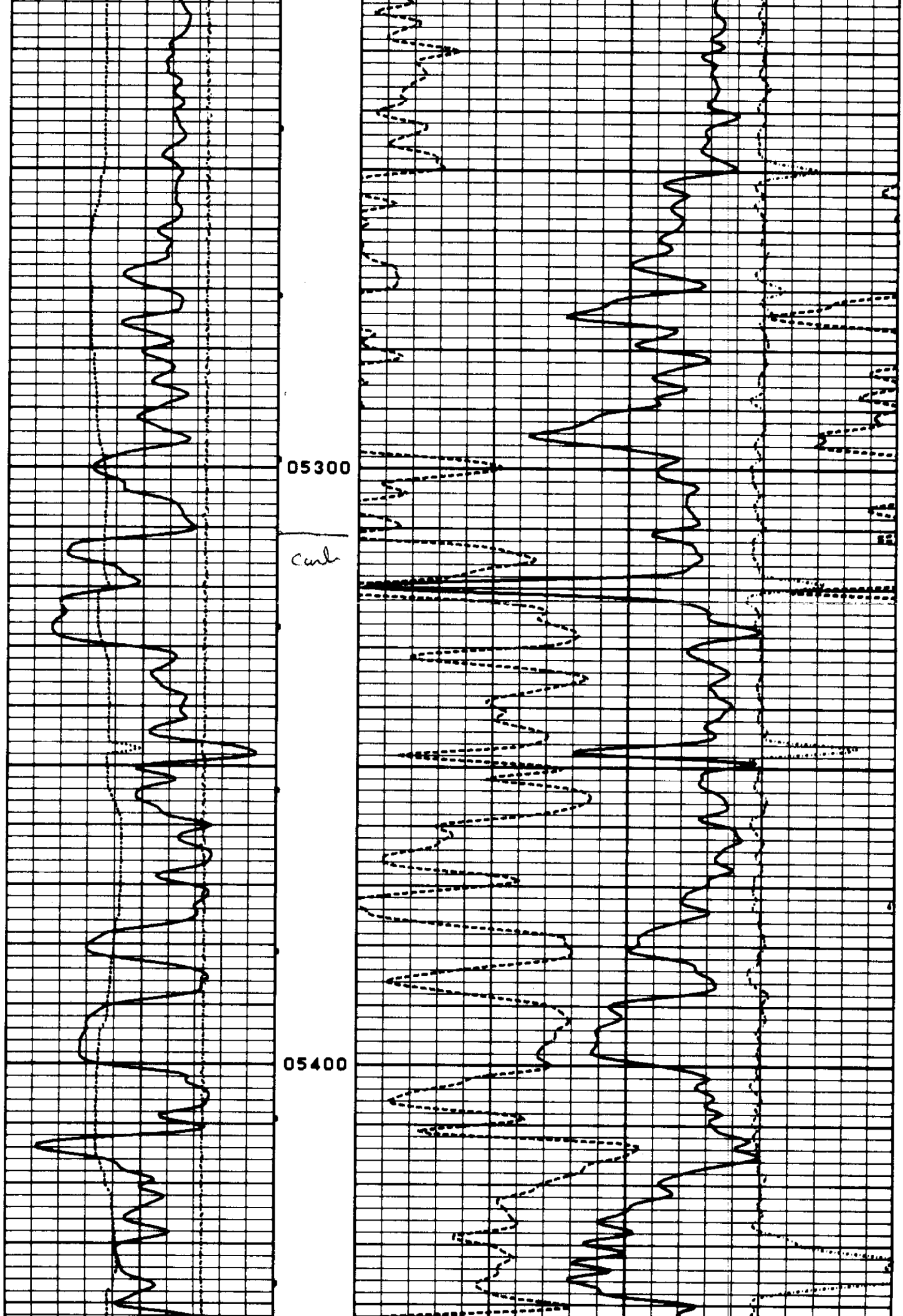
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Cmb
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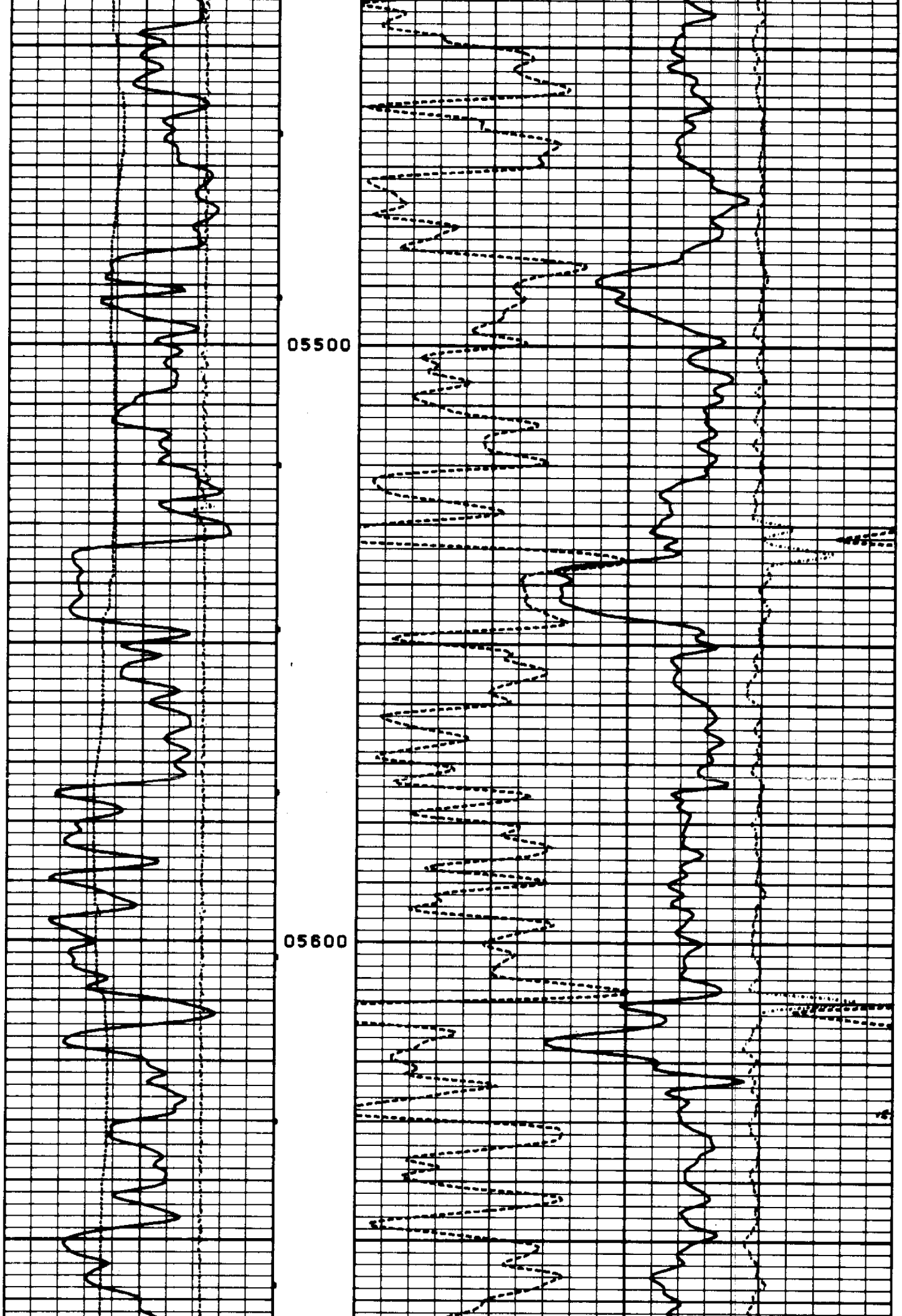
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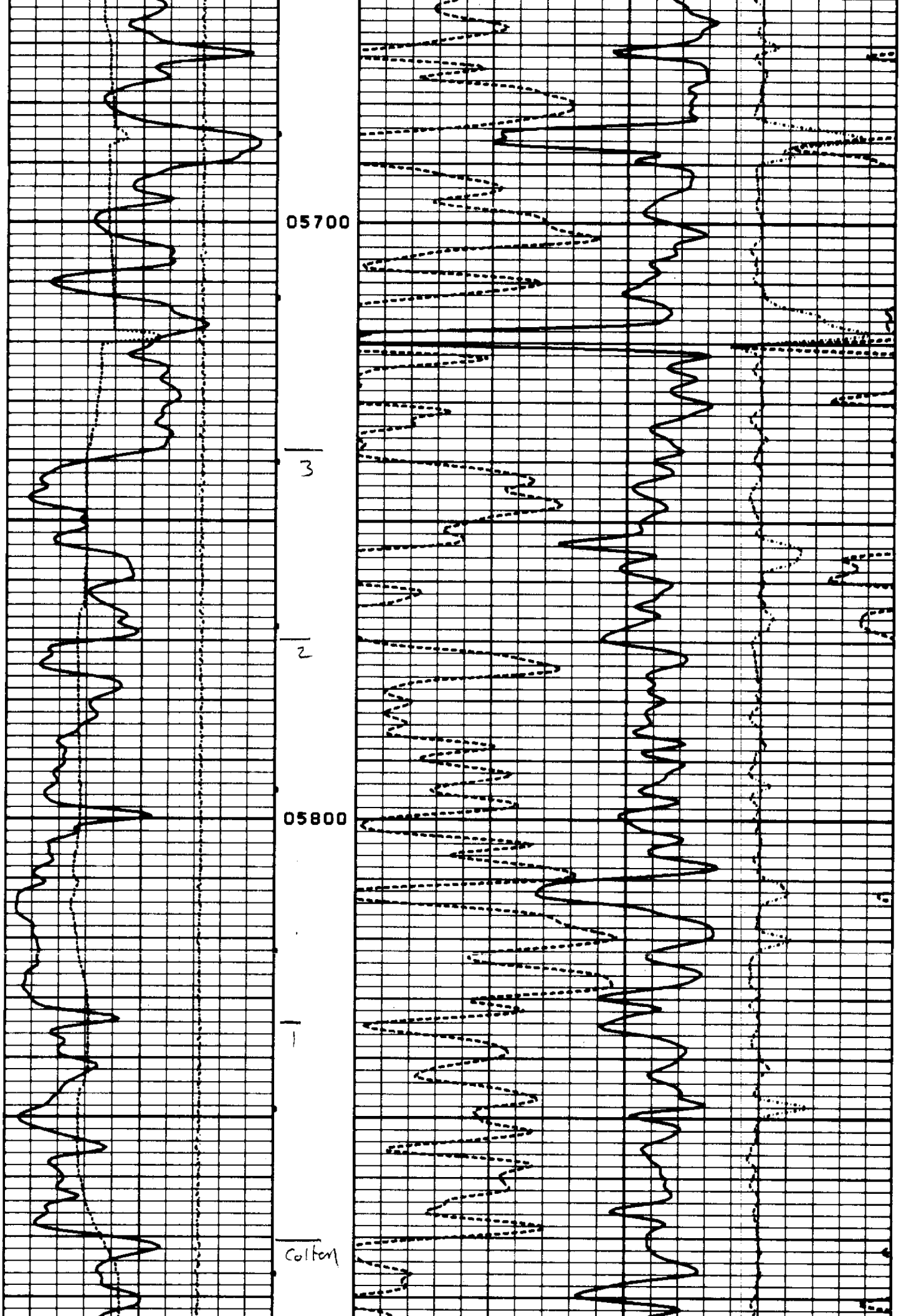
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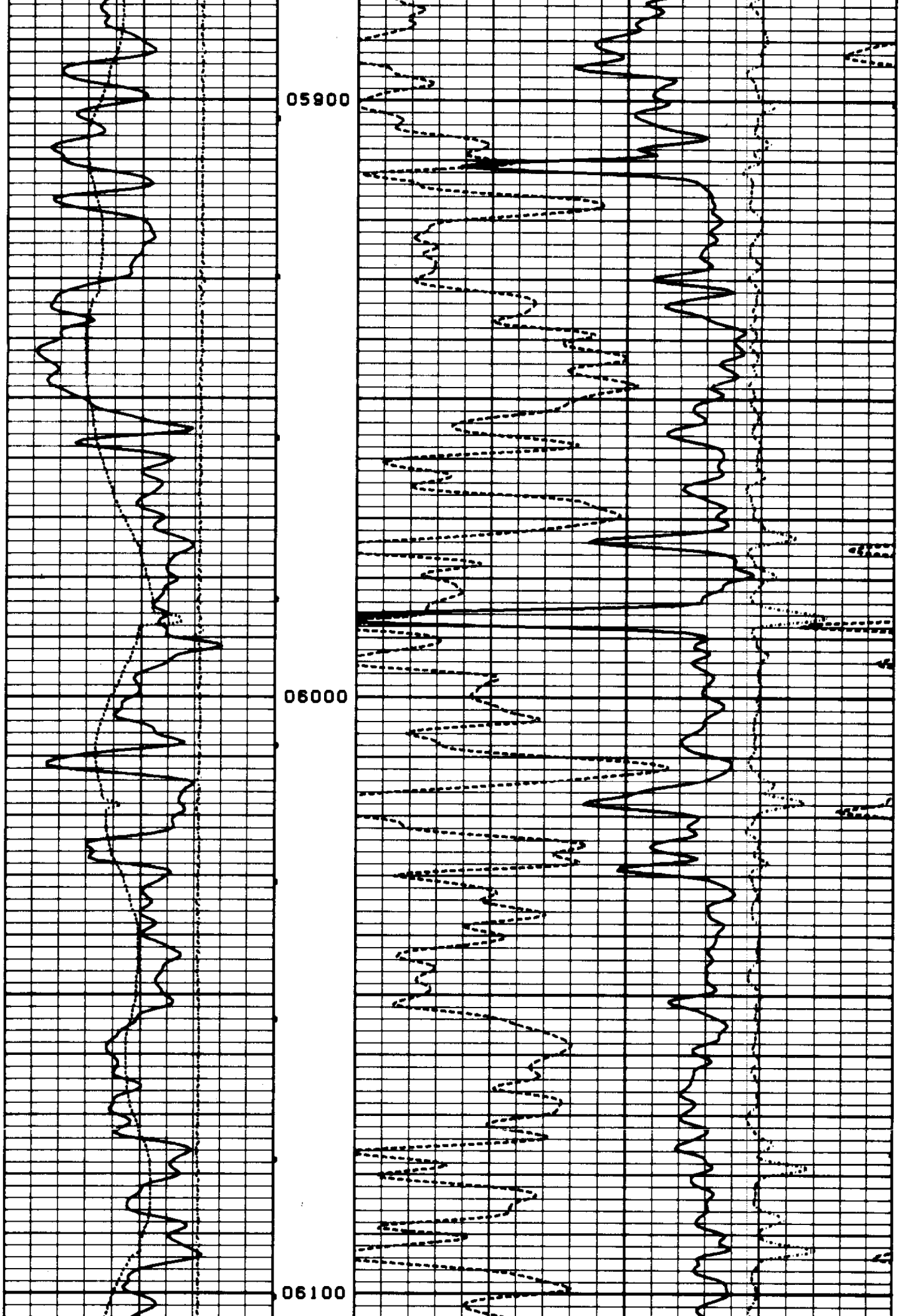
1
Colton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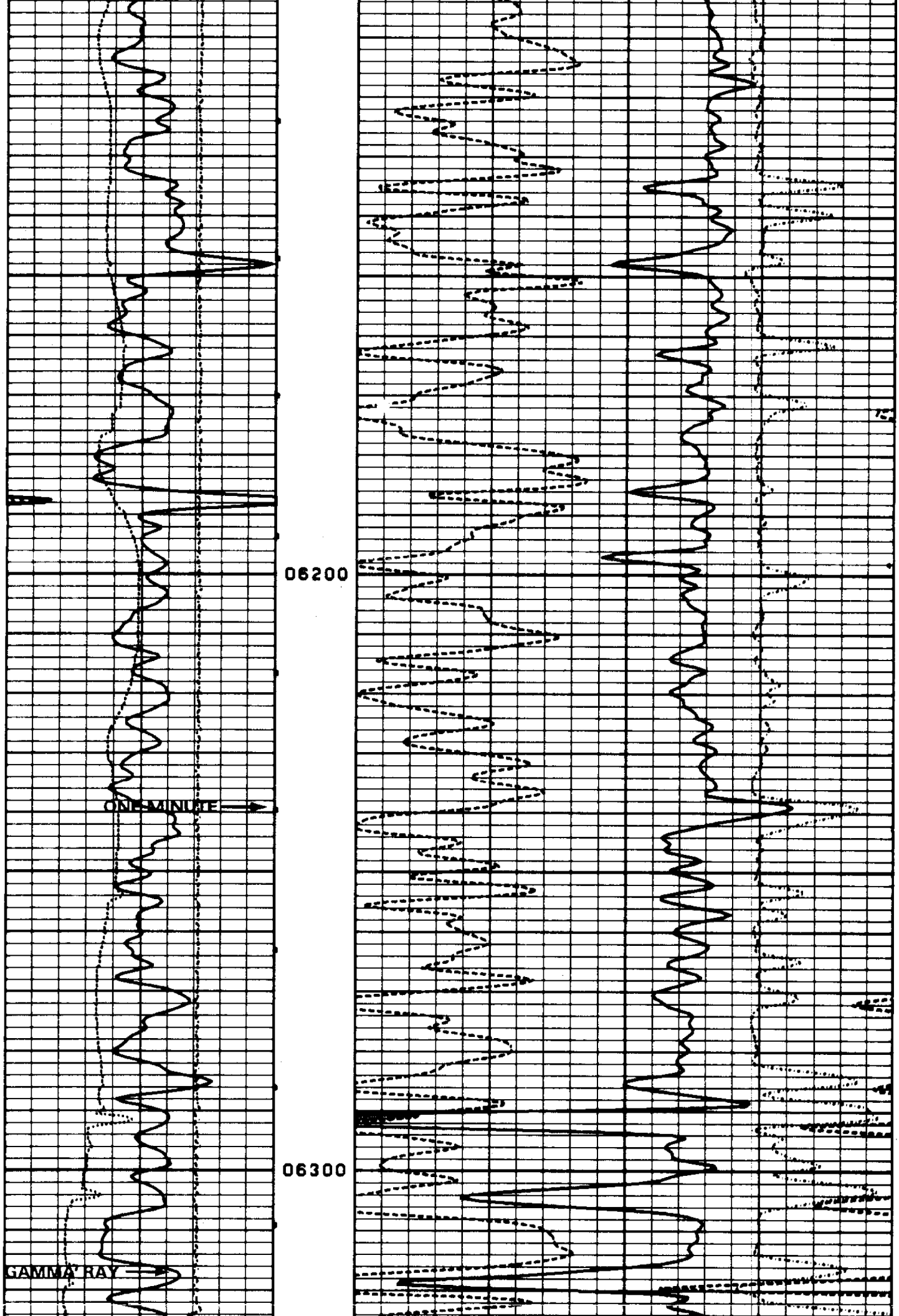
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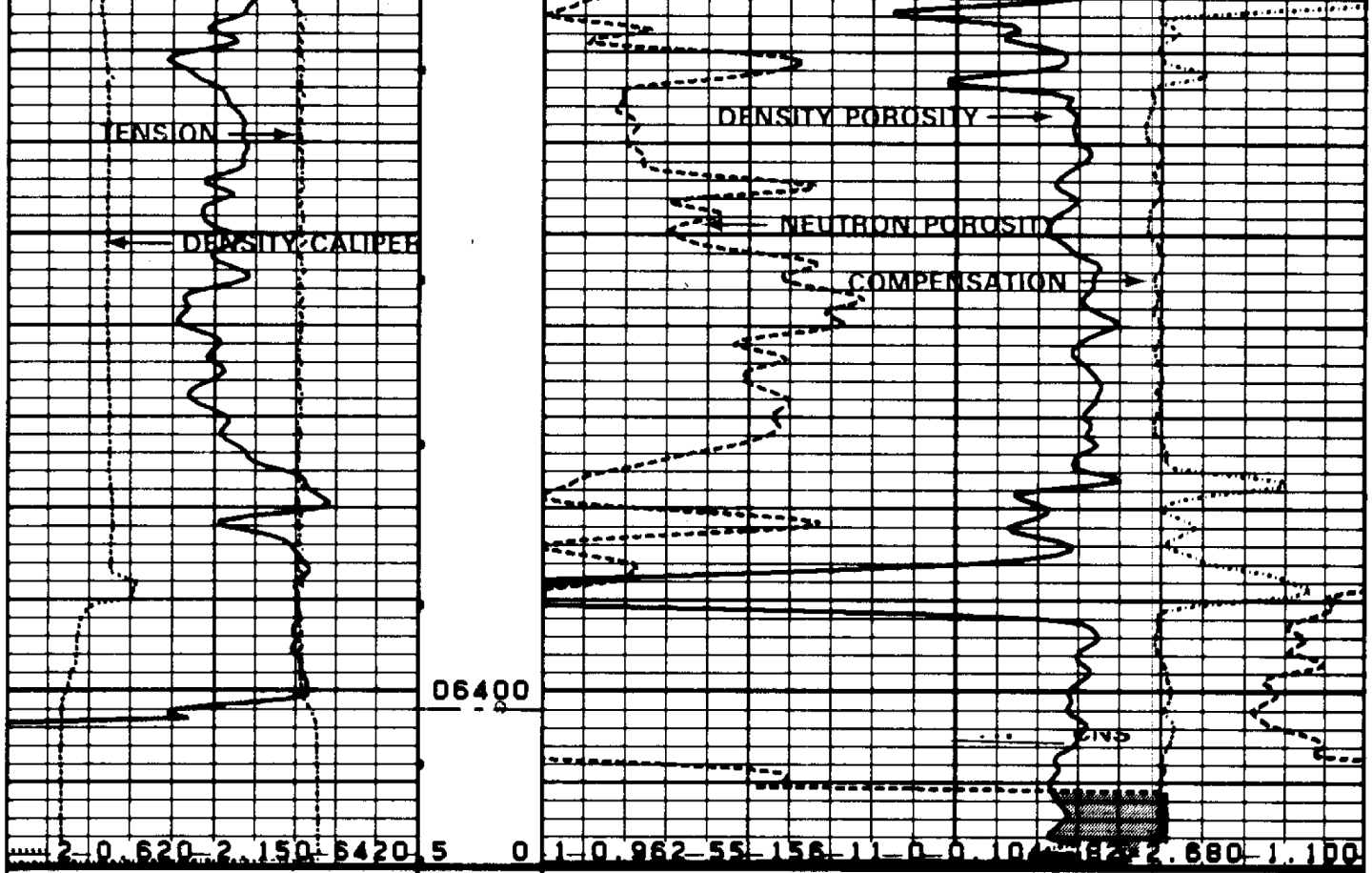
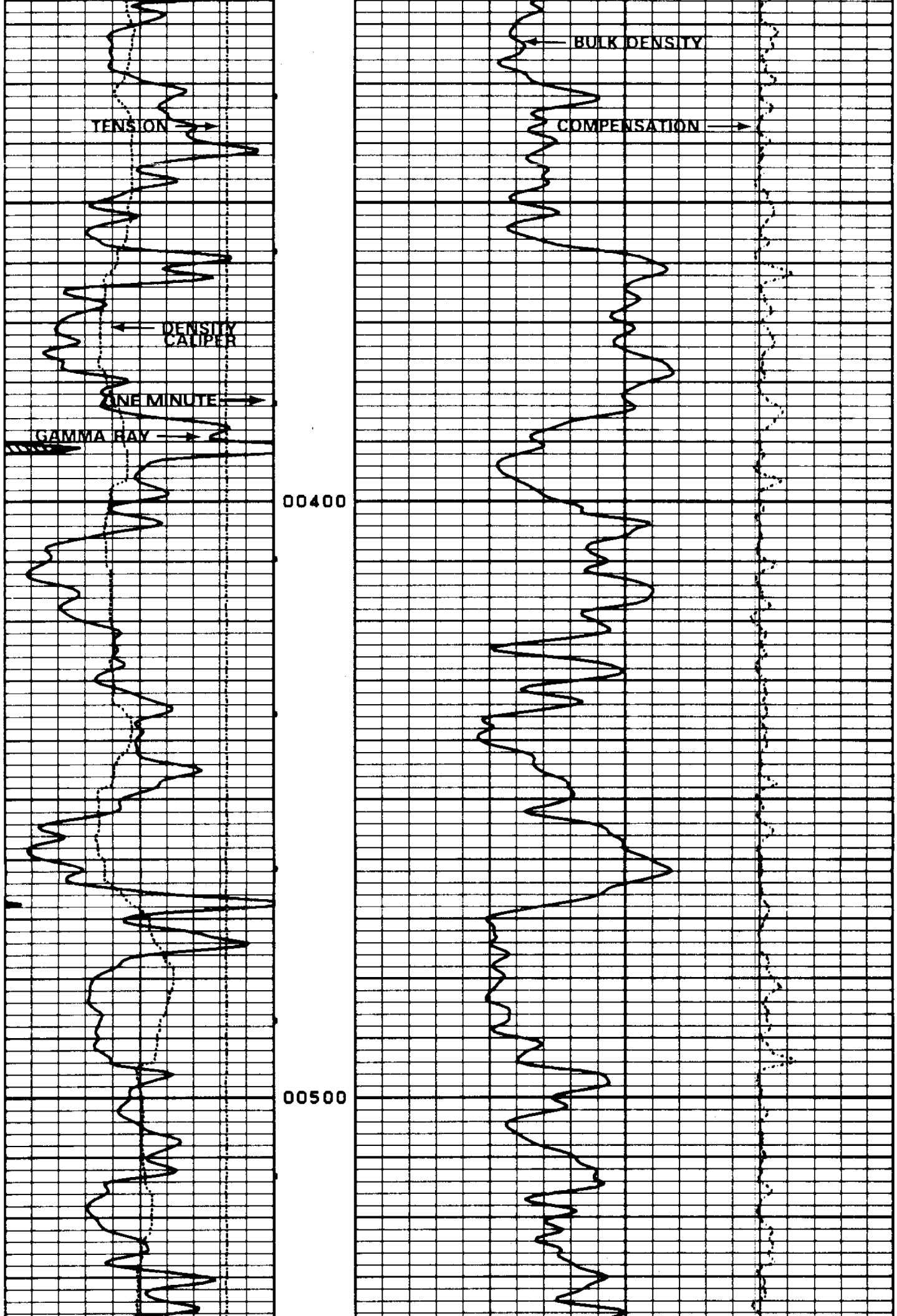
ONE MINUTE
06300
GAMMA RAY

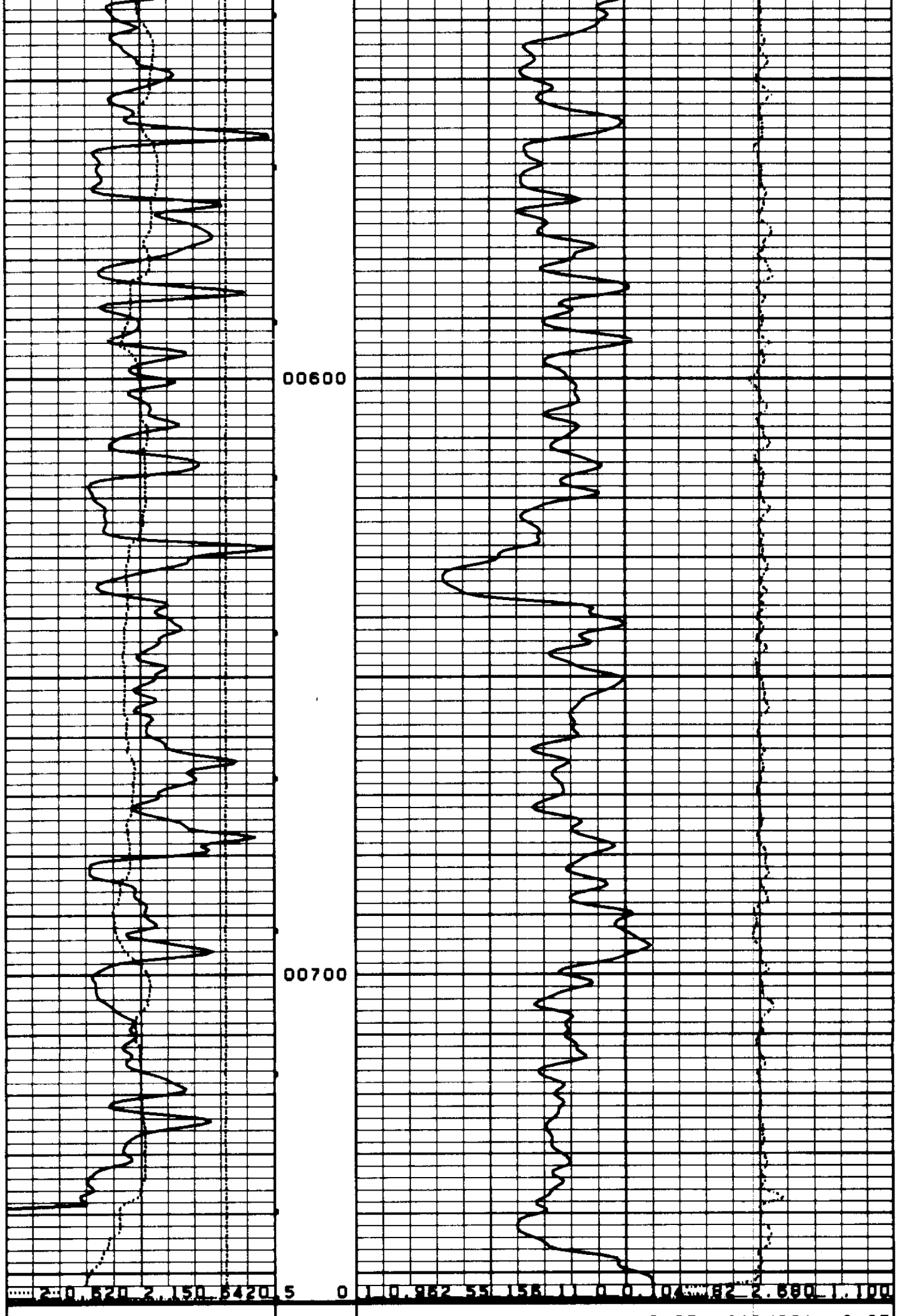


0 GR (API) 200		-0.25 ΔP(G/CC) 0.25
		30 ϕ-CNS.SD -10
6 CAL-X (IN) 16		30 ϕ-CDL -10

12-06-86	17:30	6419.0	359172	0152-05	0	17
12-06-86	19:51	308.5	359172	0152-05	0	18

0 GR (API) 200		-0.25 ΔP(G/CC) 0.25
		2.00 PB(G/CC) 3.00
6 CAL-X (IN) 16		


TENSION
DENSITY
CALIPER
ONE MINUTE
GAMMA RAY
00400
00500
BULK DENSITY
COMPENSATION


00600
00700

-0.25 ΔP(G/CC) 0.25

0 GR (API) 200

2.00 ρB(G/CC) 3.00

6 CAL-X (IN) 16

12-06-86 19:35 754.5 359172 0152-05 0 18

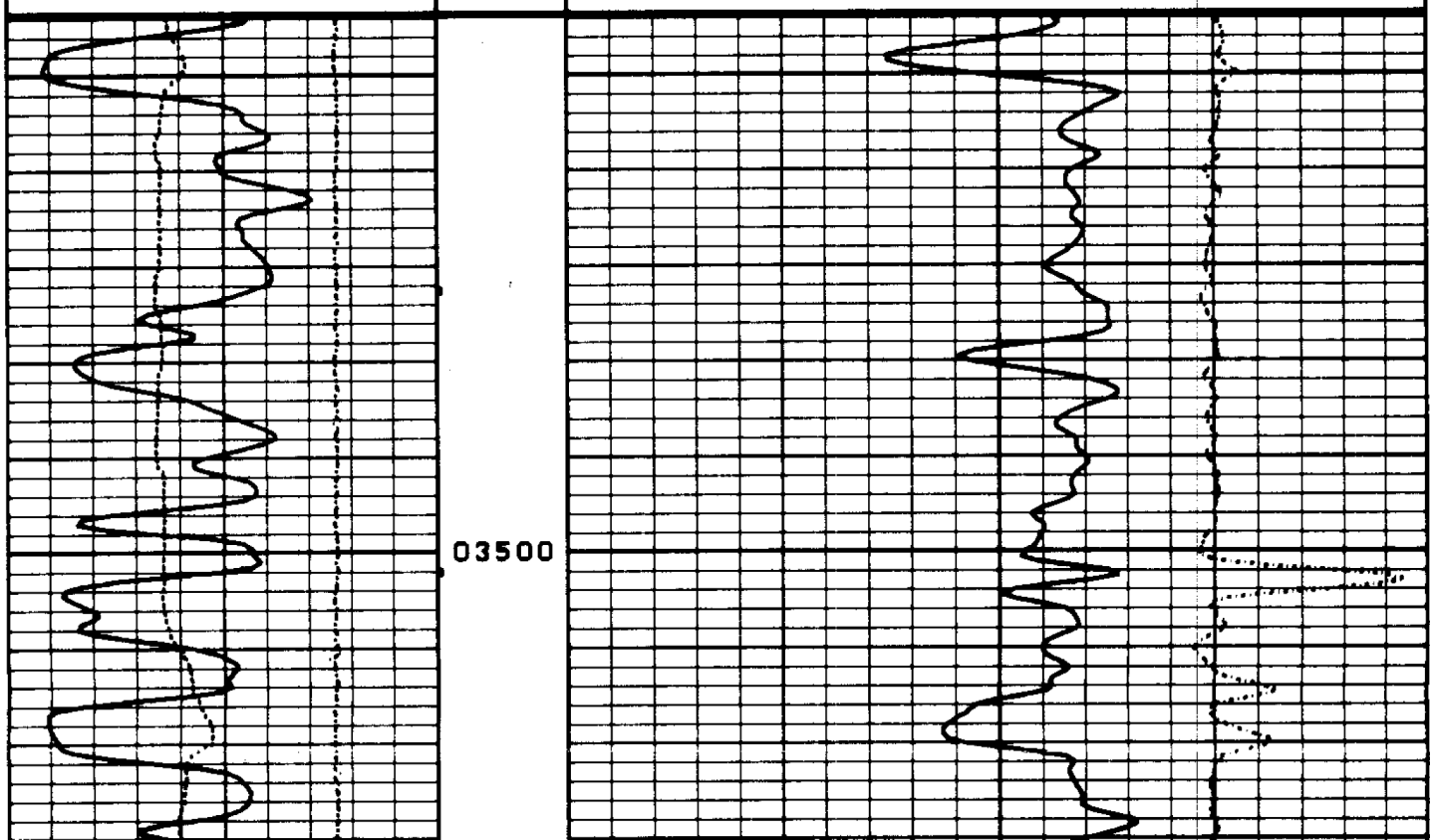
12-06-86 19:18 3443.5 359172 0152-05 0 17

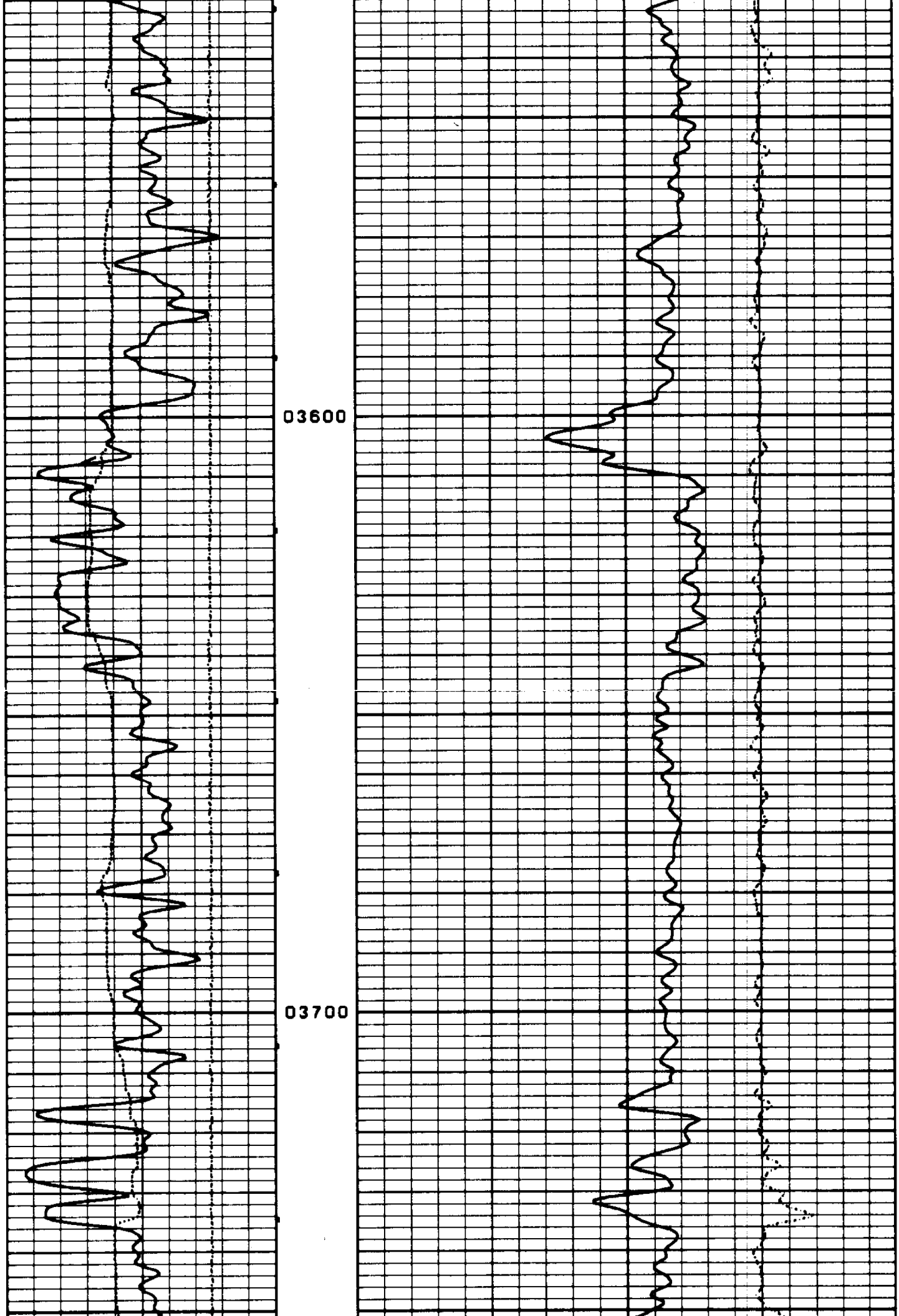
-0.25 ΔP(G/CC) 0.25

0 GR (API) 200

2.00 ρB(G/CC) 3.00

6 CAL-X (IN) 16

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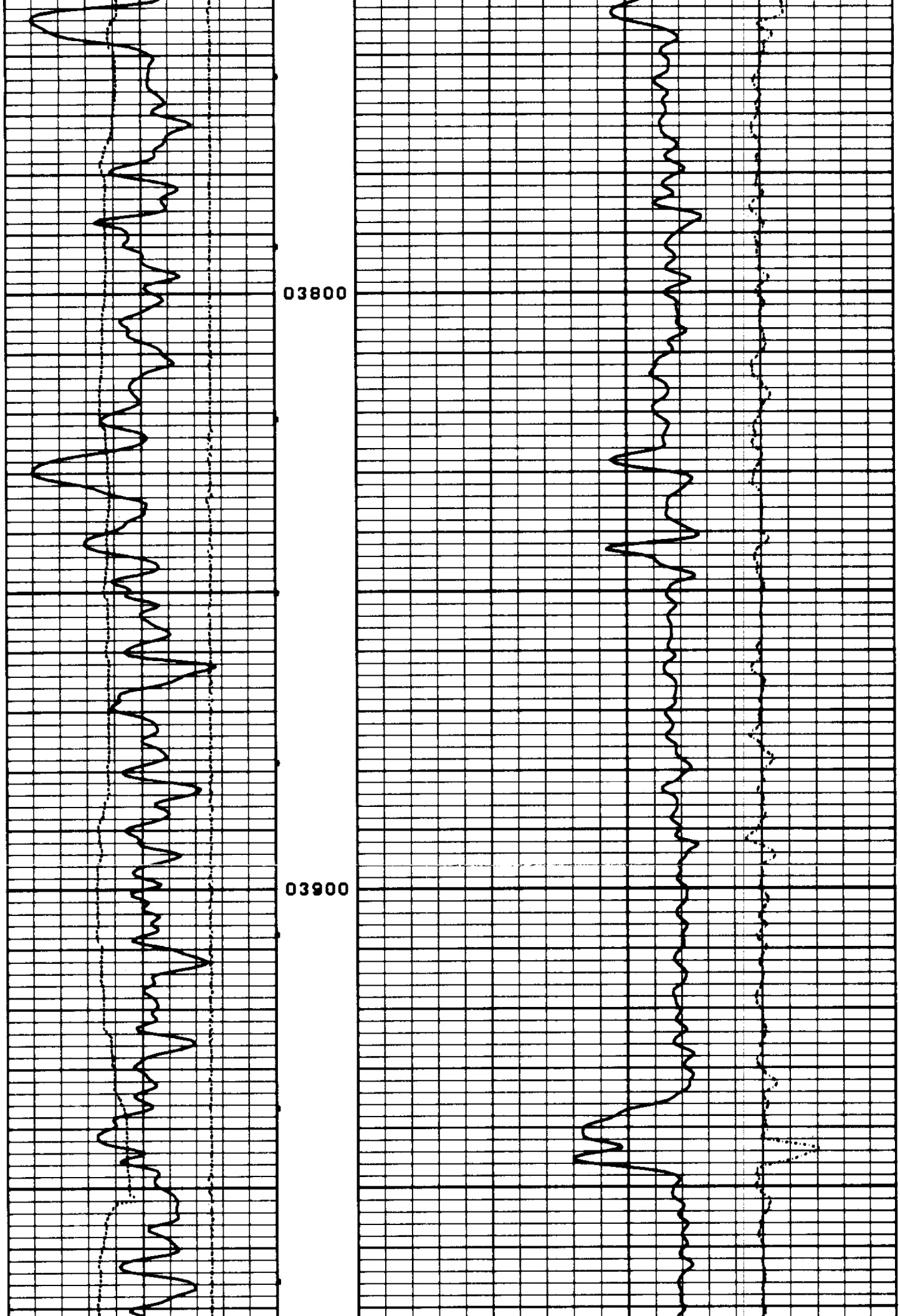
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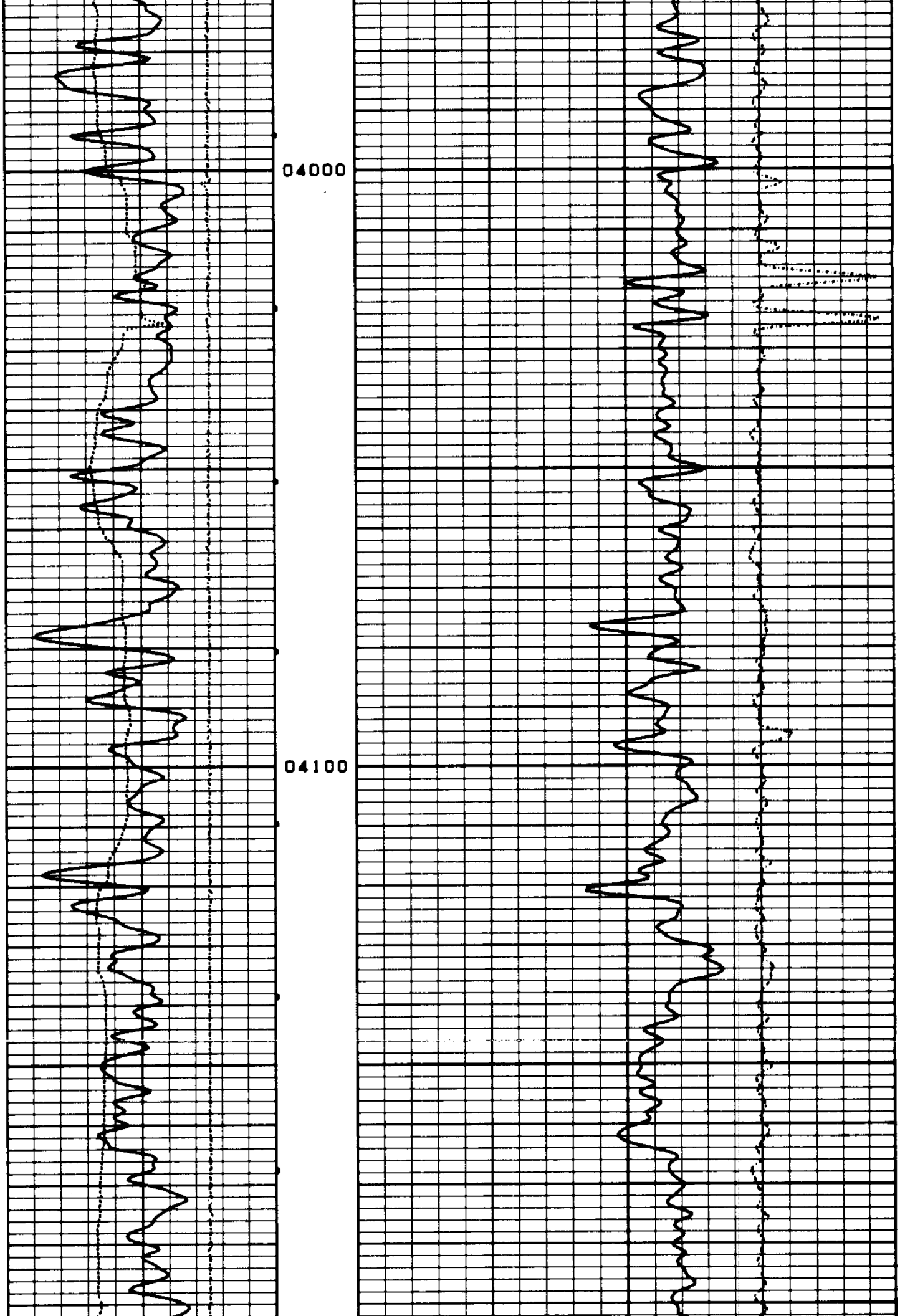
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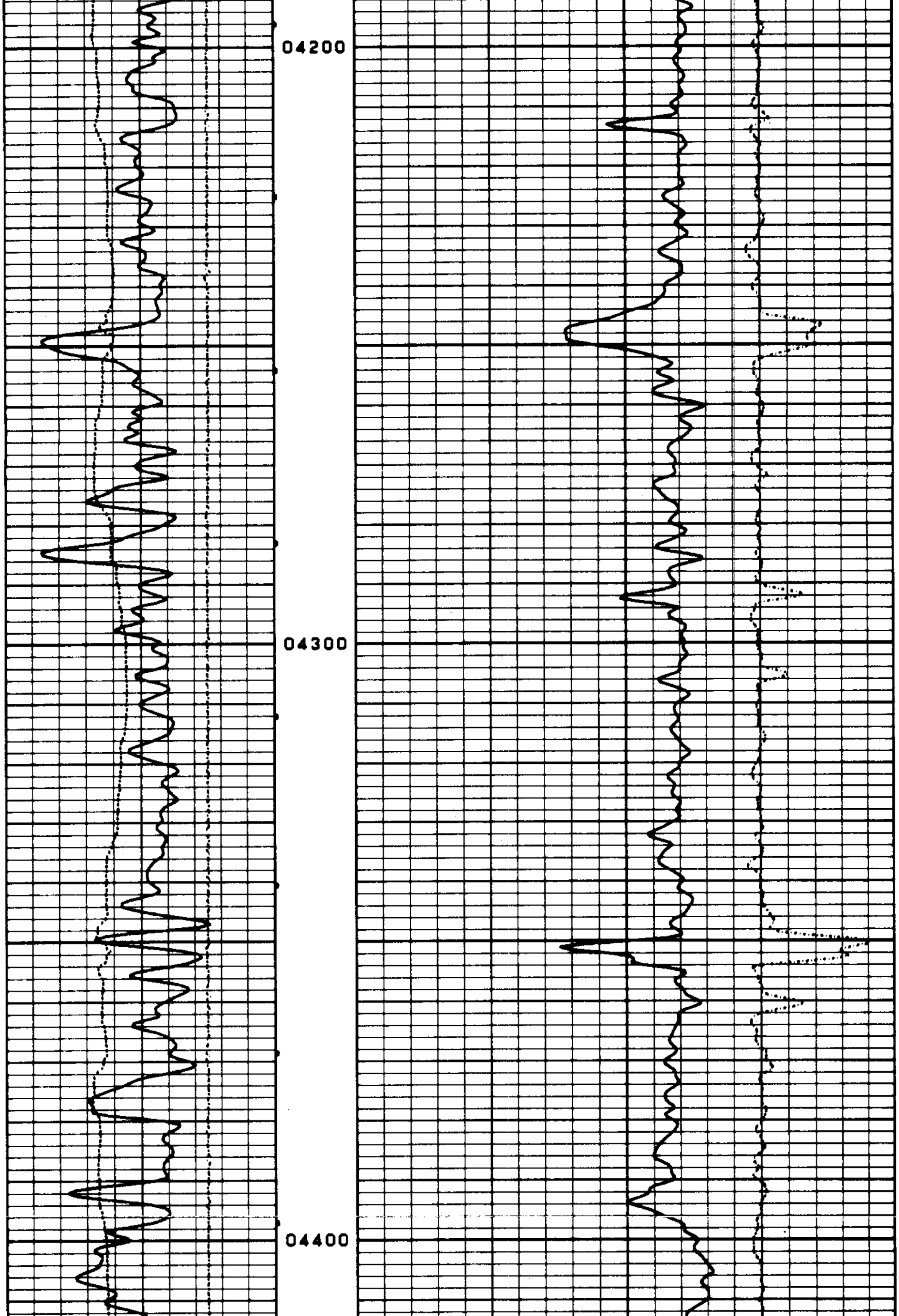
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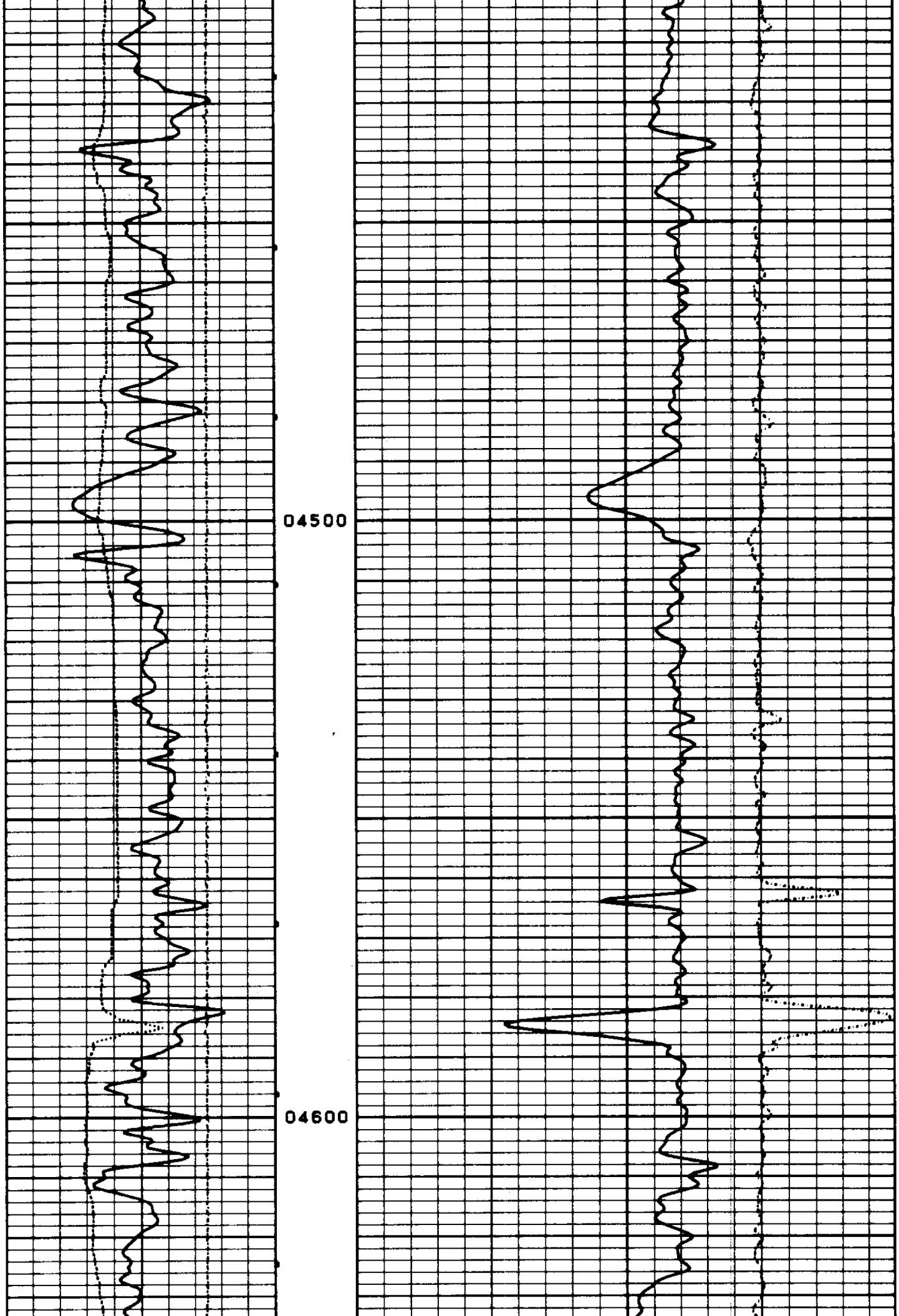
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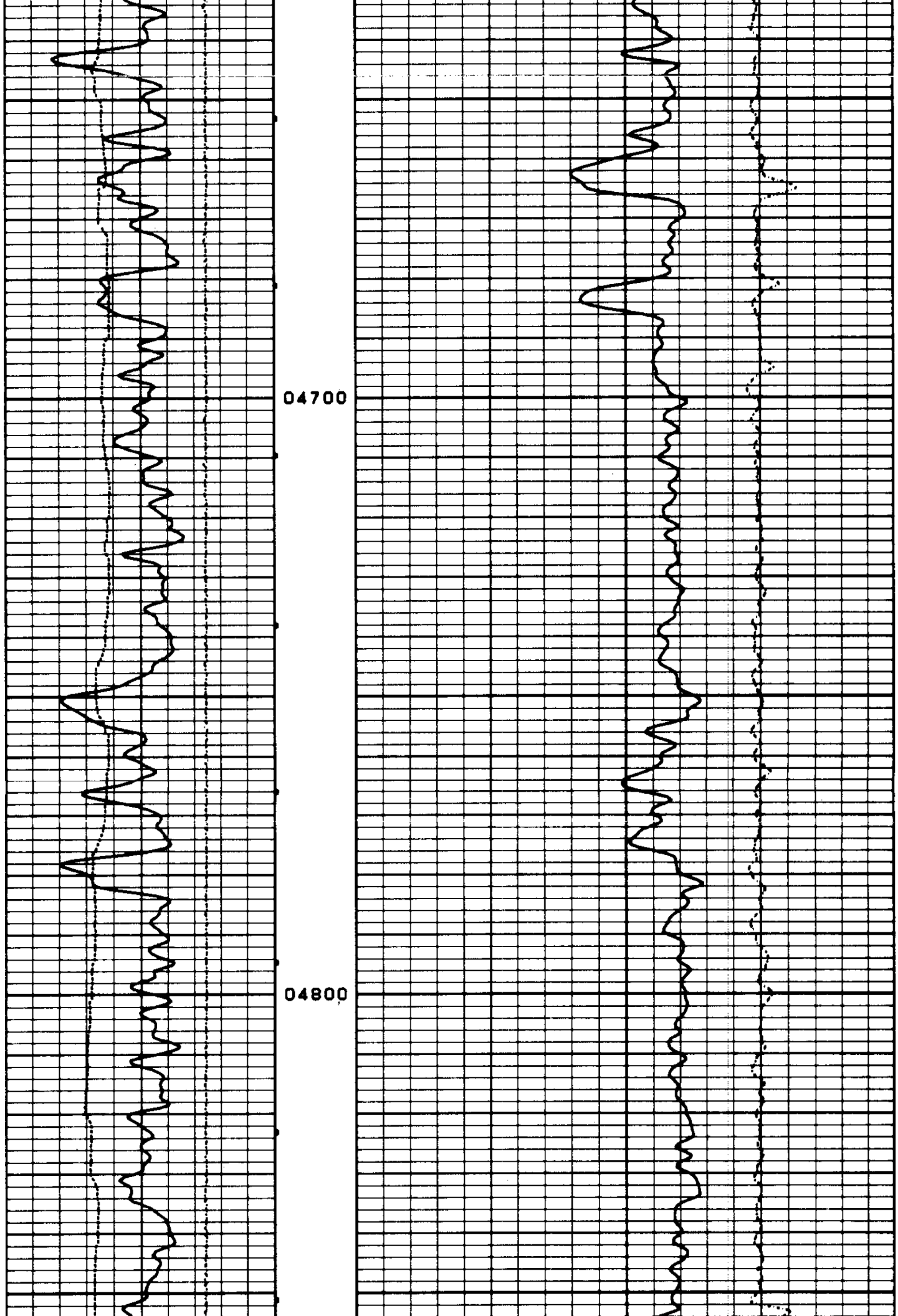
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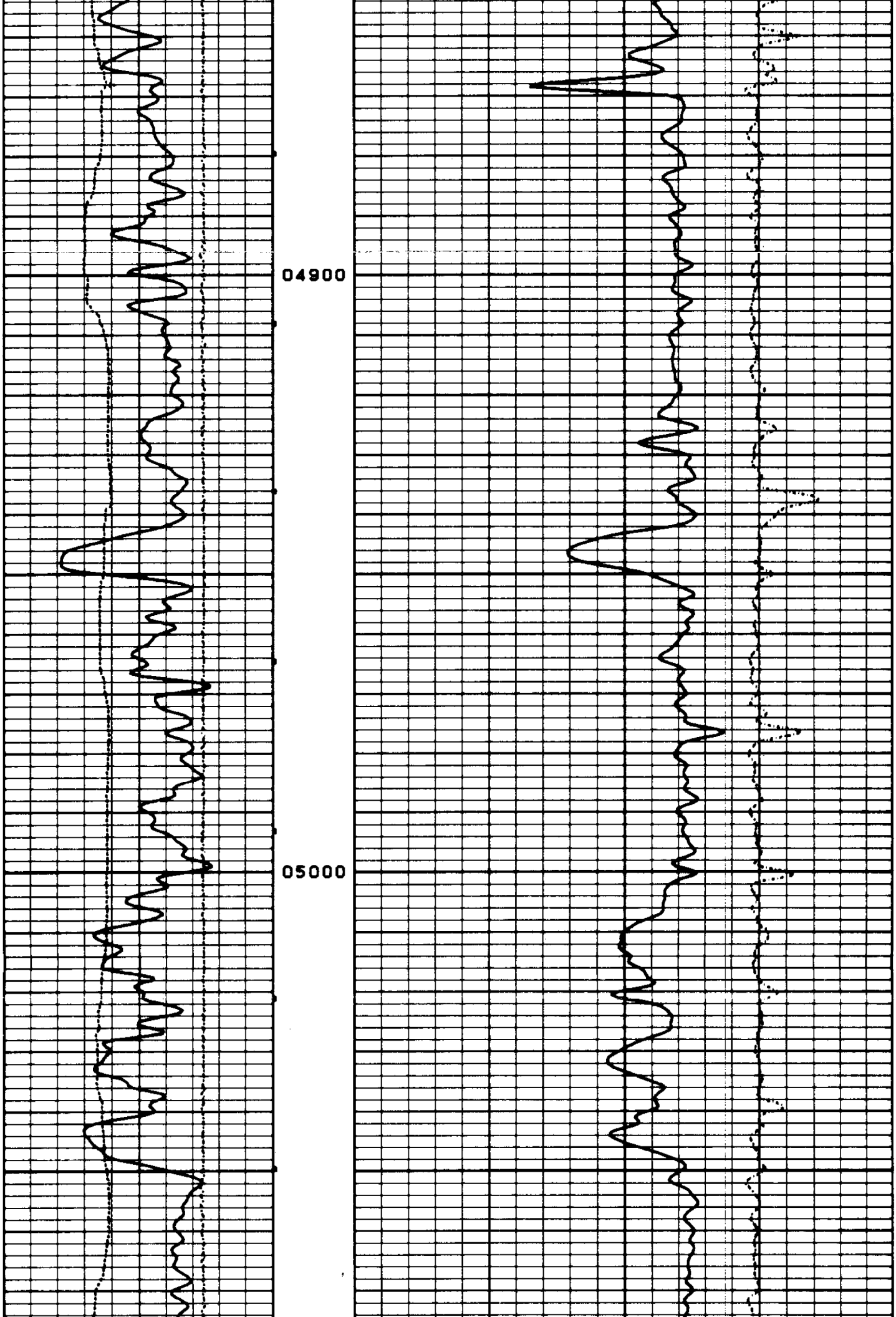
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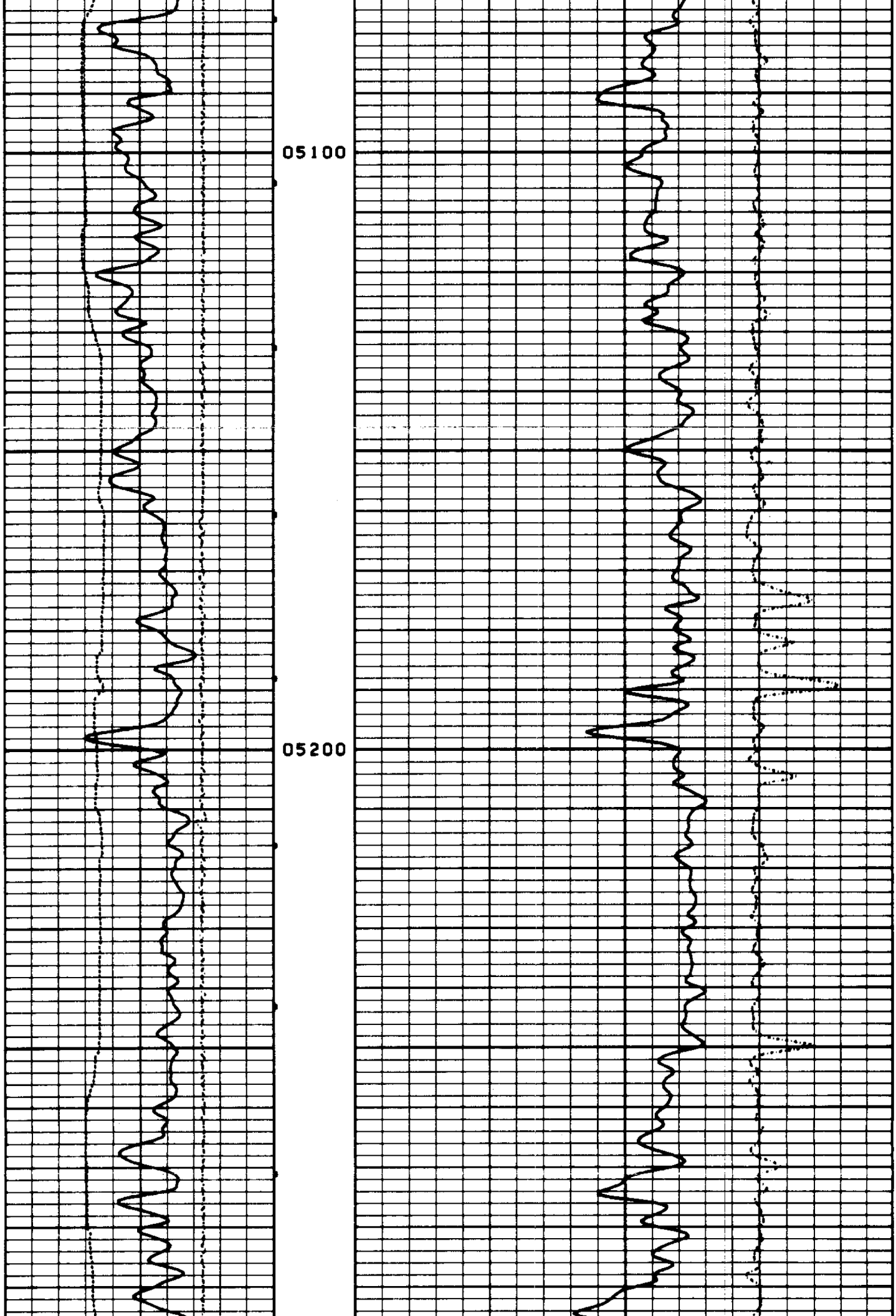
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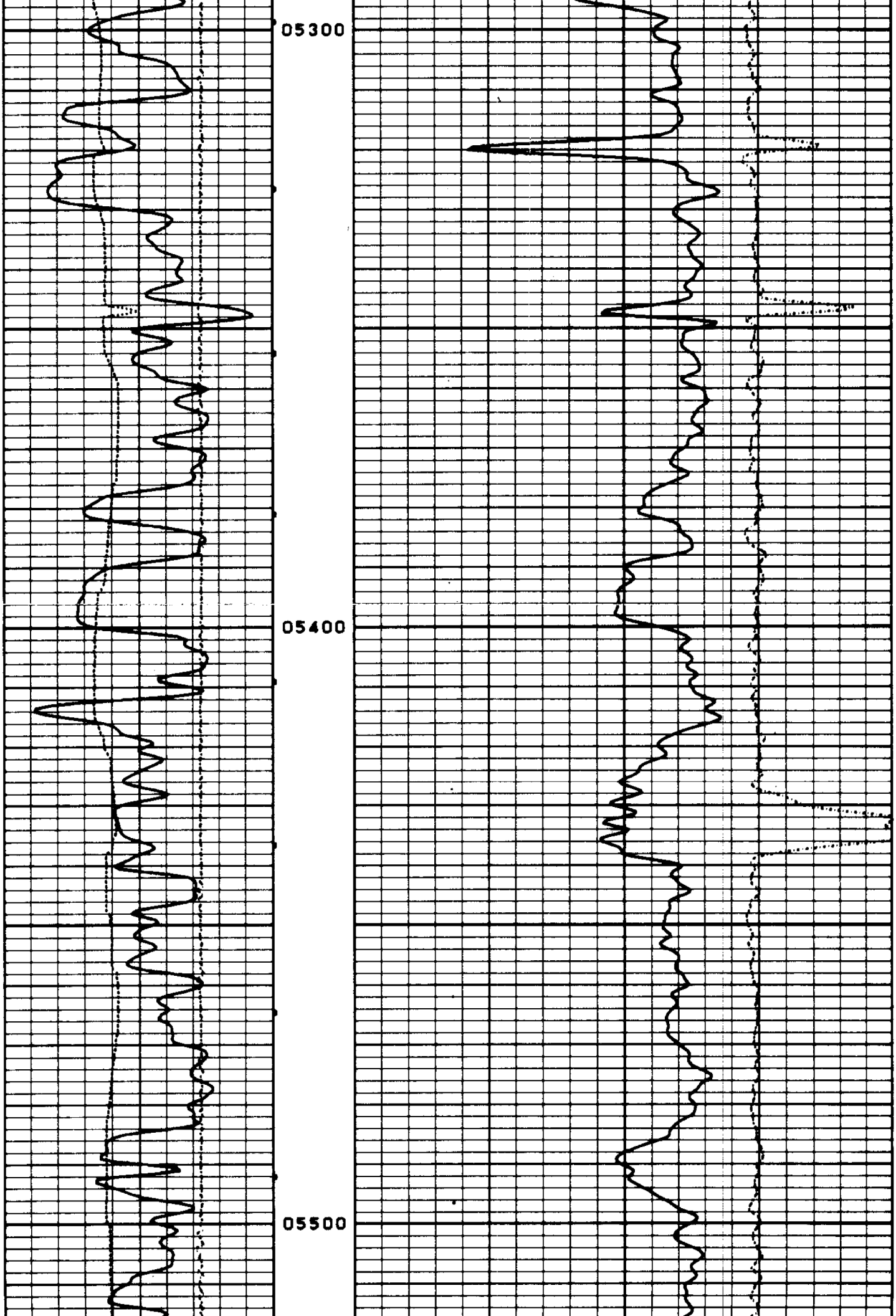
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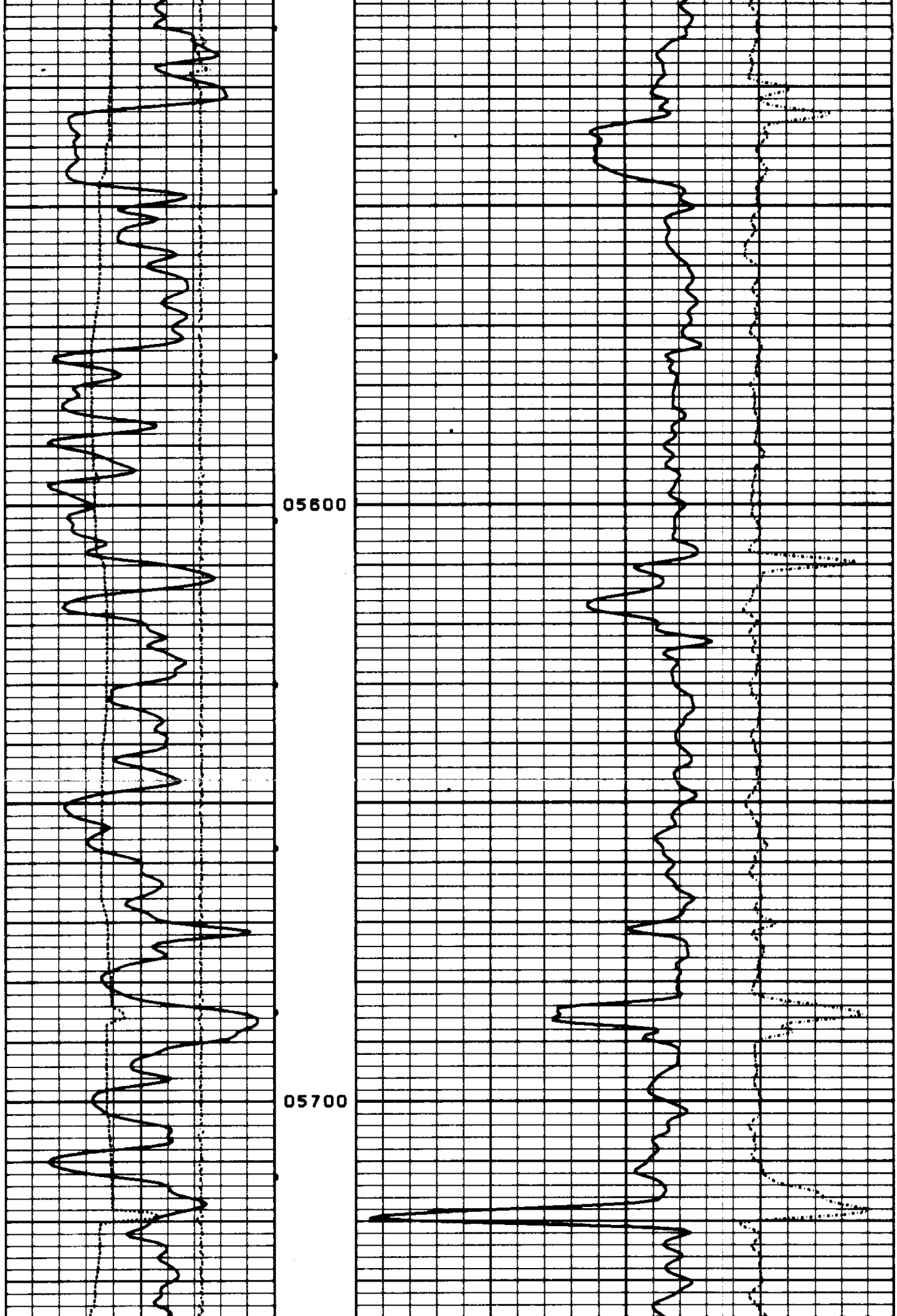
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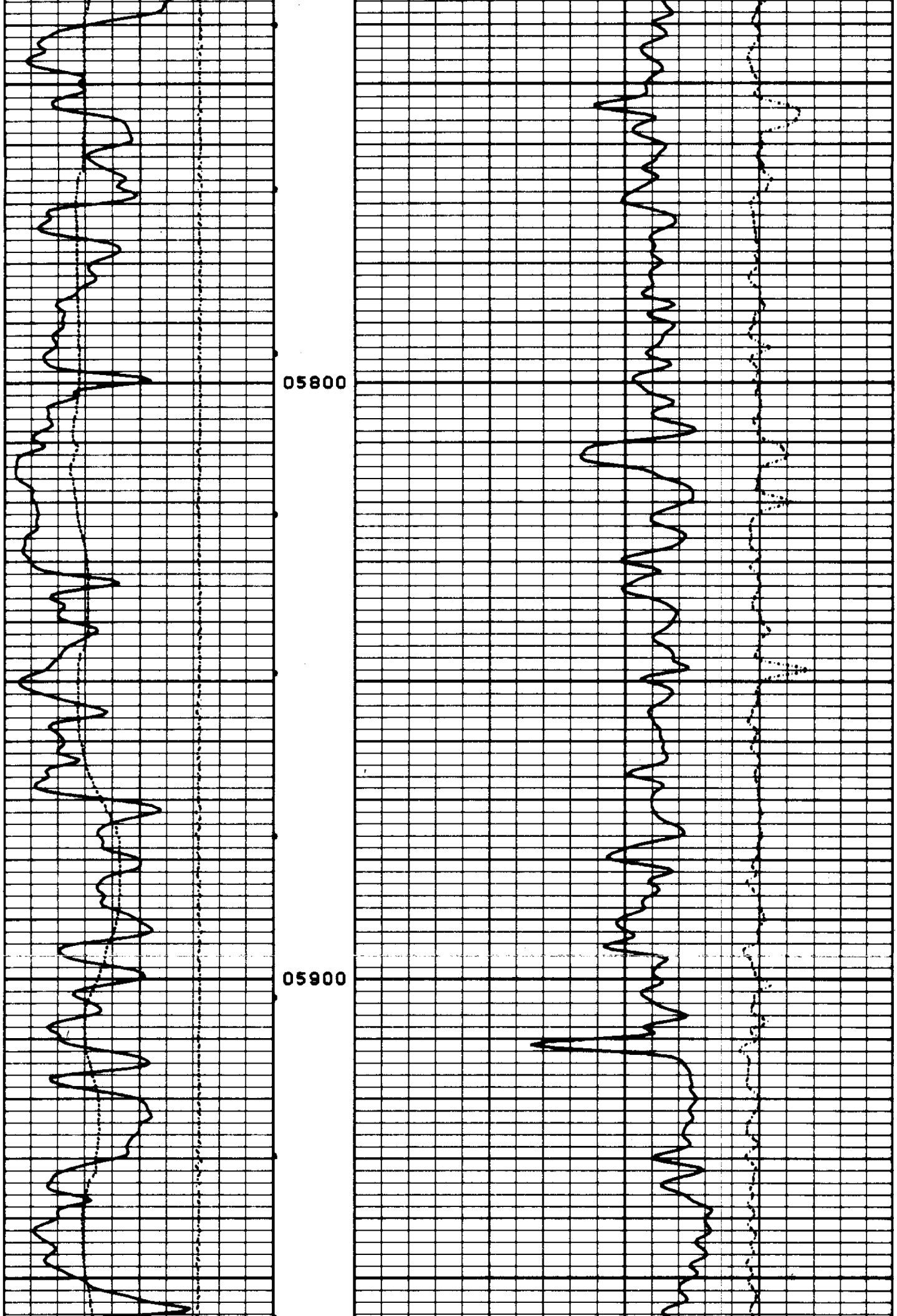
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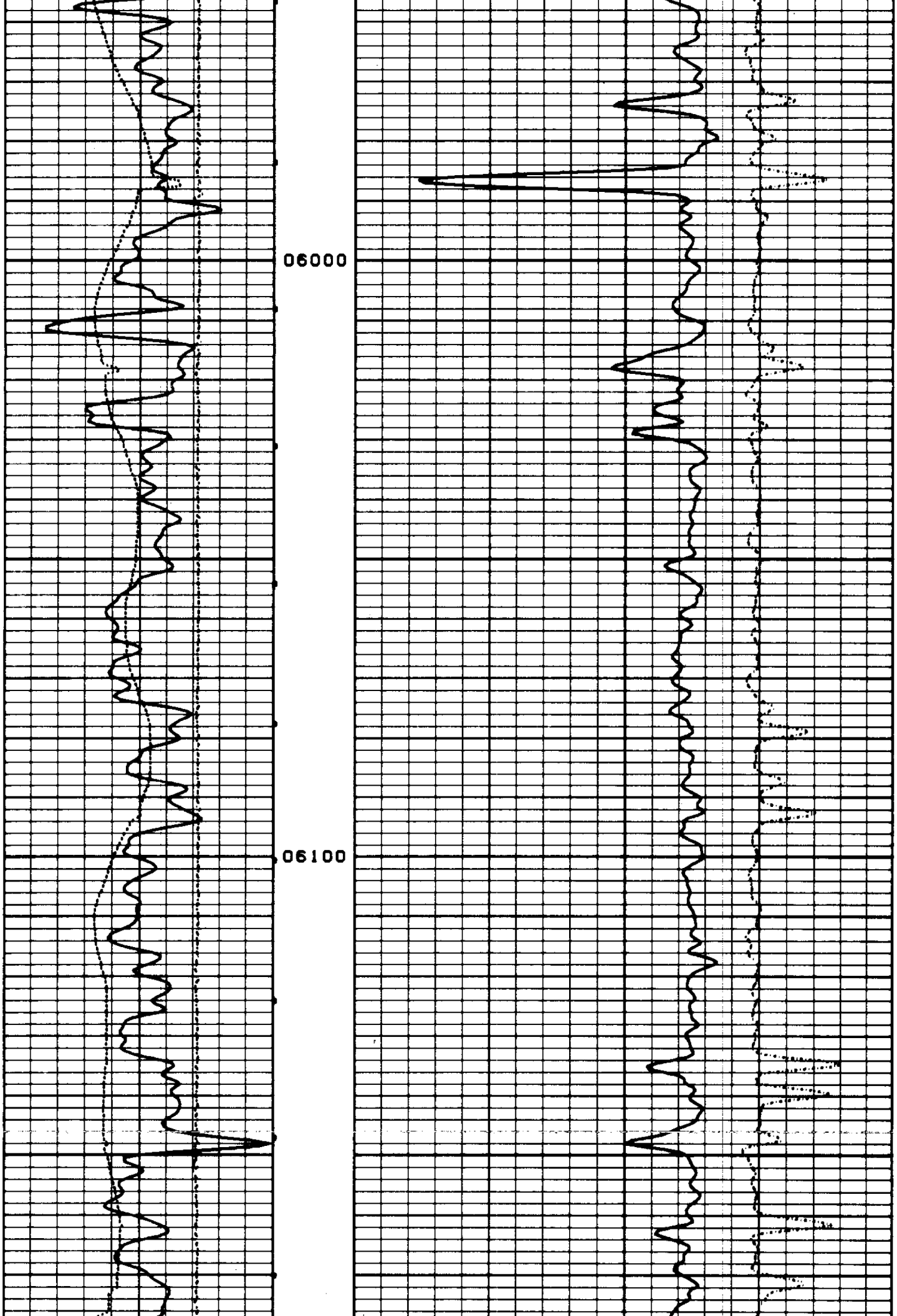
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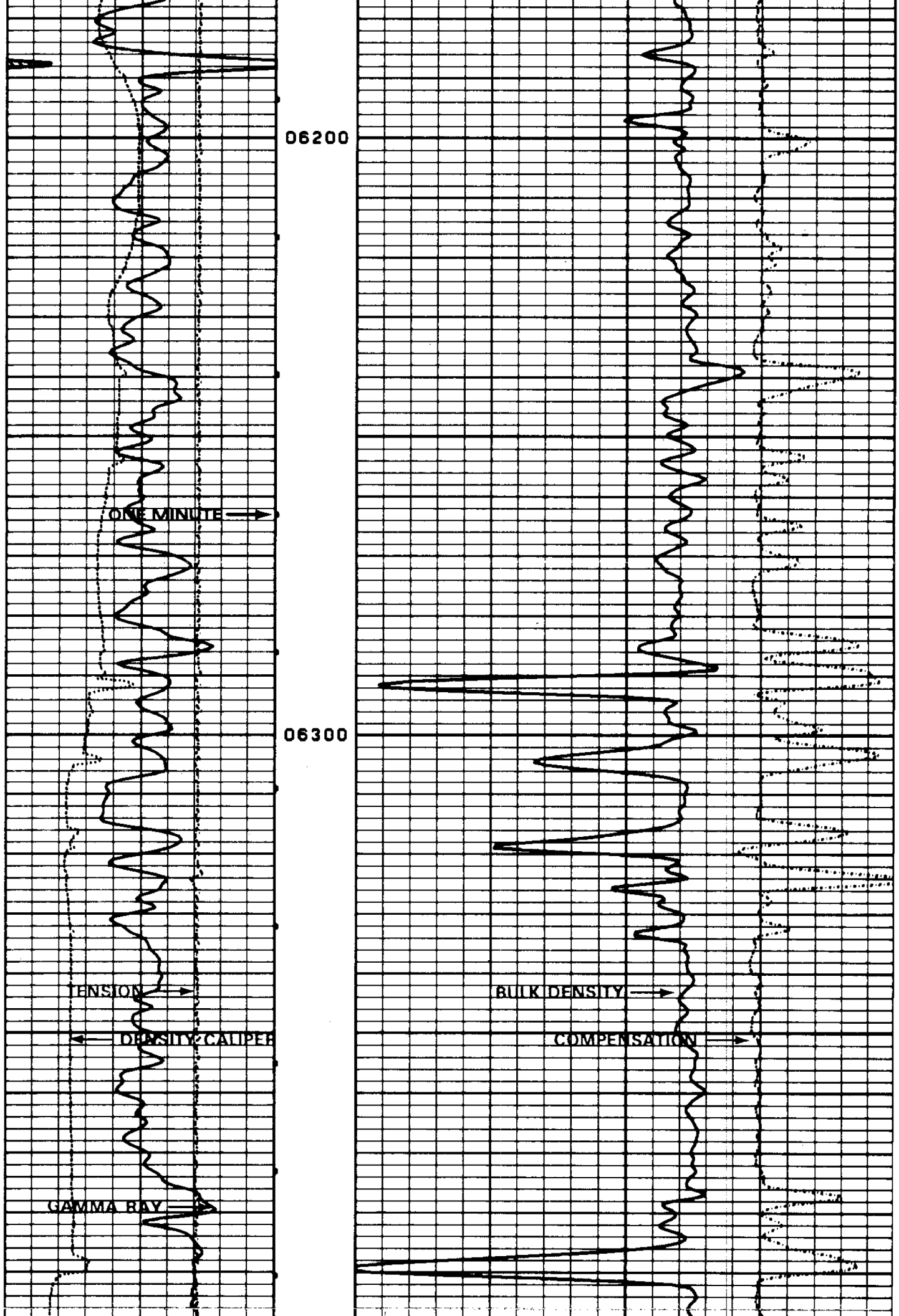
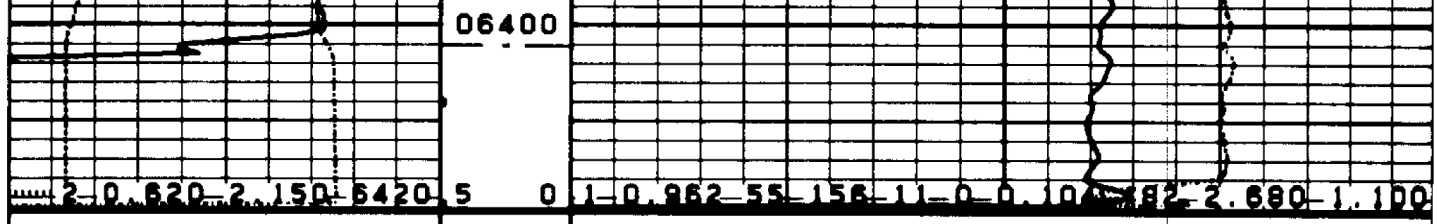

06200
ONE MINUTE
06300
TENSION
DENSITY CALIPER
GAMMA RAY
BULK DENSITY
COMPENSATION



0	GR (API)	200	2.00	ρB (G/CC) 3.00
6	CAL-X (IN)	16	-0.25	ΔρB (G/CC) 0.25

12-06-86	17:30	6419.0	359172	0152-05	0	17

COORS ENERGY COMPANY

UTE TRIBAL NO. 4-8

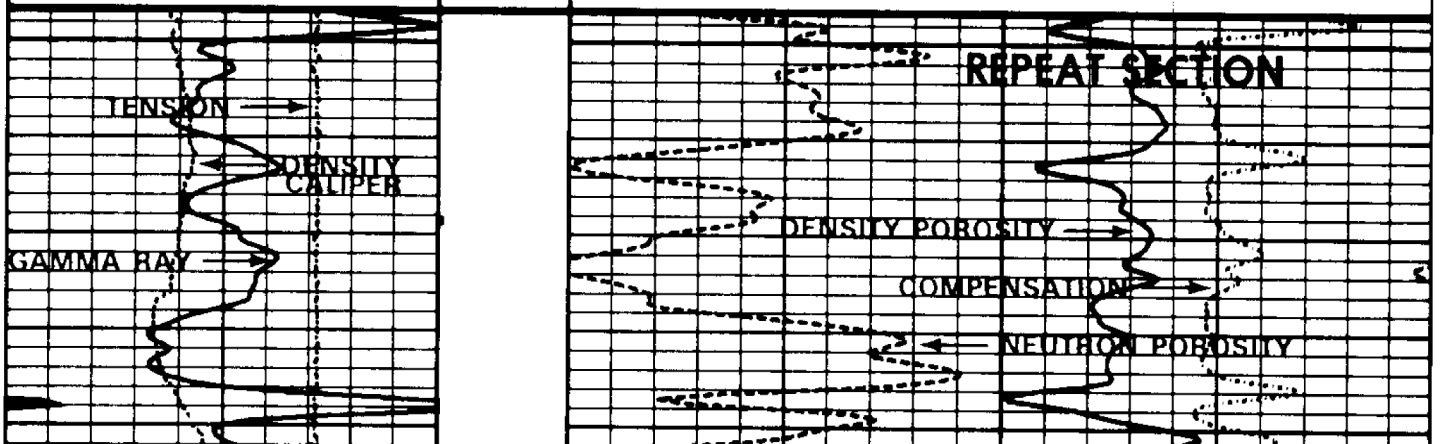
ANTELOPE CREEK

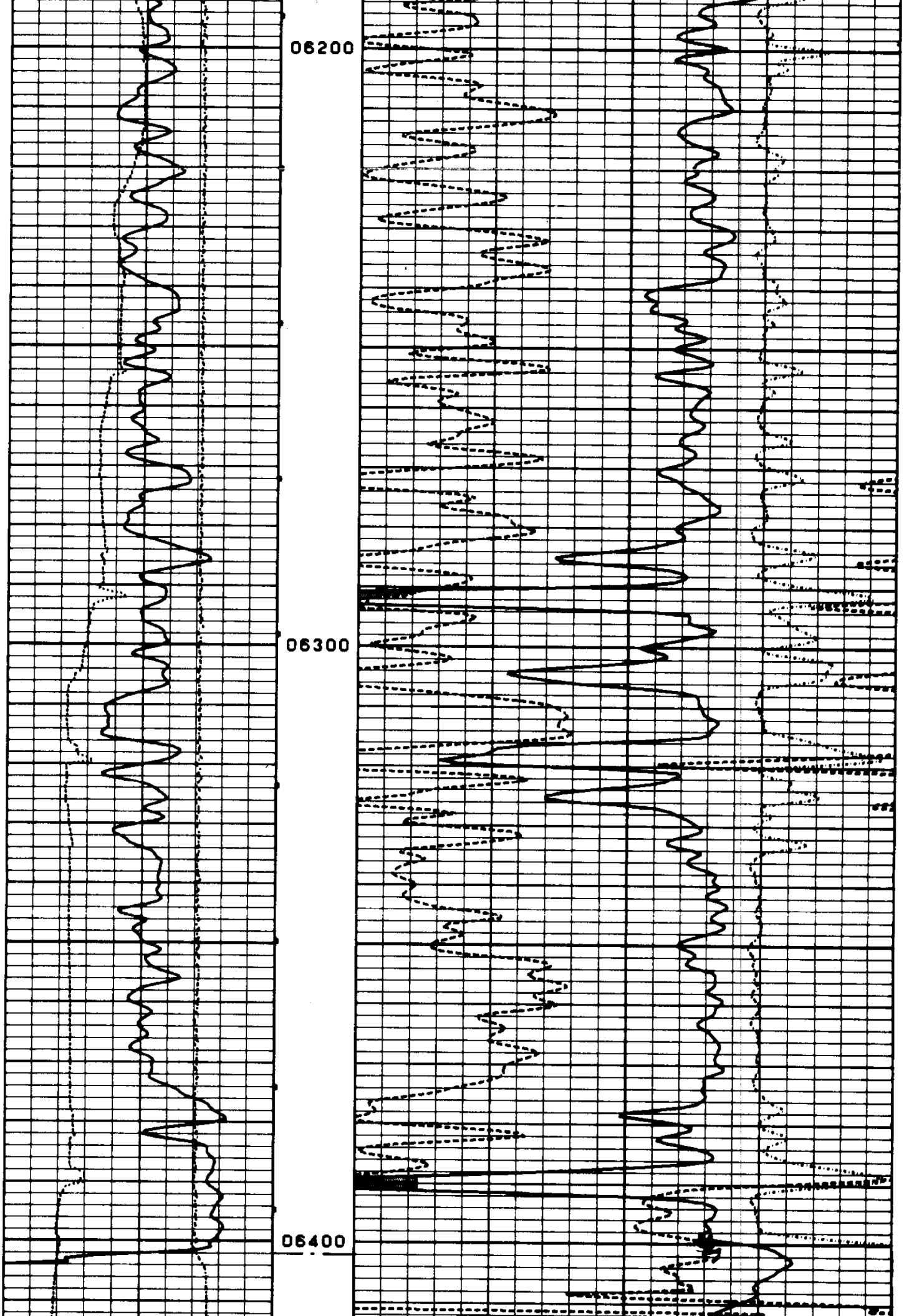
DUCHESNE State UTAH

GO FR 6402
GO TD 6404
DRLR TD 6420
Elev:
KB 5881
DF --
GL 5866

12-06-86	17:24	6146.5	359172	0152-05	0	18

0	GR (API)	200	-0.25	ΔρB (G/CC)	[illegible]
6	CAL-X (IN)	16	30	φ-CNS.SD	-10
			30	φ-CDL	-10




06200
06300
06400

2 0.620 2.150 6420 5 0 1 0.962 55 156 11 0 0.307 182 2.680 1.100

0 GR (API) 200

6 CAL-X (IN) 16

-0.25 ΔP (G/CC) 0.25

30 ϕ-CNS.SD -10

30 ϕ-CDL -10

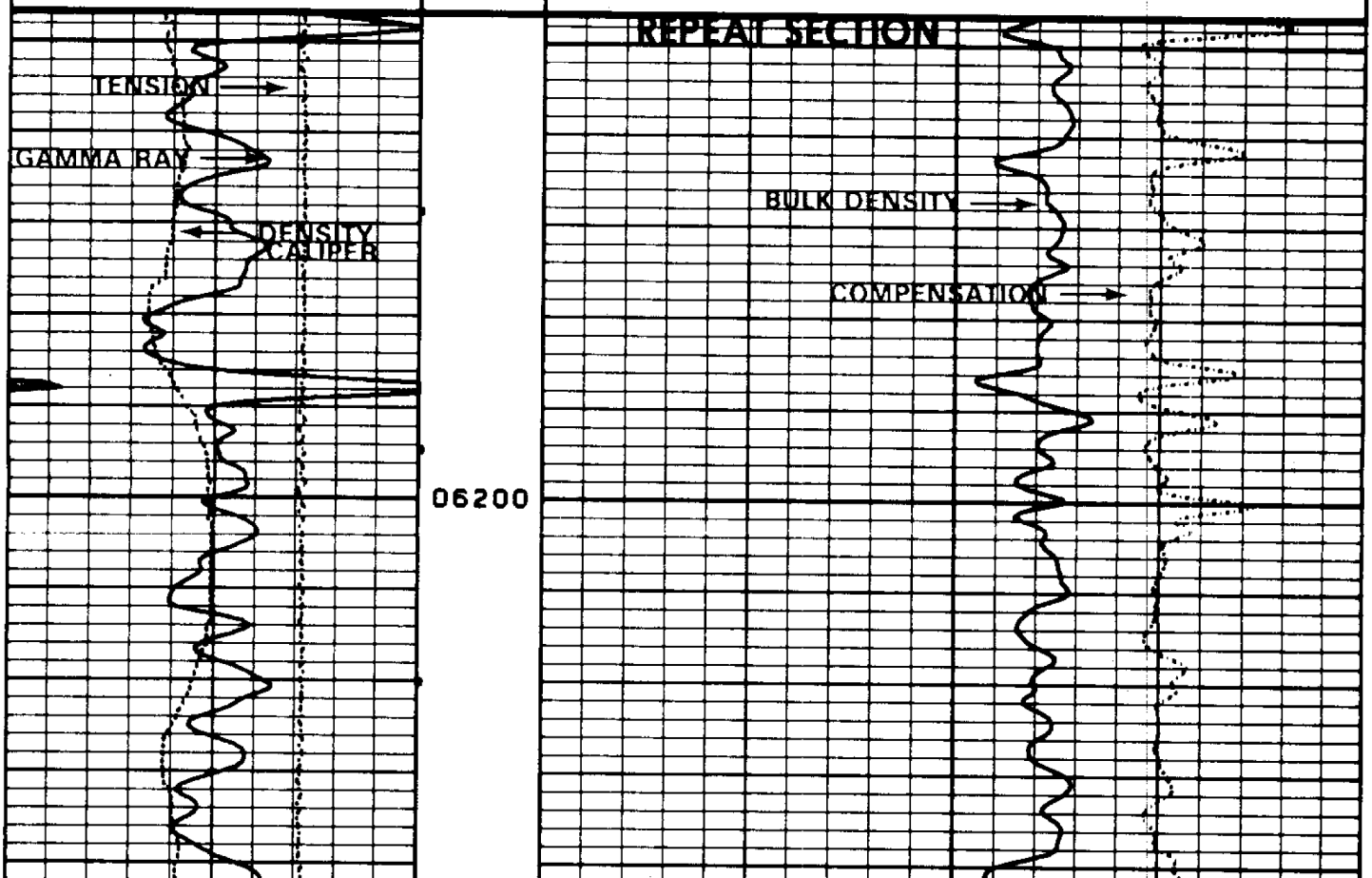
12-06-86	17:14	6419.5	359172	0152-05	0	16
12-06-86	17:24	6146.5	359172	0152-05	23	16

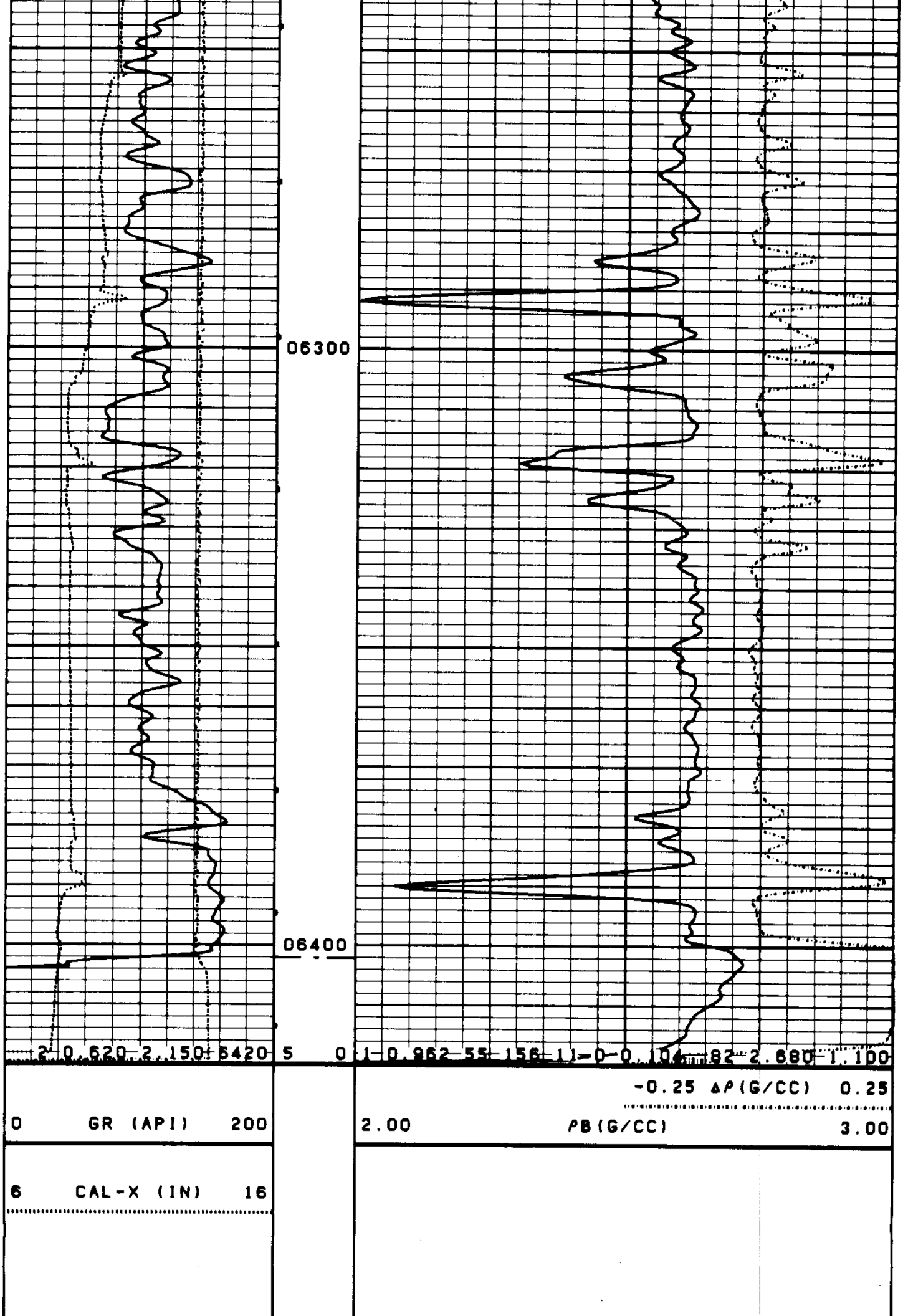
0 GR (API) 200

6 CAL-X (IN) 16

-0.25 ΔP (G/CC) 0.25

2.00 ρB (G/CC) 3.00




06300
06400
2 0.620 2.150 6420 5 0
1 0.862 55 156 11 0 0.104 82 2.680 1.100
-0.25 ΔP(G/CC) 0.25
0 GR (API) 200
2.00 ρB(G/CC) 3.00
6 CAL-X (IN) 16

12-06-86	17:14	6419.5	359172	0152-05	23	16

12-06-86	20:37	0.0	359172	0152-05	23	12

COMPENSATED DENSITY AFTER SURVEY TOOL CHECK

TOOL TYPE: CDT- K SERIAL NO:00097

VERIFIER NO: 00031 SOURCE NO: 00091

VERIFIER CHECK

	BEFORE	AFTER	UNITS
LS DETECTOR	281.2	279.7	CPS
SS DETECTOR	353.2	362.8	CPS
BULK DENSITY	2.352	2.377	G/CC

12-06-86	20:43	0.0	359172	0152-05	23	13

COMPENSATED NEUTRON AFTER SURVEY TOOL CHECK

TOOL TYPE: CNT- K SERIAL NO:00109

VERIFIER NO: 00031 SOURCE NO: 00657

VERIFIER CHECK

	BEFORE	AFTER	UNITS
LS DETECTOR	249.3	246.8	CPS
SS DETECTOR	331.4	327.1	CPS
TOOL RATIO:	1.329	1.325	SS/LS
TOOL POROSITY:	9.16	9.11	LM-PU

TOOL CONSTANT: 0.962

12-06-86	16:24	0.0	359172	0152-05	23	11

CALIPER BEFORE SURVEY CALIBRATION

TOOL TYPE: CDT- SERIAL NO:00097

	MEASURED			CALIBRATED		
	SMALL	LARGE	UNITS	SMALL	LARGE	UNITS
CALX	8.00	13.23	IN	7.00	14.00	IN

12-06-86	16:20	0.0	359172	0152-05	23	10

COMPENSATED DENSITY BEFORE SURVEY TOOL CHECK

TOOL TYPE: CDT- K SERIAL NO:00097

VERIFIER NO: 00031 SOURCE NO: 00091

	VERIFIER CHECK	UNITS
LS DETECTOR	281.2	CPS
SS DETECTOR	353.2	CPS
BULK DENSITY	2.352	G/CC

12-06-86	08:50	0.0	97	0152-05	23	9

COMPENSATED DENSITY SHOP CALIBRATION

TOOL TYPE: CDT- K SERIAL NO:00097

VERIFIER NO: 00031 SOURCE NO: 00091

	MAG BLK(CPS)	ALUM BLK(CPS)	SPINE ANGLE	DEN/SPINE RATIO
LS DETECTOR	1271.3	281.2	76.0	0.565
SS DETECTOR	691.4	475.2		

FIELD VERIFIER

	VERIFIER CHECK	UNITS
LS DETECTOR	281.0	CPS
SS DETECTOR	363.2	CPS
BULK DENSITY	2.375	G/CC

12-06-86	14:34	257.0	359172	0152-05	23	8

CALIPER CASING CHECK

TOOL TYPE: CDT- SERIAL NO:00108

MEASURED CASING ID. X-CALIPER = 8.20 IN

12-06-86	05:01	0.0	359172	0152-05	23	4

GAMMA RAY BEFORE SURVEY CALIBRATION

TOOL TYPE: GRT-HA SERIAL NO:00804

BACKGROUND	CALIBRATOR	STANDARD	UNITS
215.9	739.2	140.0	GAPI

DELTA COUNTS PER SEC: 523.3 CPS/API = 3.737

12-06-86	04:57	11.0	359172	0152-05	23	3

COMPENSATED NEUTRON BEFORE SURVEY TOOL CHECK

TOOL TYPE: CNT- K SERIAL NO:00109

VERIFIER NO: 00031 SOURCE NO: 00657

	VERIFIER CHECK	UNITS
LS DETECTOR	249.3	CPS
SS DETECTOR	331.4	CPS
TOOL RATIO:	1.329	SS/LS
TOOL POROSITY:	9.16	LM-PU

TOOL CONSTANT: 0.962

11-14-86	16:09	0.0	7570	0152-05	23	1

COMPENSATED NEUTRON SHOP CALIBRATION

TOOL TYPE: CNT- K SERIAL NO:00109

VERIFIER NO: 00031 SOURCE NO: 00657

	LOW - ø	MED - ø	HIGH - ø	UNITS
TANK RATIO:	0.566	1.300	[illegible]	

TANK RATIO:	0.566	1.389	2.176	SS/LS
TANK POROSITY:	-0.34	11.23	25.89	LM-PU
LS DETECTOR	1810.1	358.7	163.8	CPS
SS DETECTOR	1059.9	525.2	372.9	CPS
TOOL RATIO:	0.583	1.444	2.245	SS/LS
TOOL POROSITY:	-0.37	11.23	25.57	LM-PU

TOOL CONSTANT: 0.962

SURFACE TEMPERATURE: 55° F

FIELD VERIFIER

SS DETECTOR	LS DETECTOR	RATIO	POROSITY
331.3 CPS	248.3 CPS	1.334	9.26

BEST COPY AVAILABLE

ART 3

DUAL LATEROLOG

FILING NO.

COMPANY COORS ENERGY COMPANY

WELL UTE TRIBAL NO. 4-8

FIELD ANTELOPE CREEK

COUNTY DUCHESNE STATE UTAH

FEB 2 DIVISION OF OIL GAS

LOCATION: 515' F W/L 2100' F S/L NW SW

12

SEC 8 TWP 5S RGE 3W

Other Services

RHC

Permanent Datum GL Elev. 5866

Log Measured from KB 15 Ft. Above Perm. Datum

Drilling Measured from KB

KB 5881

DF --

GL 5866

Date	12-6-86			
Run No.	One			
Depth Driller	6420			
Depth-Logger	6414			
Bottom Logged Interval	6412			
Top Logged Interval	306			
Casing-Driller	8 5/8 @ 300	@	@	@
Casing-Logger	--			
Bit Size	7 7/8			
Type Fluid in Hole	KCL			
Density and Viscosity	8.8 | 27			
pH and Fluid Loss	11.0 | -- cc	cc	cc	cc
Source of Sample	Flowline			
Rm @ Meas. Temp.	.104 @ 82.3 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.165 @ 54.7 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	.293 @ 60.8 °F	@ °F	@ °F	@ °F
Source of Rmf and Rmc	M | M			
Rm @ BHT	.050 @ 156 °F	@ °F	@ °F	@ °F
Time: End Circulation	0315 Hours			
Time: Logger on Bottom	0833 Hours			
Max Rec. Temp. Deg. F.	156 °F	°F	°F	°F
Equip. No. and Location	7570 Vernal			
Recorded By	Grenier			
Witnessed By	Mr. Ballou			

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down Hole

Changes in Mud Type or Additional Samples

Date	Sample No.										
Depth Driller											
Type Fluid in Hole											
Dens.	Visc.										
pH	Fluid Loss										
Source of Sample											
Rm @ Meas. Temp		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Source Rmf Rmc											
Rm @ BHT		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Rmf @ BHT		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Rmc @ BHT		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F

EQUIPMENT DATA

DUAL LATEROLOG					GAMMA RAY		OTHER
Run No.	Tool No.	Tool Type	Tool Position	S.O.	Tool No.	Tool Type	Tool No.
One	17	DLL	Cent.	Bow	4413	Scint.	18013
				Spring			MSFL

CALIBRATION DATA

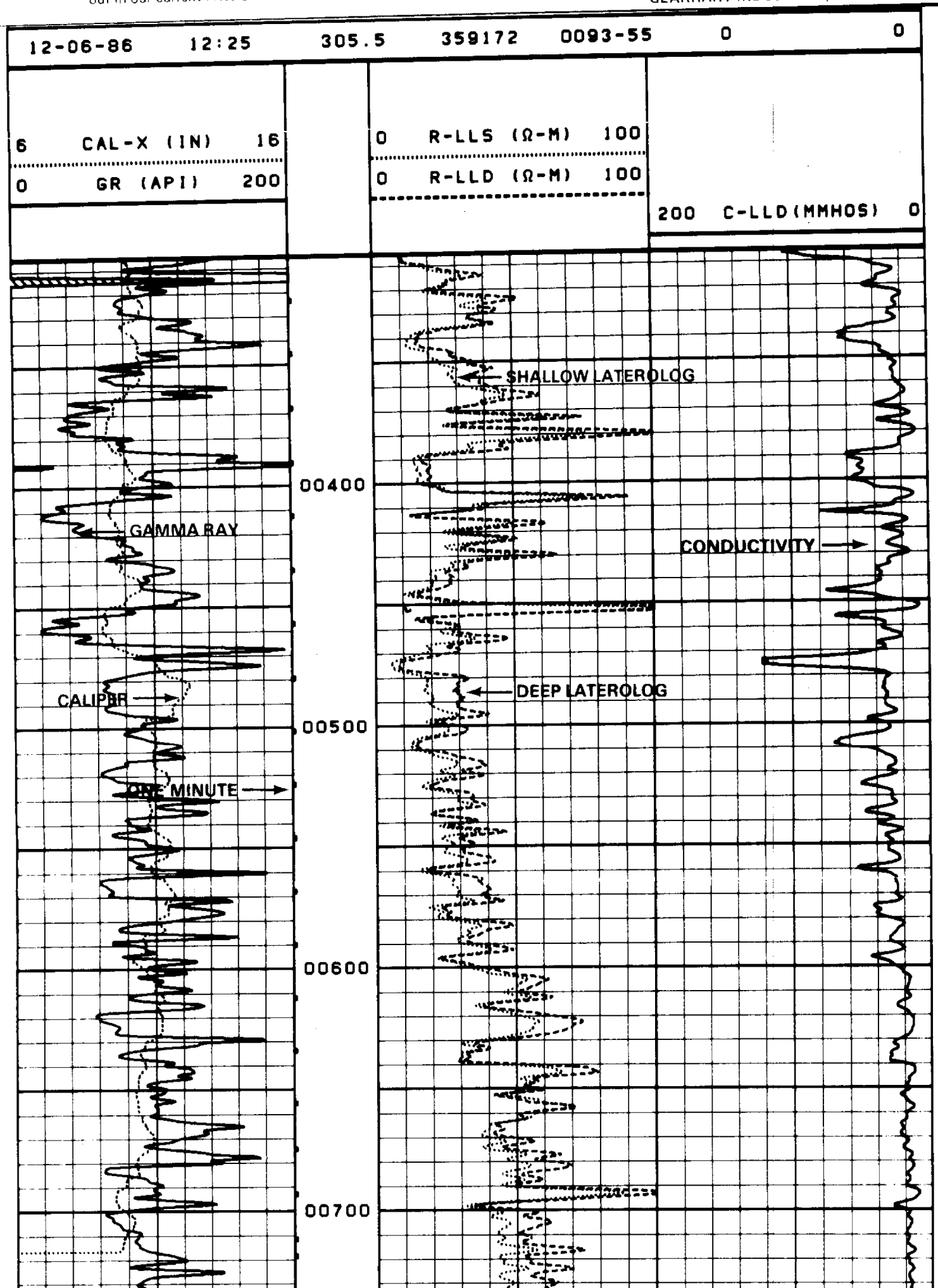
Run No.	LLD High	LLD Low	LLD Gain	LLS High	LLS Low	LLS Gain	GAMMA RAY API Scale	GAMMA RAY BKG.	GAMMA RAY STD.
One	SEE DIGITAL CALIBRATION								

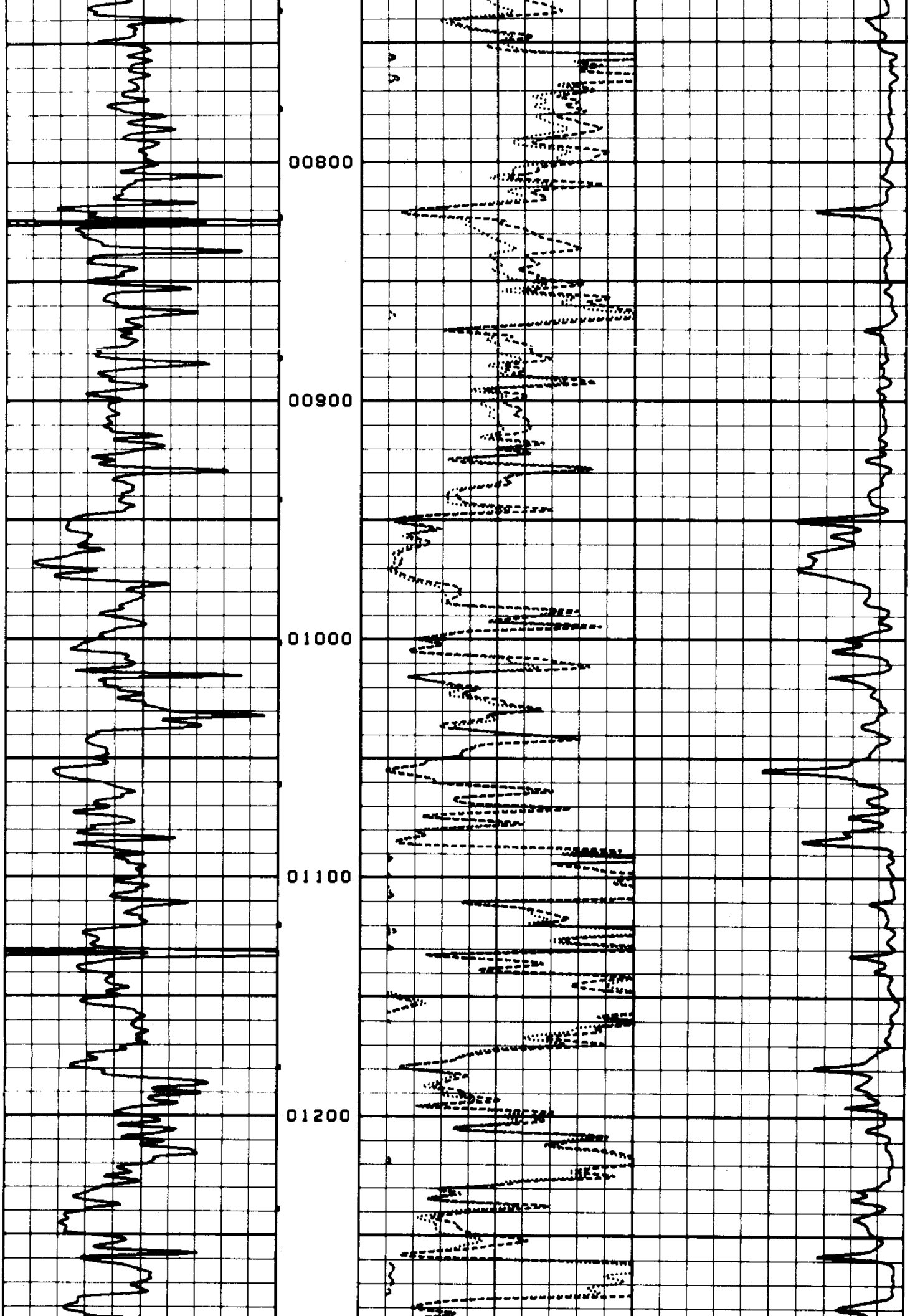
REMARKS:

NOTICE: 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,

the accuracy or correctness of any interpretation, we shall not be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by one of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current Price Schedule.

GEARHART INDUSTRIES, INC.

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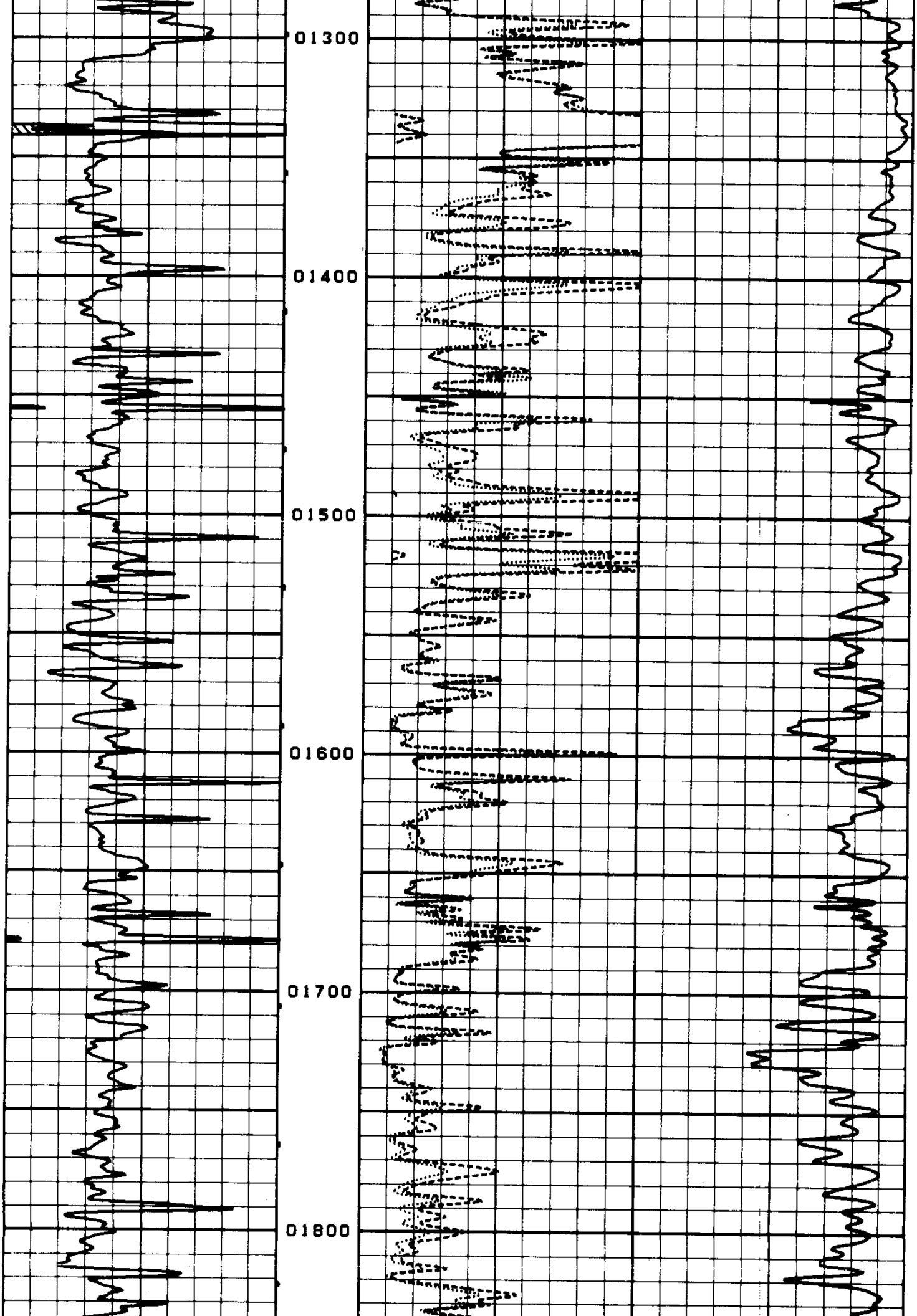
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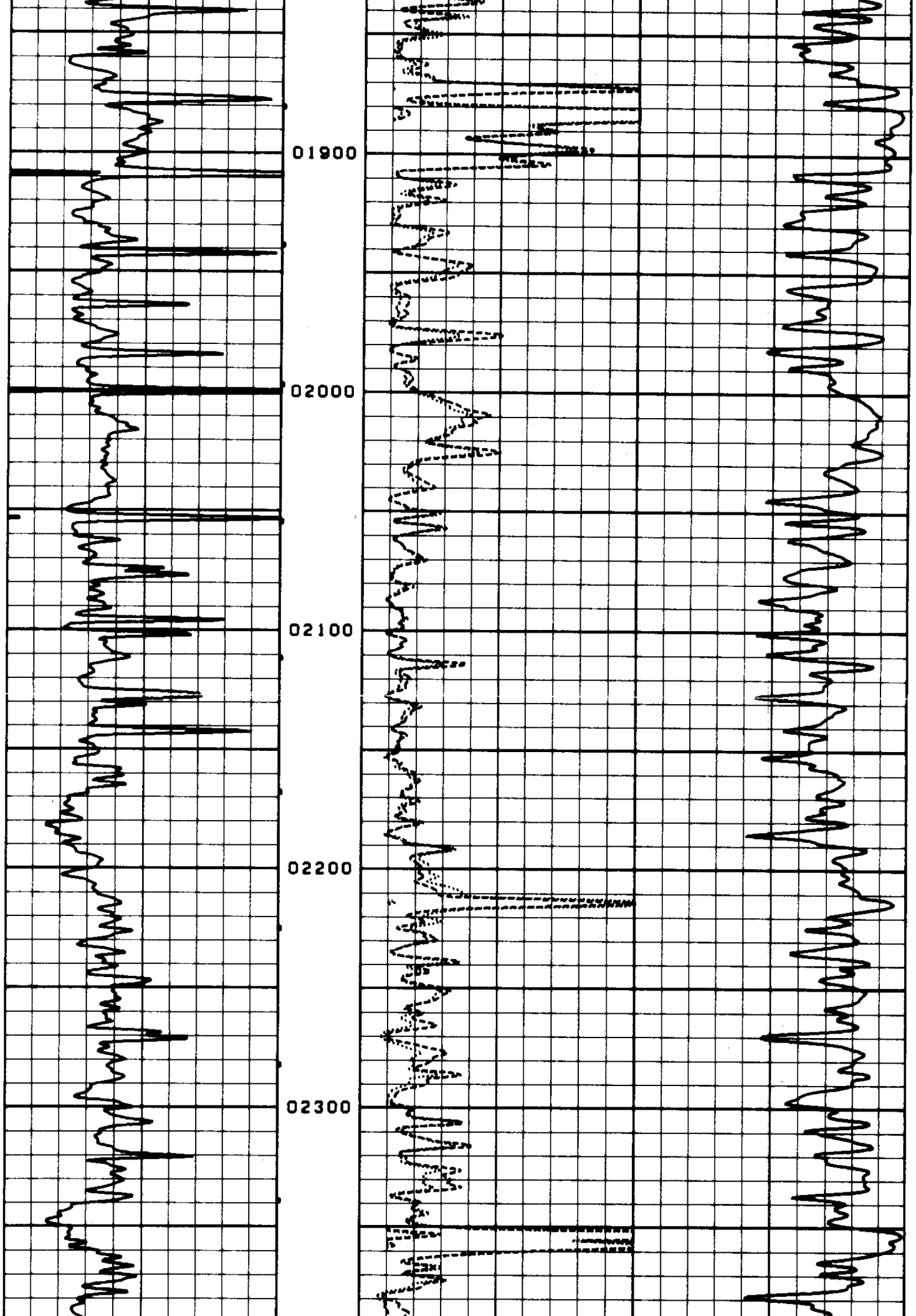
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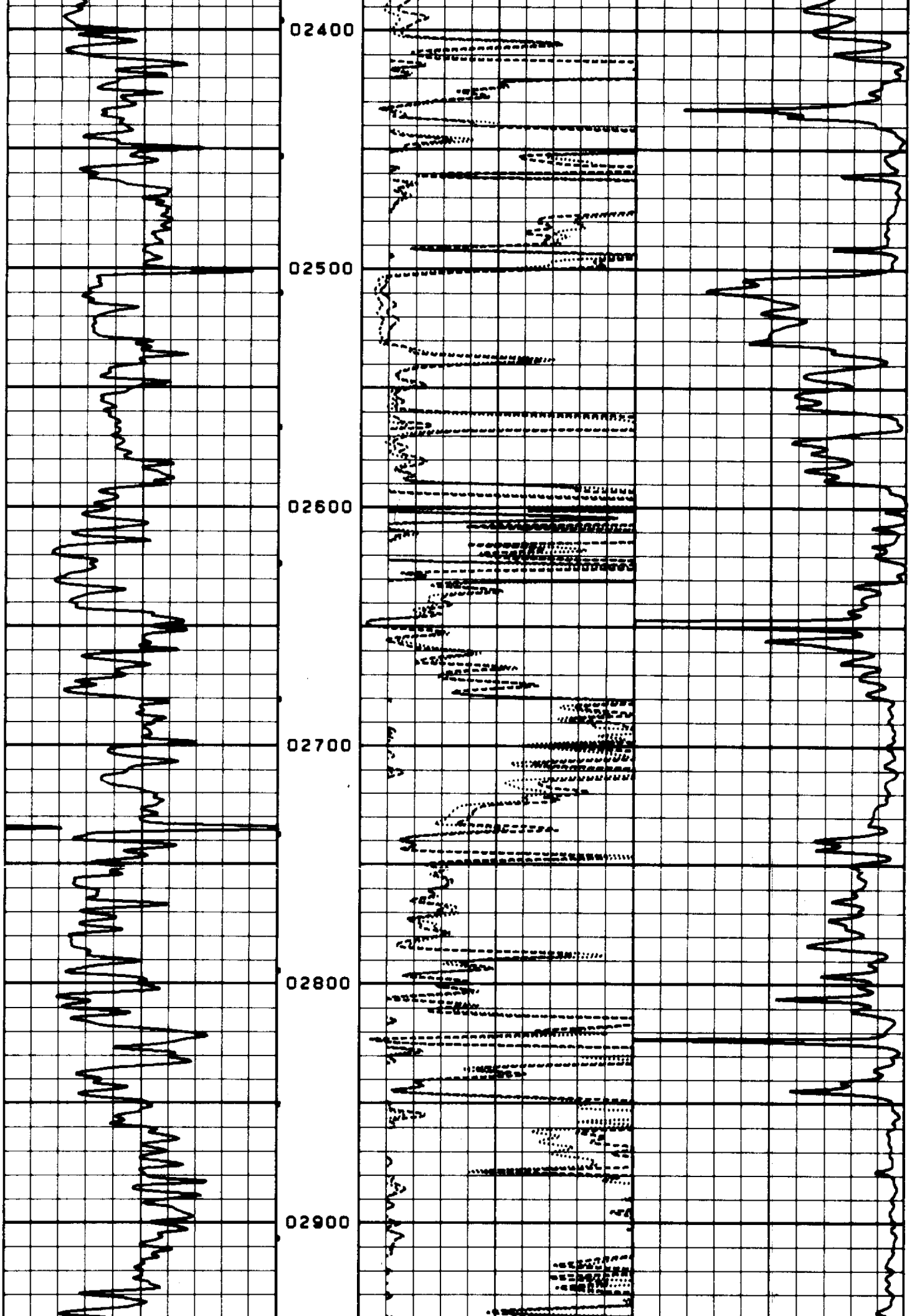
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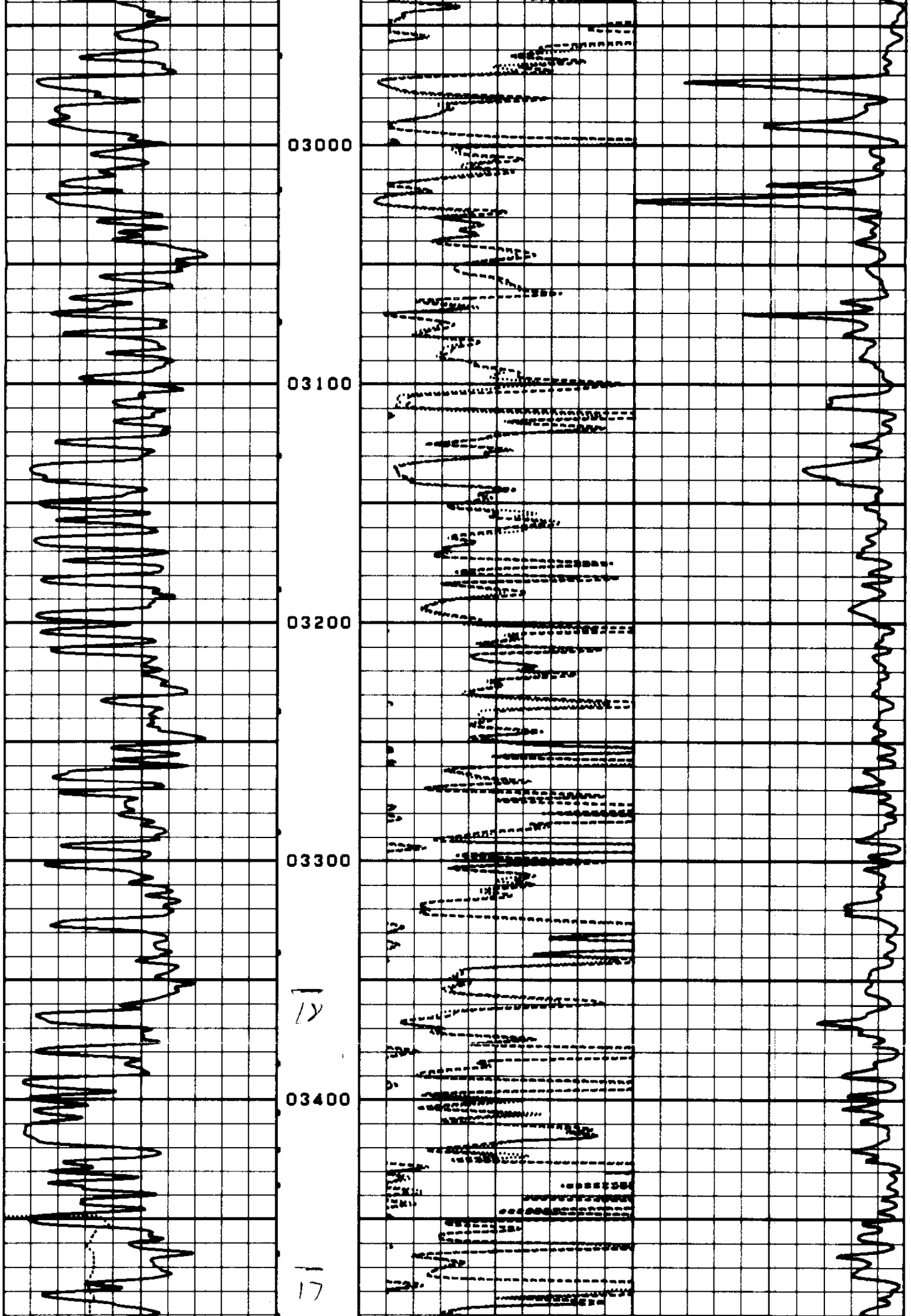
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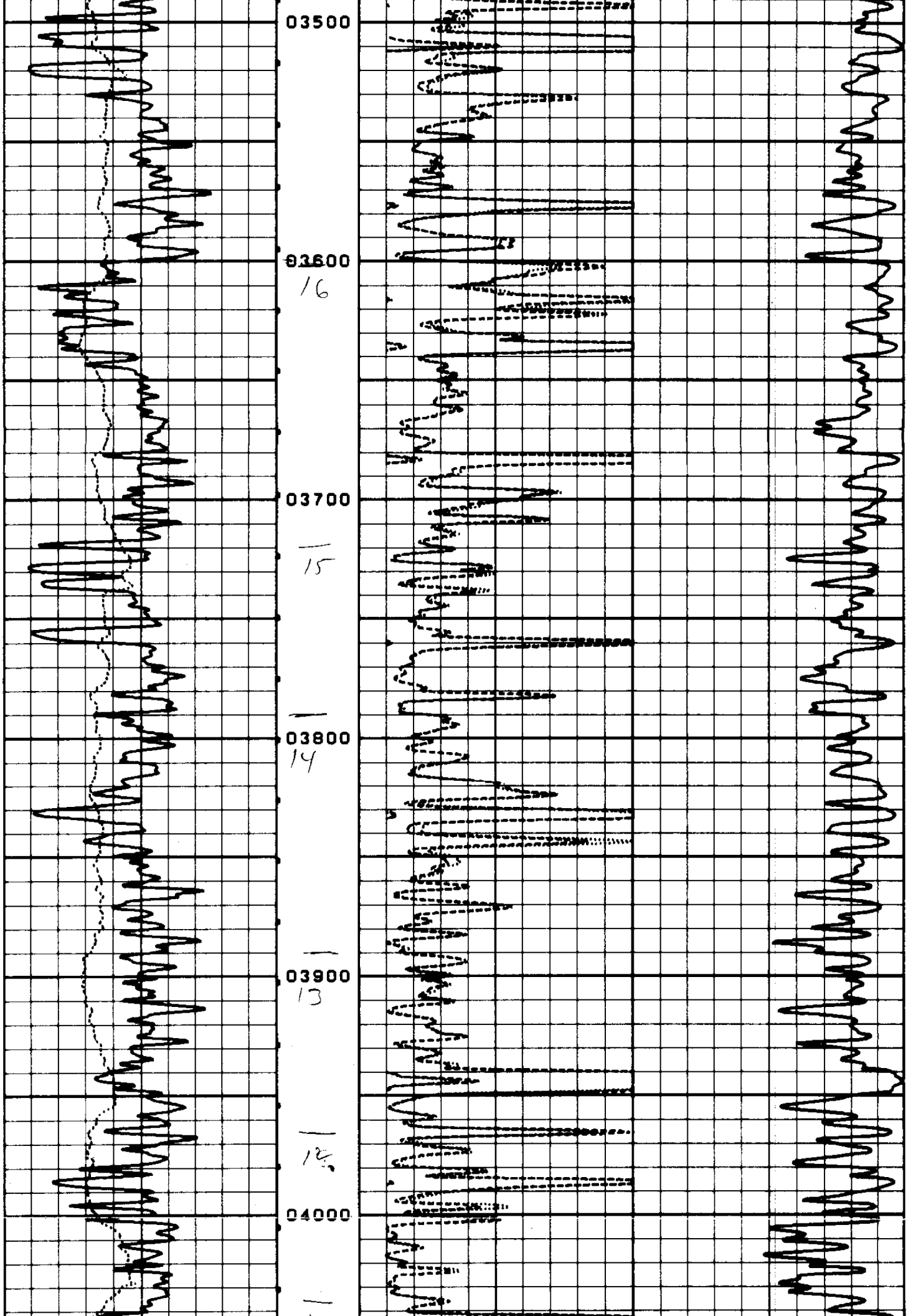
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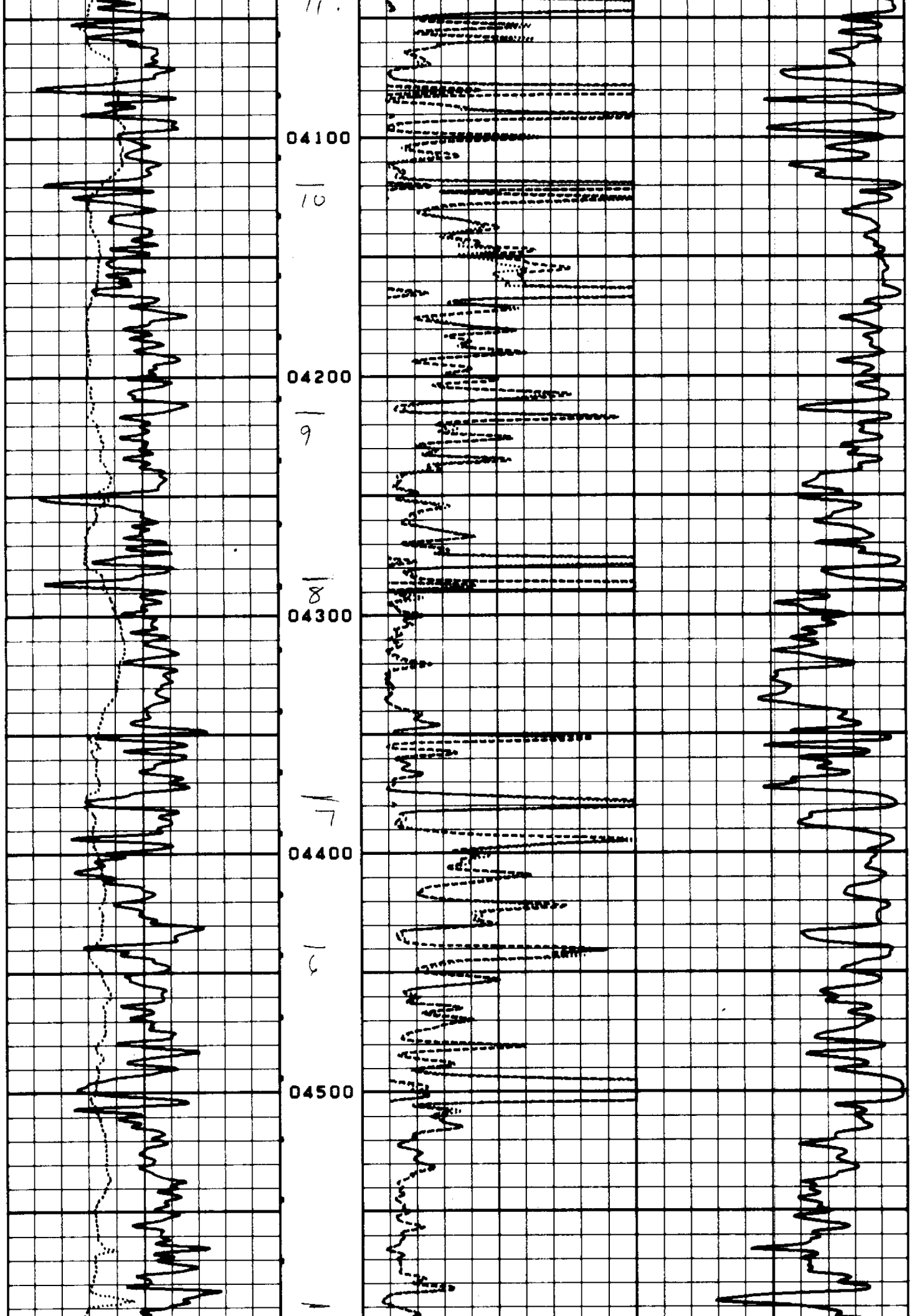
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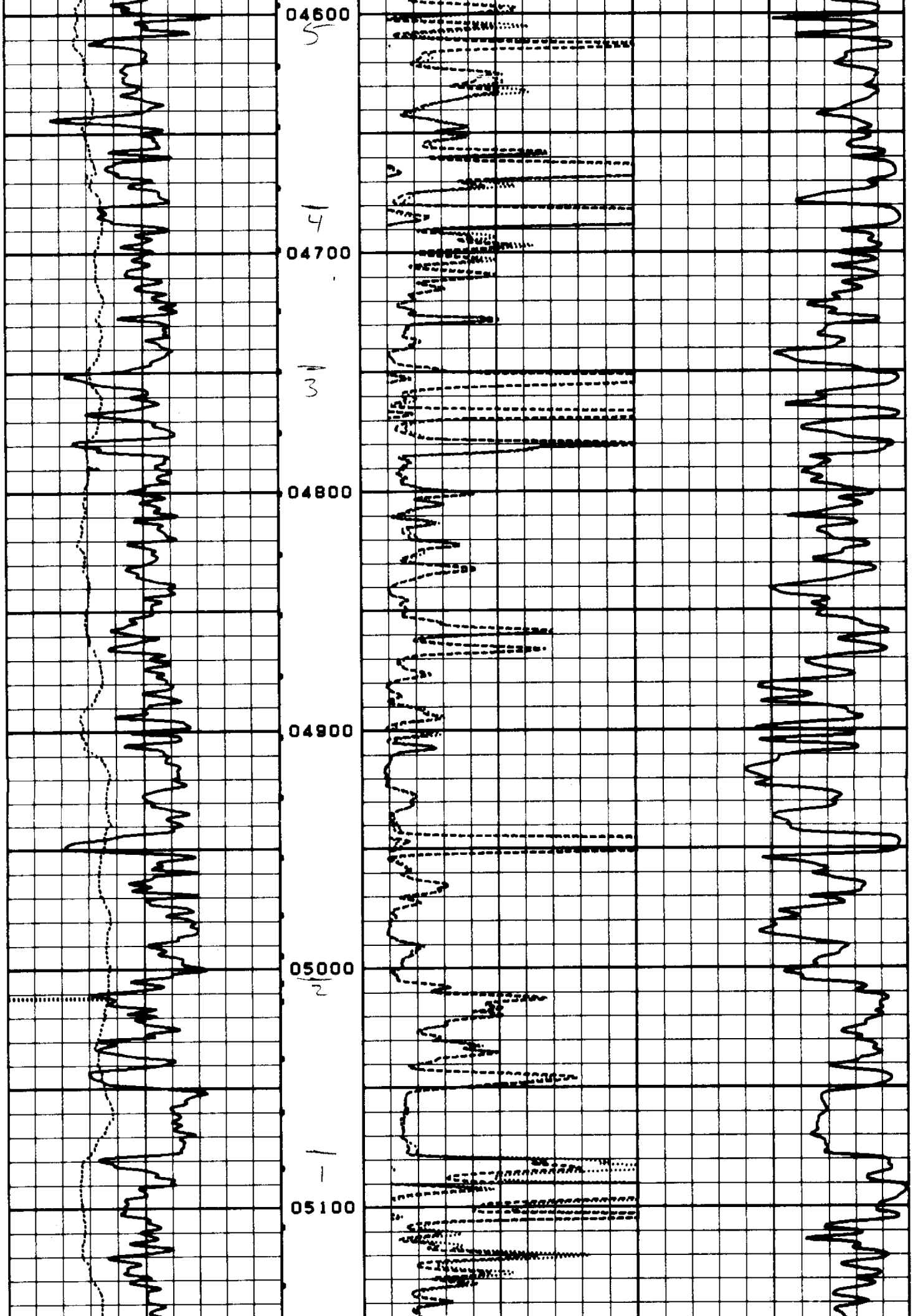
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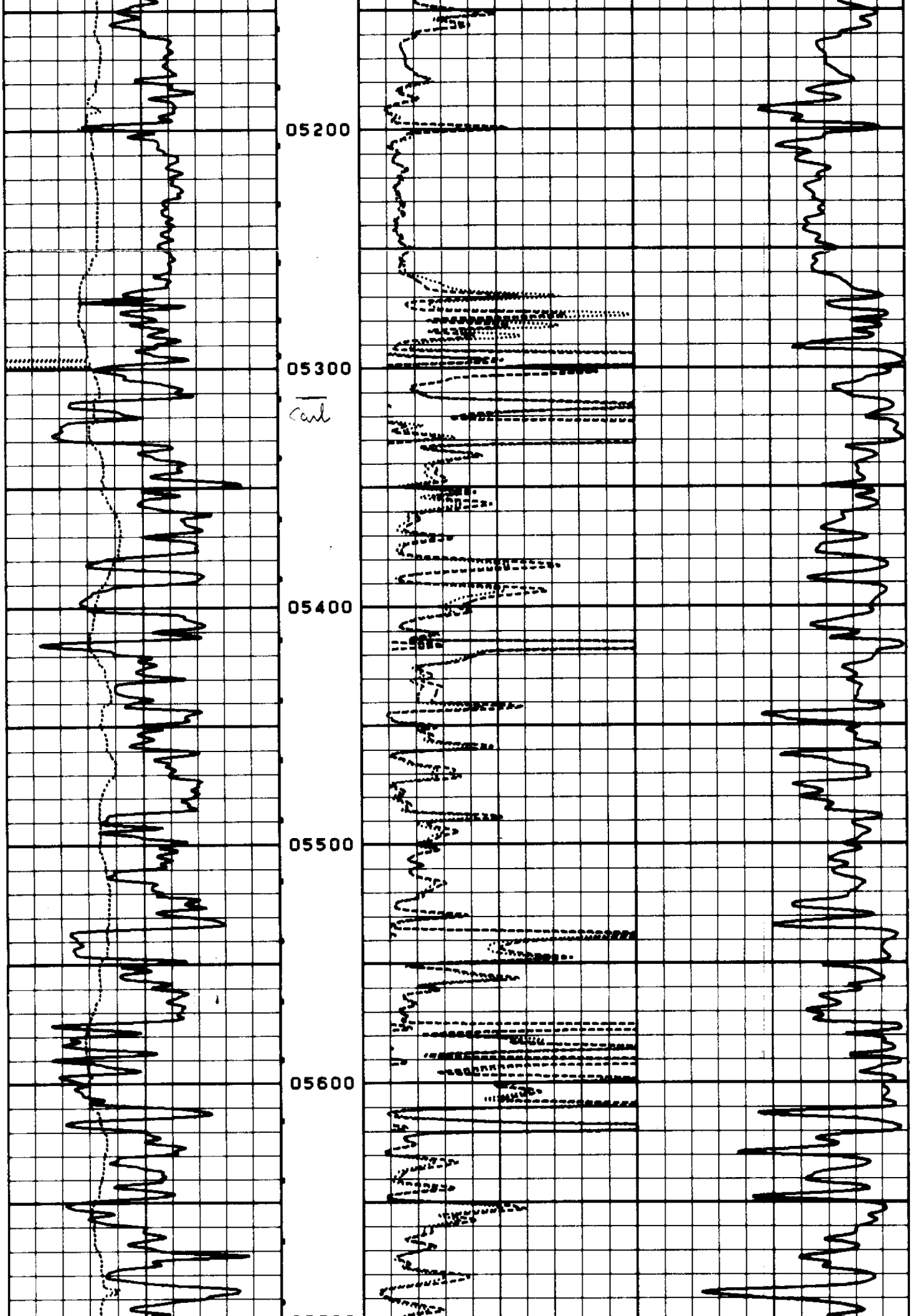
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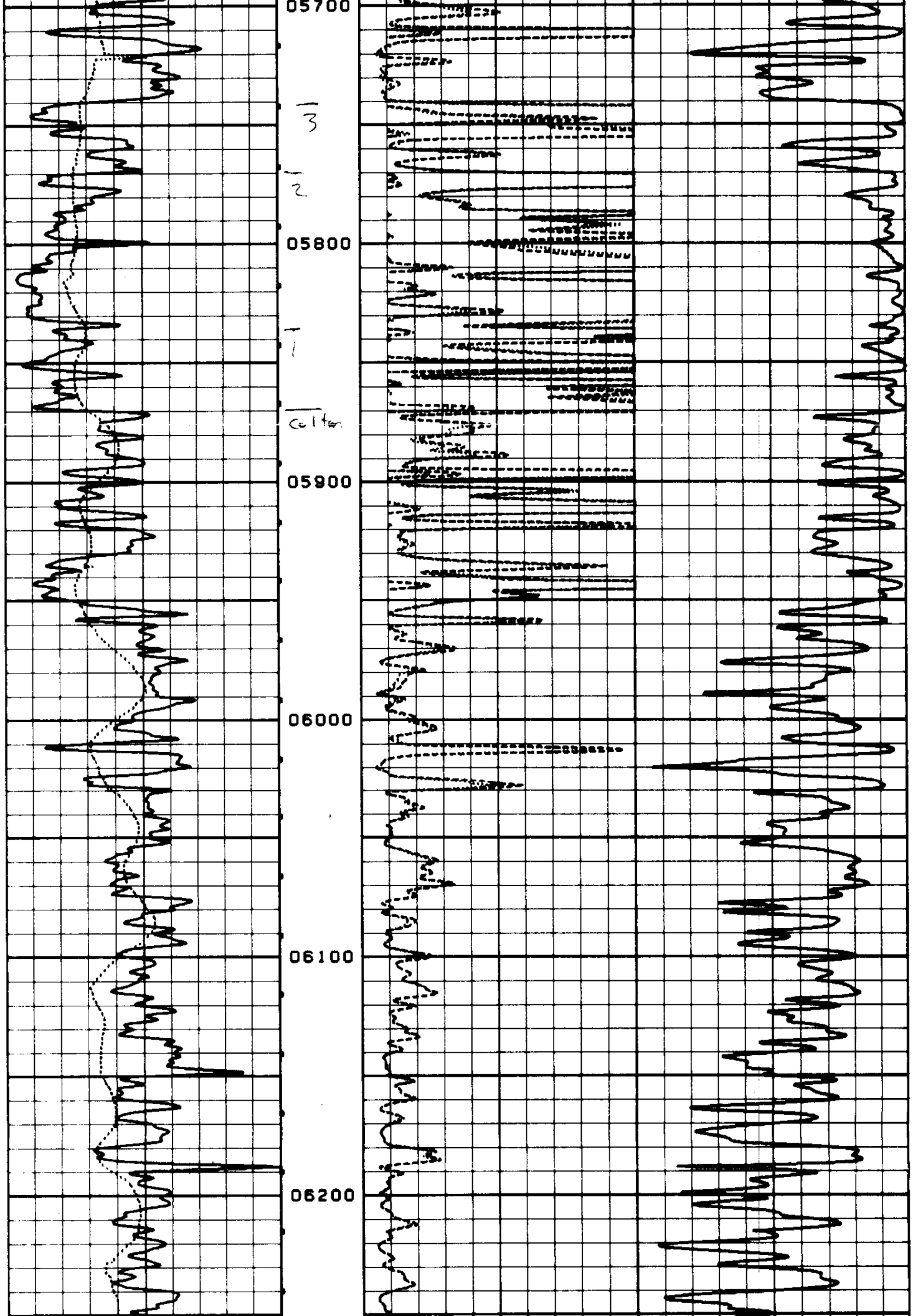
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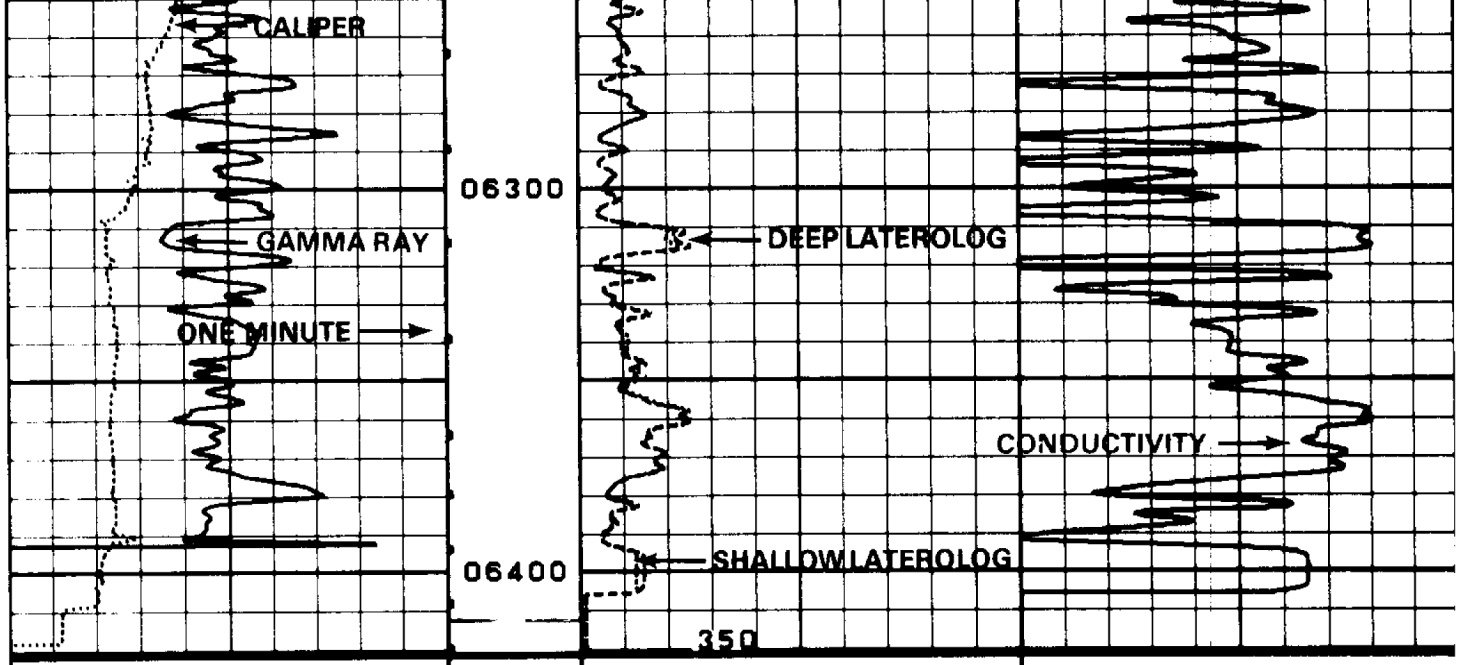
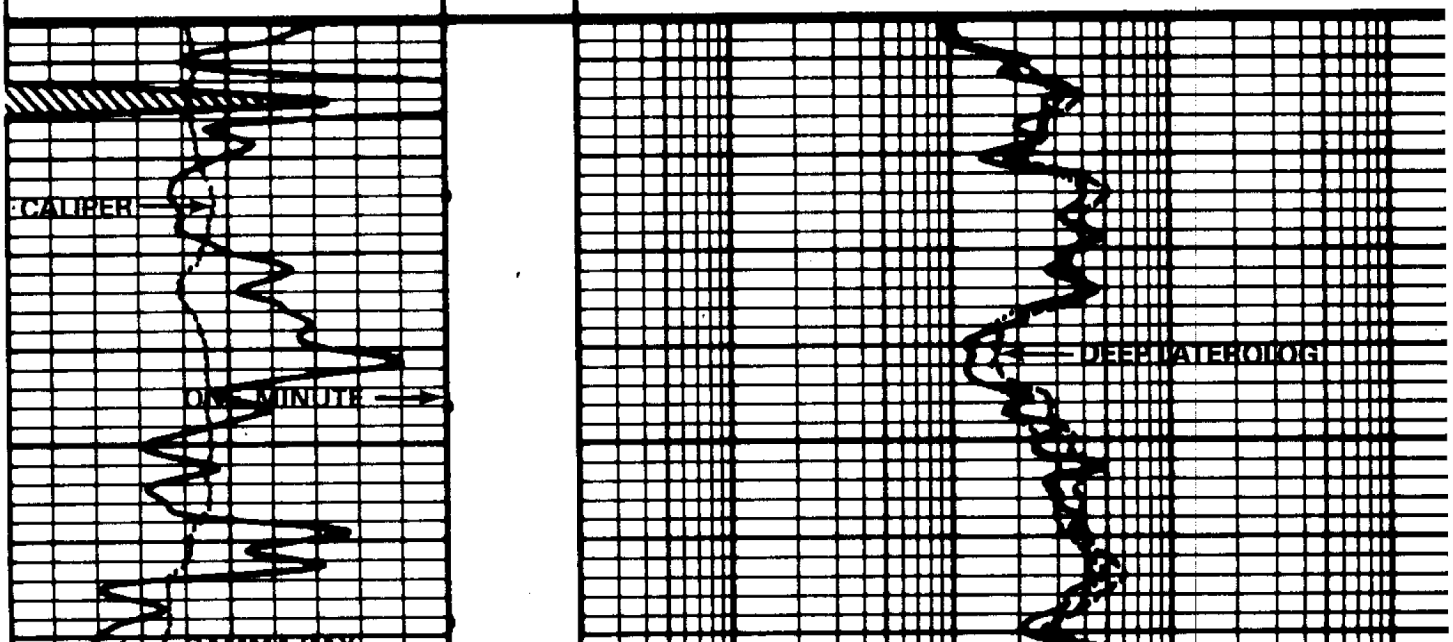


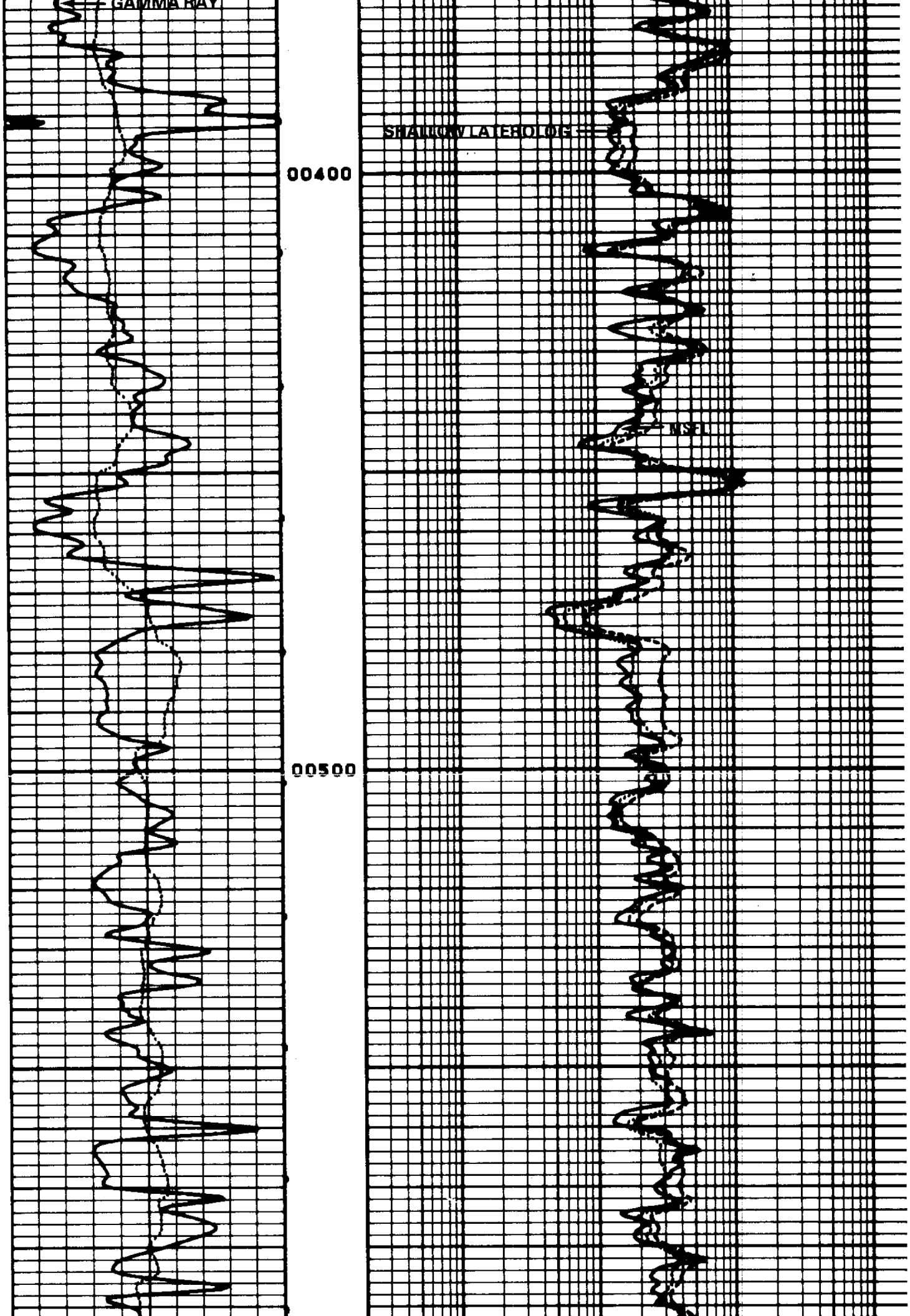
6	CAL-X (IN)	16	0	R-LLS (Ω-M)	100	
0	GR (API)	200	0	R-LLD (Ω-M)	100	
					200	C-LLD (MMHOS) 0

12-06-86	08:50	6420.5	359172	0093-55	0	0

12-06-86	12:25	305.5	359172	0093-55	0	0

		0.2	R-MSF (Ω-M)	2000	
-1000	TENSION (LBS)	0	0.2	R-LLS (Ω-M)	2000
			0.2	R-LLD (Ω-M)	2000
6	CAL-X (IN)	16			
0	GR (API)	200			




GAMMA RAY
SHALLOW LATEROLOG
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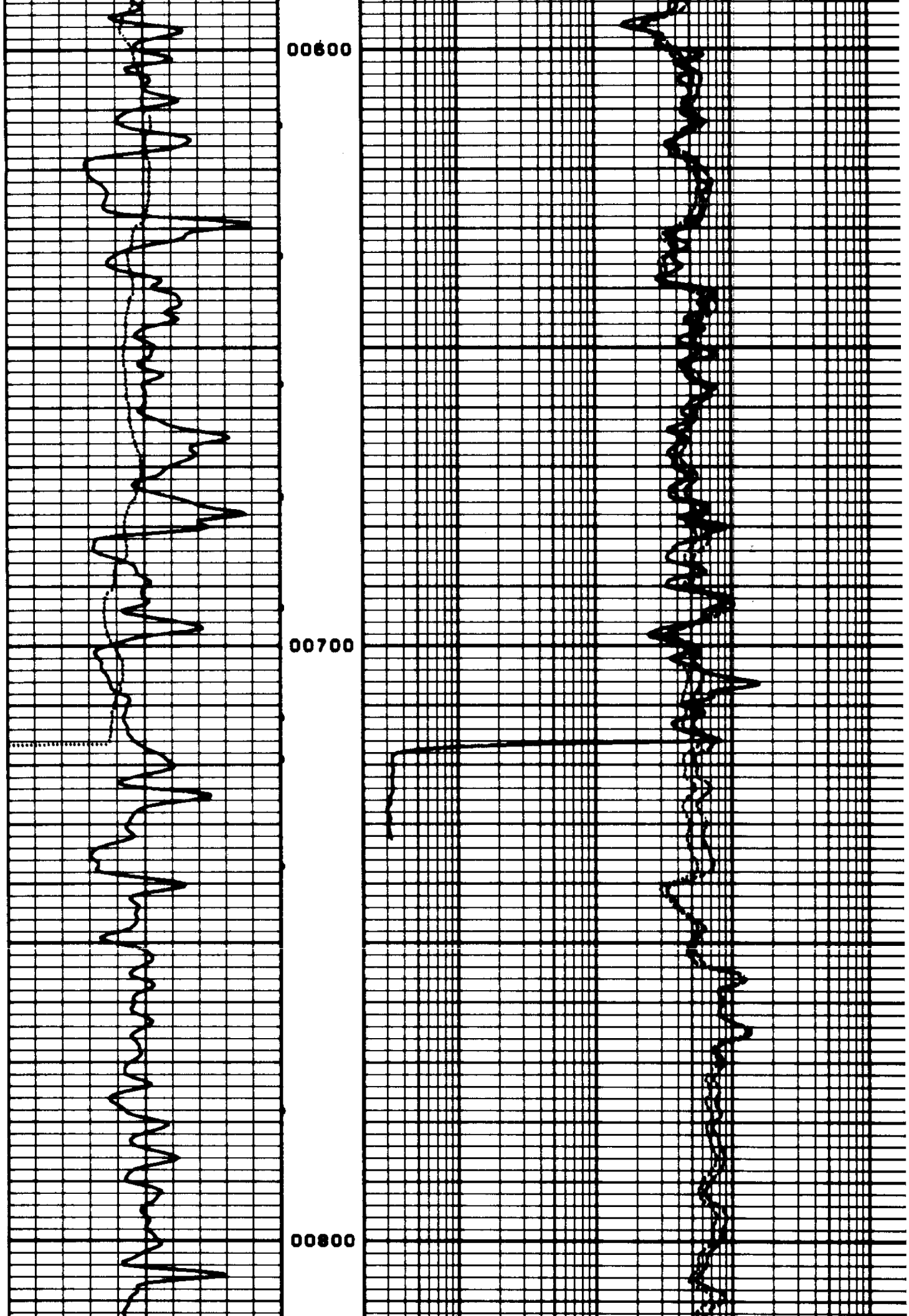
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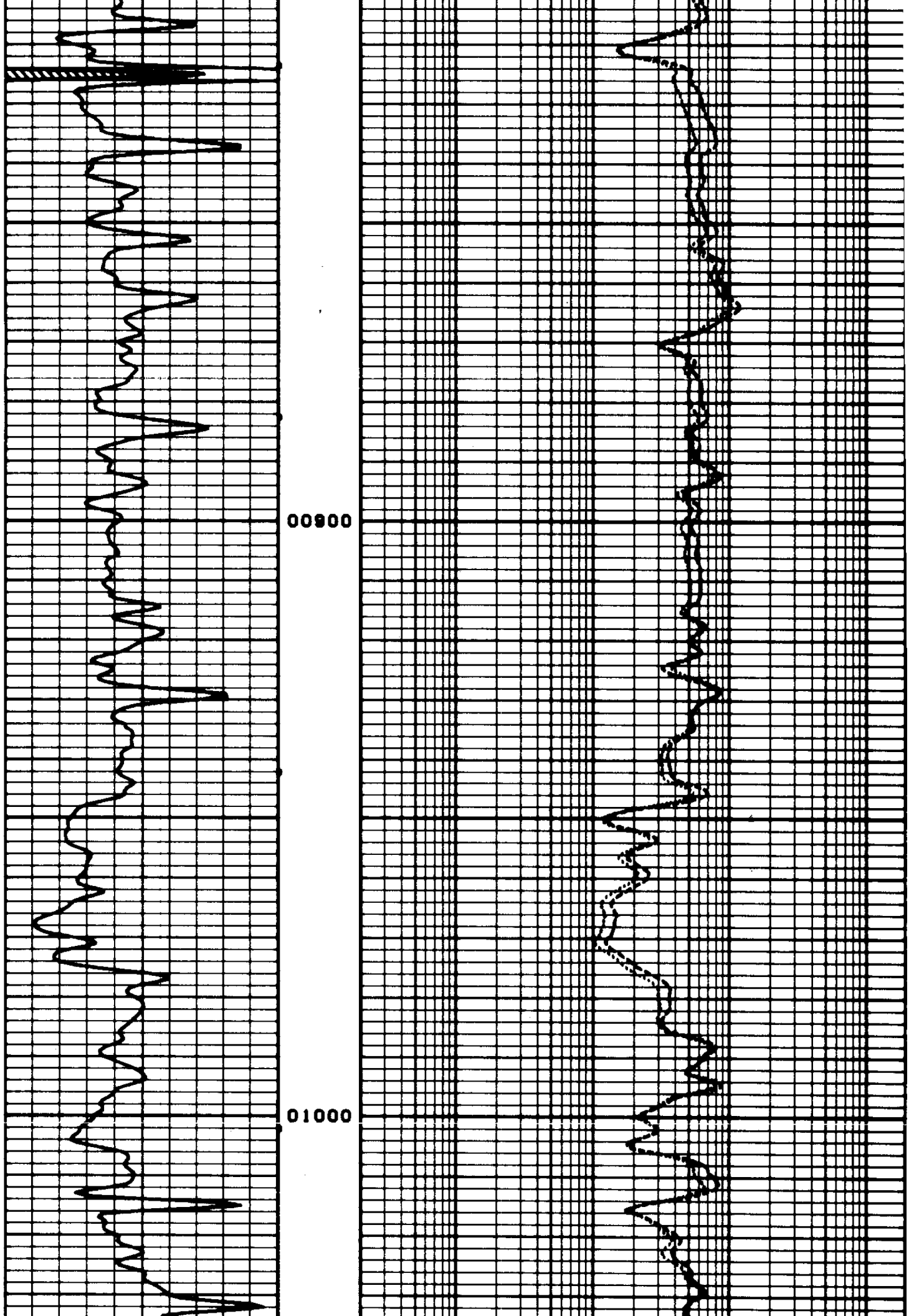
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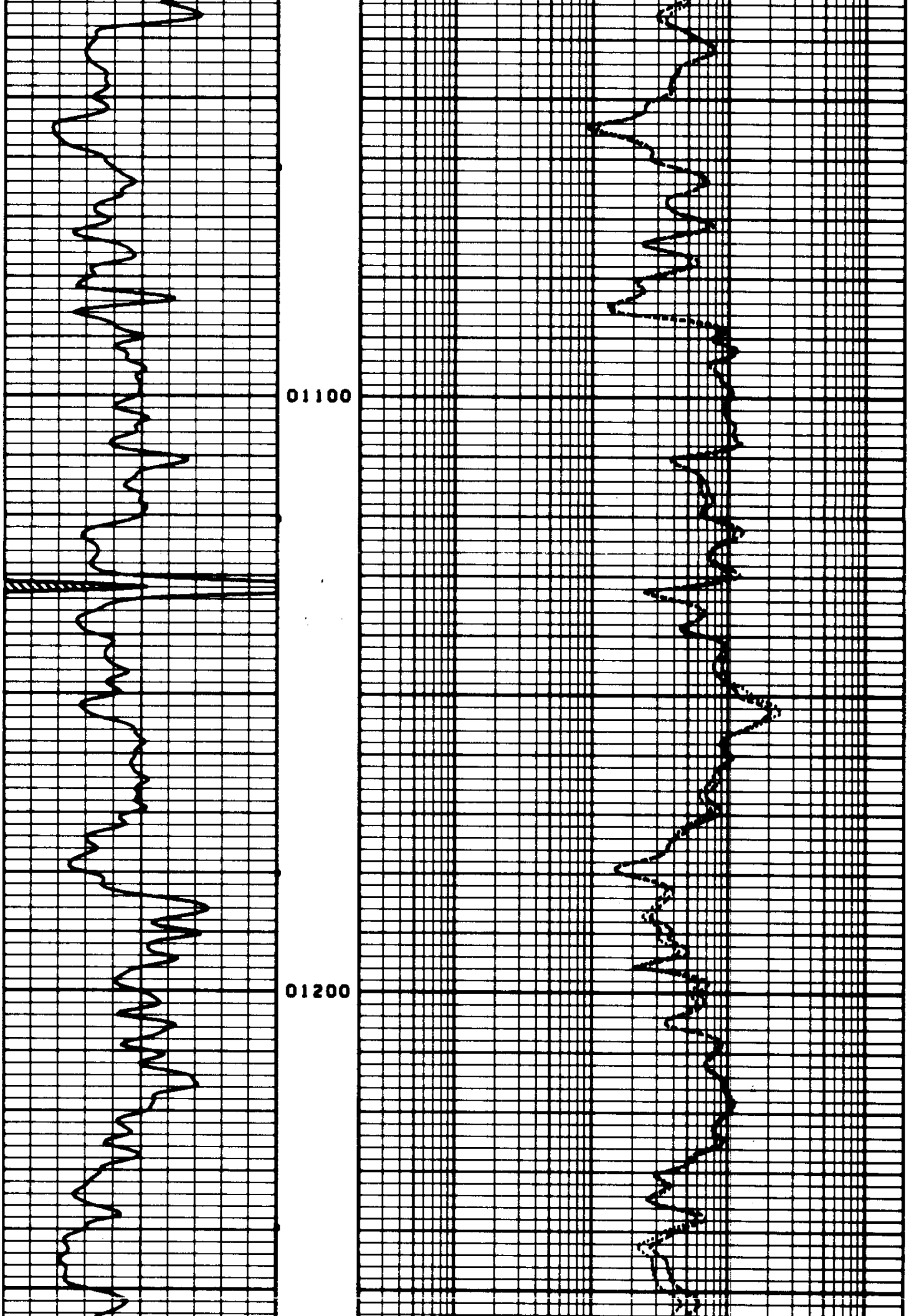
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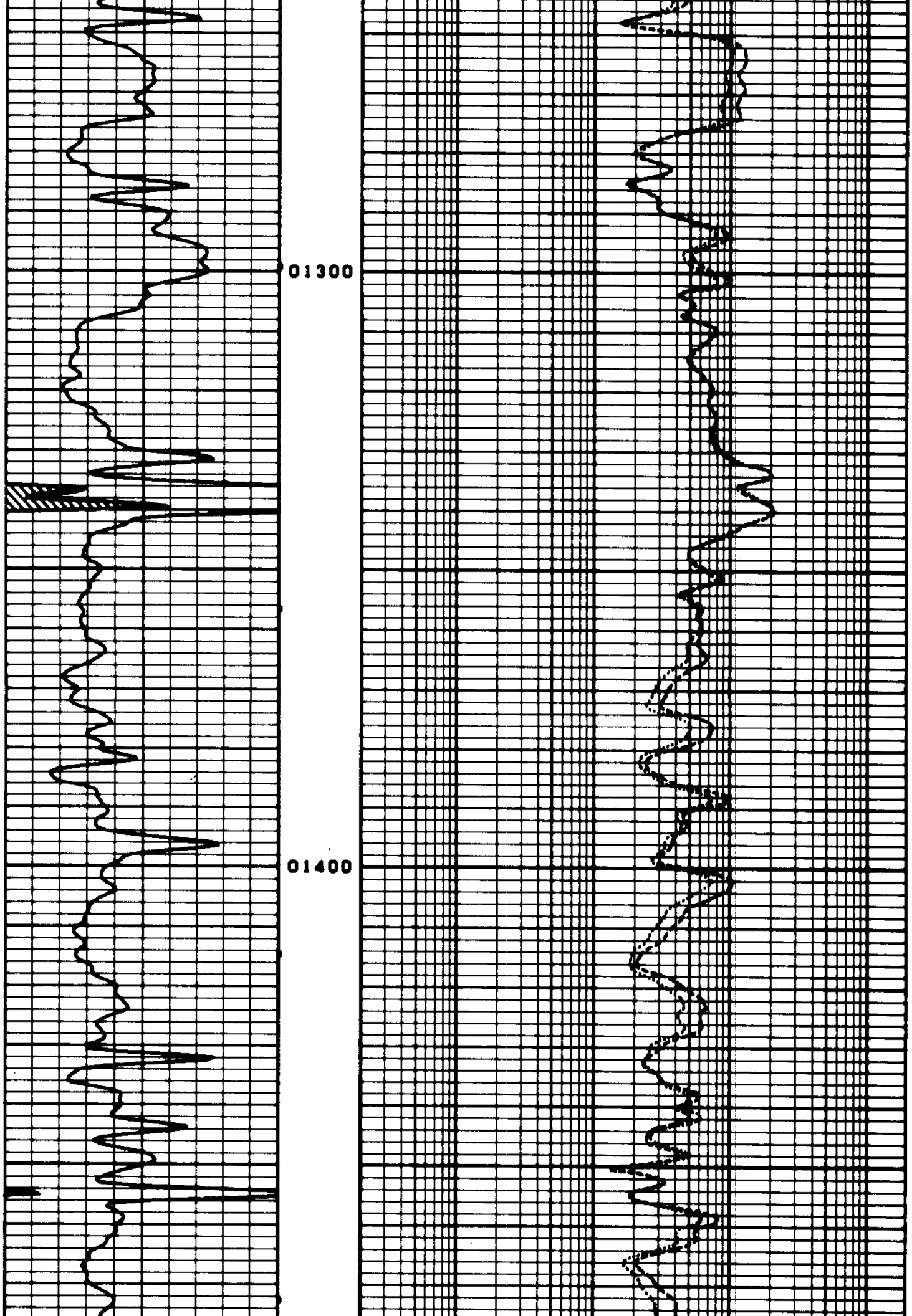
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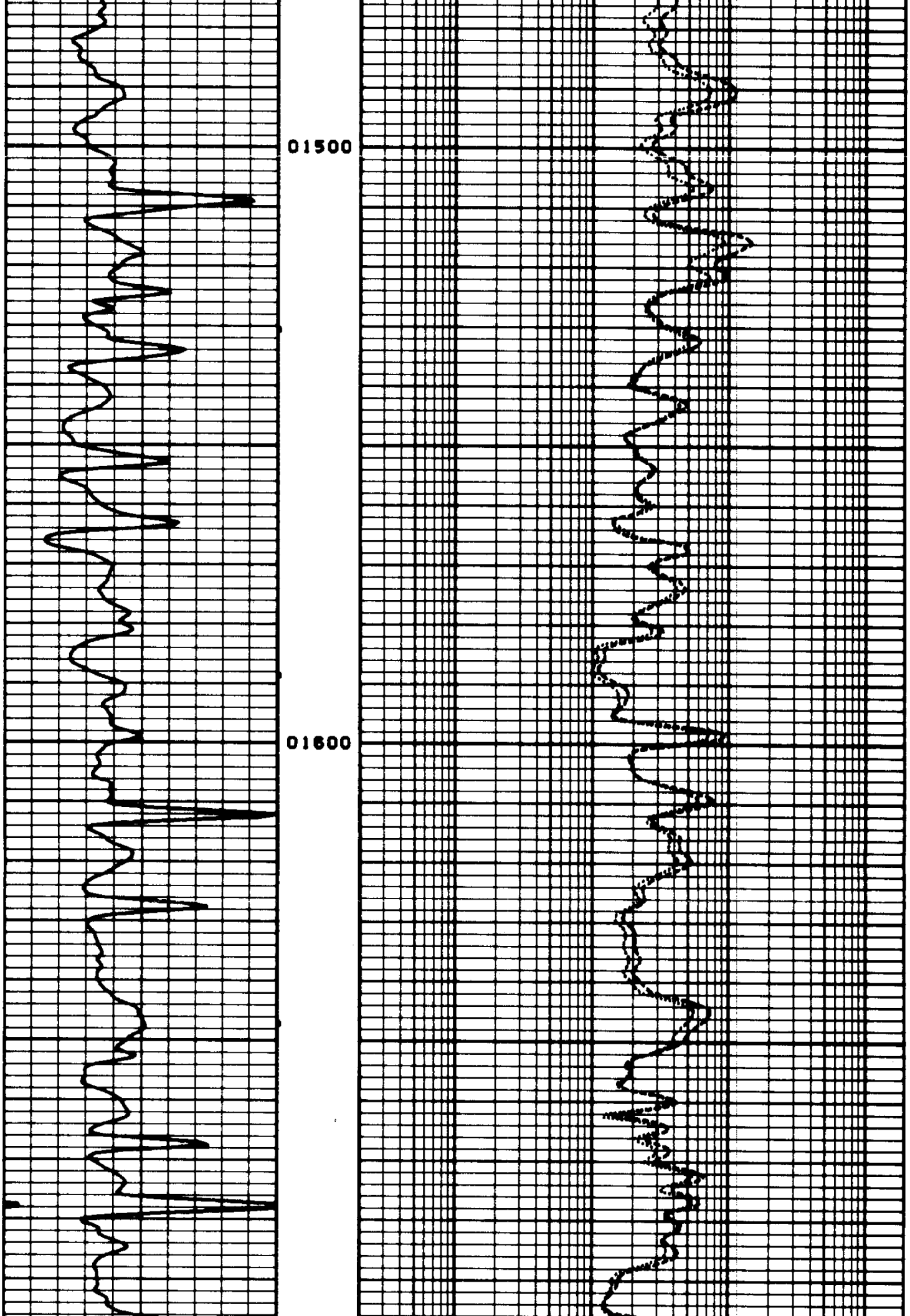
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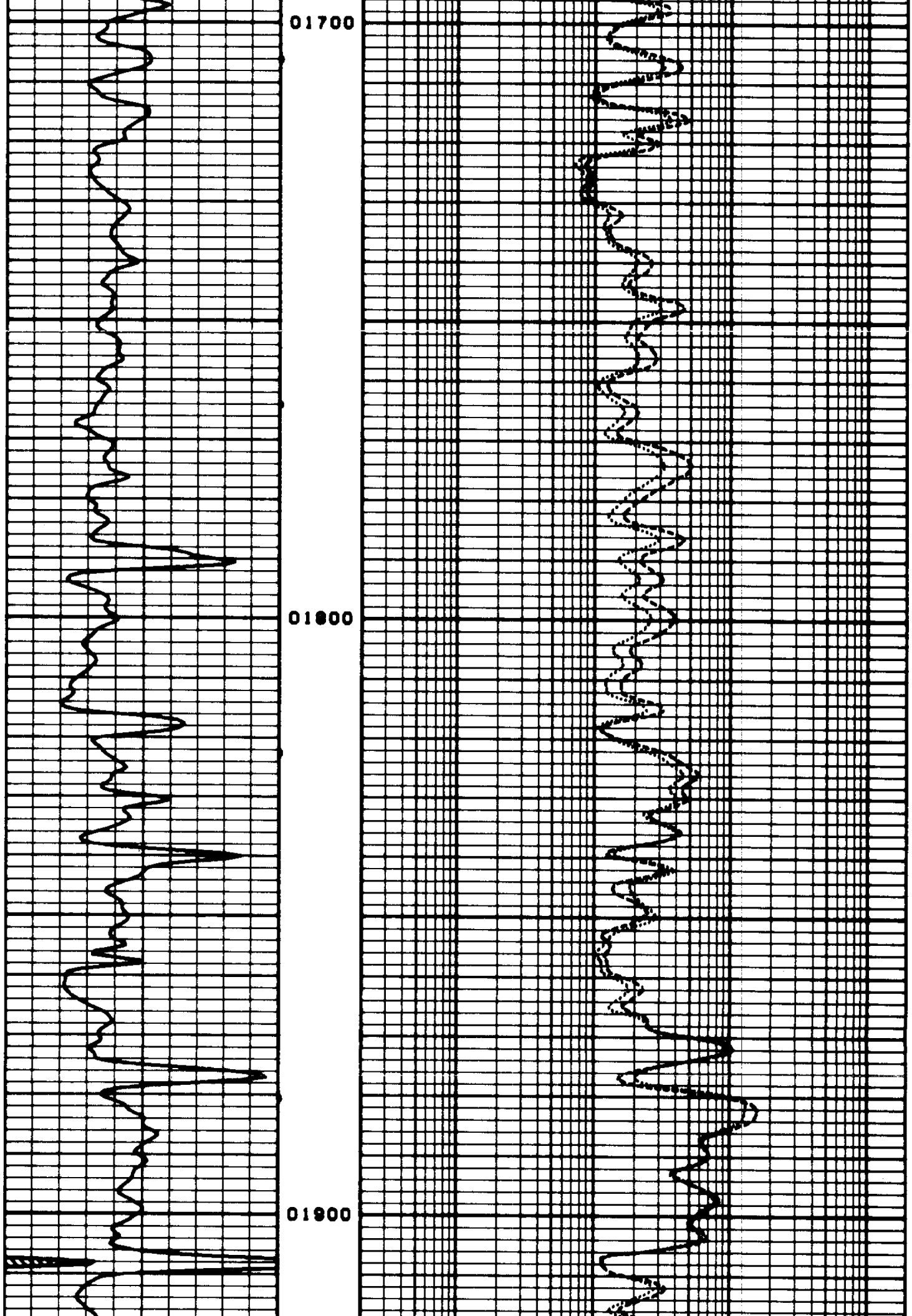
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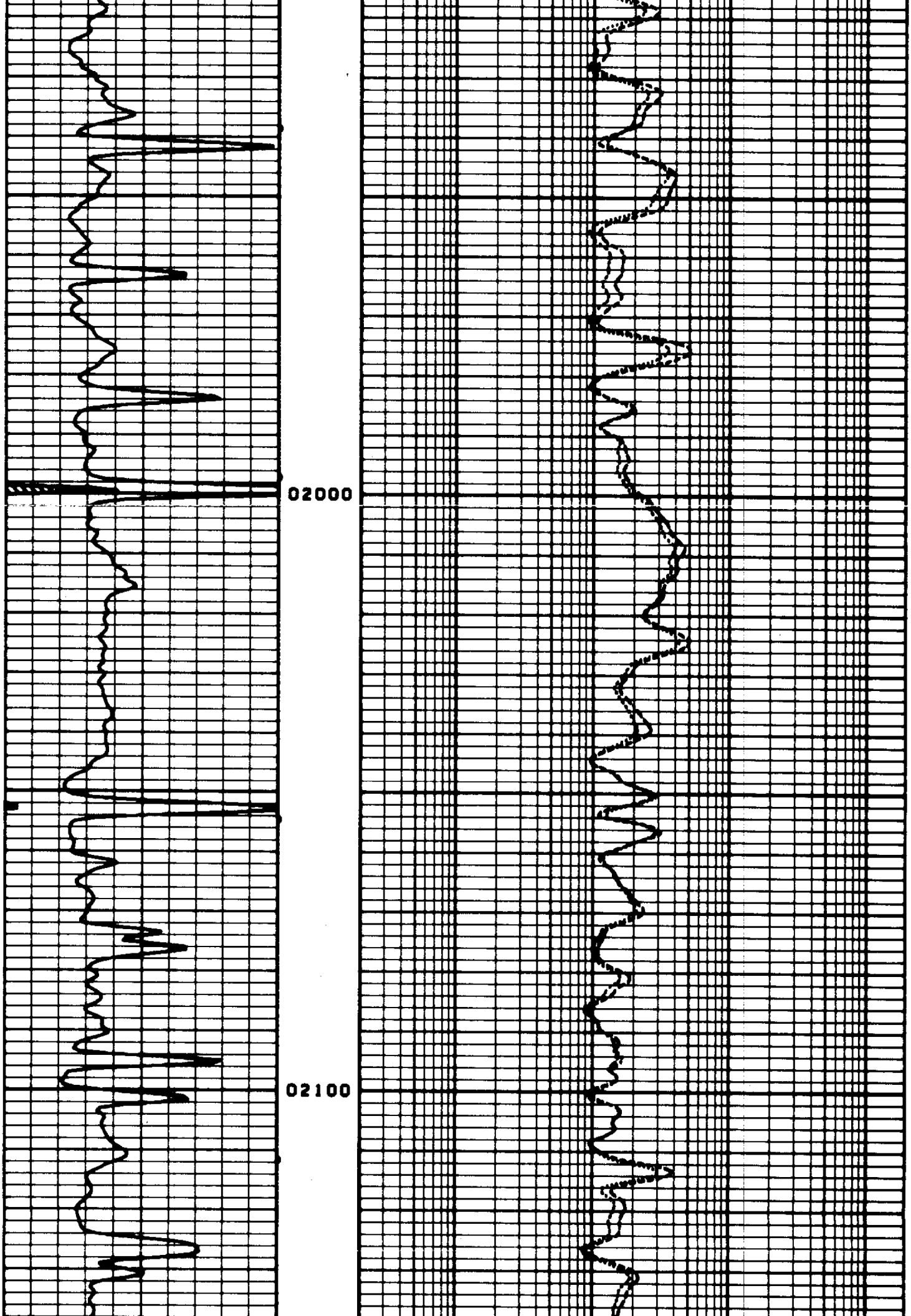
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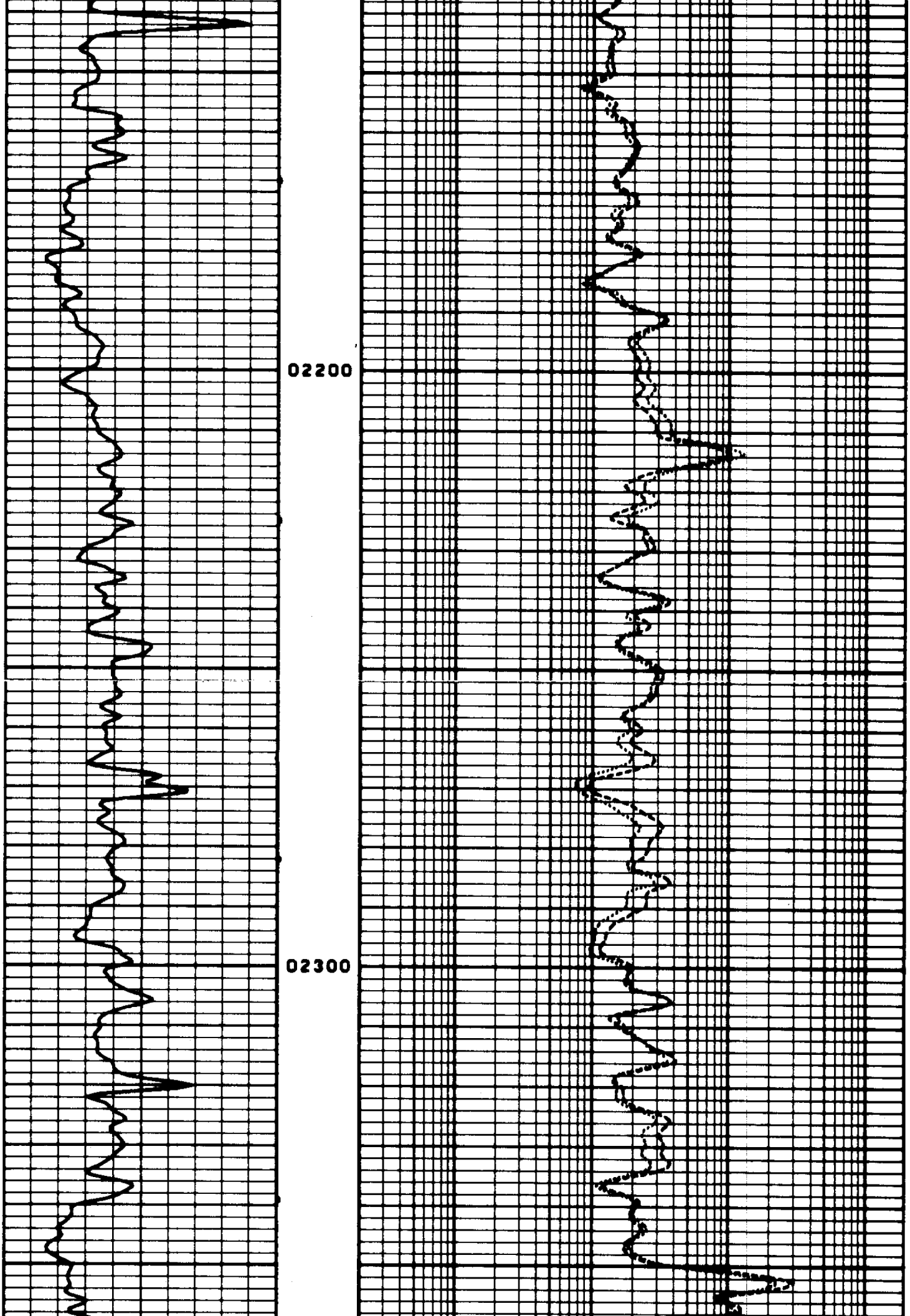
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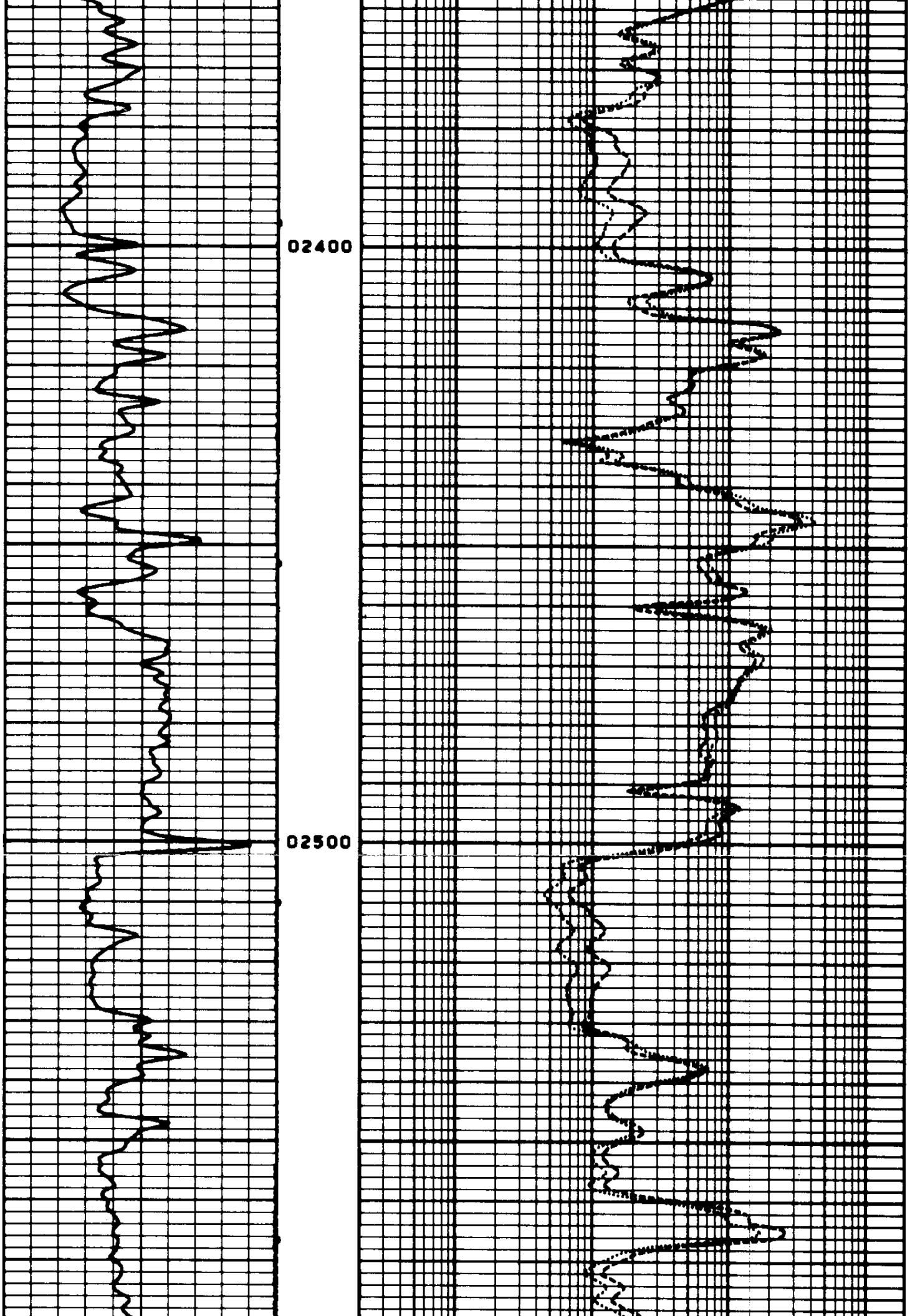
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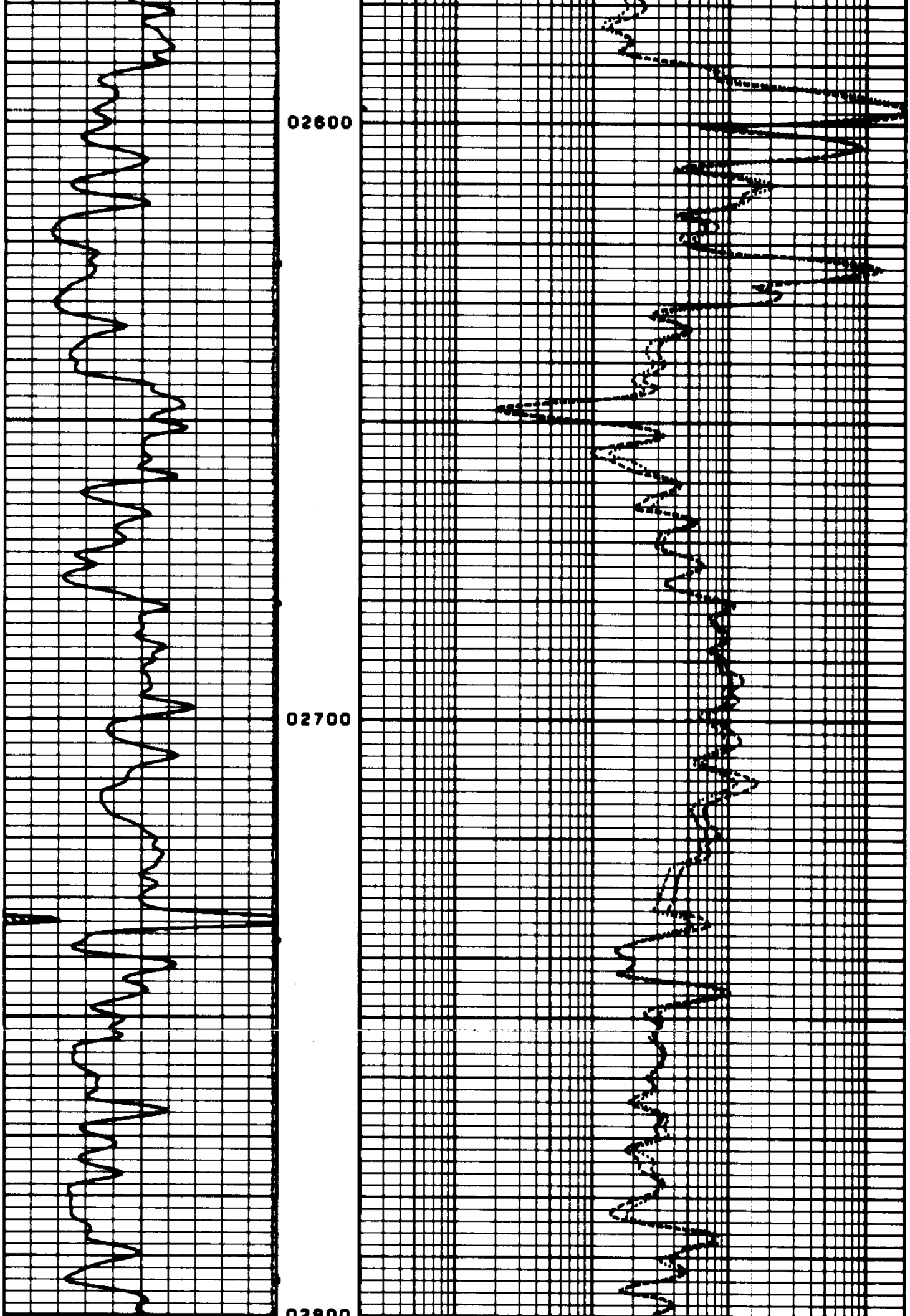
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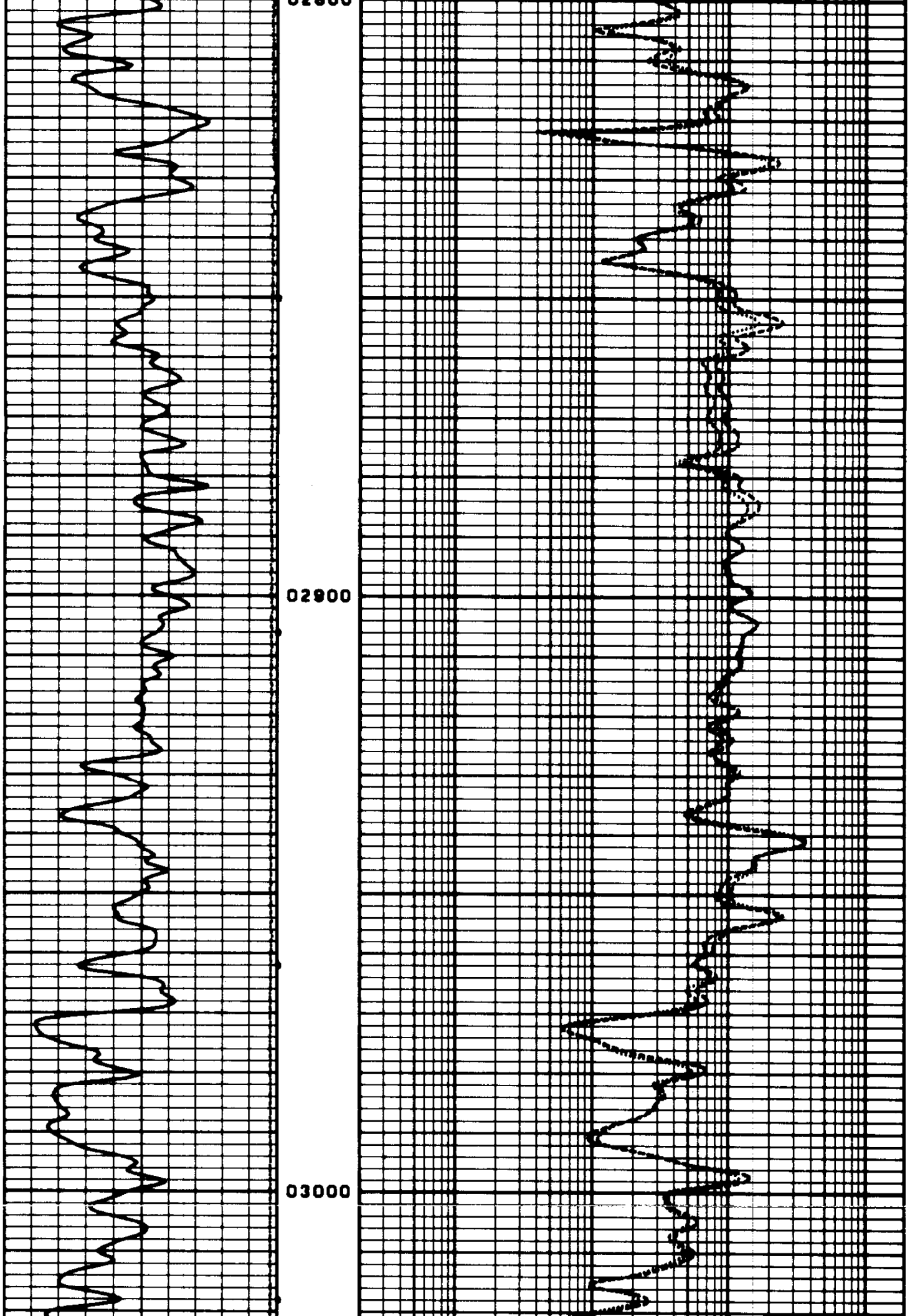
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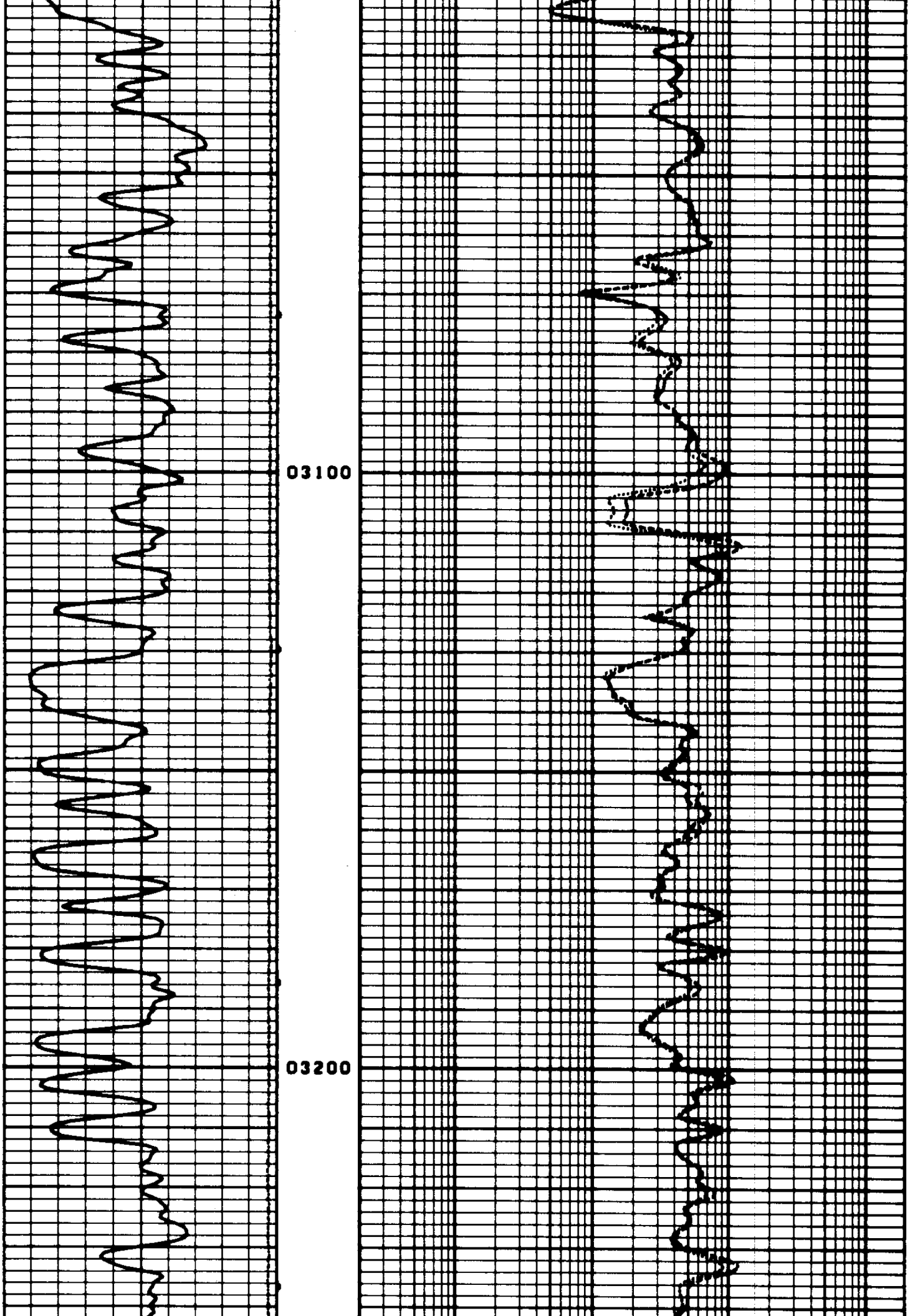
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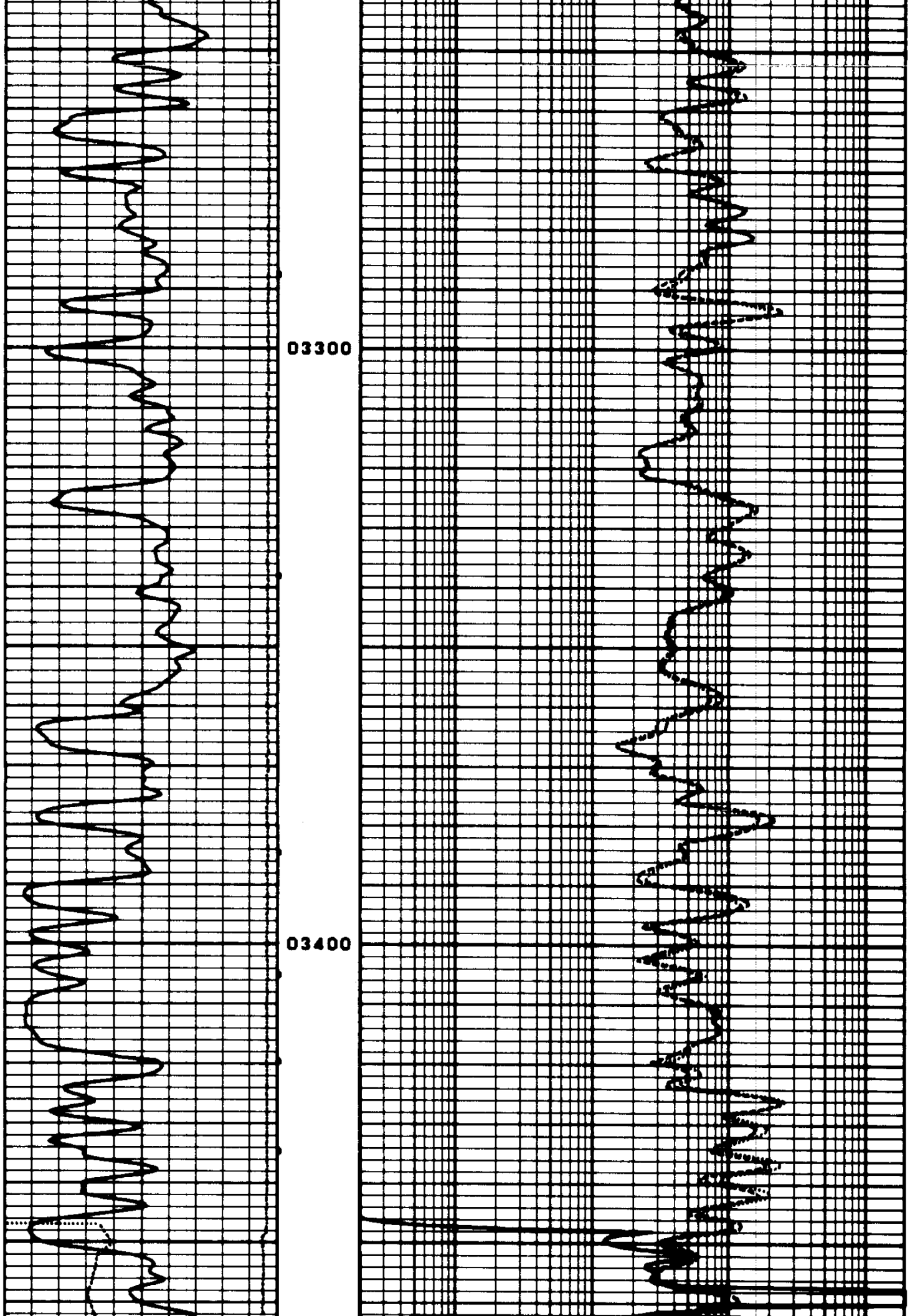
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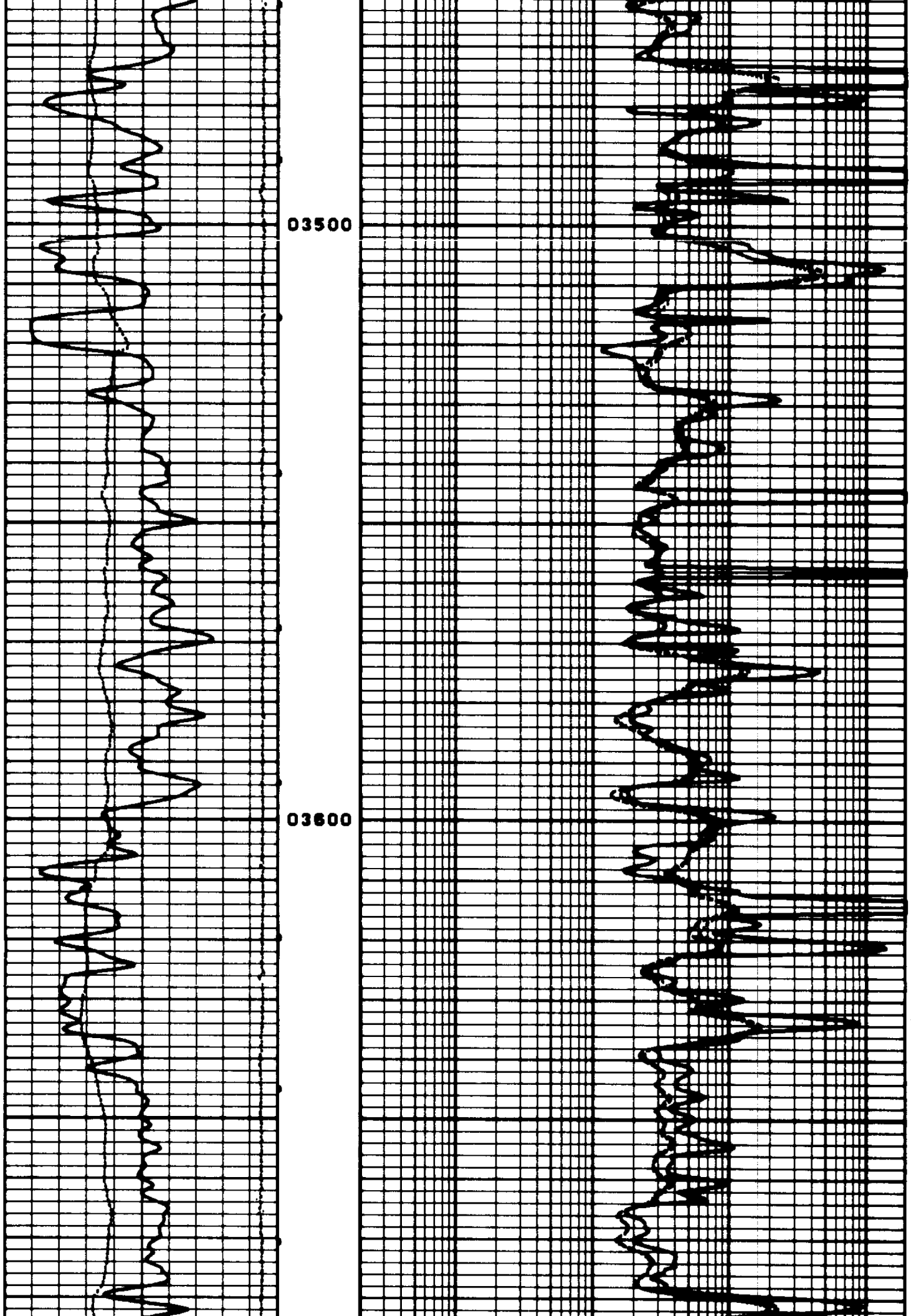
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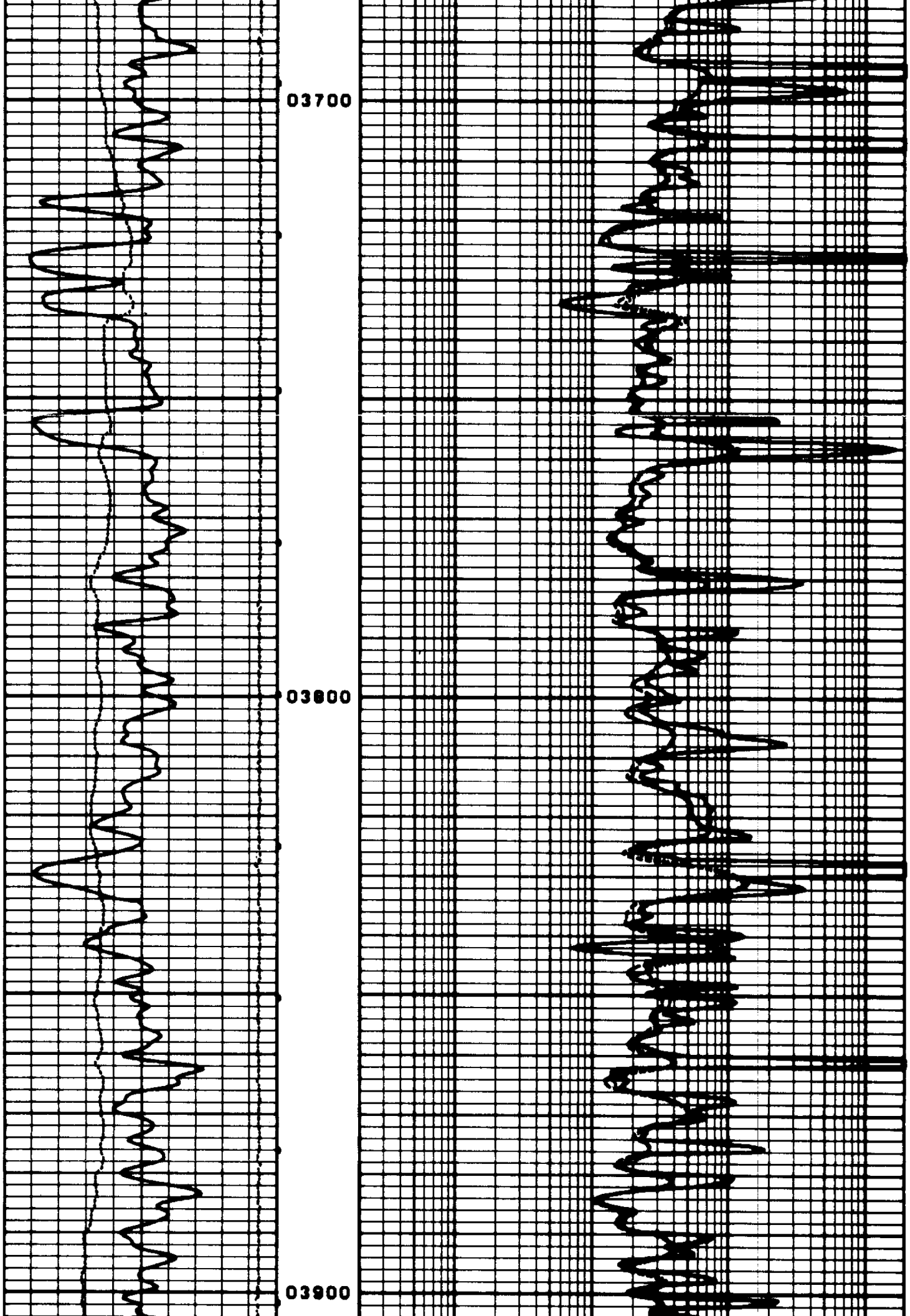
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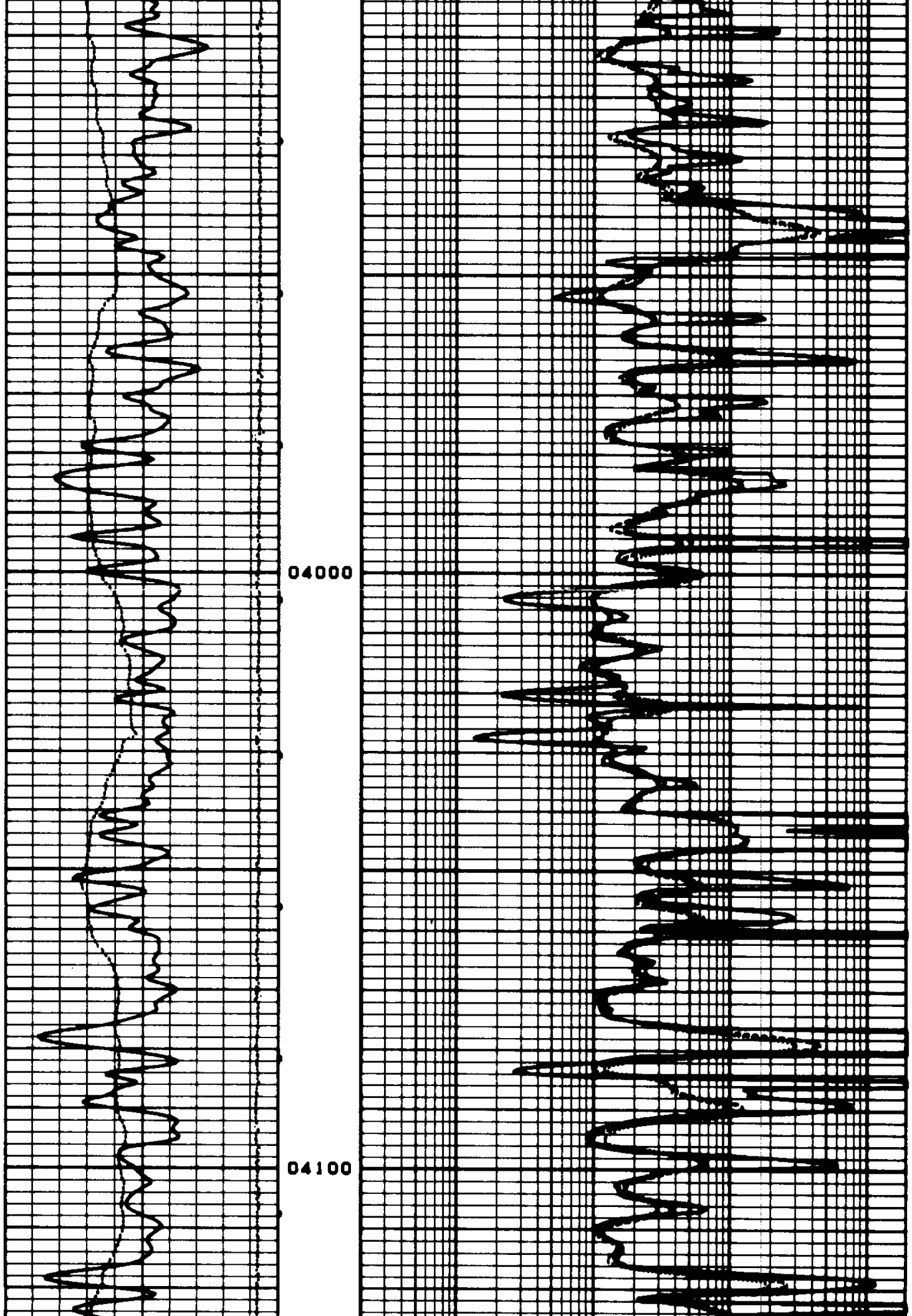
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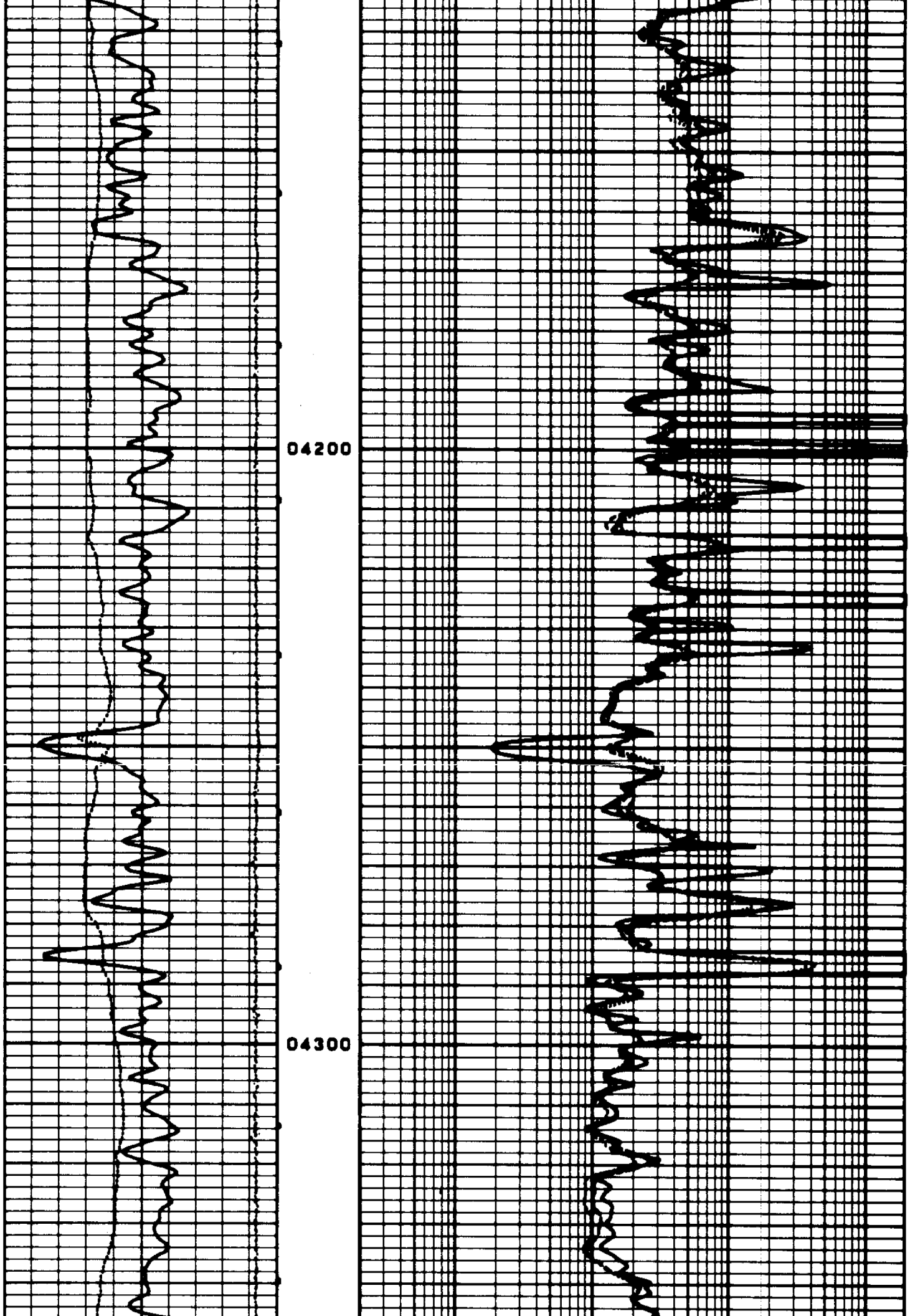
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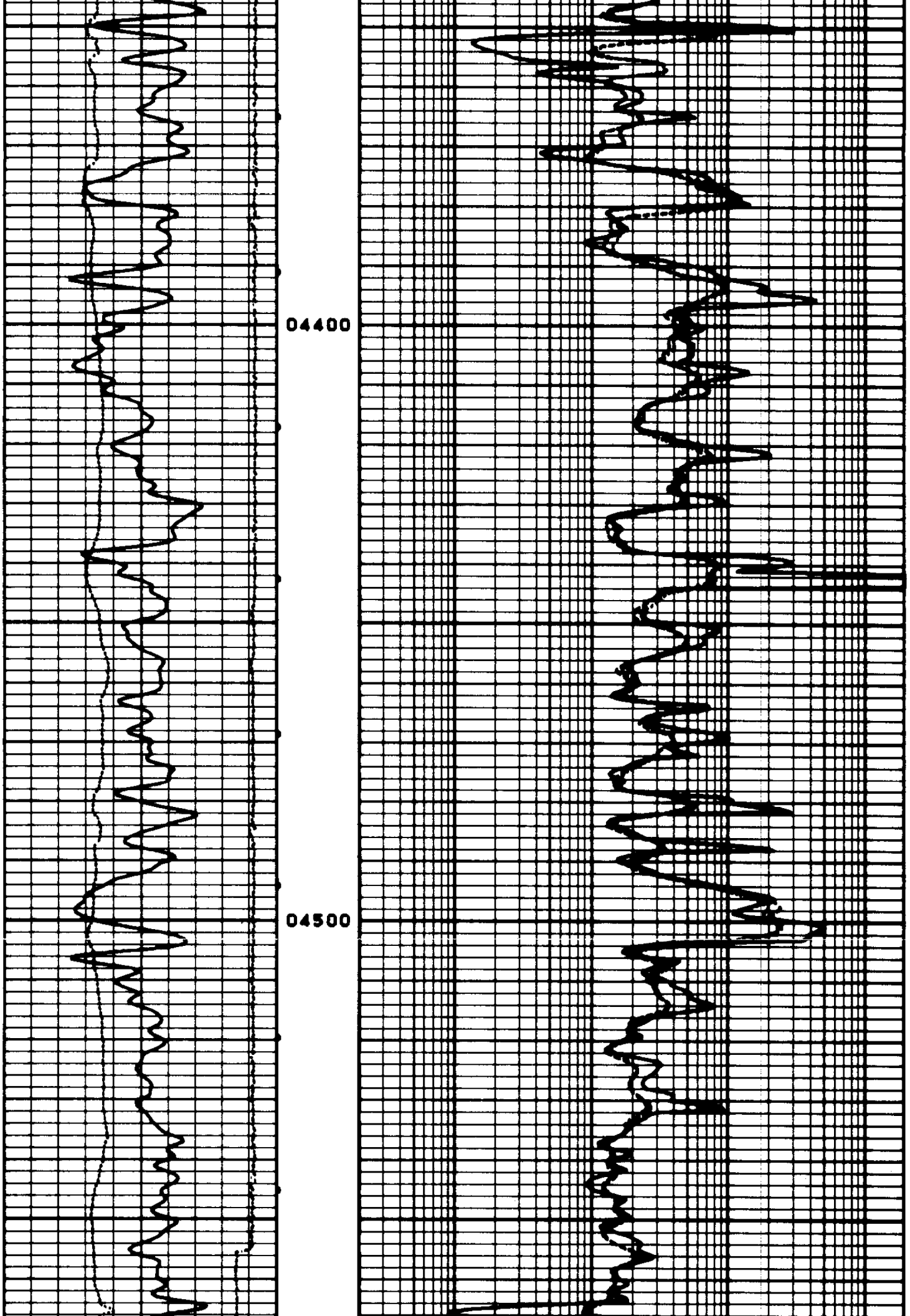
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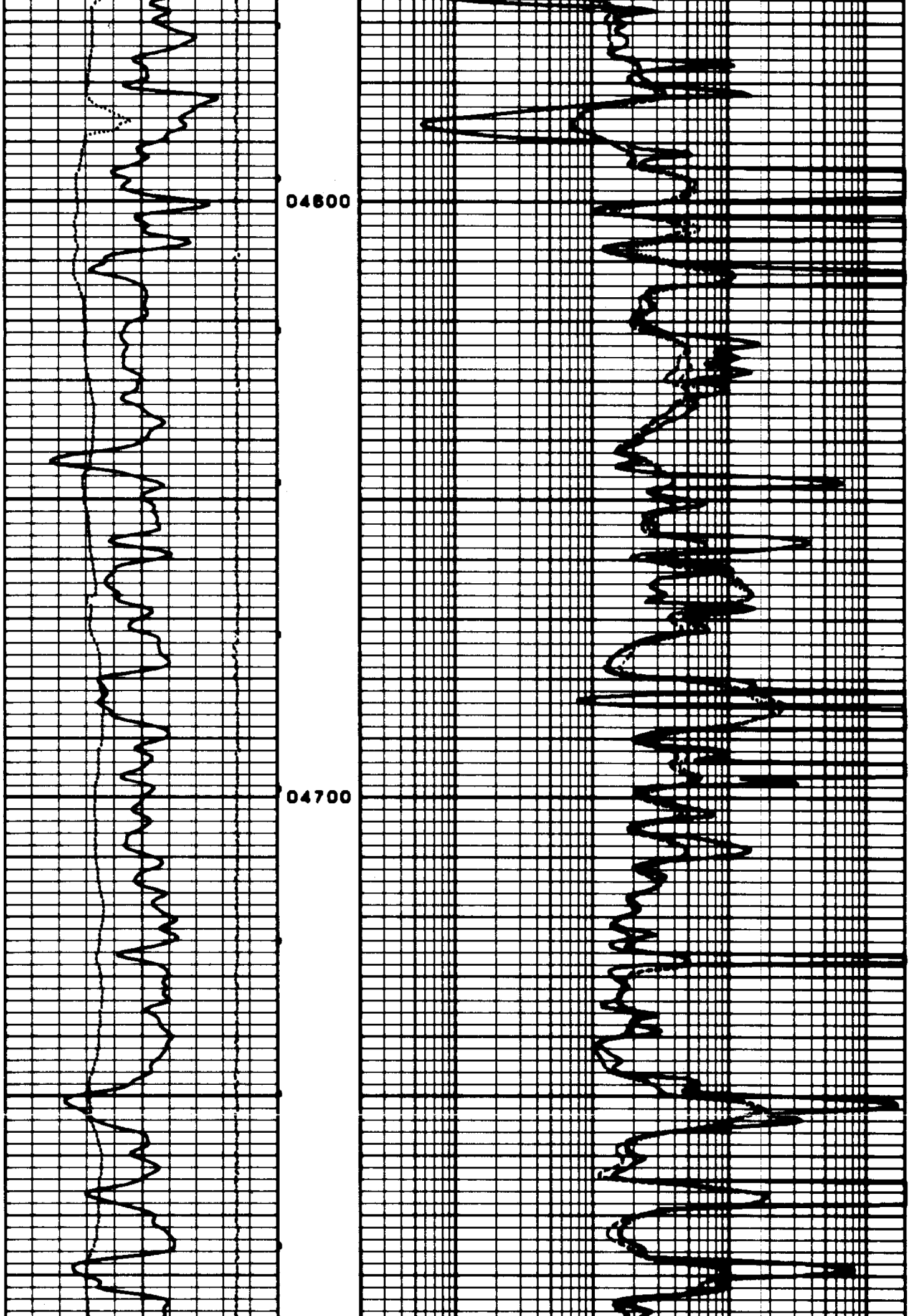
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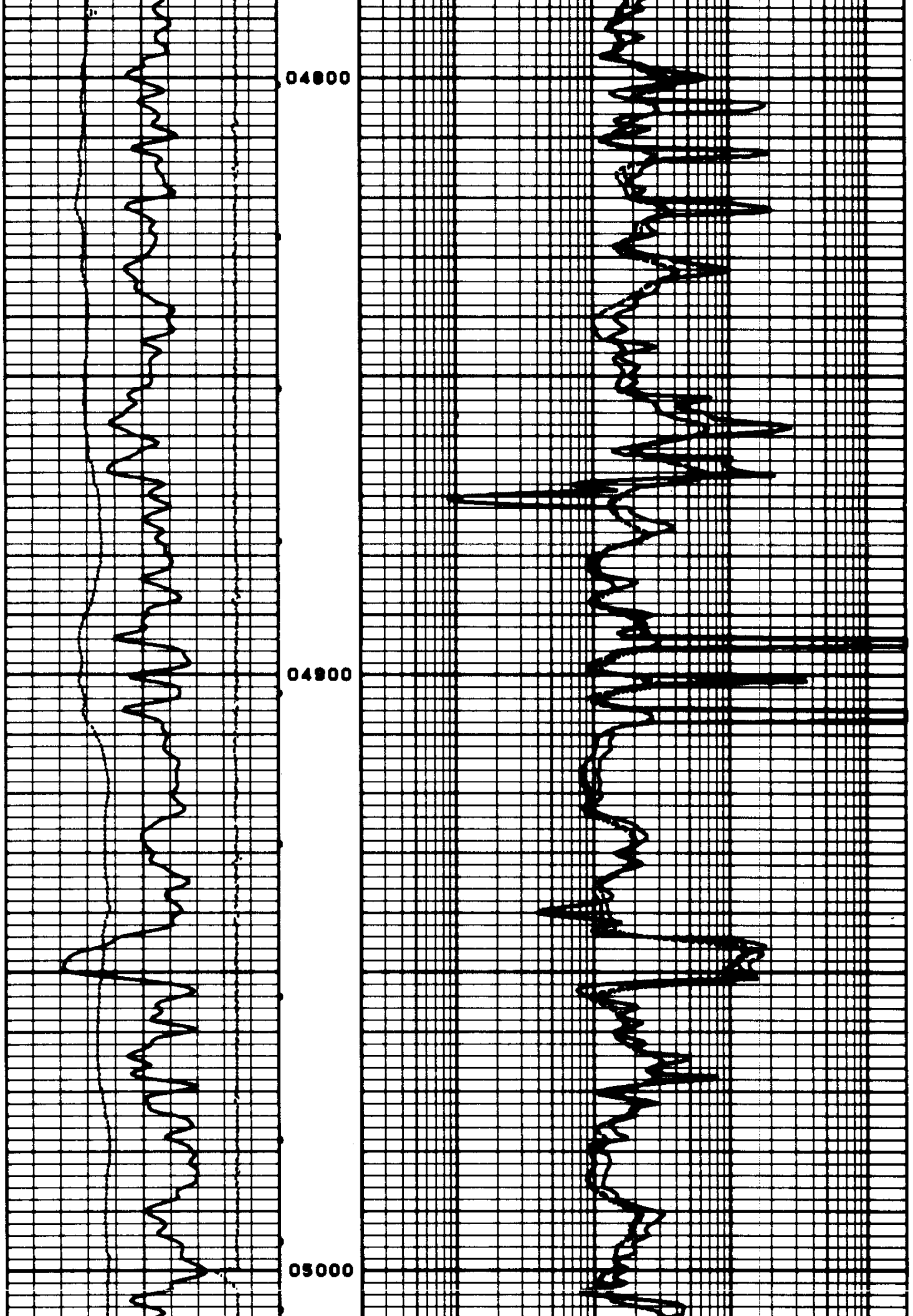
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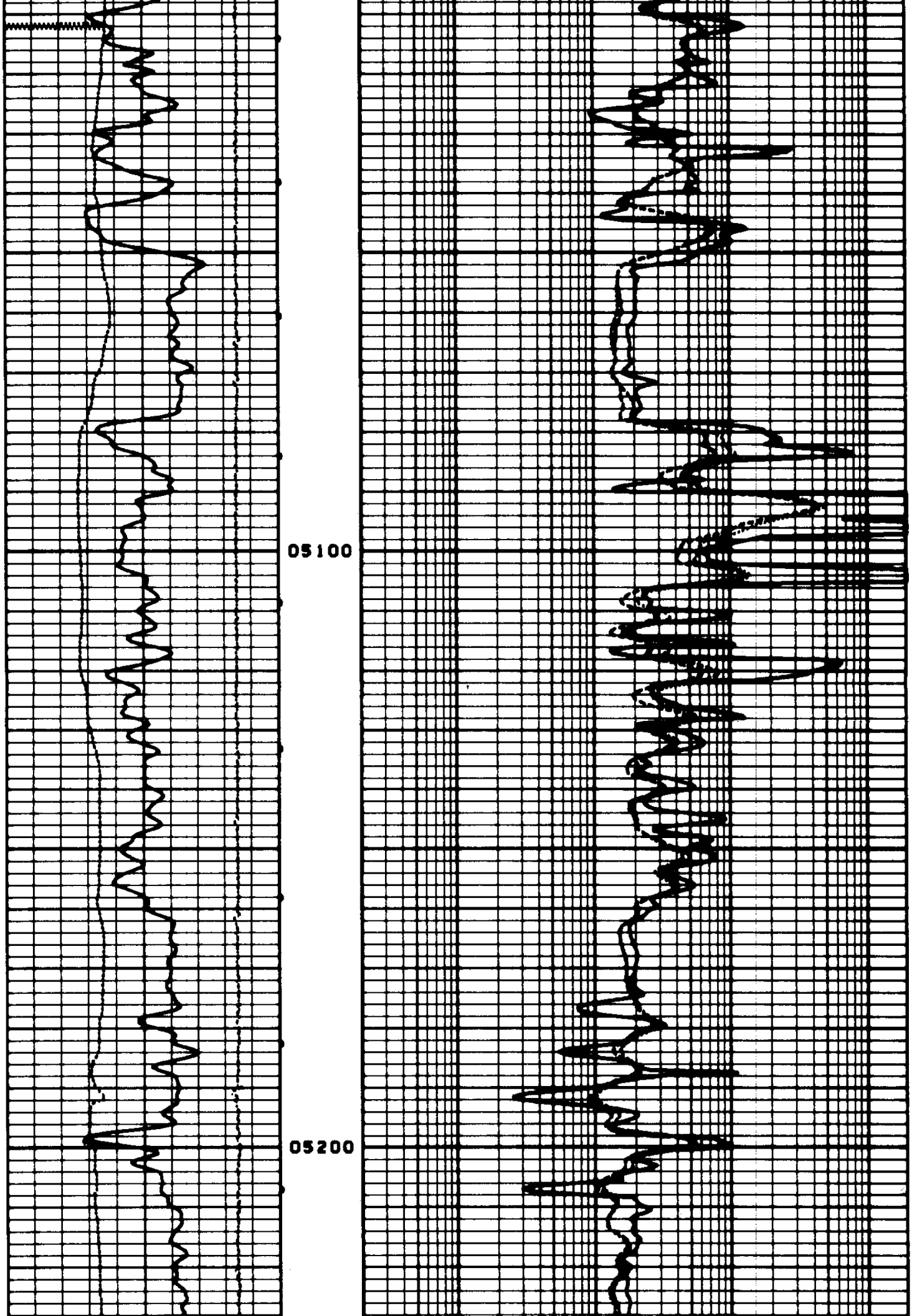
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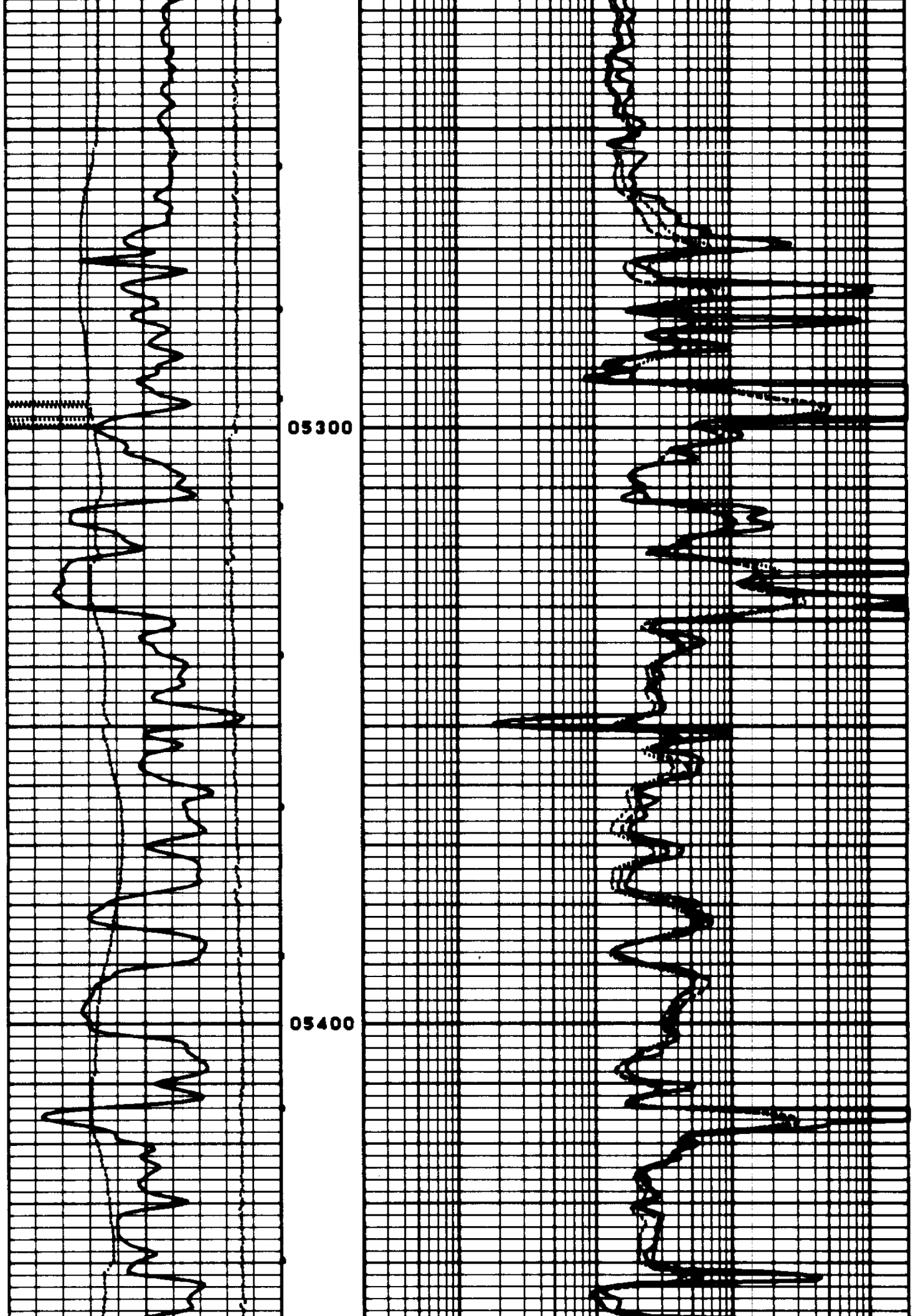
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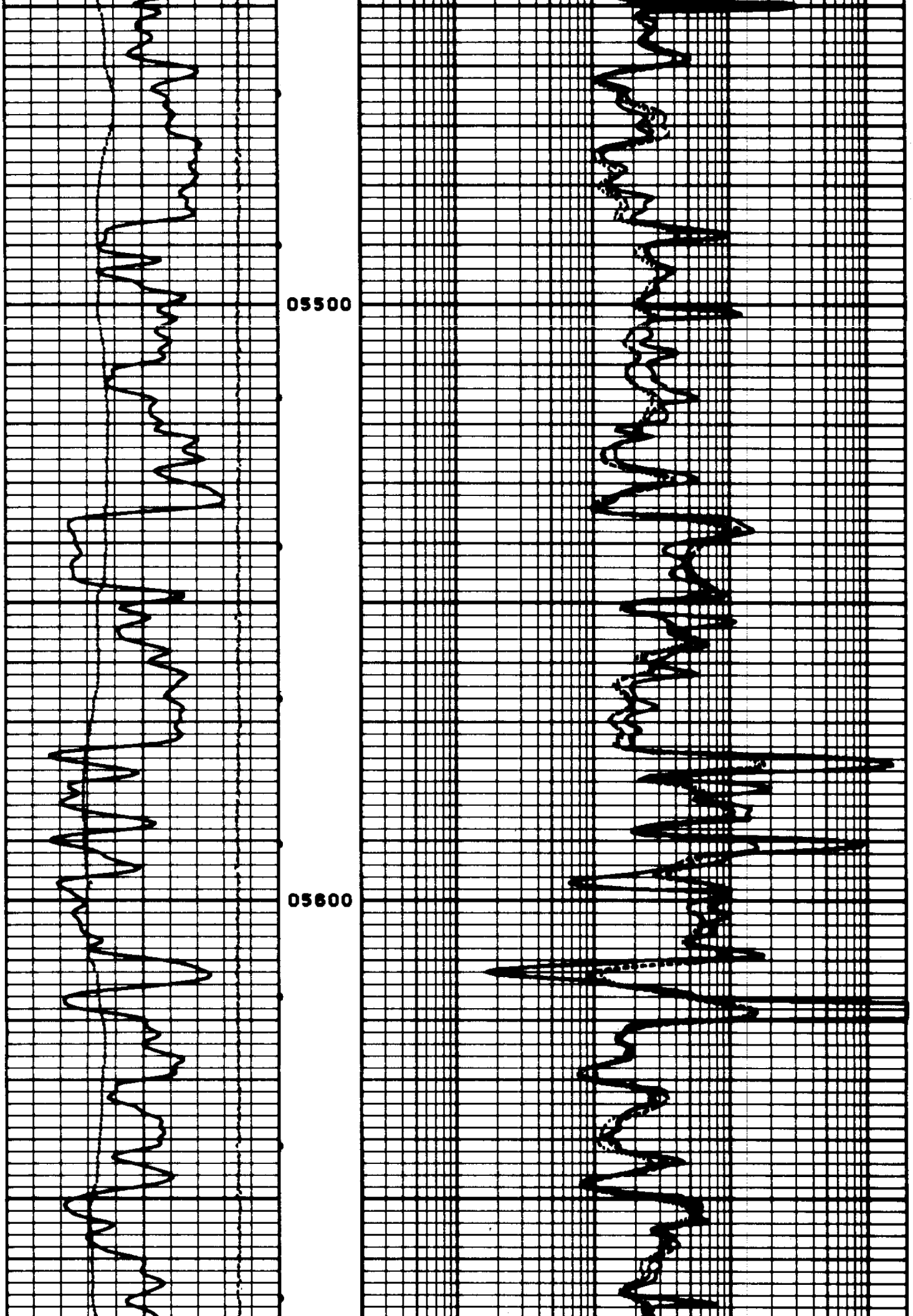
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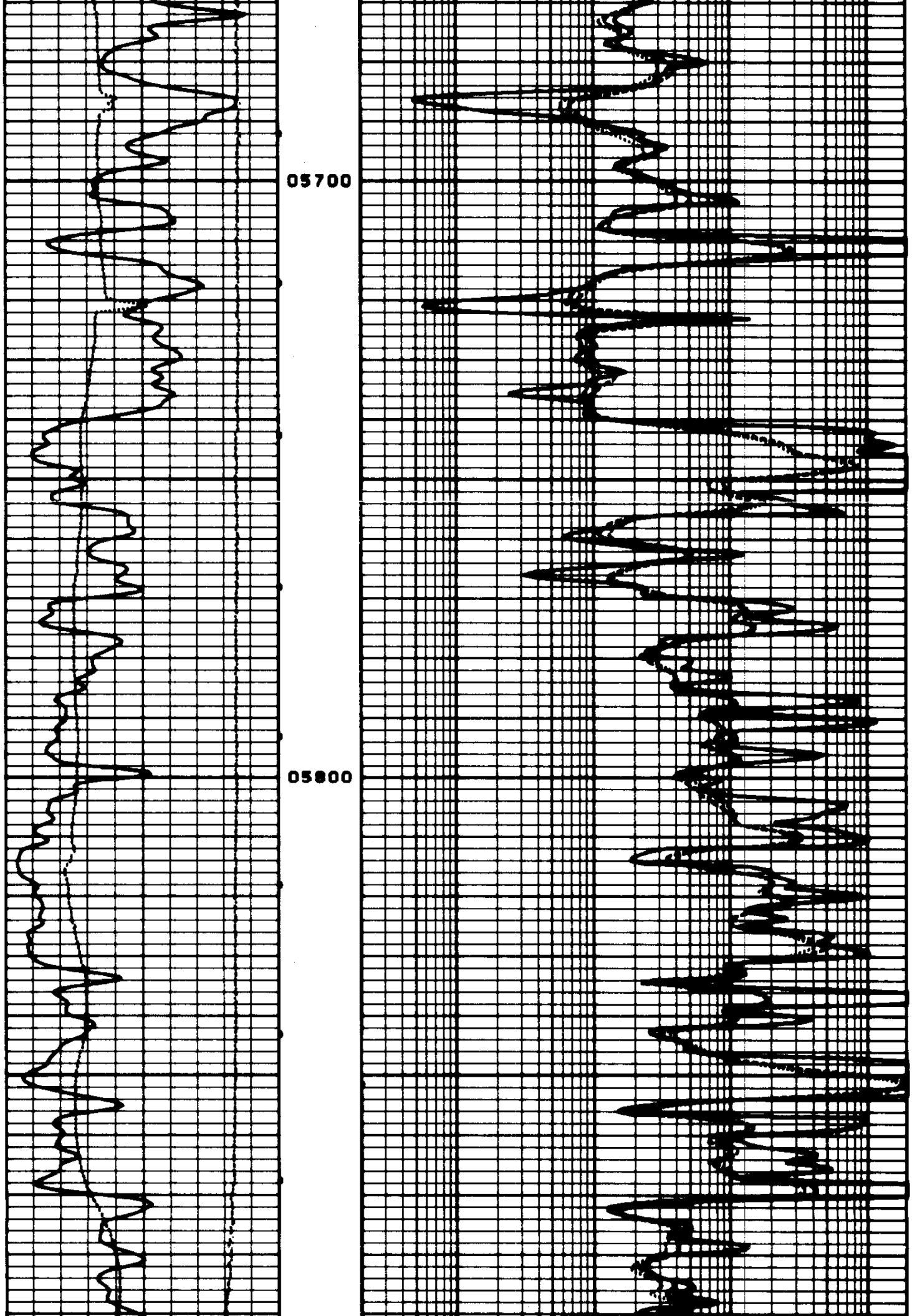
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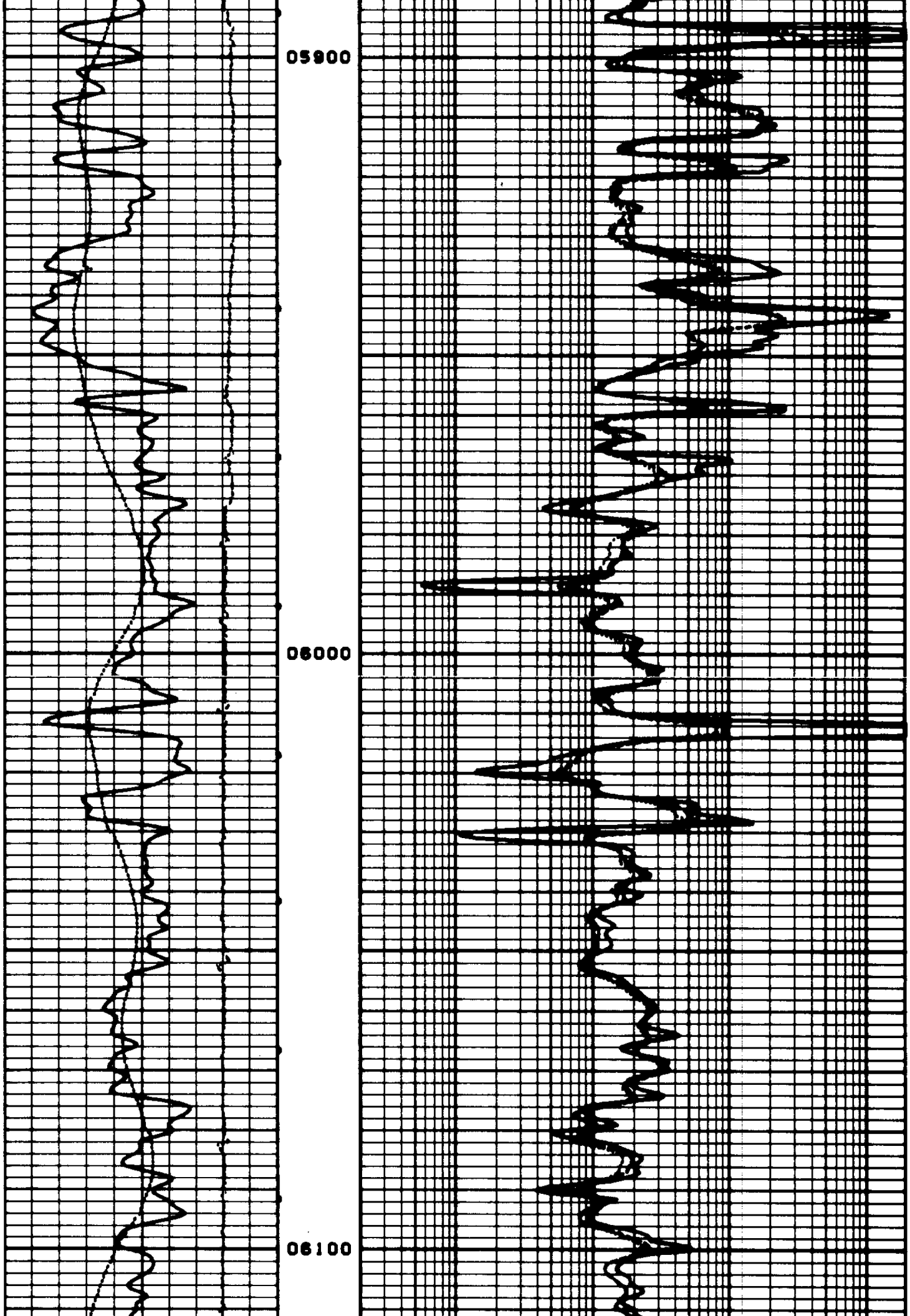
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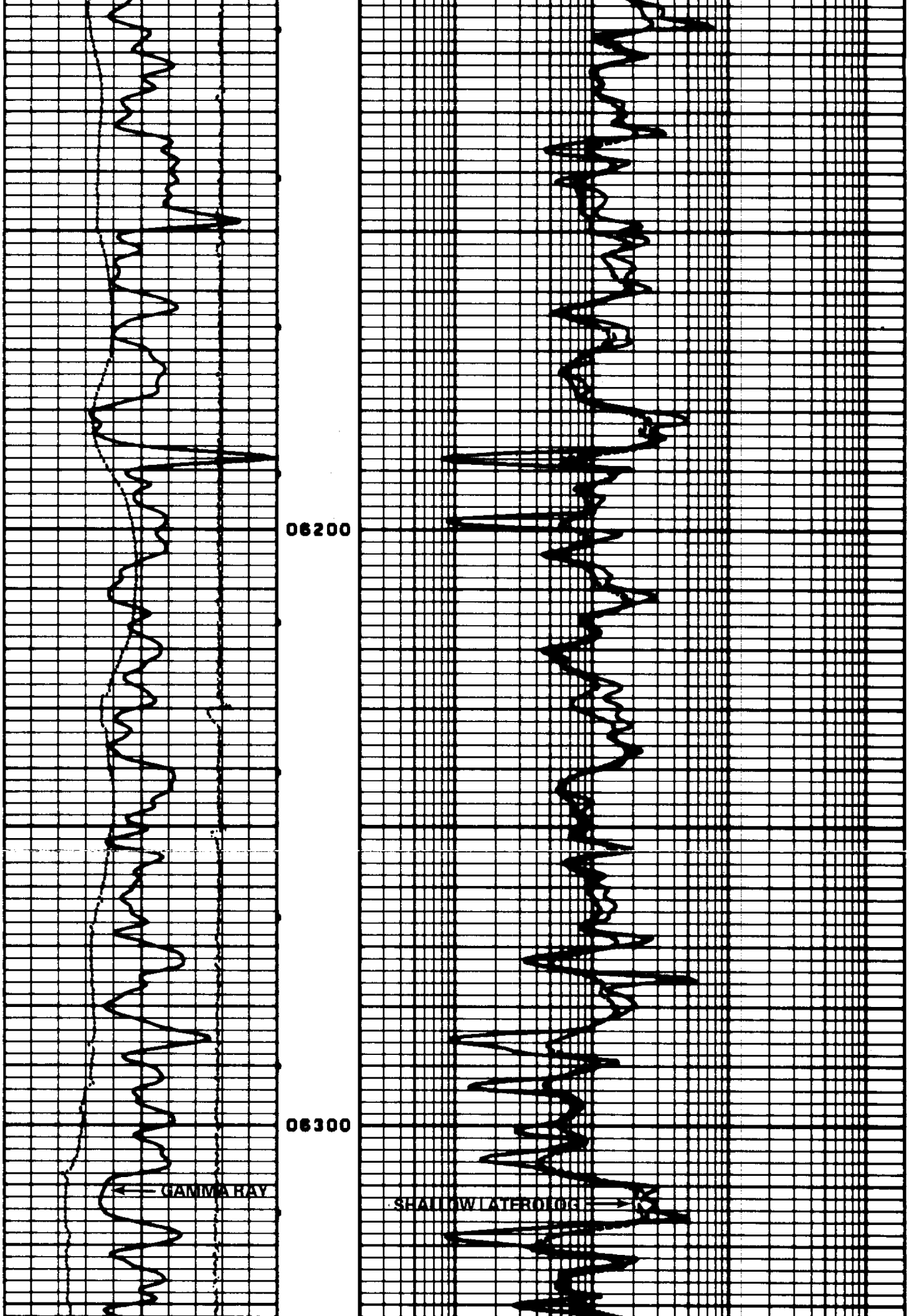
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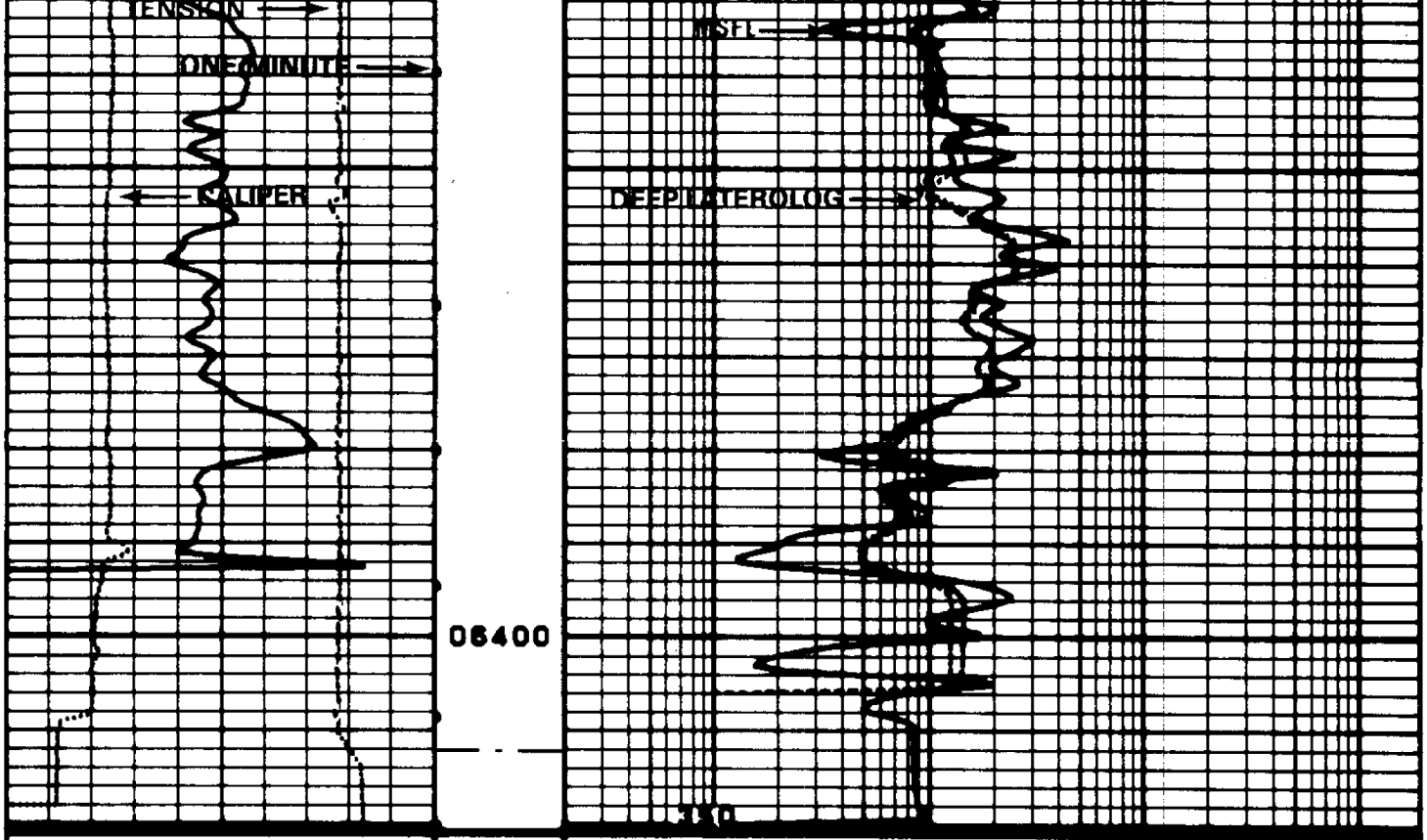
GAMMA RAY
SHALLOW LATEROLOG



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0	GR (API)		200
0.2	R-MSF (Ω-M)		2000
0.2	R-LLS (Ω-M)		2000
0.2	R-LLD (Ω-M)		2000

12-06-86 08:50 6420.5 359172 0093-55 0 0

Company COORS ENERGY COMPANY

Well UTE TRIBAL NO. 4-8

Field ANTELOPE CREEK

County DUCHESNE State UTAH

GO FR 6412
GO TD 6414
DRLR TD 6420
Elev:
KB 5881
DF --
GL 5866

12-06-86 13:25 4940.0 359172 0093-55 0 14

1000	TENSION (LBS)		0
6	CAL-X (IN)		16
0	GR (API)		200
0.2	R-MSF (Ω-M)		2000
0.2	R-LLS (Ω-M)		2000
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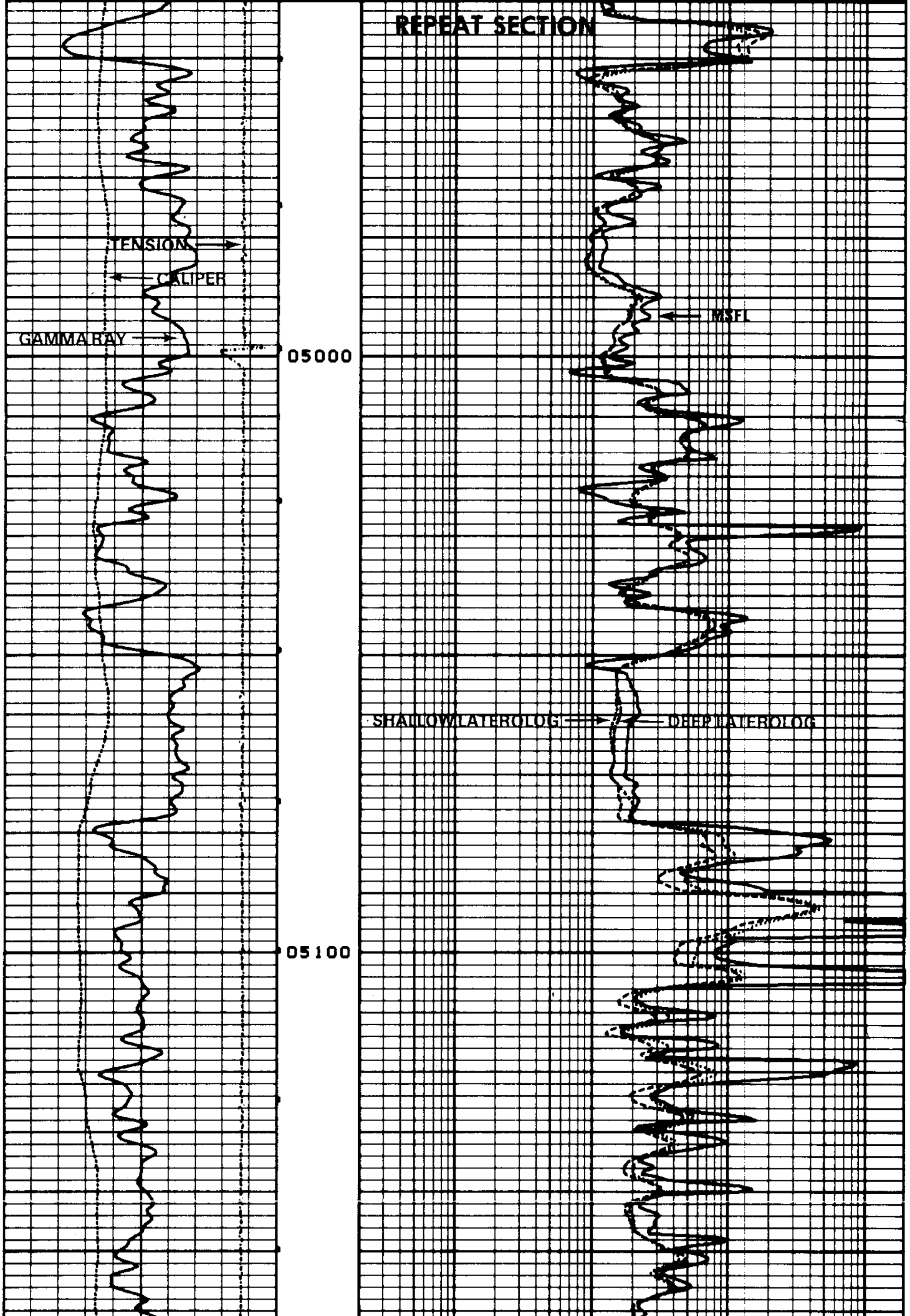
REPEAT SECTION
TENSION
CALIPER
GAMMA RAY
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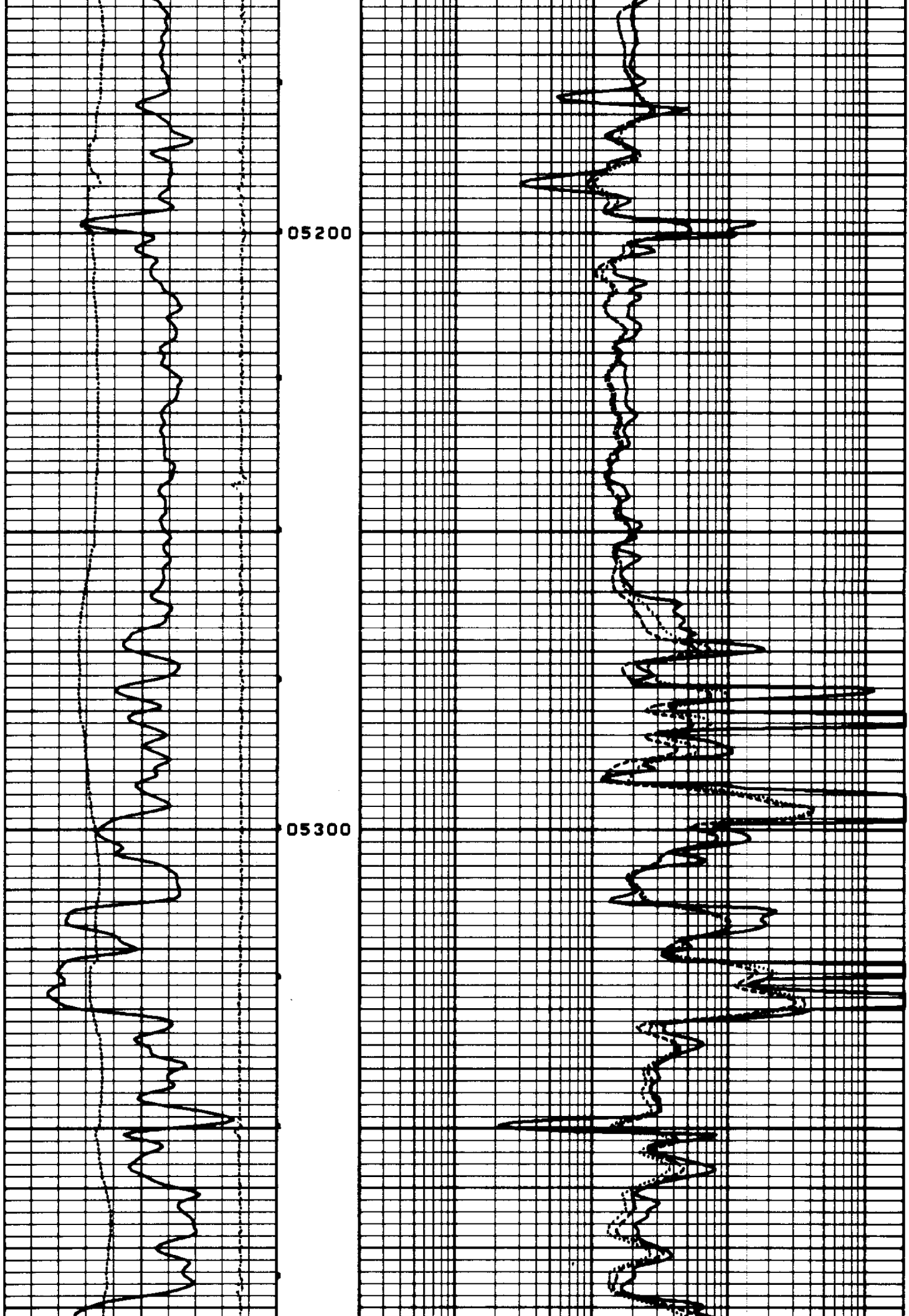
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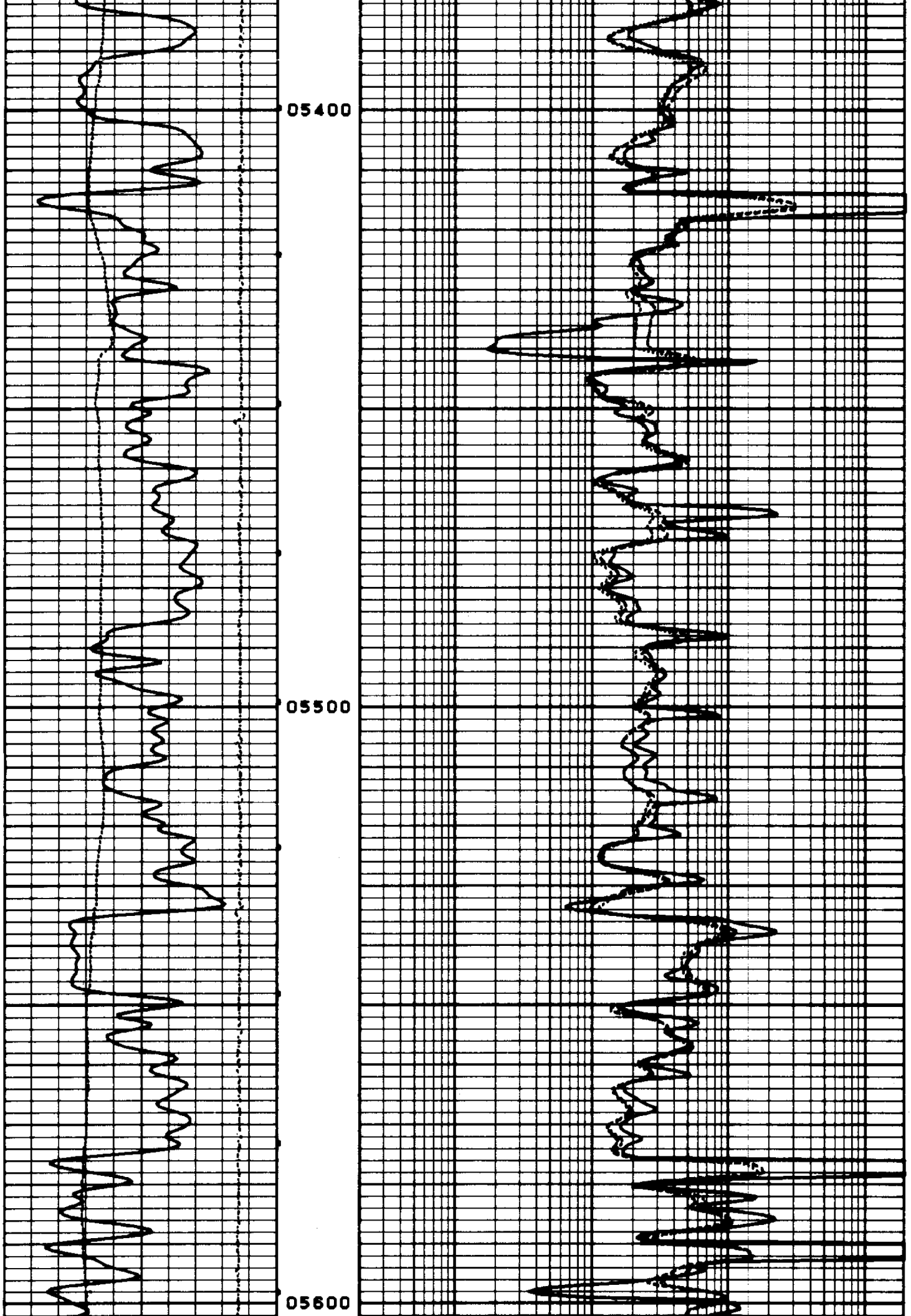
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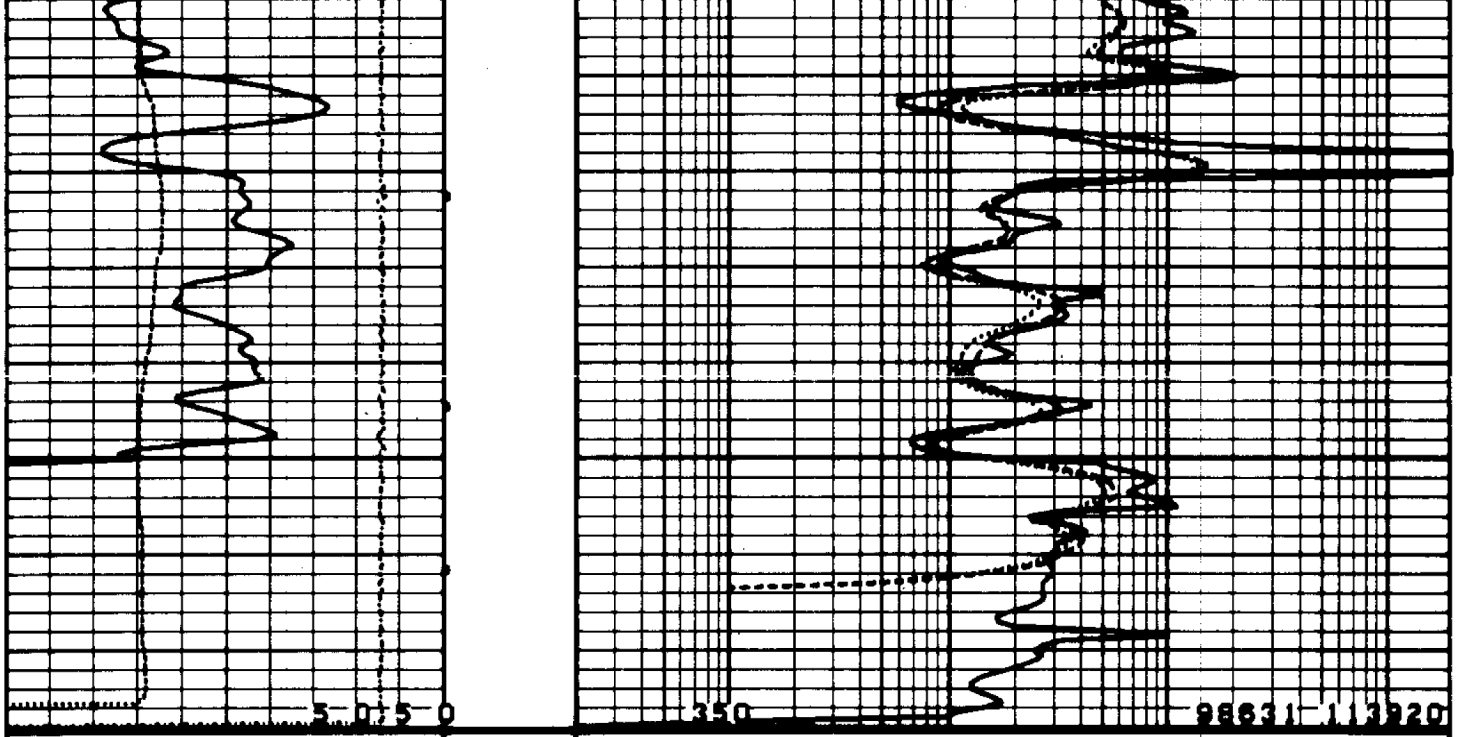
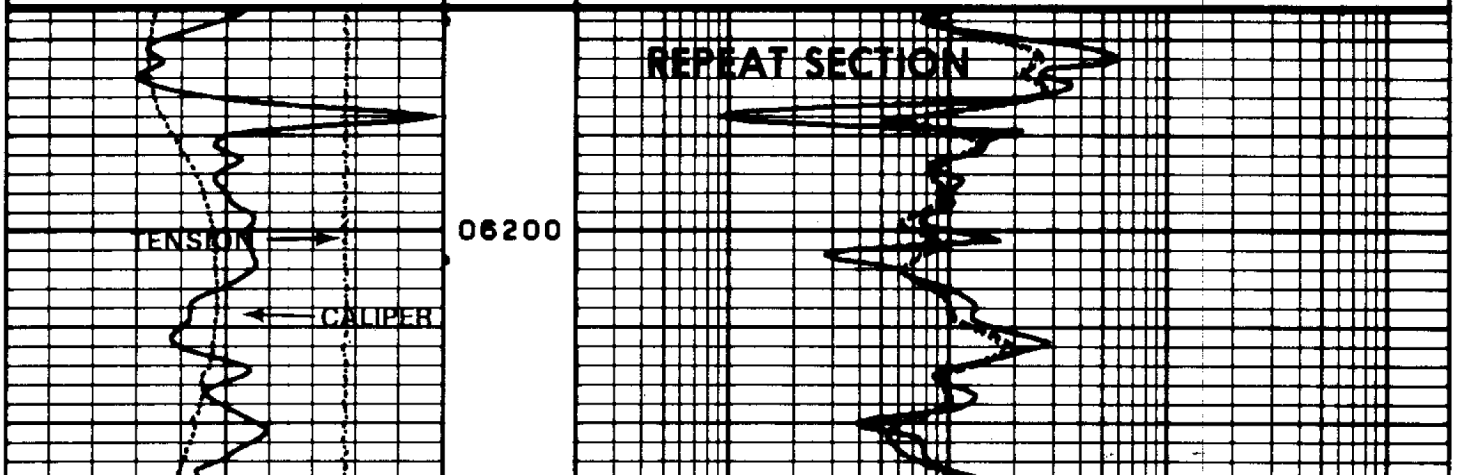


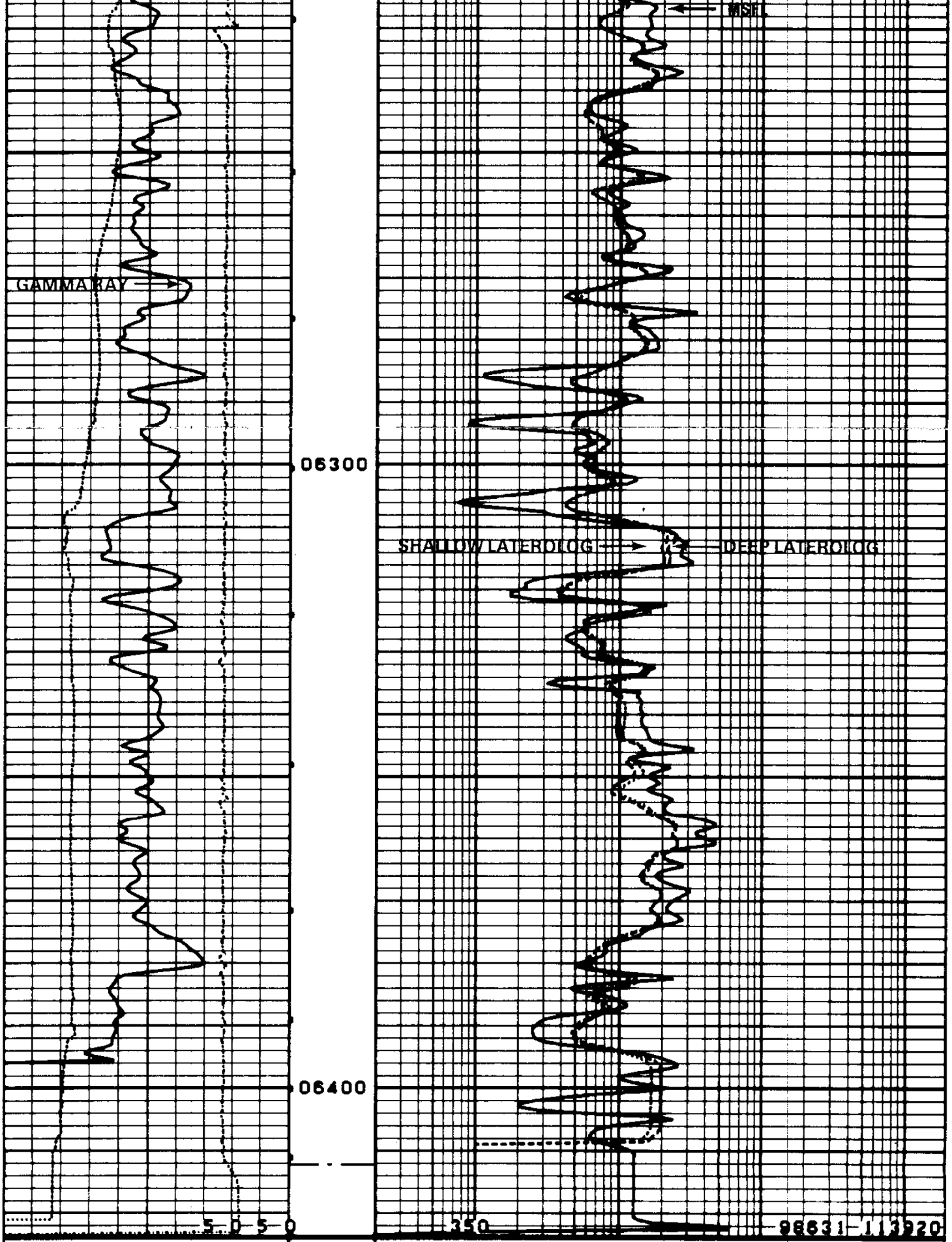
1000TENSION(LBS) 0	0.2	R-MSF (Ω-M)	2000
	0.2	R-LLS (Ω-M)	2000
	0.2	R-LLD (Ω-M)	2000
6 CAL-X (IN) 16			
0 GR (API) 200			

12-06-86 12:56 5678.0 359172 0093-55 0 14

12-06-86 08:44 6176.5 359172 0093-55 0 12

1000TENSION(LBS) 0	0.2	R-MSF (Ω-M)	2000
	0.2	R-LLS (Ω-M)	2000
	0.2	R-LLD (Ω-M)	2000
6 CAL-X (IN) 16			
0 GR (API) 200			





0.2	R-MSF (Ω-M)	2000
1000TENSION(LBS) 0		
0.2	R-LLS (Ω-M)	2000
0.2	R-LLD (Ω-M)	2000

6	CAL-X (IN)	16
0	GR (API)	200

12-06-86	08:33	6423.5	359172	0093-55	0	12
12-06-86	05:30	0.0	359172	0093-55	0	4

CALIPER BEFORE SURVEY CALIBRATION

TOOL TYPE: MSF- SERIAL NO:18013

	MEASURED			CALIBRATED		
	SMALL	LARGE	UNITS	SMALL	LARGE	UNITS
CALX	6.15	12.99	IN	7.00	14.00	IN

12-06-86	05:25	0.0	359172	0093-55	0	3

GAMMA RAY BEFORE SURVEY CALIBRATION

TOOL TYPE: GRT-DC SERIAL NO:04413

BACKGROUND	CALIBRATOR	STANDARD	UNITS
175.8	496.4	120.0	GAPI

DELTA COUNTS PER SEC: 320.6 CPS/API = 2.671

12-06-86	13:54	986.5	359172	0093-55	0	10

DUAL LATEROLOG AFTER SURVEY CALIBRATION

TOOL TYPE: DLL- SERIAL NO:00017

100 OHM-METER MEASUREMENT

REISTIVITY	BEFORE	AFTER	UNITS
LLD	100	98	OHM-M
LLS	100	100	OHM-M

REFERENCE DATA

	LLD	LLS	UNITS
DRIVE OUTPUT	1136	1911	
CHANNEL OFFSETS V(0)	155	178	MV
CHANNEL OFFSETS V(90)	183	178	MV
CHANNEL OFFSETS I(0)	159	173	MV
CHANNEL OFFSETS I(90)	175	164	MV

12-06-86	13:53	986.5	359172	0093-55	0	9

MICRO-SPHERICALLY FOCUSED AFTER SURVEY TOOL CHECK

TOOL TYPE: MSF- SERIAL NO:18013

	LOW		HIGH		
	BEFORE	AFTER	BEFORE	AFTER	UNITS
MSFL	0.0	0.0	500.0	499.9	MMHO/M

12-06-86	07:28	350.0	359172	0093-55	0	8

DUAL LATEROLOG BEFORE SURVEY CALIBRATION

TOOL TYPE: DLL- SERIAL NO:00017

100 OHM-METER CAL

	MEASURED	CALIBRATED	UNITS
LLD	124	100	OHM-M
LLS	111	100	OHM-M

REFERENCE DATA

	LLD	LLS	UNITS
ZERO OFFSET	-0.02	-0.05	OHM-M
CALIBRATION RATIO	0.800	0.898	

POWER REFERENCE	98631	113920	
DRIVE OUTPUT	1137	1937	
CHANNEL OFFSETS V(0)	157	181	MV
CHANNEL OFFSETS V(90)	182	179	MV
CHANNEL OFFSETS I(0)	156	173	MV
CHANNEL OFFSETS I(90)	176	169	MV

12-06-86	07:27	350.0	359172	0093-55	0	7

MICRO-SPHERICALLY FOCUSED BEFORE SURVEY CALIBRATION

TOOL TYPE: MSF- SERIAL NO:18013

	MEASURED		CALIBRATED		
	LOW	HIGH	LOW	HIGH	UNITS
MSFL	-1.7	501.5	0.0	500.0	MMHO/M

12-06-86	07:21	235.0	359172	0093-55	0	6

CALIPER CASING CHECK

TOOL TYPE: MSF- SERIAL NO:18013

MEASURED CASING ID. X-CALIPER = 7.99 IN

BEST COPY AVAILABLE

VART.

COMPENSATED DENSITY COMPENSATED NEUTRON LOG

FILING NO.

COMPANY COORS ENERGY COMPANY

WELL UTE TRIBAL NO. 4-8 4301331164

FIELD ANTELOPE CREEK

COUNTY DUCHESNE STATE UTAH

LOCATION 515' F W/L 2100' F S/L NW SW

SEC 8 TWP 5S RGE 3W

Other Services DLL, RHC

Permanent Datum GL Elev. 5866

Log Measured from KB 15 Ft. Above Perm. Datum

Drilling Measured from KB

Elev. KB 5881 DF -- GL 5866

Date	12-6-86
Run No.	One
Depth – Driller	6420
Depth-Logger	6404
Bottom logged interval	6402
Top logged interval	309
Type fluid in hole	KCL
Density / Visc.	8.8 / 27
pH / Fluid Loss	11.0 / --
Max rec. temp., deg F.	160 °F
Source of Samples	Flowline
Rm @ Meas. Temp.	.104 @82.3F
Rmf @ Meas. Temp.	.165 @54.7F
Rmc @ Meas. Temp.	.293 @60.8F
Source Rmf / Source Rmc	M / M
Time: End Circulation	0315 Hours
Time: Logger on Bottom	1714 Hours
Recorded By	Grenier
Witnessed By	Mr. Ballou

Bore-Hole Record

Run No.	Bit	From	To
One	12 1/4	Surface	300
	7 7/8	300	6420

Casing Record

Size	Wgt.	From	To
8 5/8	--	Surface	300

FOLD HERE

EQUIPMENT DATA

Run No.	Logging Unit	Location	Gamma Ray Tool No.	Compensated Density Tool No.	Compensated Density Source No.	Compensated Density Source Type	Compensated Density Source Stg.	Compensated Neutron Tool No.	Compensated Neutron Source No.	Compensated Neutron Source Type	Compensated Neutron Source Stg.
One	7570	Vernal	804	97	91	Cs. 137	2 Curie	108	657	AmBe	20
										241	Curie

CALIBRATION DATA

Run No.	Gamma Ray Bkg. cps	Gamma Ray Std. cps	Compensated Density Magnesium LS	Magnesium SS	Aluminum LS	Aluminum SS	Test Block LS	Test Block SS	Caliper L. Ring	Caliper S. Ring	Compensated Neutron Calibrator LS	Calibrator SS	Caliper L. Ring	Caliper S. Ring
One														

SEE DIGITAL CALIBRATION

LOGGING DATA

Run No.	General Depth From	General Depth To	Speed FPM	Gamma Ray TC	Gamma Ray API PER LOG DIV.	Compensated Density TC	Compensated Density Matrix Density	Compensated Density Fluid Density	Compensated Neutron TC	Compensated Neutron Matrix Type	Const. "K"	Temp. Grad.	Salinity PPM NaCL	Surf. Temp.
One	6402	309	23	Auto	20	Auto	2.68	1.1	Auto	Sd	.962	--	31000	55

REMARKS:

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GEARHART INDUSTRIES, INC.

12-06-86 19:51 308.5 359172 0152-05 0 18

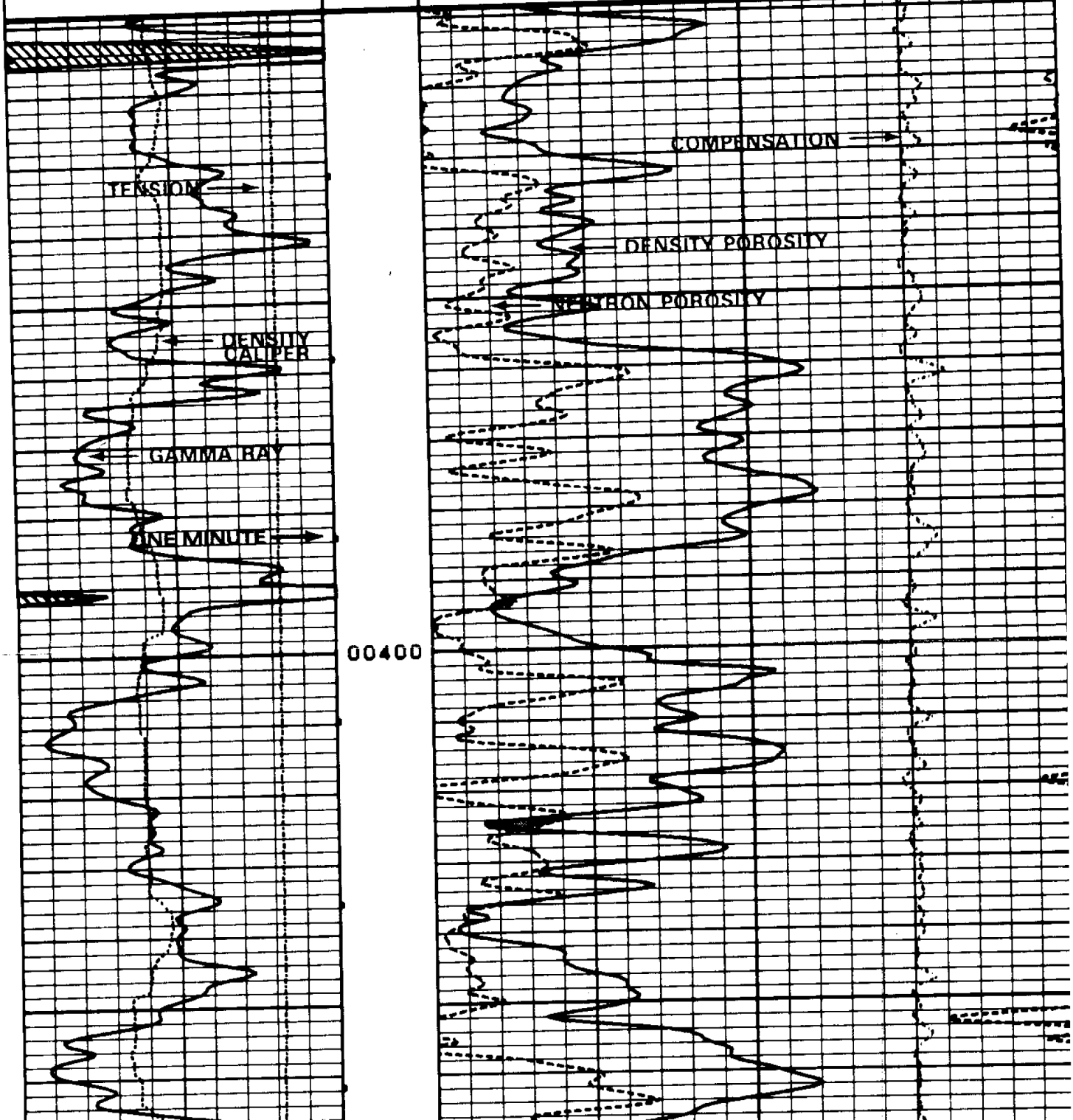
-0.25 ΔP(G/CC) 0.25

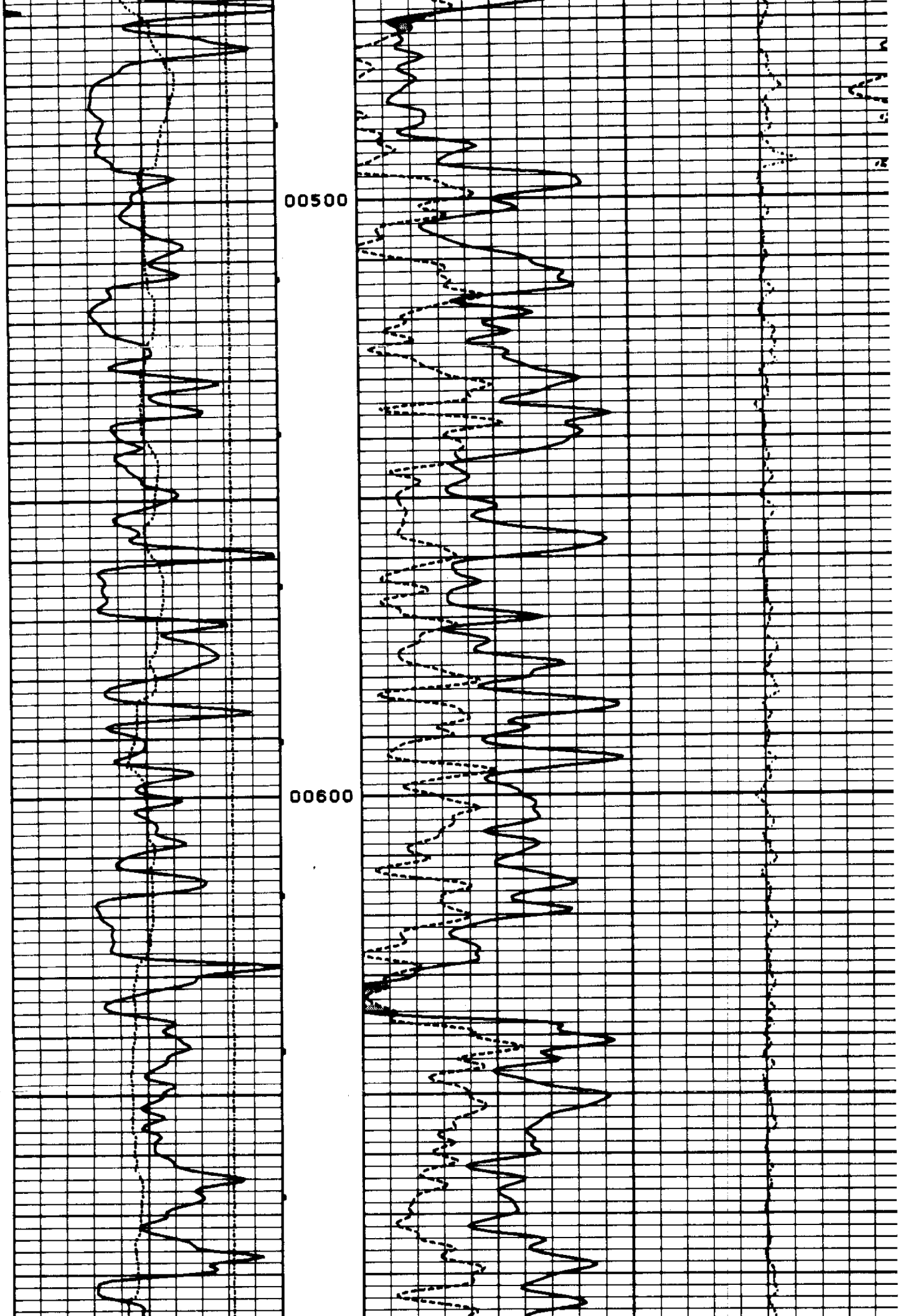
0 GR (API) 200

30 ø-CNS.SD -10

6 CAL-X (IN) 16

30 ø-CDL -10

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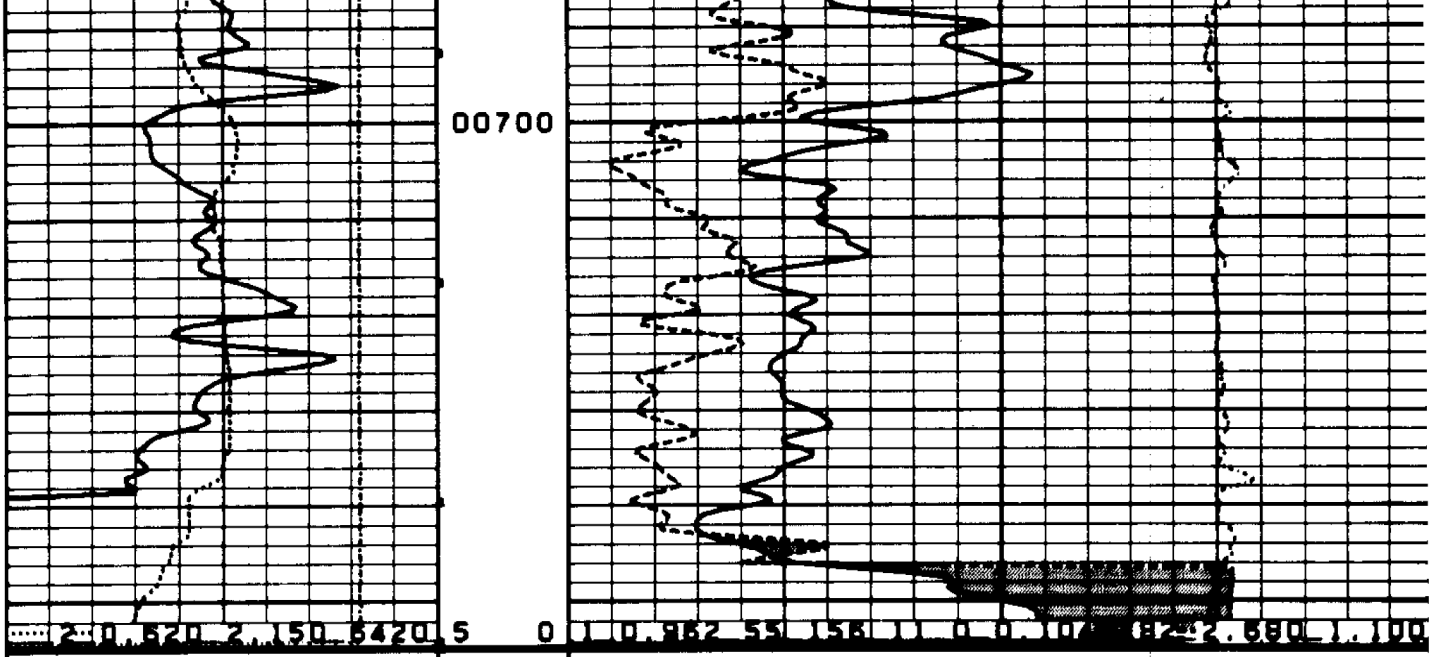

0 GR (API) 200		-0.25 ΔP(G/CC) 0.25
		30 ø-CNS.SD -10
6 CAL-X (IN) 16		30 ø-CDL -10

12-06-86 19:35 754.5 359172 0152-05 0 18

12-06-86 19:18 3443.5 359172 0152-05 0 17

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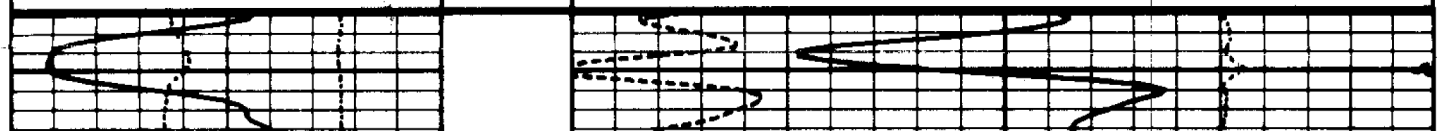
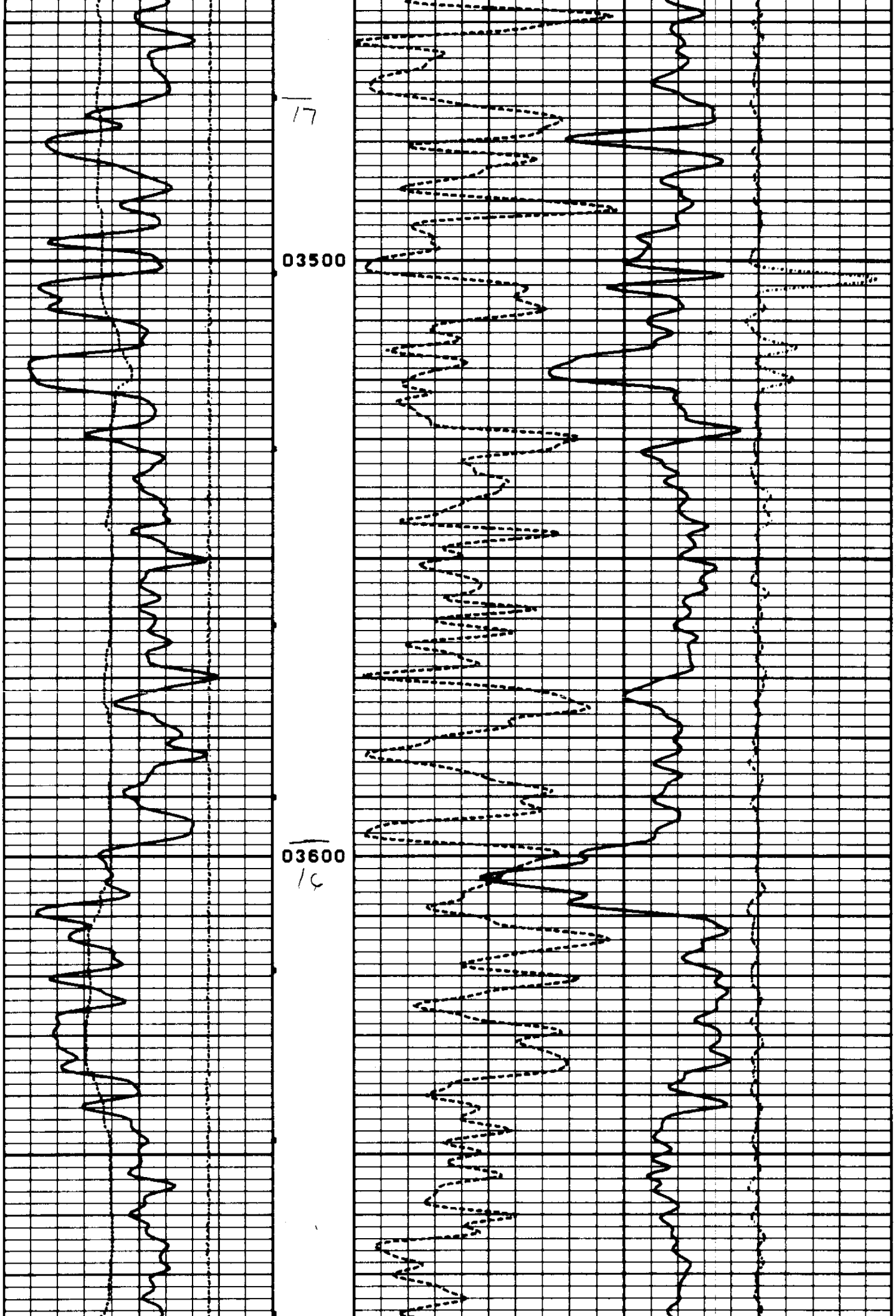
		30 ø-CNS.SD -10
6 CAL-X (IN) 16		30 ø-CDL -10

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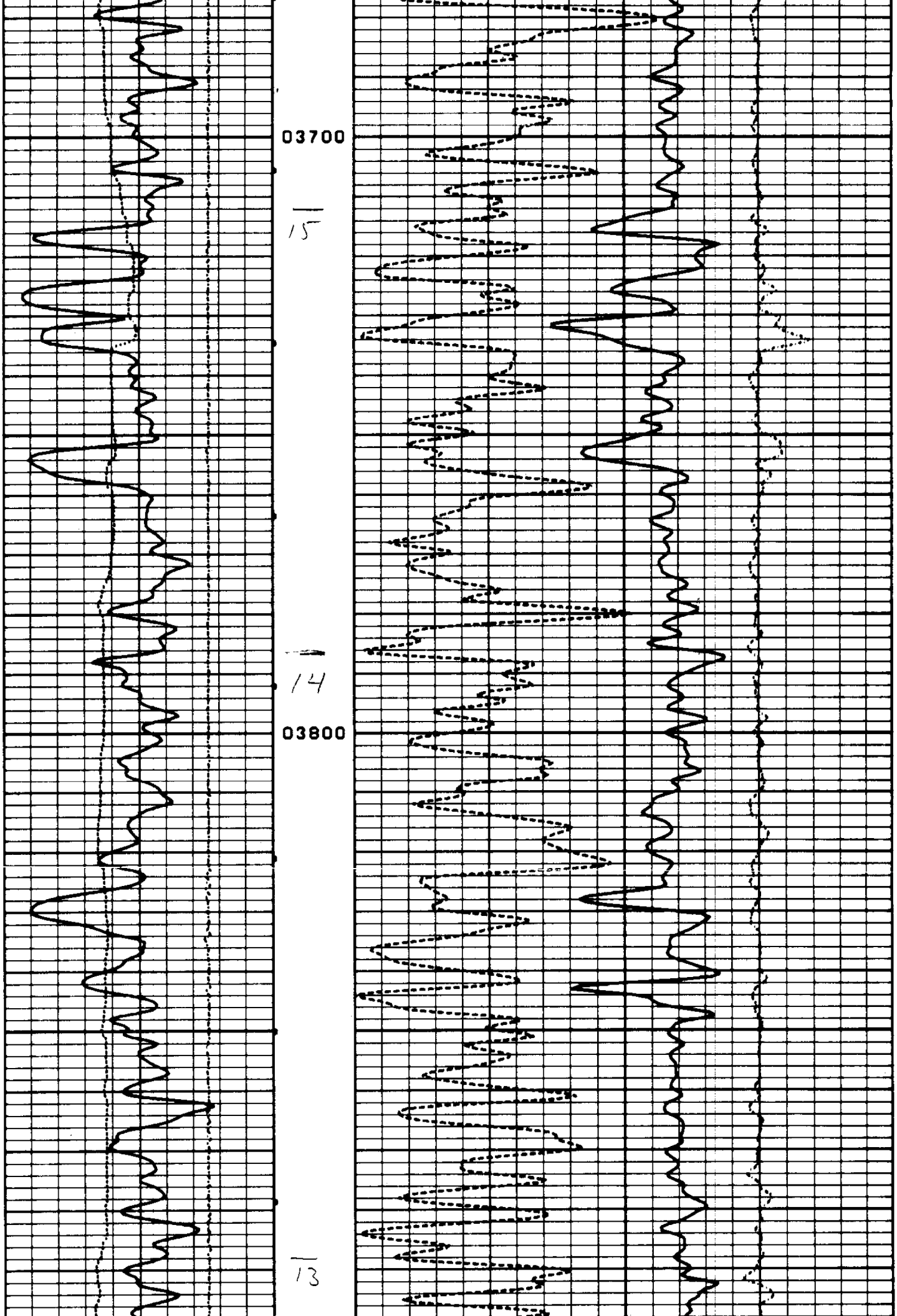
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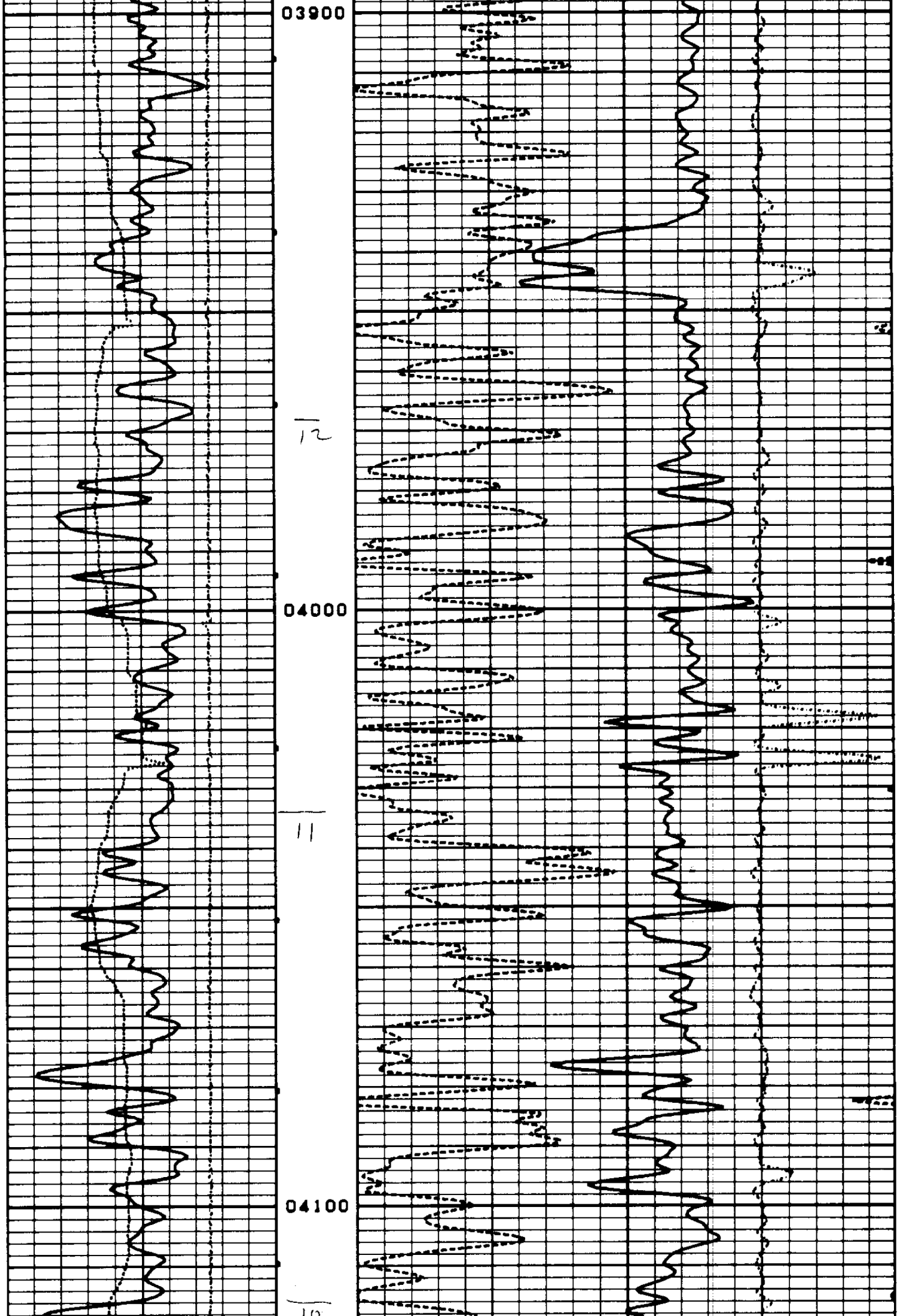
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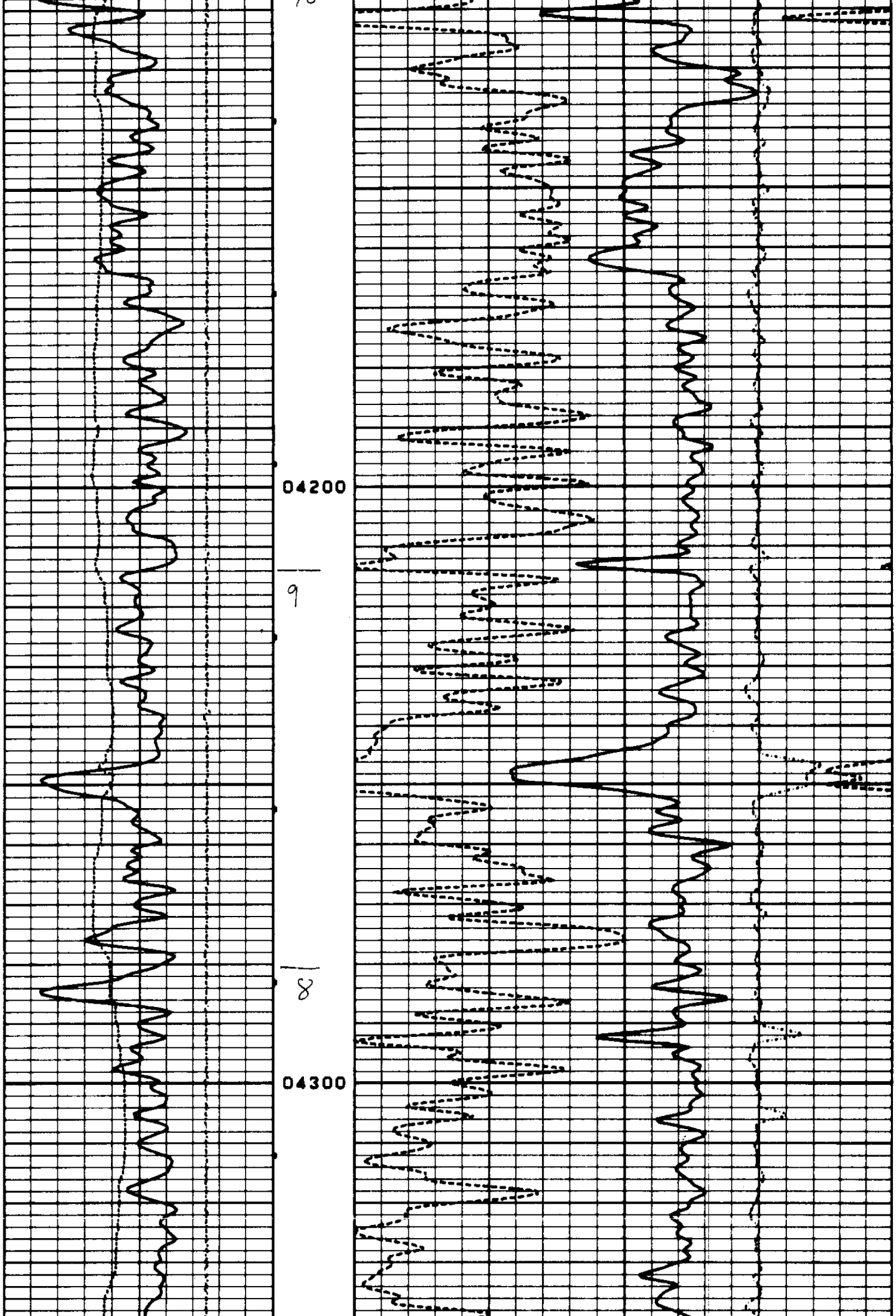
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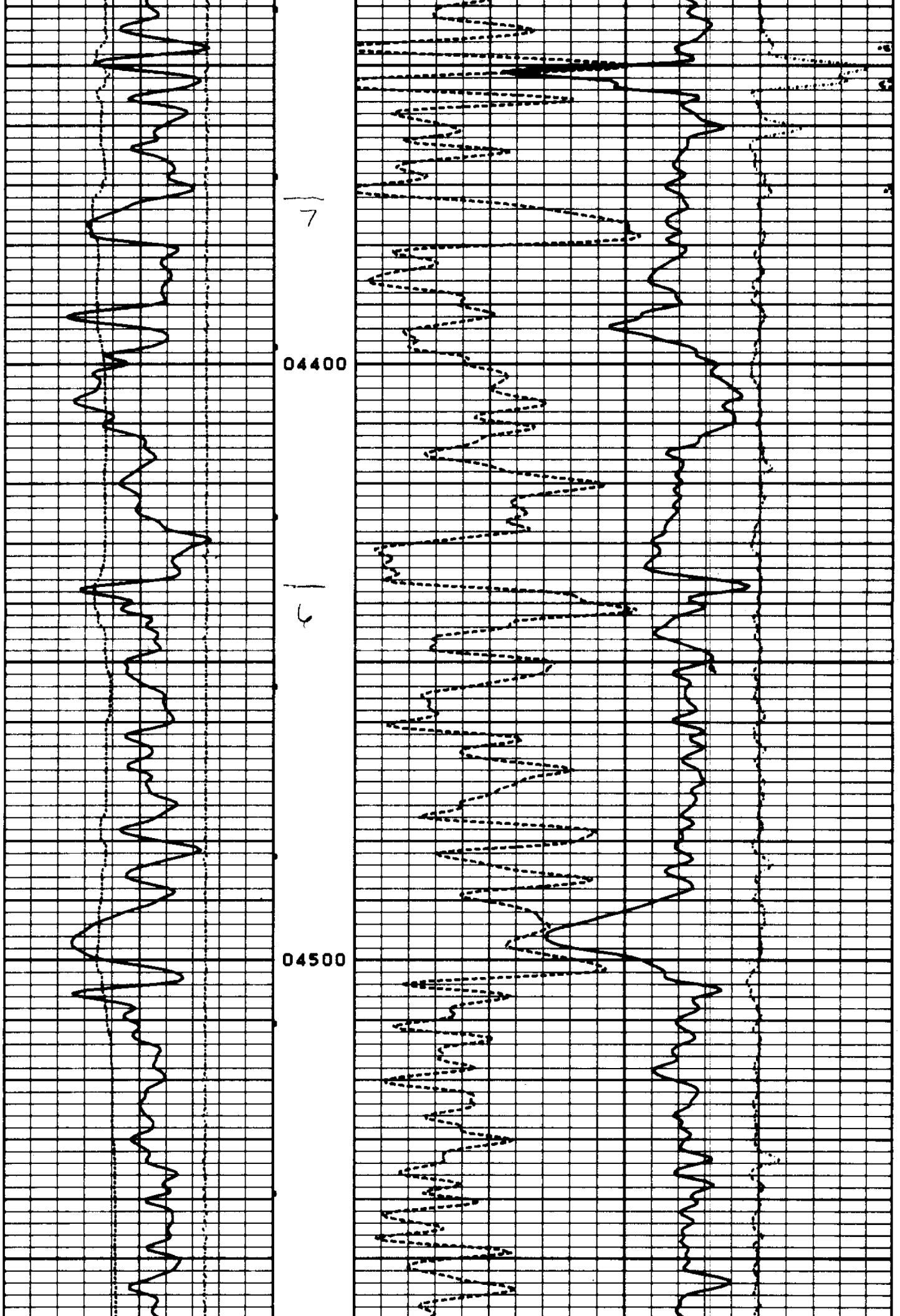
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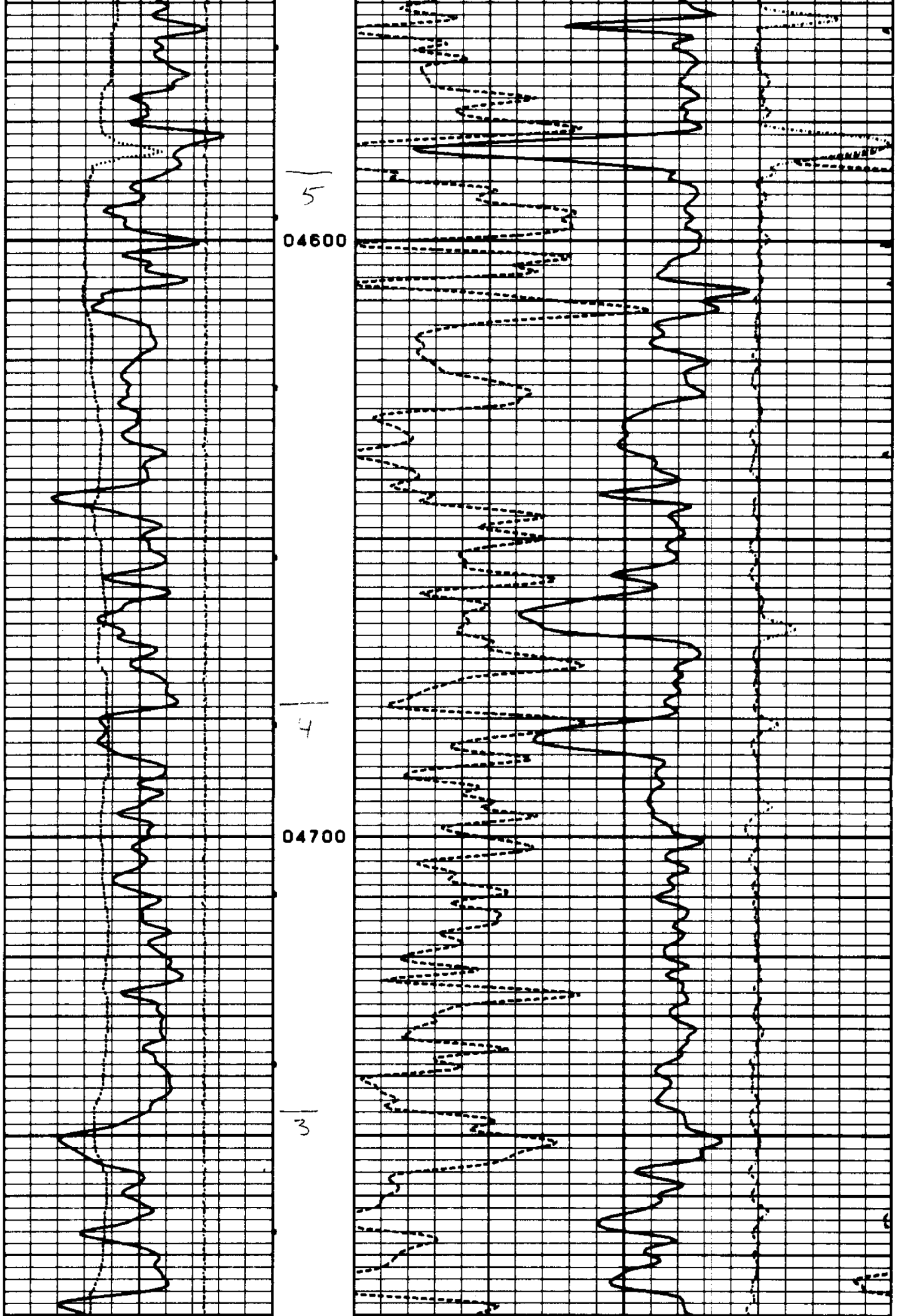
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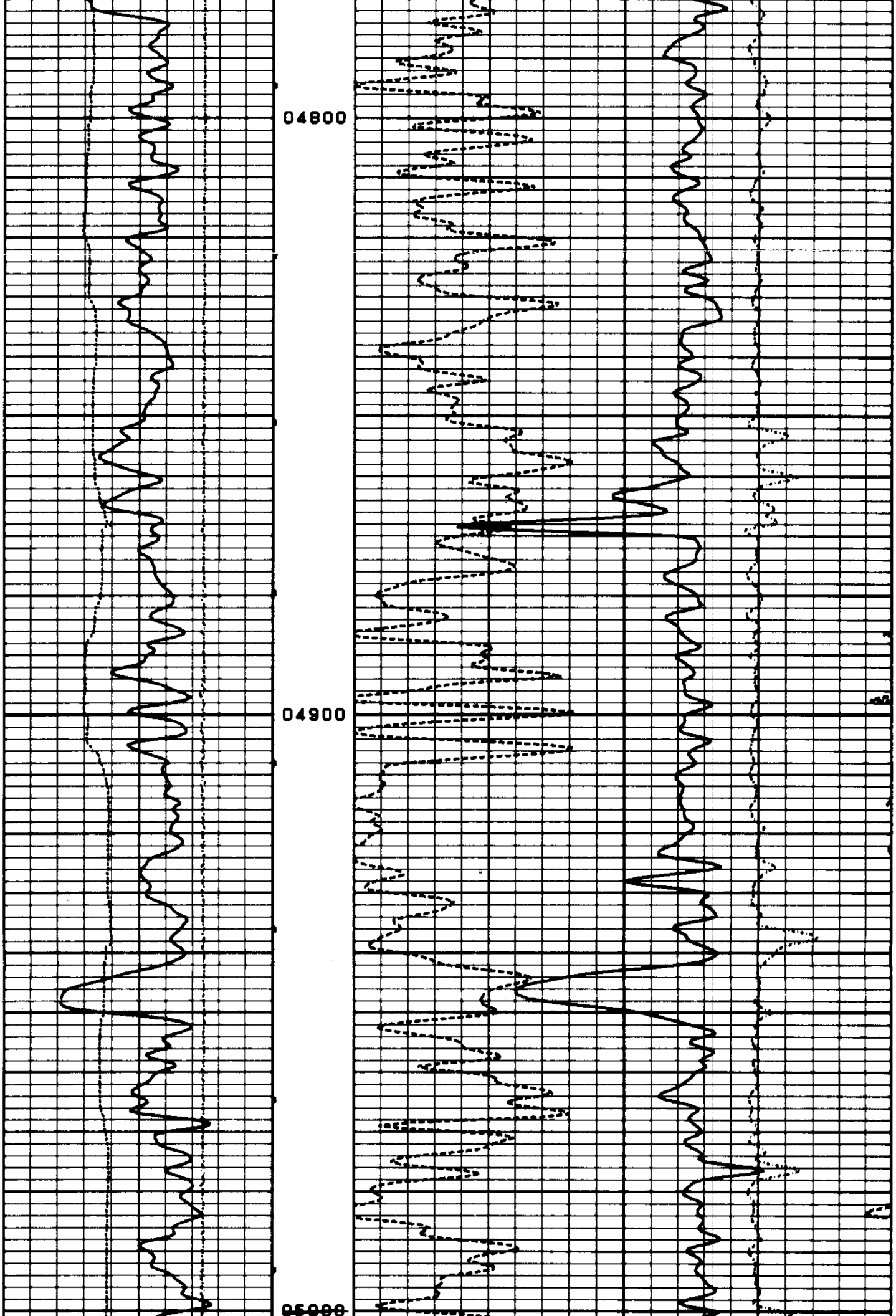
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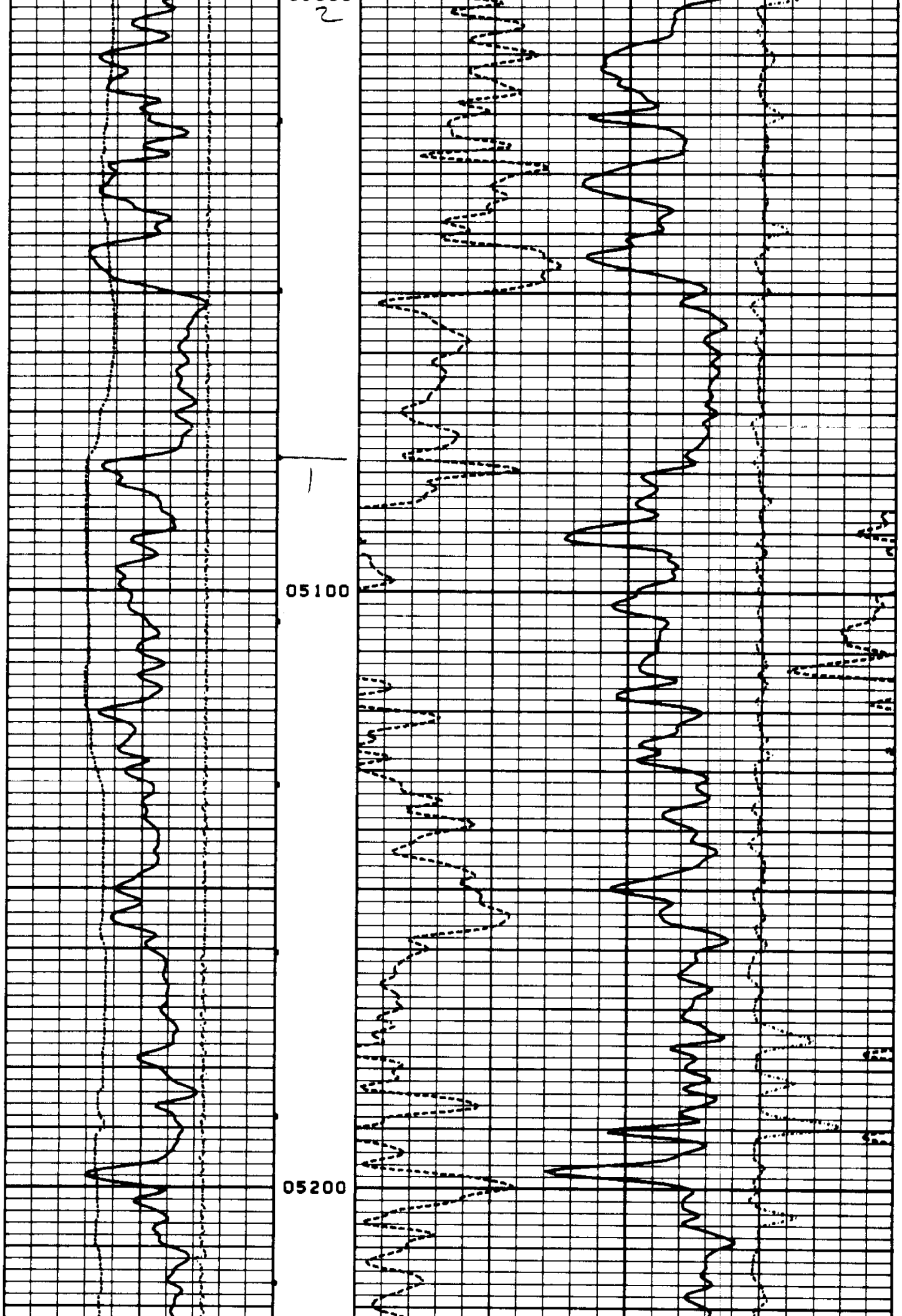
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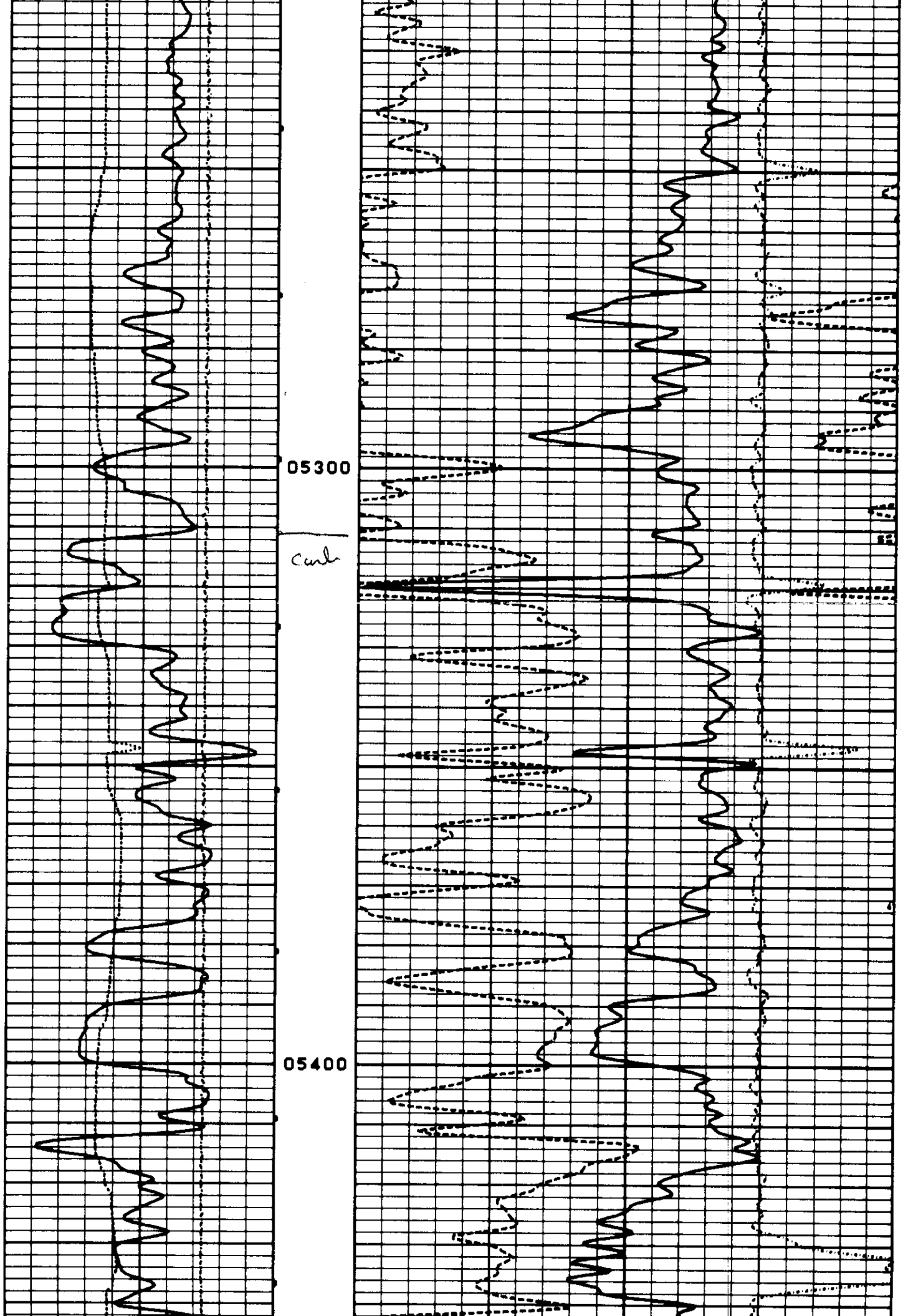
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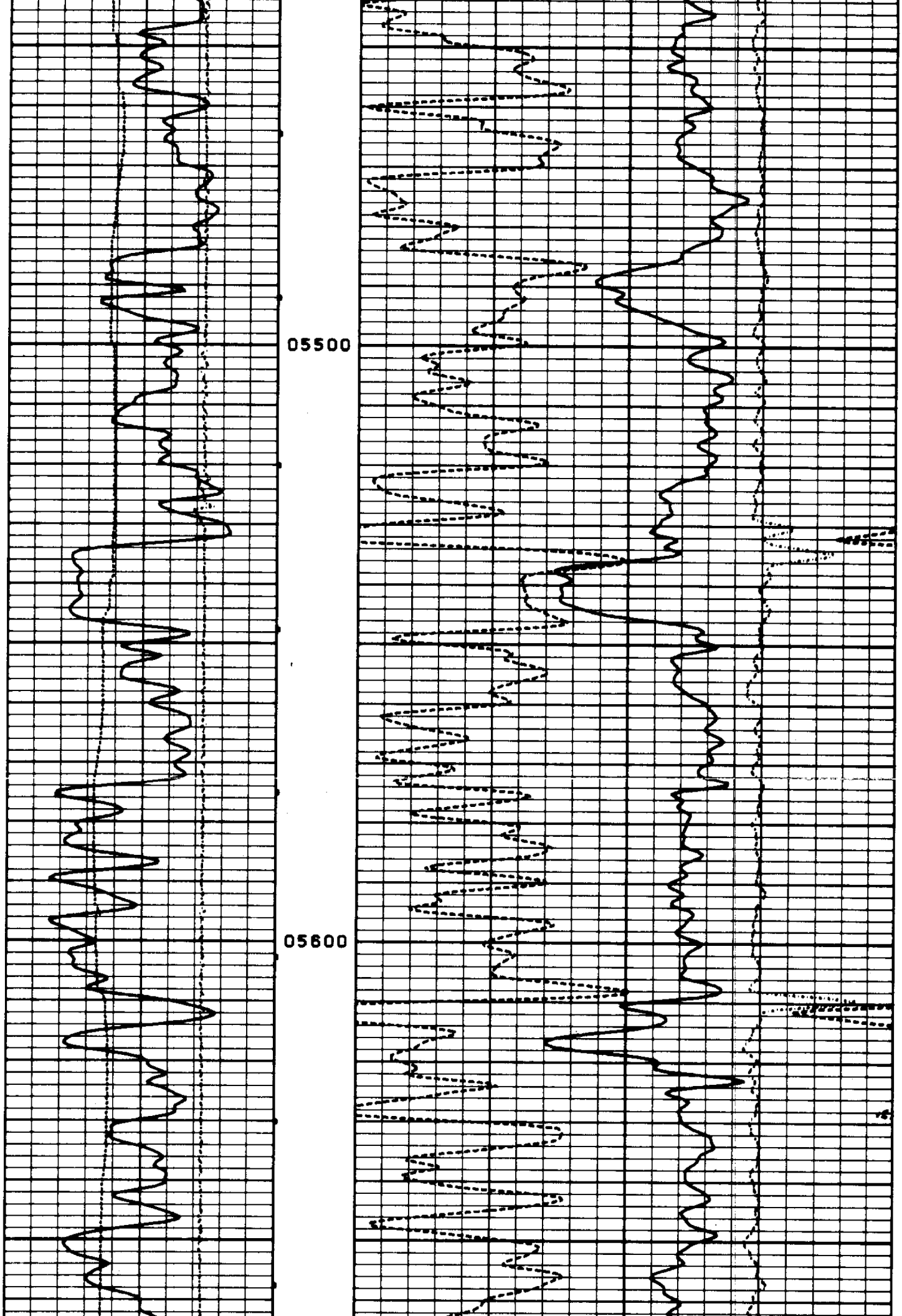
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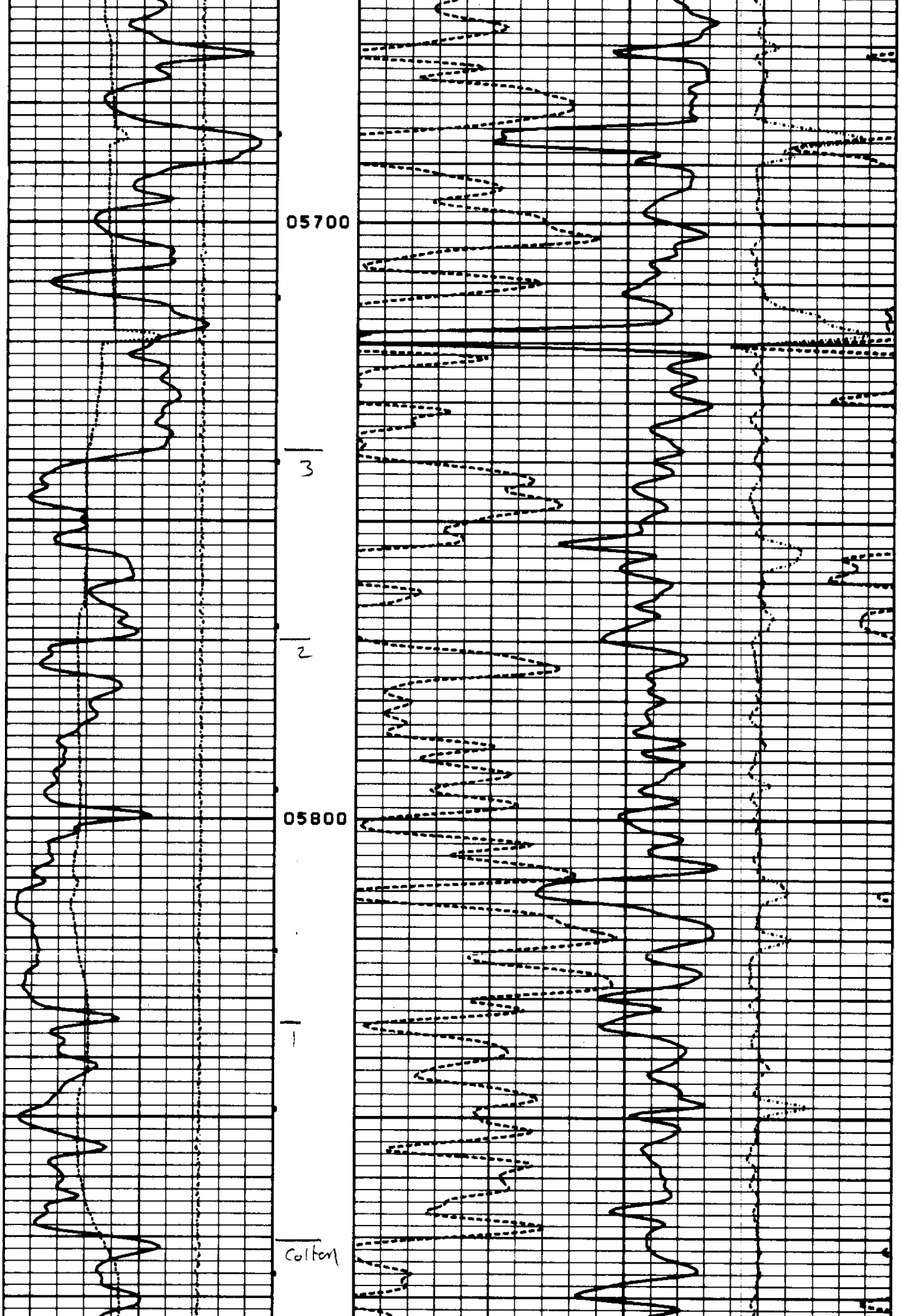
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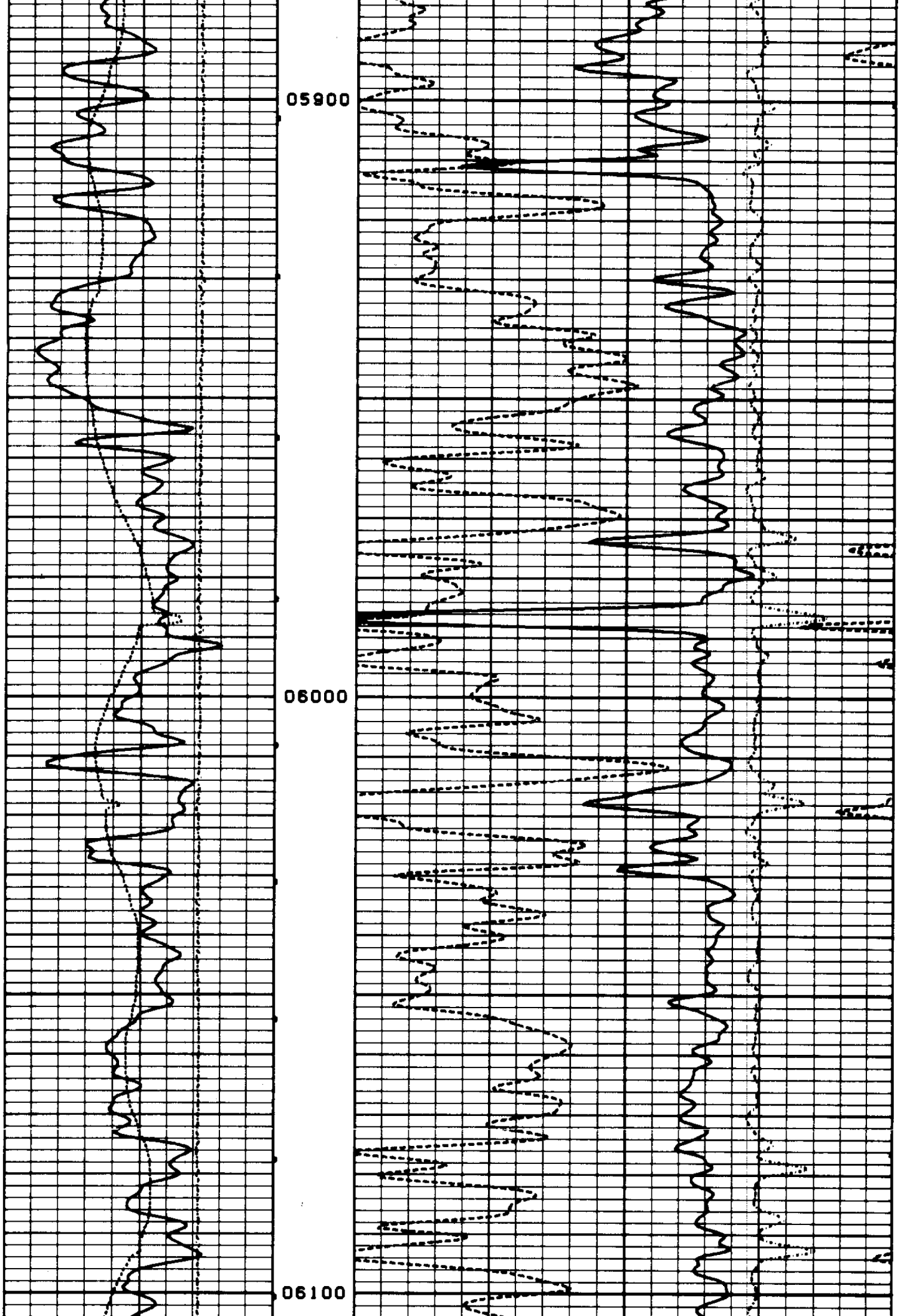
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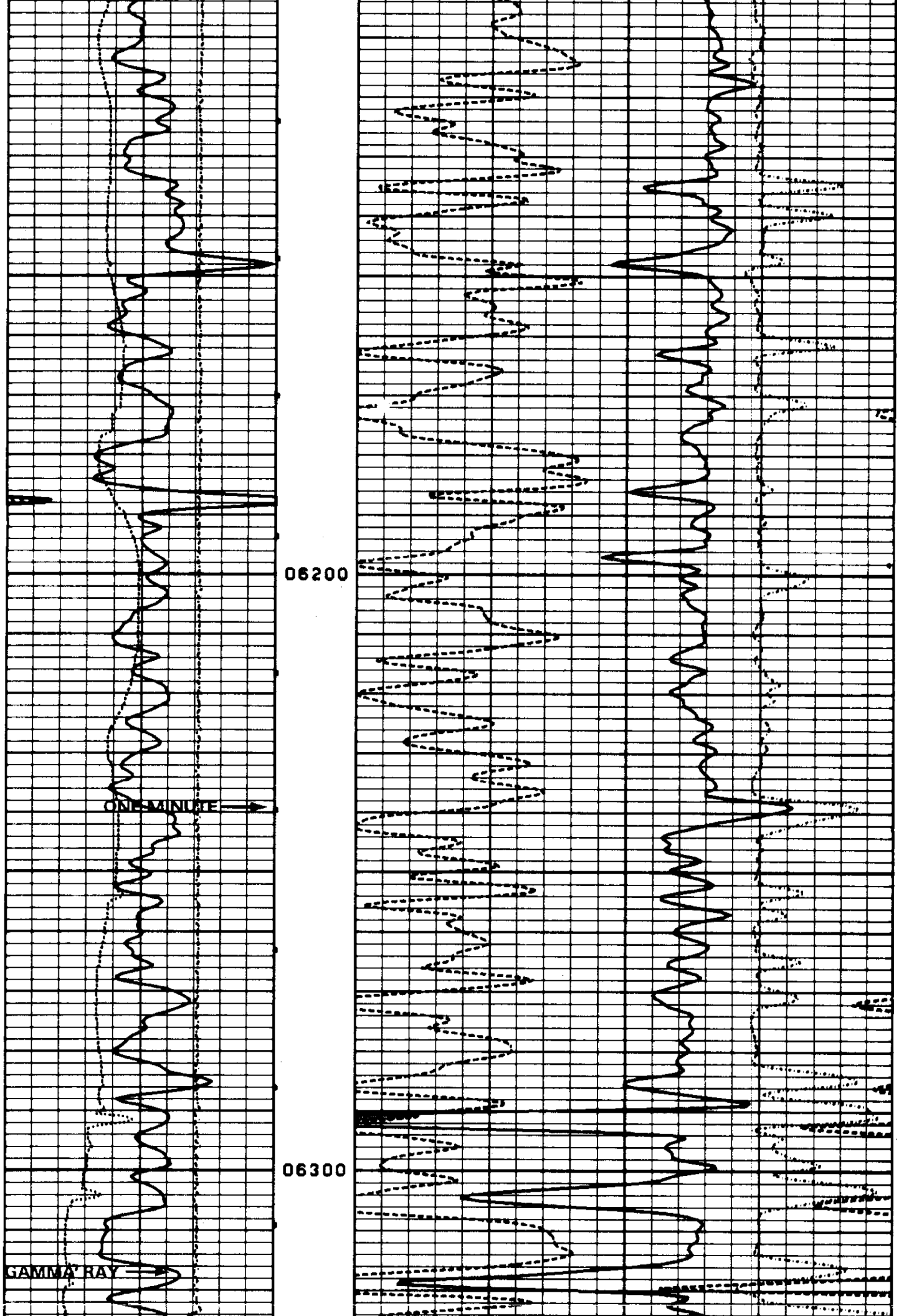
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ONE MINUTE
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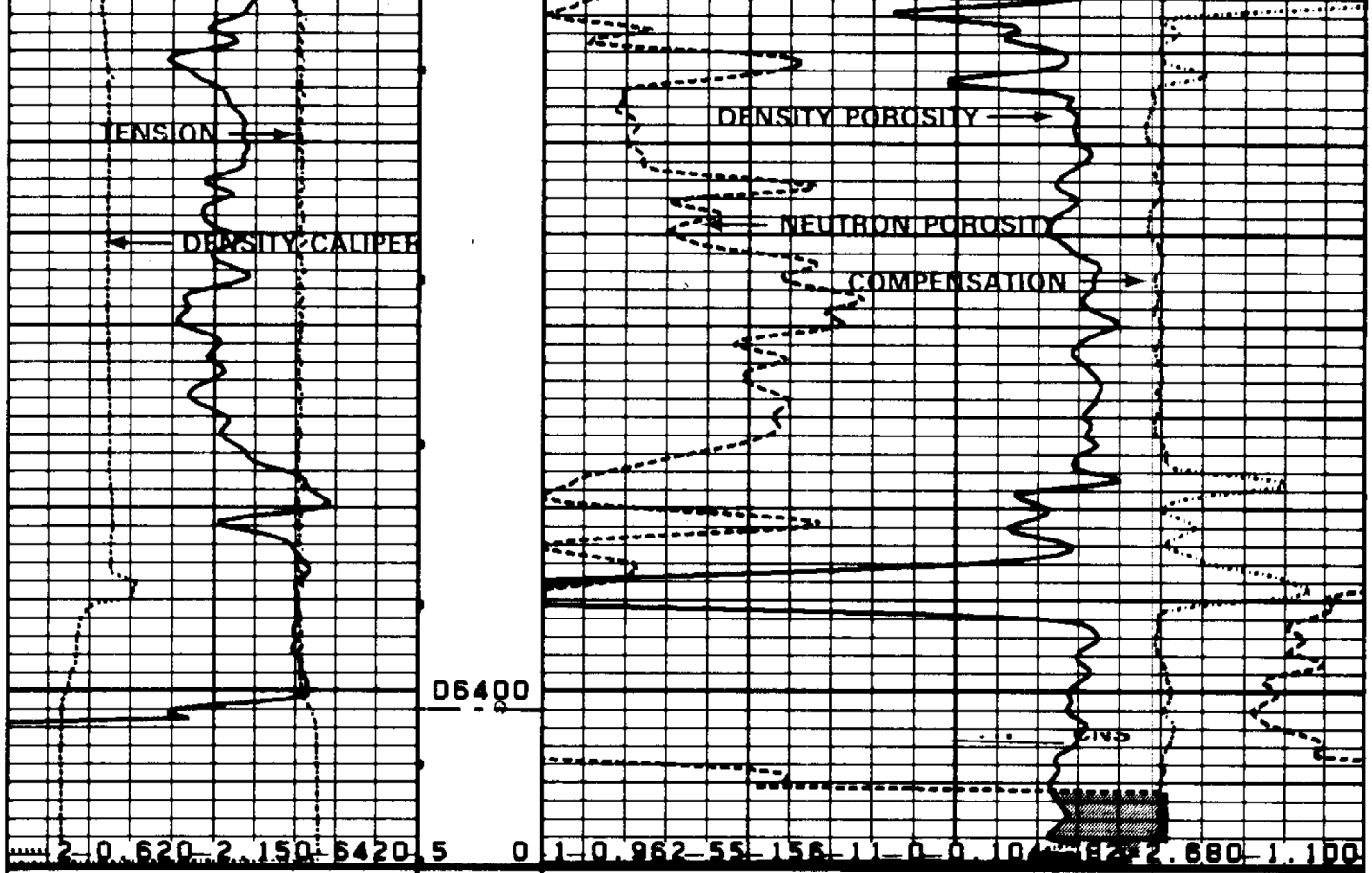
GAMMA RAY



0 GR (API) 200		-0.25 ΔP(G/CC) 0.25
		30 ϕ-CNS.SD -10
6 CAL-X (IN) 16		30 ϕ-CDL -10

12-06-86	17:30	6419.0	359172	0152-05	0	17
12-06-86	19:51	308.5	359172	0152-05	0	18

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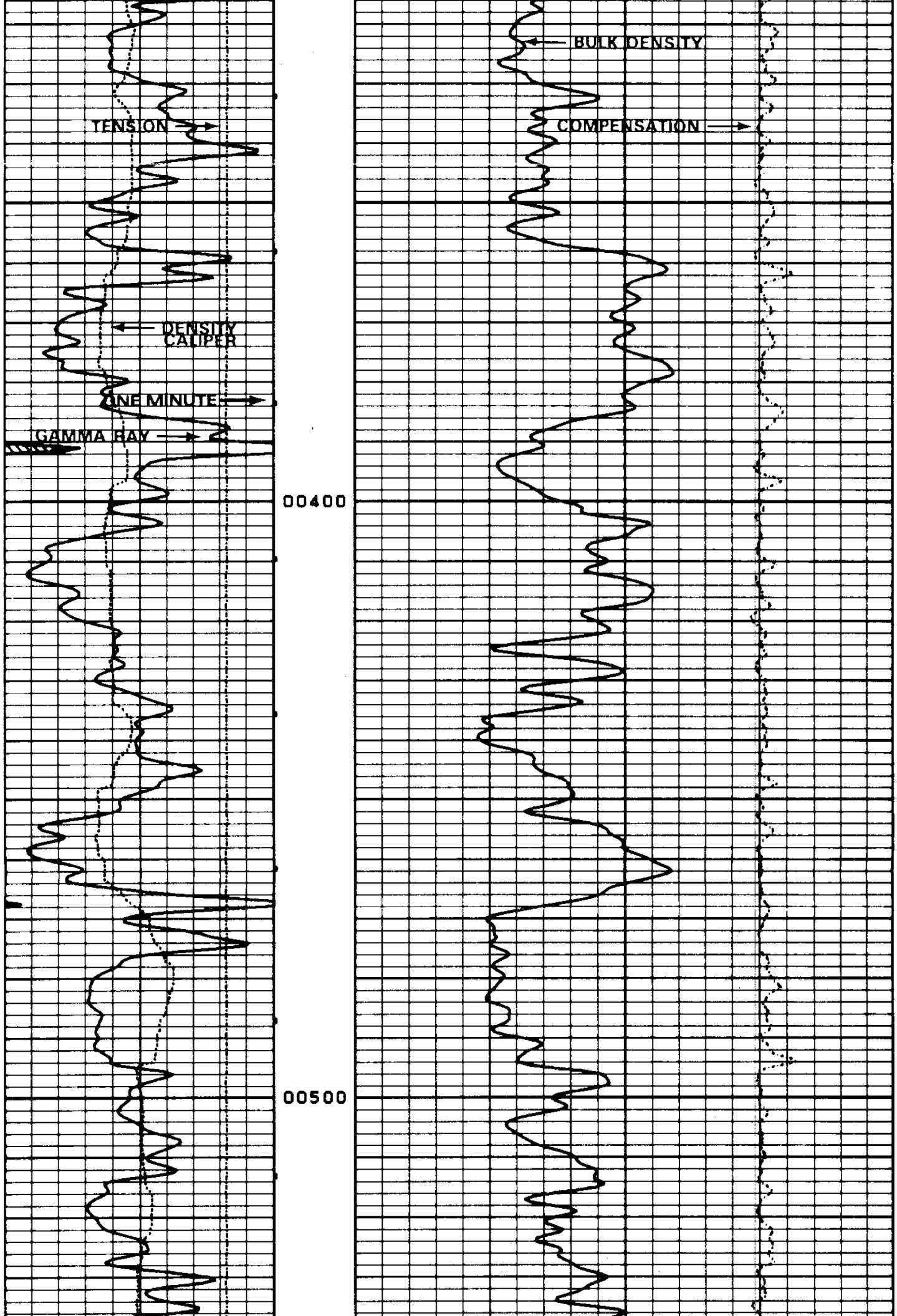
		2.00 PB(G/CC) 3.00
6 CAL-X (IN) 16		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DENSITY
CALIPER
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GAMMA RAY
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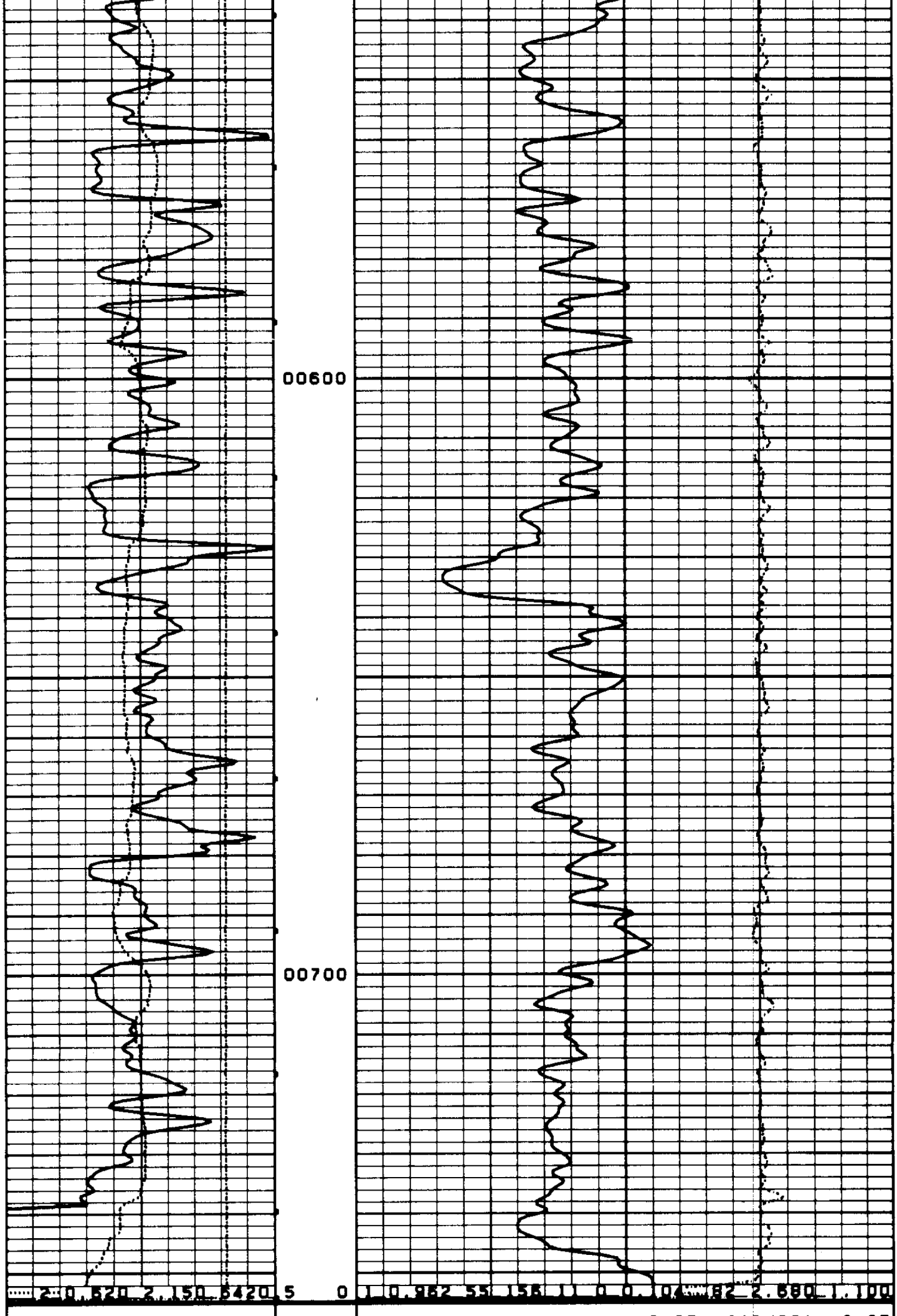
BULK DENSITY
COMPENSATION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-0.25 ΔP(G/CC) 0.25

0 GR (API) 200

2.00 ρB(G/CC) 3.00

6 CAL-X (IN) 16

12-06-86 19:35 754.5 359172 0152-05 0 18

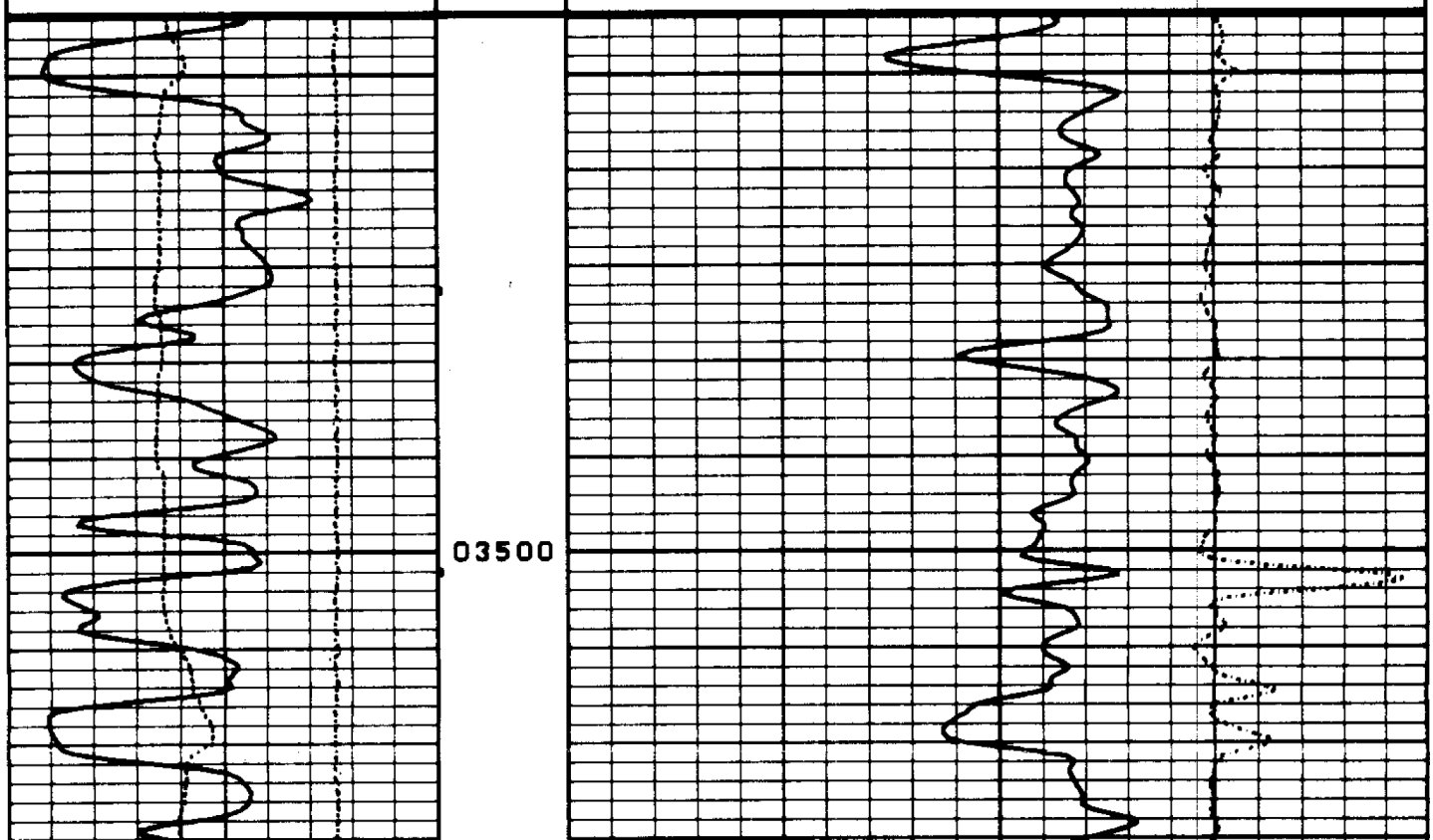
12-06-86 19:18 3443.5 359172 0152-05 0 17

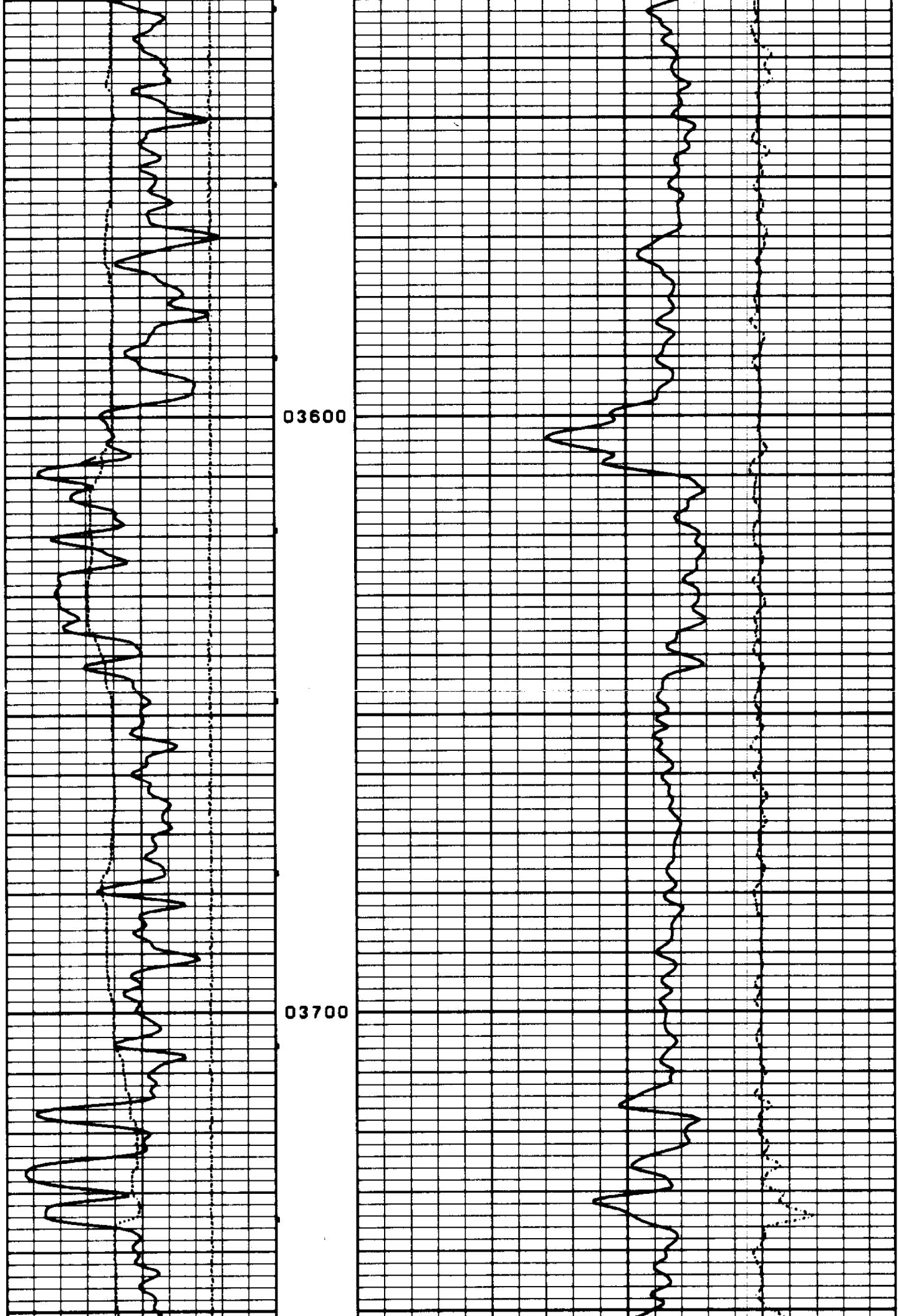
-0.25 ΔP(G/CC) 0.25

0 GR (API) 200

2.00 ρB(G/CC) 3.00

6 CAL-X (IN) 16

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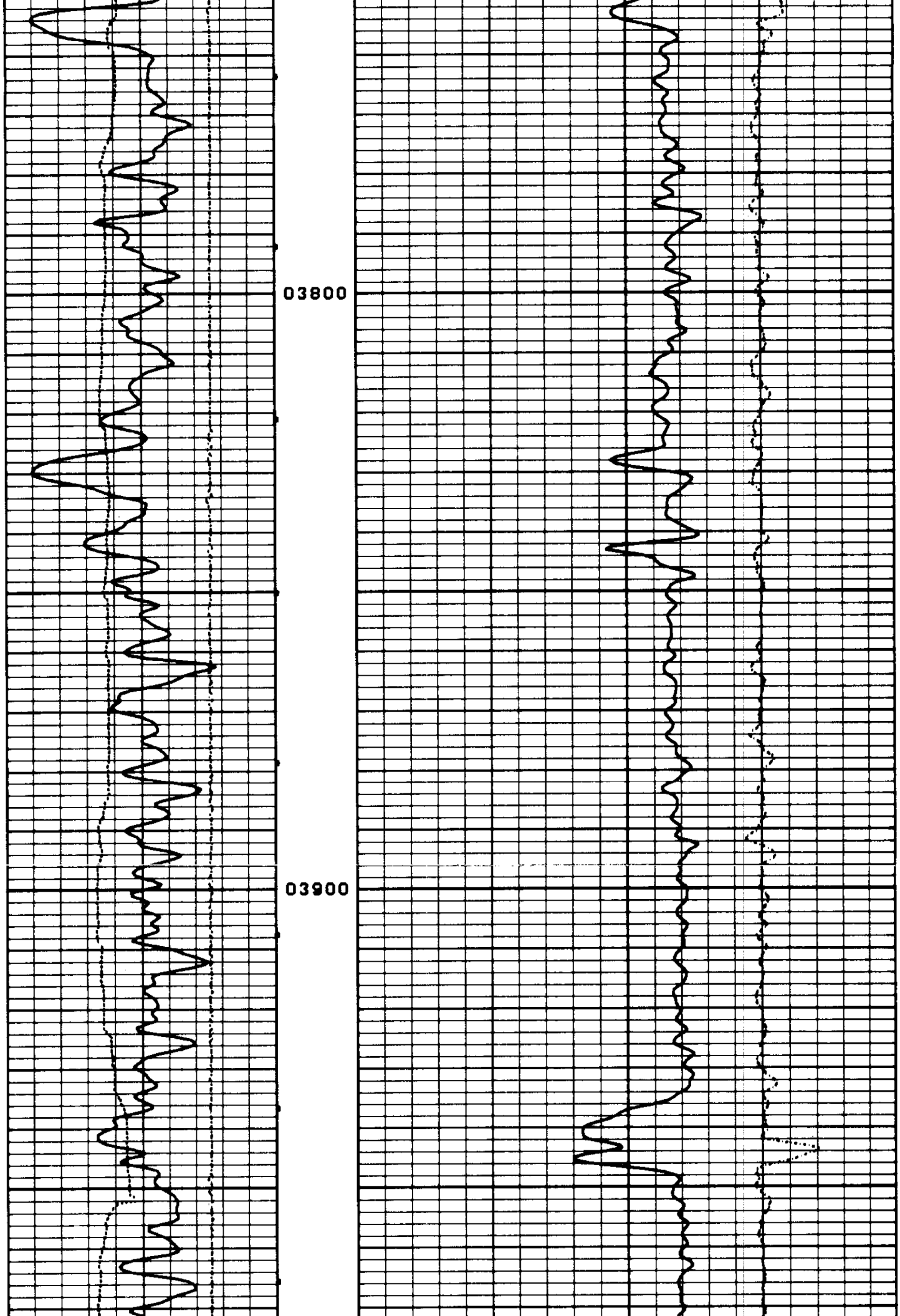
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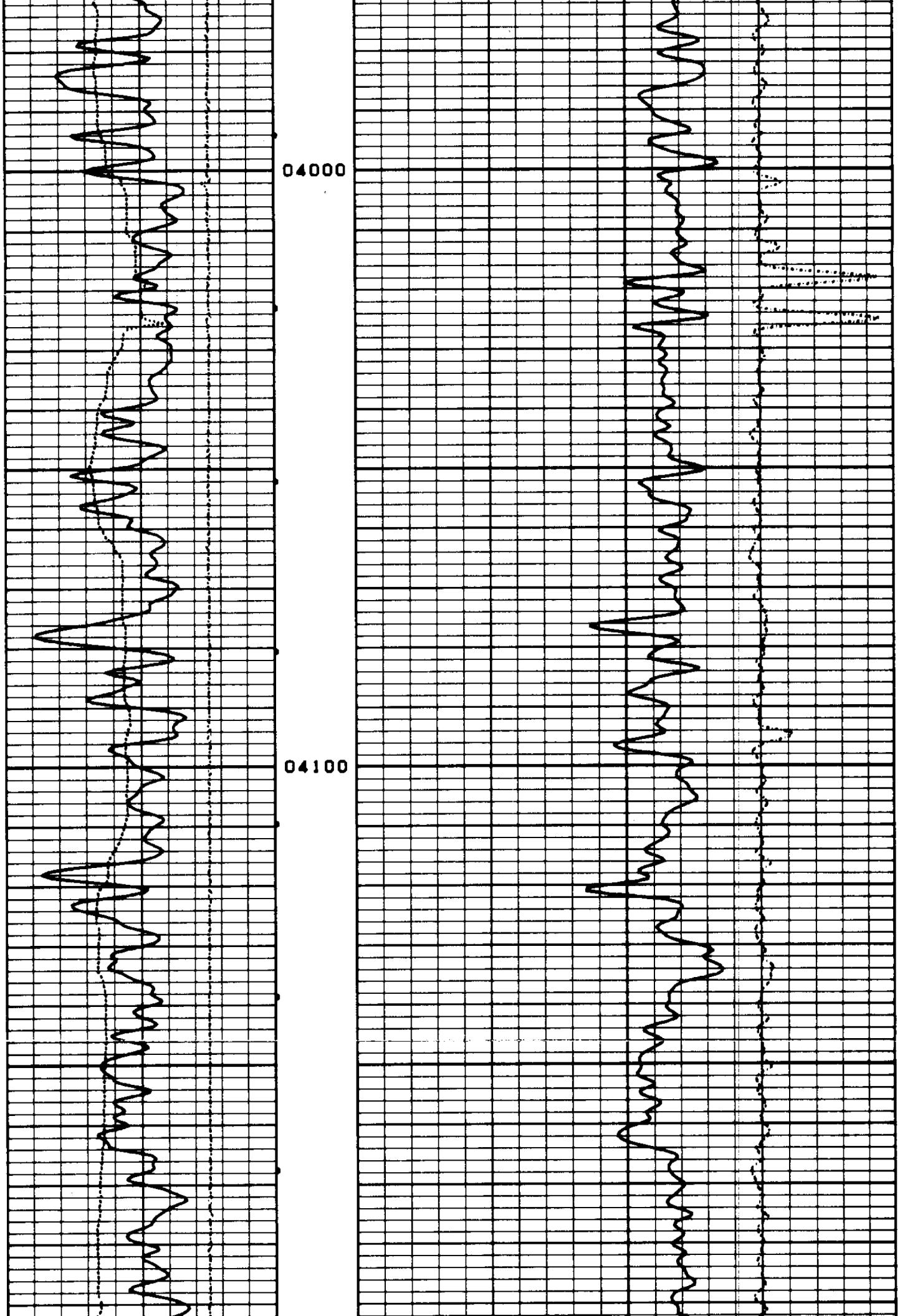
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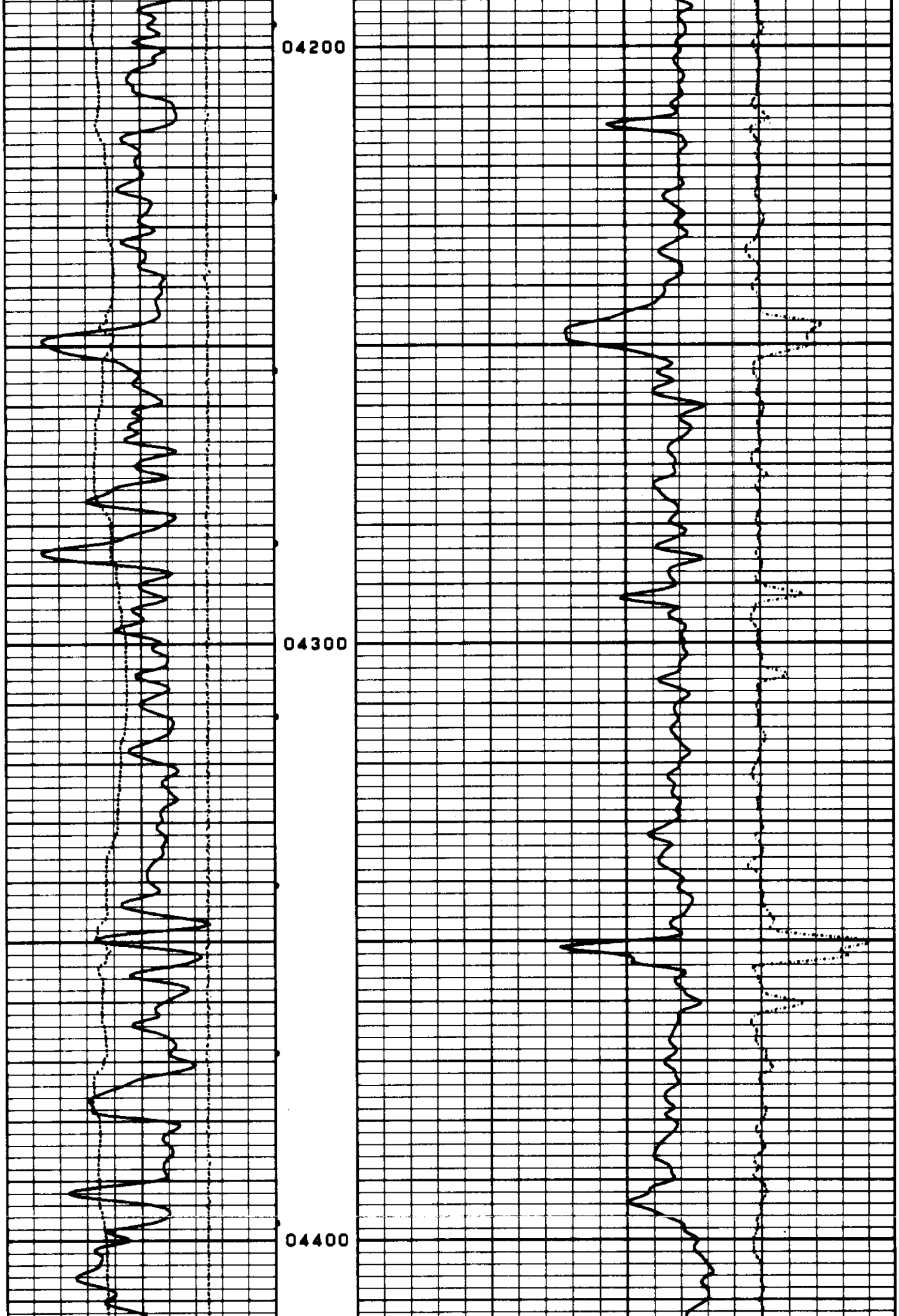
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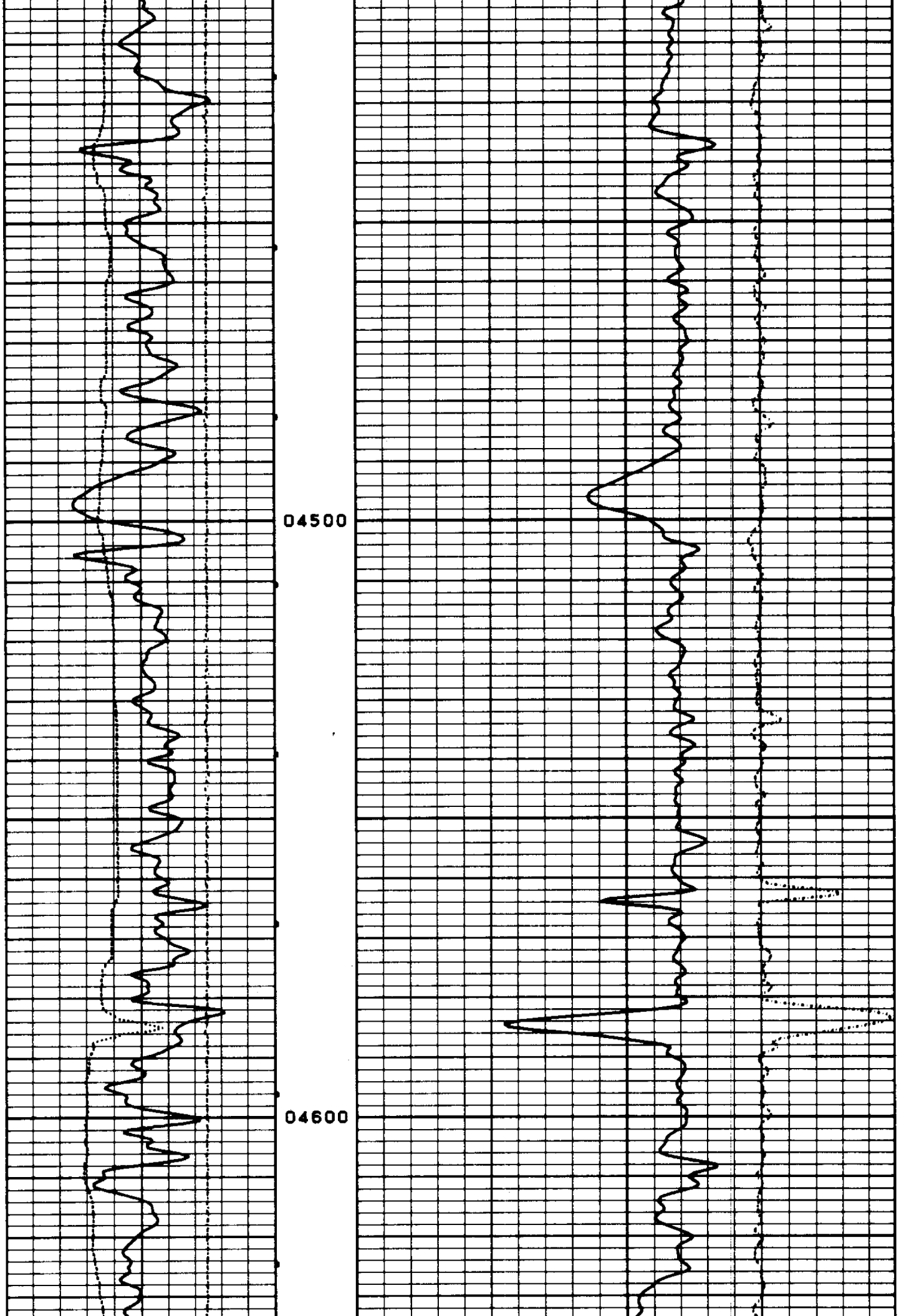
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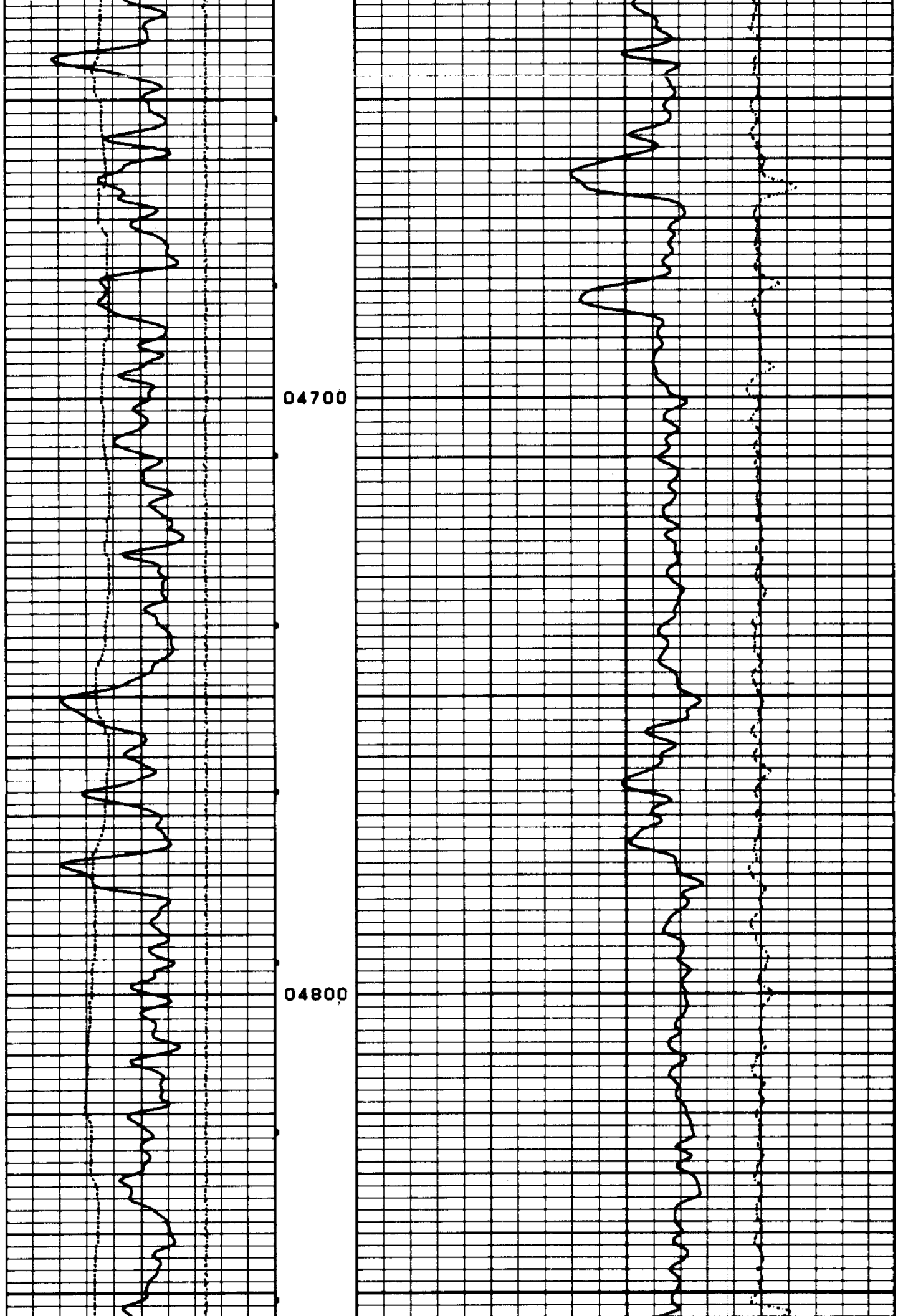
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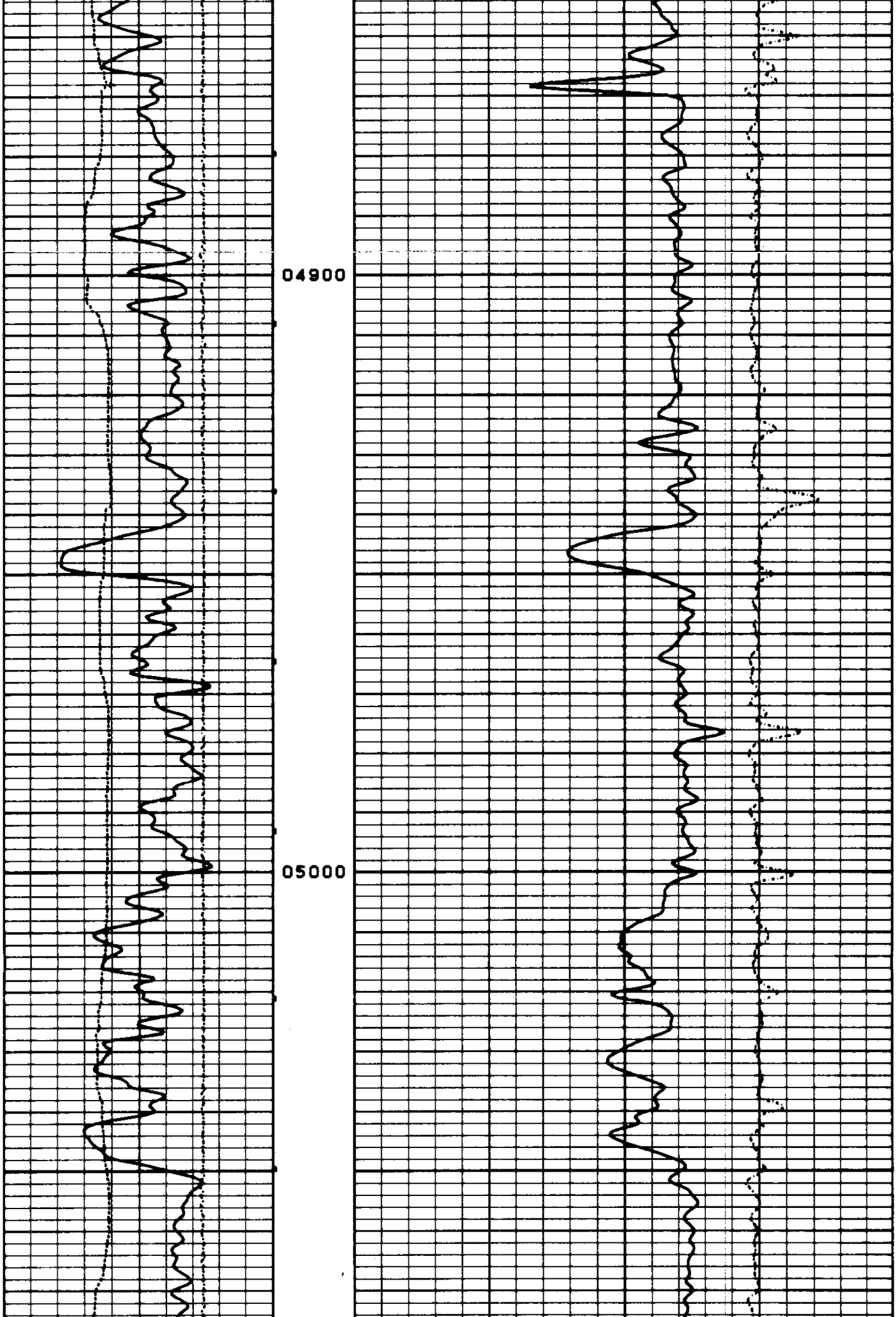
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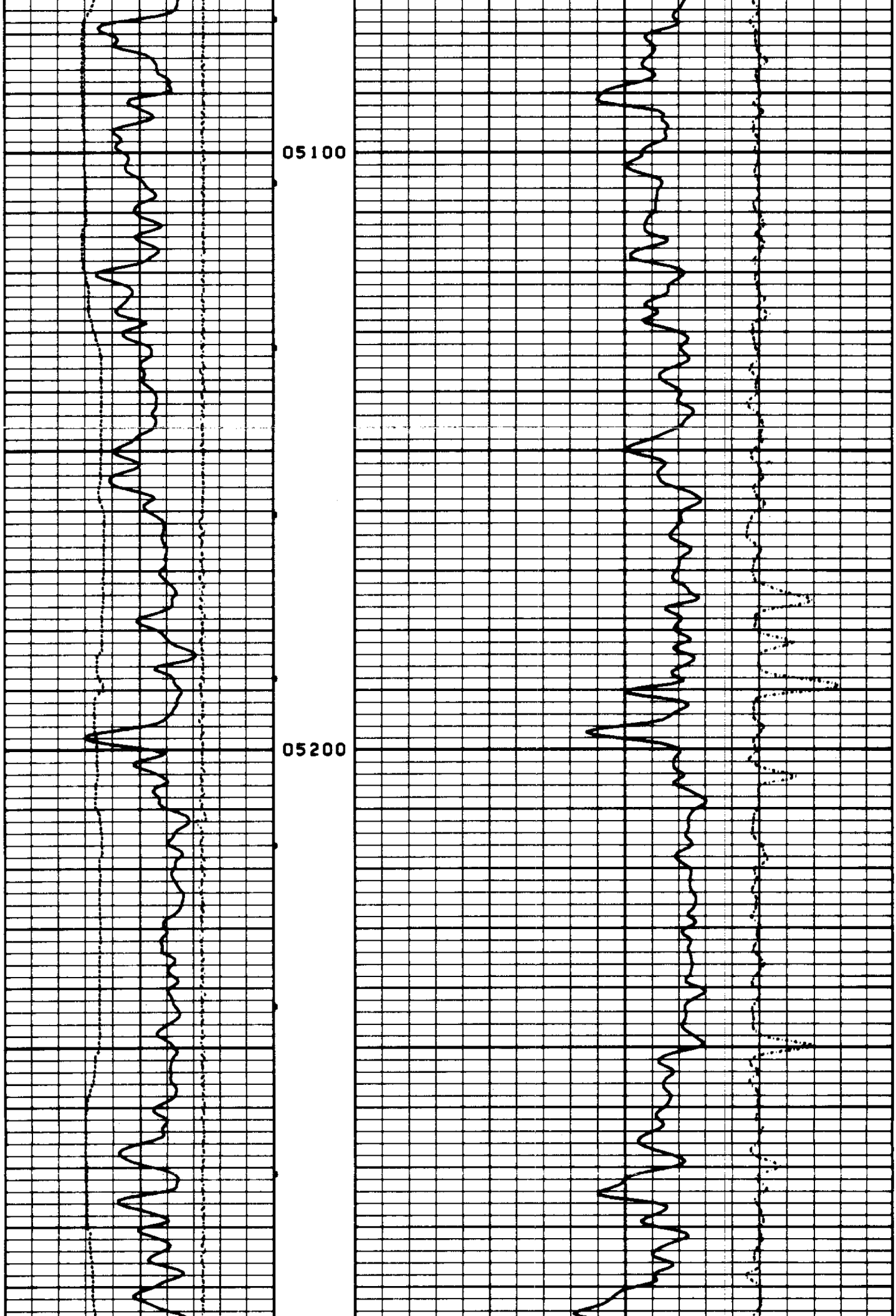
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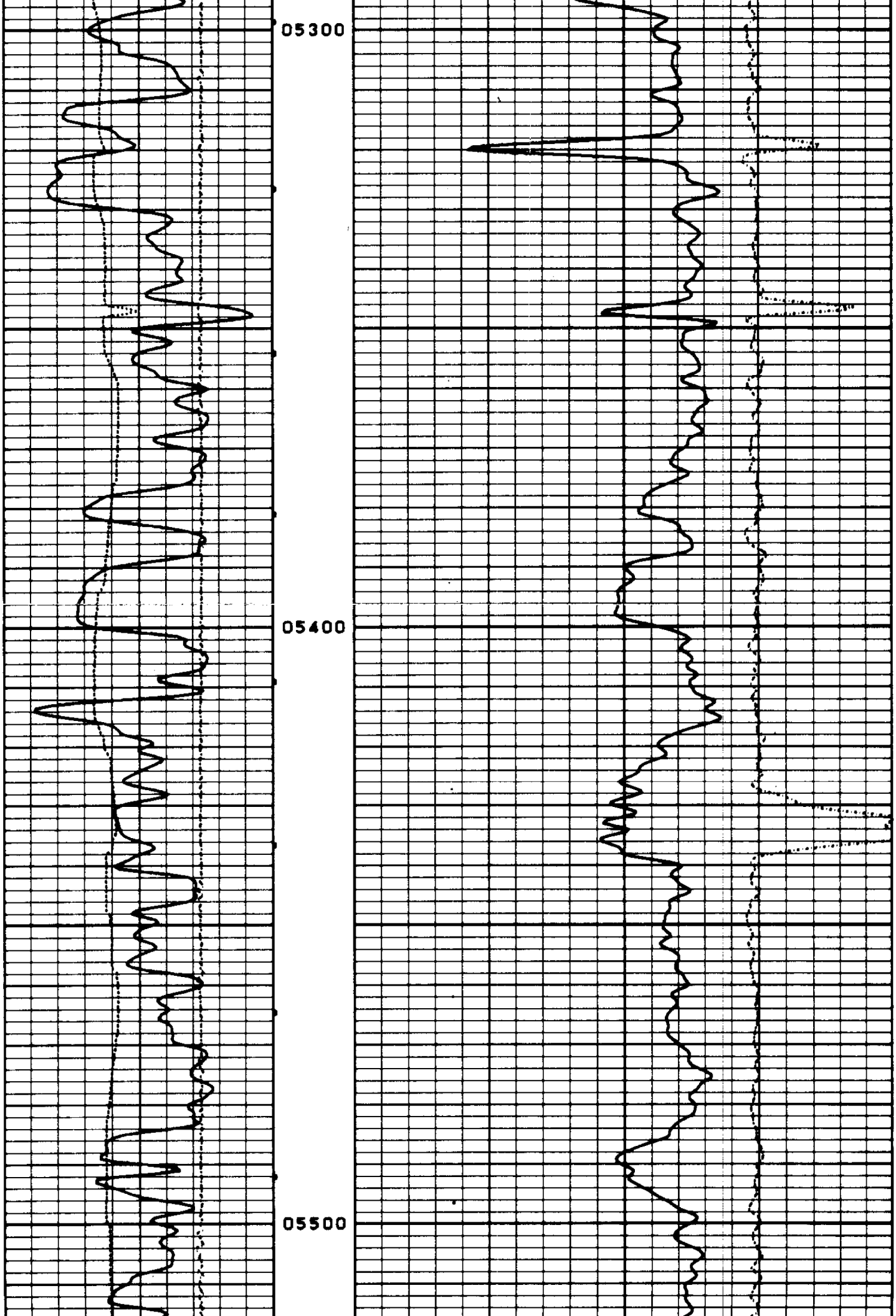
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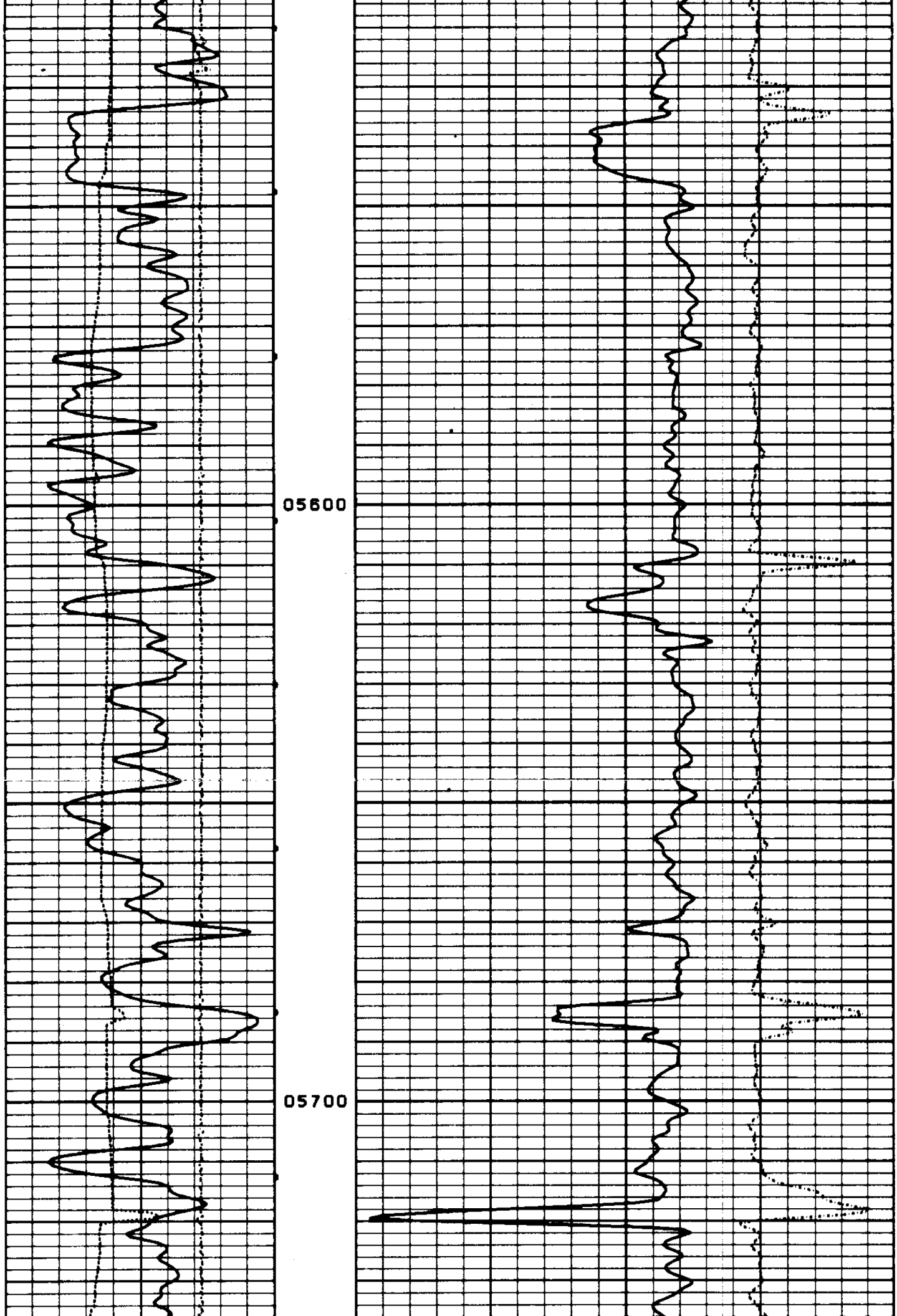
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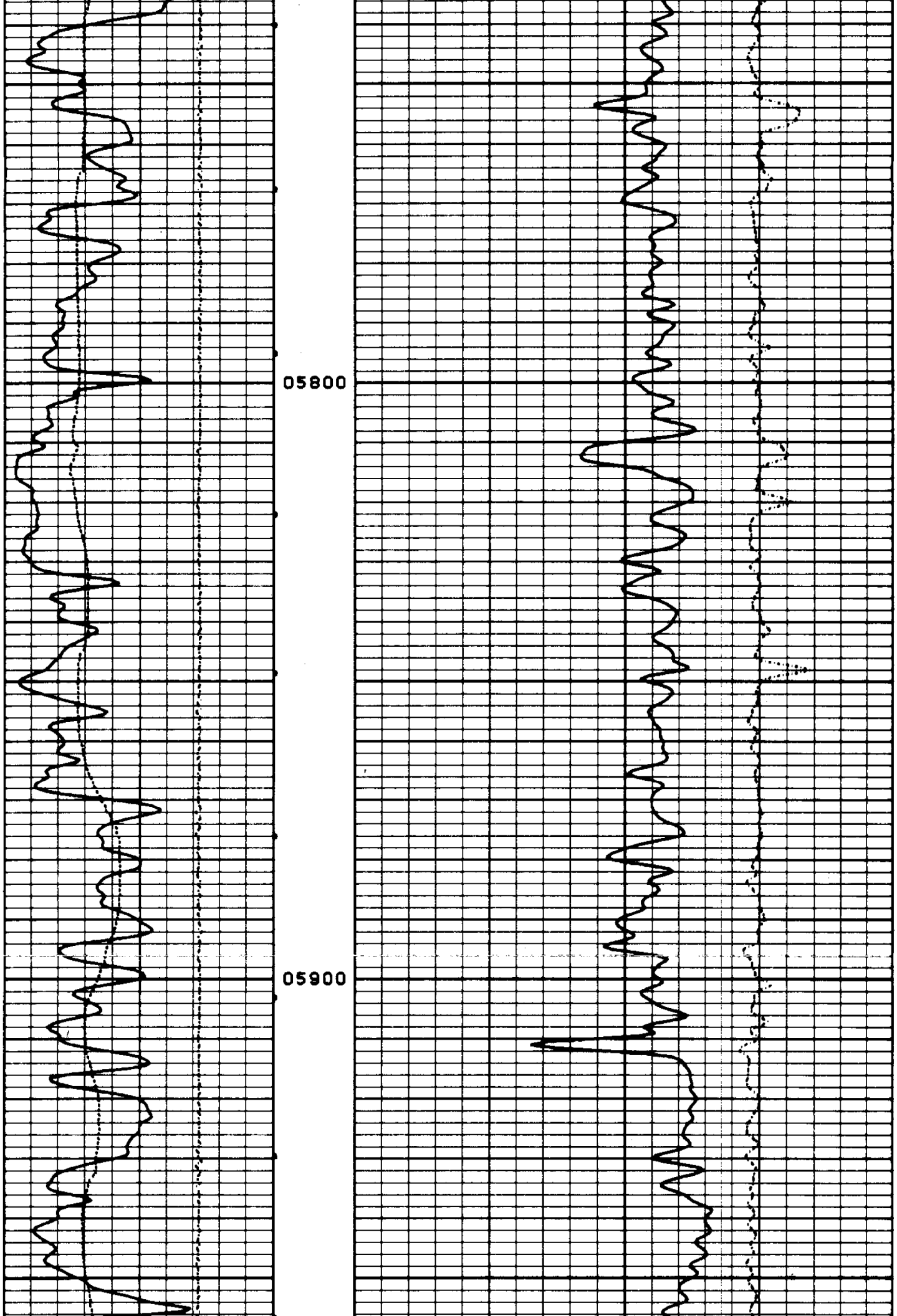
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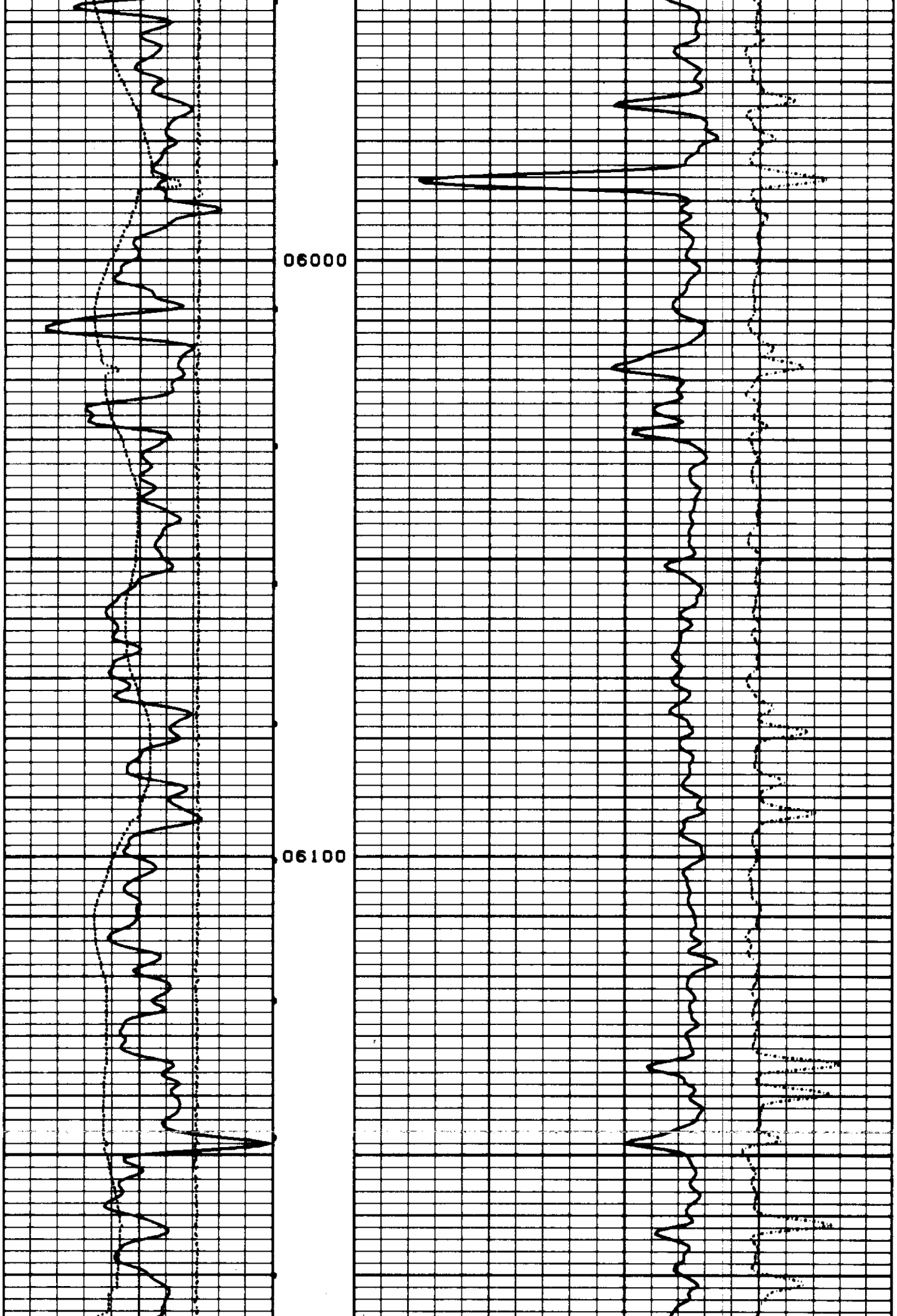
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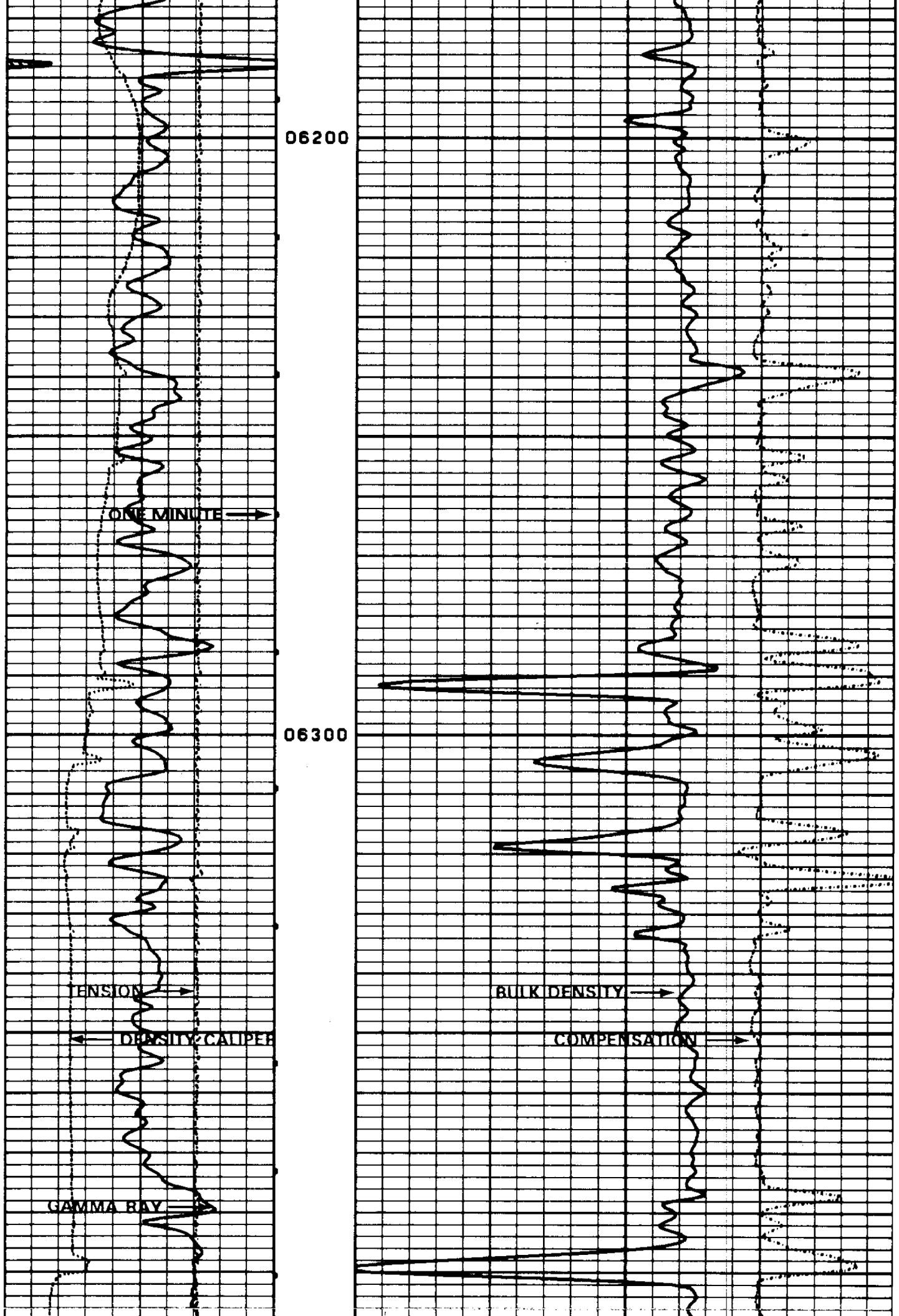
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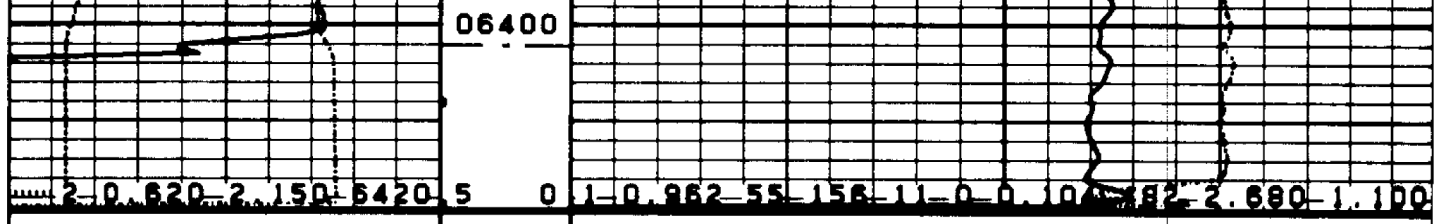
TENSION
DENSITY CALIPER
GAMMA RAY
BULK DENSITY
COMPENSATION



0	GR (API)	200	2.00	ρB (G/CC) 3.00
6	CAL-X (IN)	16	-0.25	ΔρB (G/CC) 0.25

12-06-86	17:30	6419.0	359172	0152-05	0	17

COORS ENERGY COMPANY

UTE TRIBAL NO. 4-8

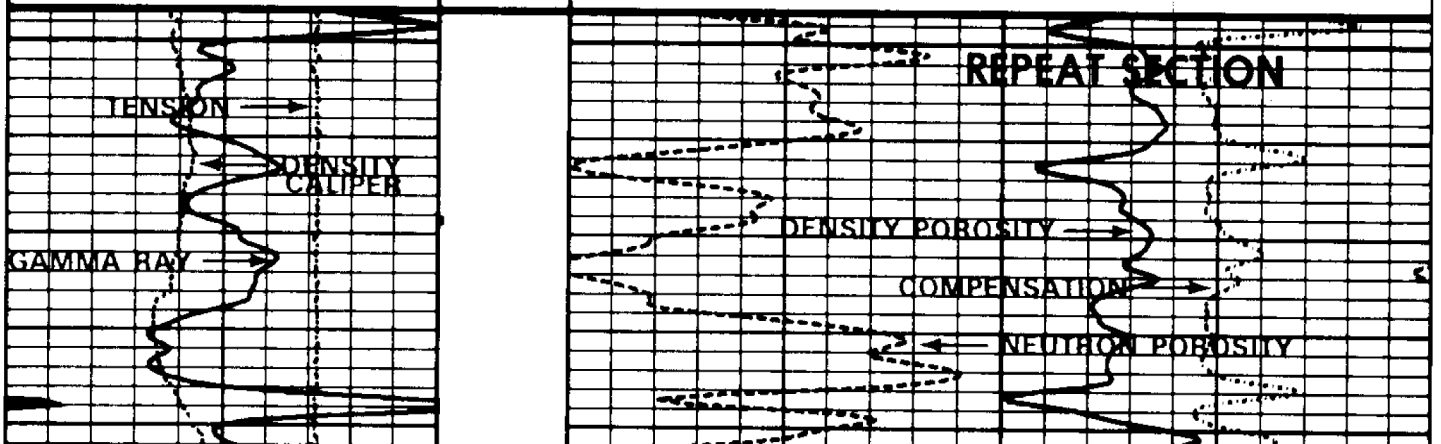
ANTELOPE CREEK

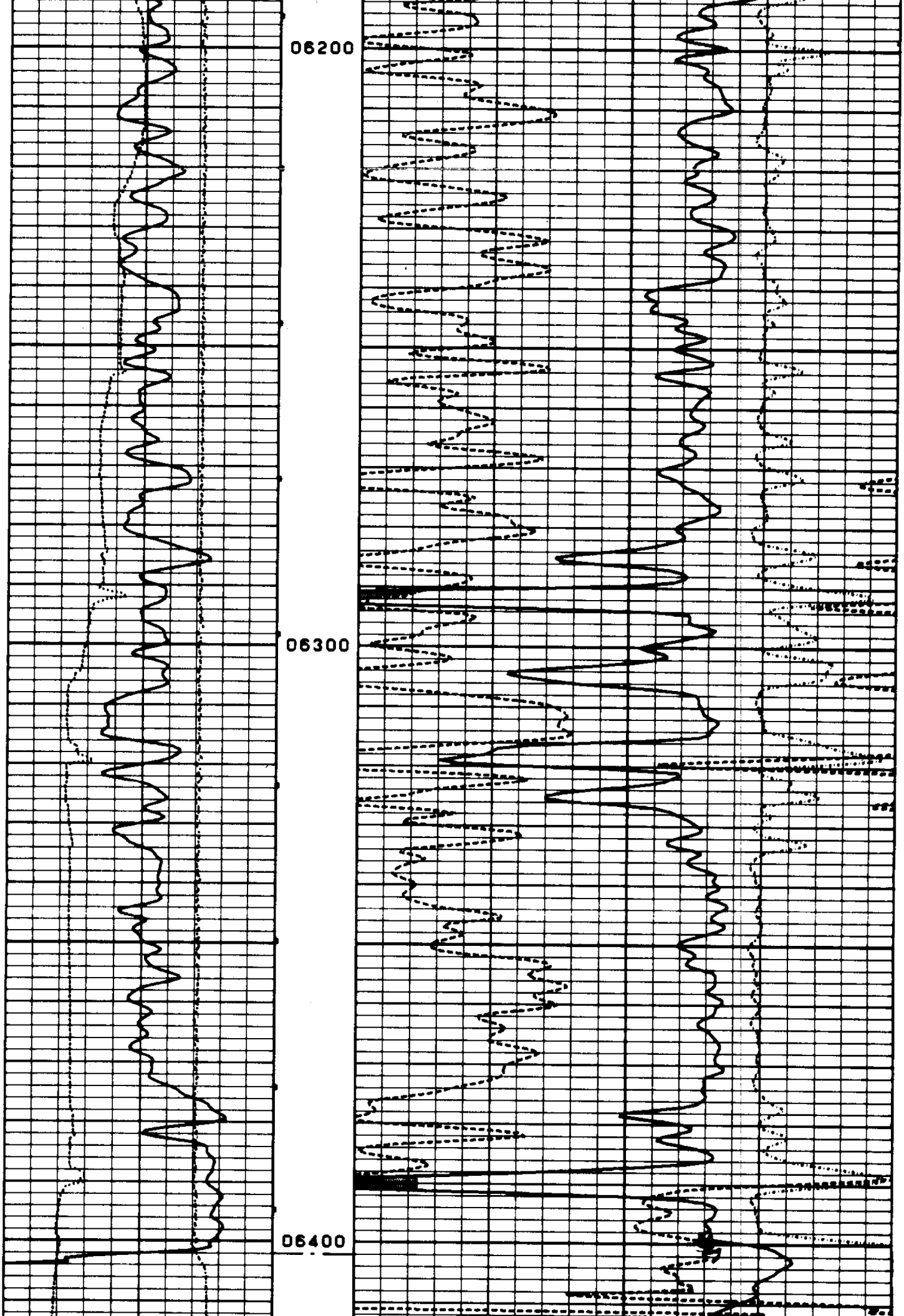
DUCHESNE State UTAH

GO FR 6402
GO TD 6404
DRLR TD 6420
Elev:
KB 5881
DF --
GL 5866

12-06-86	17:24	6146.5	359172	0152-05	0	18

0	GR (API)	200	-0.25	ΔρB (G/CC)	[illegible]
6	CAL-X (IN)	16	30	φ-CNS.SD	-10
			30	φ-CDL	-10

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0 GR (API) 200

6 CAL-X (IN) 16

-0.25 ΔP (G/CC) 0.25

30 ϕ-CNS.SD -10

30 ϕ-CDL -10

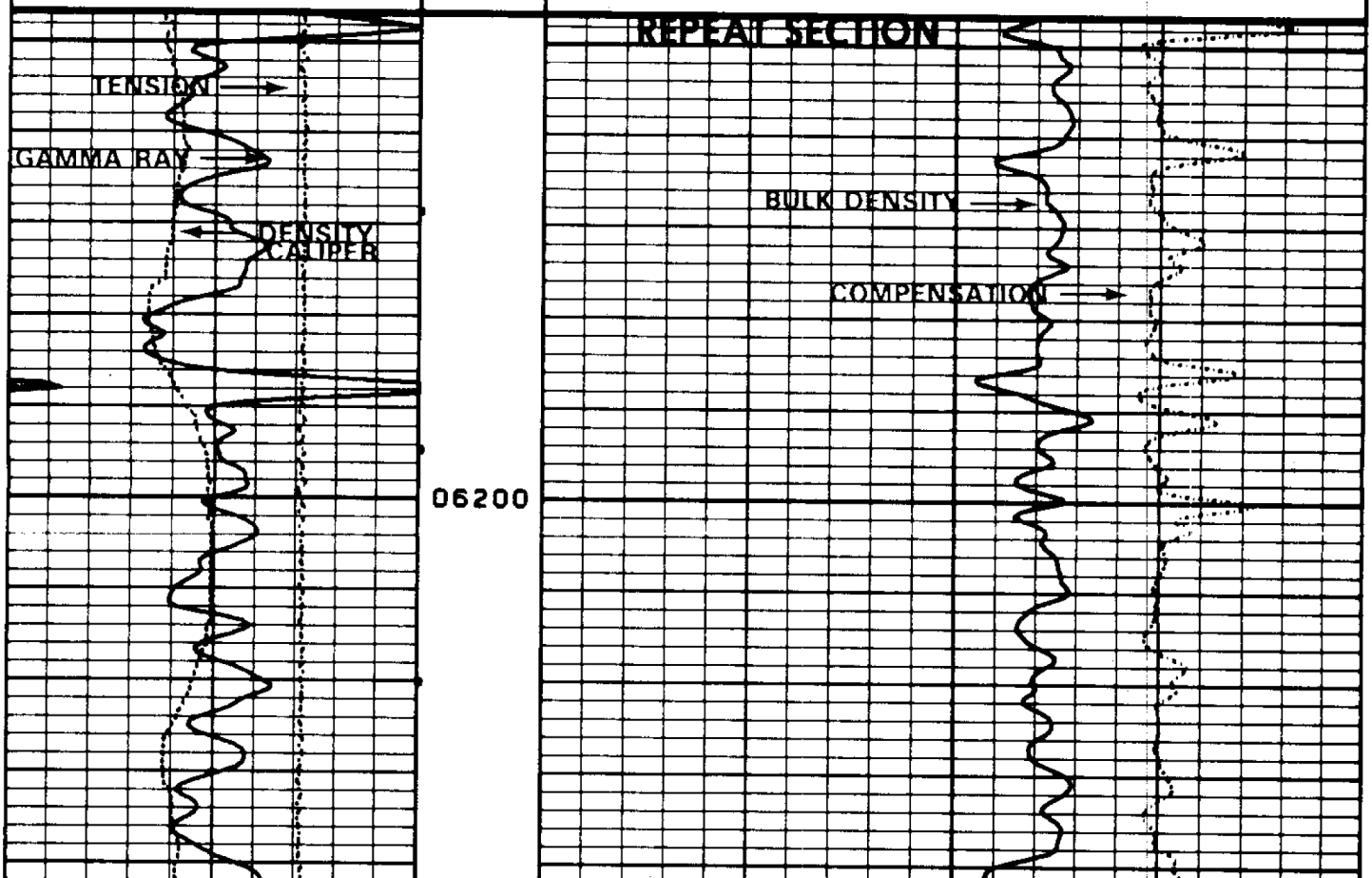
12-06-86	17:14	6419.5	359172	0152-05	0	16
12-06-86	17:24	6146.5	359172	0152-05	23	16

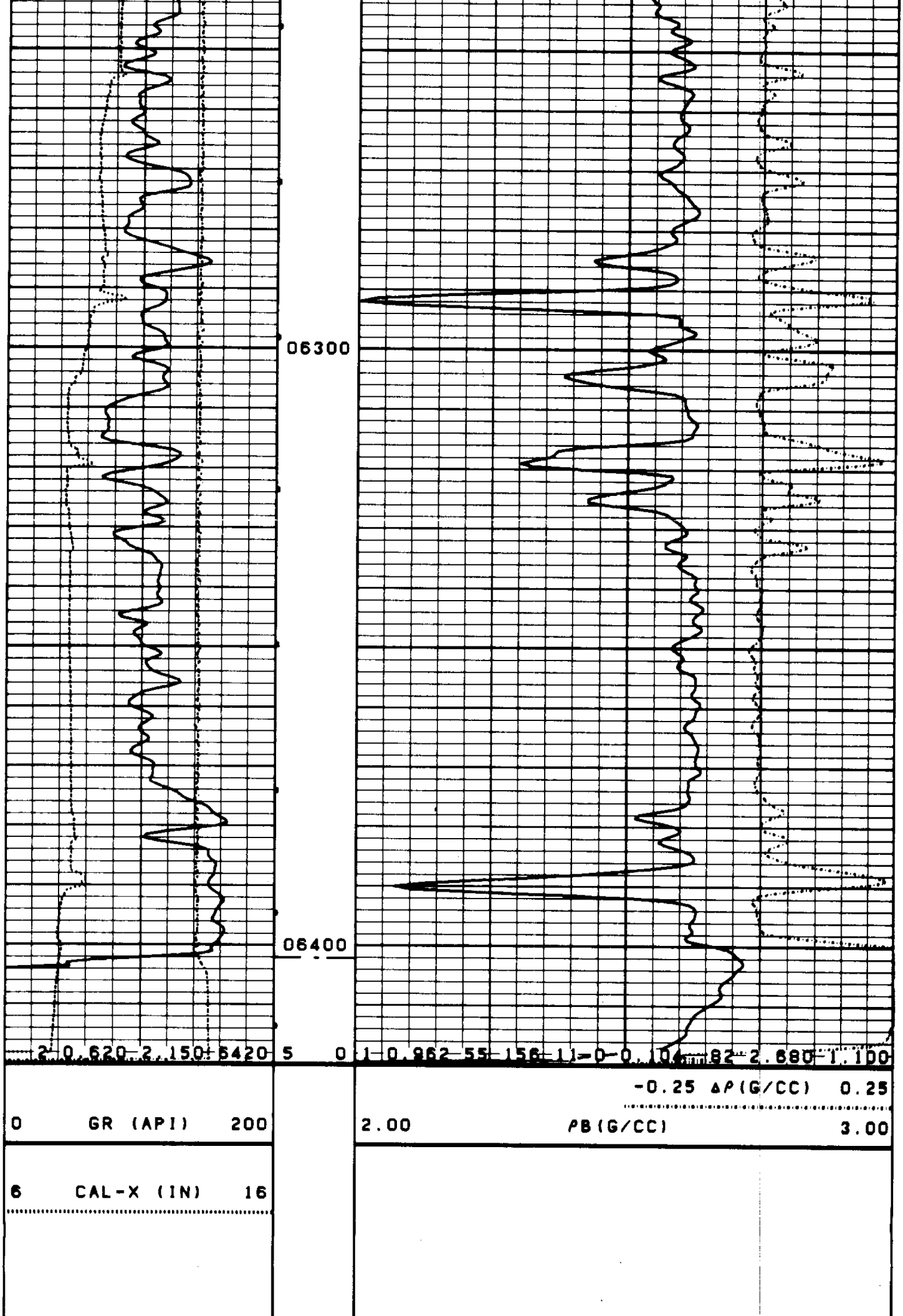
0 GR (API) 200

6 CAL-X (IN) 16

-0.25 ΔP (G/CC) 0.25

2.00 ρB (G/CC) 3.00

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06400
2 0.620 2.150 6420 5 0
1 0.862 55 156 11 0 0.104 82 2.680 1.100
-0.25 ΔP(G/CC) 0.25
0 GR (API) 200
2.00 ρB(G/CC) 3.00
6 CAL-X (IN) 16

12-06-86	17:14	6419.5	359172	0152-05	23	16

12-06-86	20:37	0.0	359172	0152-05	23	12

COMPENSATED DENSITY AFTER SURVEY TOOL CHECK

TOOL TYPE: CDT- K SERIAL NO:00097

VERIFIER NO: 00031 SOURCE NO: 00091

VERIFIER CHECK

	BEFORE	AFTER	UNITS
LS DETECTOR	281.2	279.7	CPS
SS DETECTOR	353.2	362.8	CPS
BULK DENSITY	2.352	2.377	G/CC

12-06-86	20:43	0.0	359172	0152-05	23	13

COMPENSATED NEUTRON AFTER SURVEY TOOL CHECK

TOOL TYPE: CNT- K SERIAL NO:00109

VERIFIER NO: 00031 SOURCE NO: 00657

VERIFIER CHECK

	BEFORE	AFTER	UNITS
LS DETECTOR	249.3	246.8	CPS
SS DETECTOR	331.4	327.1	CPS
TOOL RATIO:	1.329	1.325	SS/LS
TOOL POROSITY:	9.16	9.11	LM-PU

TOOL CONSTANT: 0.962

12-06-86	16:24	0.0	359172	0152-05	23	11

CALIPER BEFORE SURVEY CALIBRATION

TOOL TYPE: CDT- SERIAL NO:00097

	MEASURED			CALIBRATED		
	SMALL	LARGE	UNITS	SMALL	LARGE	UNITS
CALX	8.00	13.23	IN	7.00	14.00	IN

12-06-86	16:20	0.0	359172	0152-05	23	10

COMPENSATED DENSITY BEFORE SURVEY TOOL CHECK

TOOL TYPE: CDT- K SERIAL NO:00097

VERIFIER NO: 00031 SOURCE NO: 00091

	VERIFIER CHECK	UNITS
LS DETECTOR	281.2	CPS
SS DETECTOR	353.2	CPS
BULK DENSITY	2.352	G/CC

12-06-86	08:50	0.0	97	0152-05	23	9

COMPENSATED DENSITY SHOP CALIBRATION

TOOL TYPE: CDT- K SERIAL NO:00097

VERIFIER NO: 00031 SOURCE NO: 00091

	MAG BLK(CPS)	ALUM BLK(CPS)	SPINE ANGLE	DEN/SPINE RATIO
LS DETECTOR	1271.3	281.2	76.0	0.565
SS DETECTOR	691.4	475.2		

FIELD VERIFIER

	VERIFIER CHECK	UNITS
LS DETECTOR	281.0	CPS
SS DETECTOR	363.2	CPS
BULK DENSITY	2.375	G/CC

12-06-86	14:34	257.0	359172	0152-05	23	8

CALIPER CASING CHECK

TOOL TYPE: CDT- SERIAL NO:00108

MEASURED CASING ID. X-CALIPER = 8.20 IN

12-06-86	05:01	0.0	359172	0152-05	23	4

GAMMA RAY BEFORE SURVEY CALIBRATION

TOOL TYPE: GRT-HA SERIAL NO:00804

BACKGROUND	CALIBRATOR	STANDARD	UNITS
215.9	739.2	140.0	GAPI

DELTA COUNTS PER SEC: 523.3 CPS/API = 3.737

12-06-86	04:57	11.0	359172	0152-05	23	3

COMPENSATED NEUTRON BEFORE SURVEY TOOL CHECK

TOOL TYPE: CNT- K SERIAL NO:00109

VERIFIER NO: 00031 SOURCE NO: 00657

	VERIFIER CHECK	UNITS
LS DETECTOR	249.3	CPS
SS DETECTOR	331.4	CPS
TOOL RATIO:	1.329	SS/LS
TOOL POROSITY:	9.16	LM-PU

TOOL CONSTANT: 0.962

11-14-86	16:09	0.0	7570	0152-05	23	1

COMPENSATED NEUTRON SHOP CALIBRATION

TOOL TYPE: CNT- K SERIAL NO:00109

VERIFIER NO: 00031 SOURCE NO: 00657

	LOW - ø	MED - ø	HIGH - ø	UNITS
TANK RATIO:	0.566	1.300	[illegible]	

TANK RATIO:	0.566	1.389	2.176	SS/LS
TANK POROSITY:	-0.34	11.23	25.89	LM-PU
LS DETECTOR	1810.1	358.7	163.8	CPS
SS DETECTOR	1059.9	525.2	372.9	CPS
TOOL RATIO:	0.583	1.444	2.245	SS/LS
TOOL POROSITY:	-0.37	11.23	25.57	LM-PU

TOOL CONSTANT: 0.962

SURFACE TEMPERATURE: 55° F

FIELD VERIFIER

SS DETECTOR	LS DETECTOR	RATIO	POROSITY
331.3 CPS	248.3 CPS	1.334	9.26

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ART 3

DUAL LATEROLOG

FILING NO.

COMPANY COORS ENERGY COMPANY

WELL UTE TRIBAL NO. 4-8

FIELD ANTELOPE CREEK

COUNTY DUCHESNE STATE UTAH

FEB 2 DIVISION OF OIL GAS

LOCATION: 515' F W/L 2100' F S/L NW SW

12

SEC 8 TWP 5S RGE 3W

Other Services

RHC

Permanent Datum GL Elev. 5866

Log Measured from KB 15 Ft. Above Perm. Datum

Drilling Measured from KB

KB 5881

DF --

GL 5866

Date	12-6-86			
Run No.	One			
Depth Driller	6420			
Depth-Logger	6414			
Bottom Logged Interval	6412			
Top Logged Interval	306			
Casing-Driller	8 5/8 @ 300	@	@	@
Casing-Logger	--			
Bit Size	7 7/8			
Type Fluid in Hole	KCL			
Density and Viscosity	8.8 | 27			
pH and Fluid Loss	11.0 | -- cc	cc	cc	cc
Source of Sample	Flowline			
Rm @ Meas. Temp.	.104 @ 82.3 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.165 @ 54.7 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	.293 @ 60.8 °F	@ °F	@ °F	@ °F
Source of Rmf and Rmc	M | M			
Rm @ BHT	.050 @ 156 °F	@ °F	@ °F	@ °F
Time: End Circulation	0315 Hours			
Time: Logger on Bottom	0833 Hours			
Max Rec. Temp. Deg. F.	156 °F	°F	°F	°F
Equip. No. and Location	7570 Vernal			
Recorded By	Grenier			
Witnessed By	Mr. Ballou			

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down Hole

Changes in Mud Type or Additional Samples

Date	Sample No.										
Depth Driller											
Type Fluid in Hole											
Dens.	Visc.										
pH	Fluid Loss										
Source of Sample											
Rm @ Meas. Temp		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Source Rmf Rmc											
Rm @ BHT		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Rmf @ BHT		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F
Rmc @ BHT		@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F	@ °F

EQUIPMENT DATA

DUAL LATEROLOG					GAMMA RAY		OTHER
Run No.	Tool No.	Tool Type	Tool Position	S.O.	Tool No.	Tool Type	Tool No.
One	17	DLL	Cent.	Bow	4413	Scint.	18013
				Spring			MSFL

CALIBRATION DATA

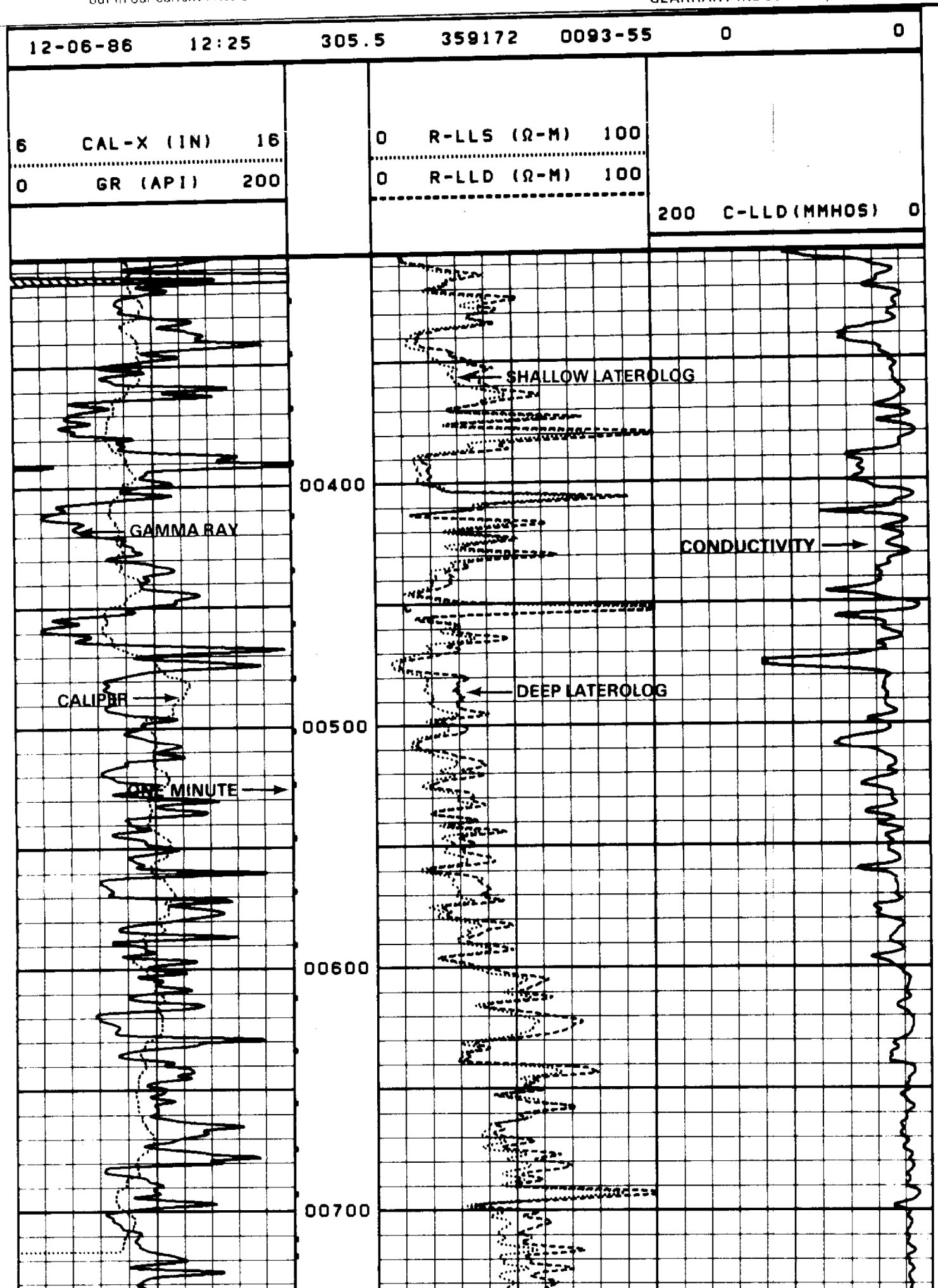
Run No.	LLD High	LLD Low	LLD Gain	LLS High	LLS Low	LLS Gain	GAMMA RAY API Scale	GAMMA RAY BKG.	GAMMA RAY STD.
One	SEE DIGITAL CALIBRATION								

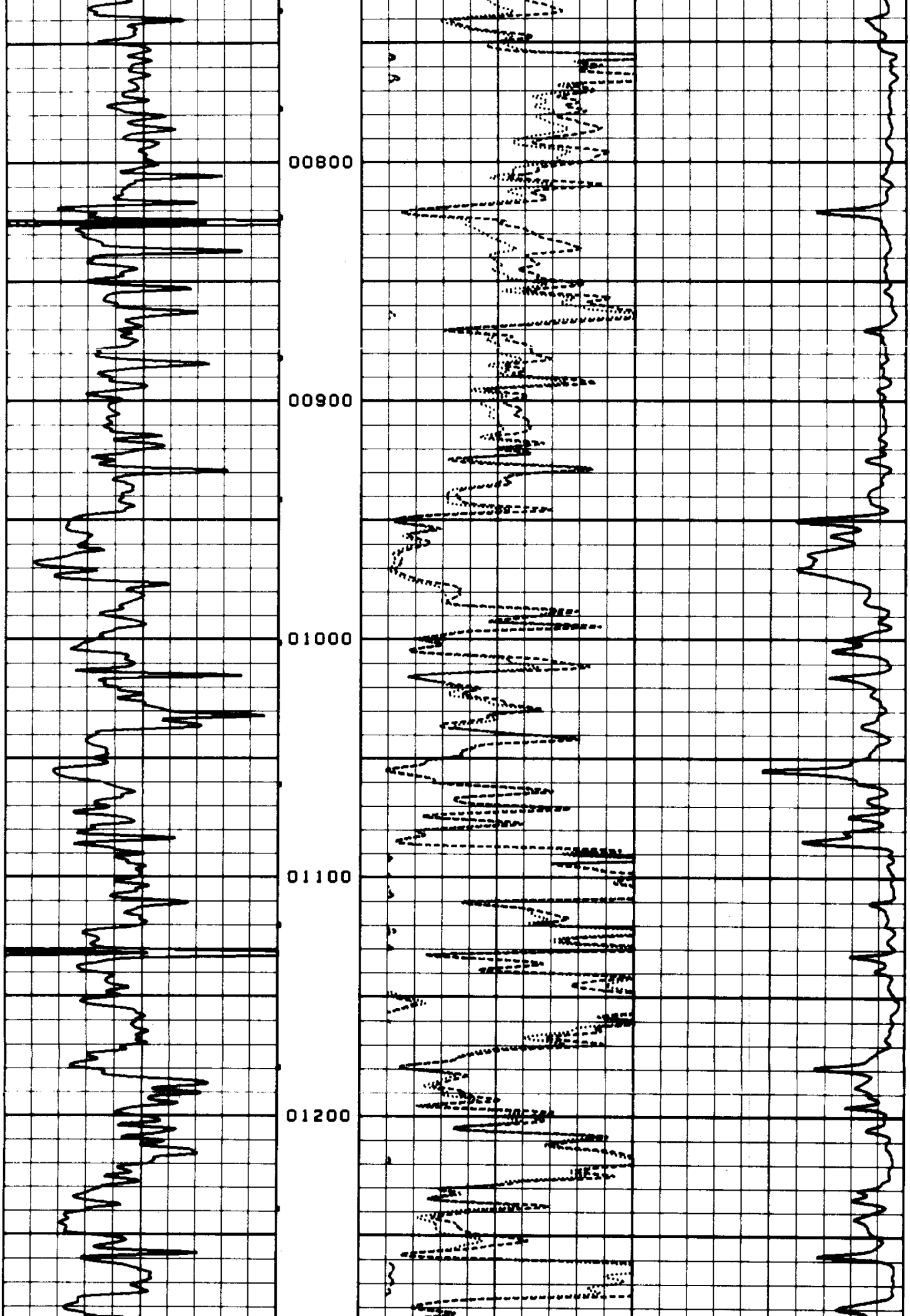
REMARKS:

NOTICE: 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,

the accuracy or correctness of any interpretation, we shall not be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by one of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current Price Schedule.

GEARHART INDUSTRIES, INC.

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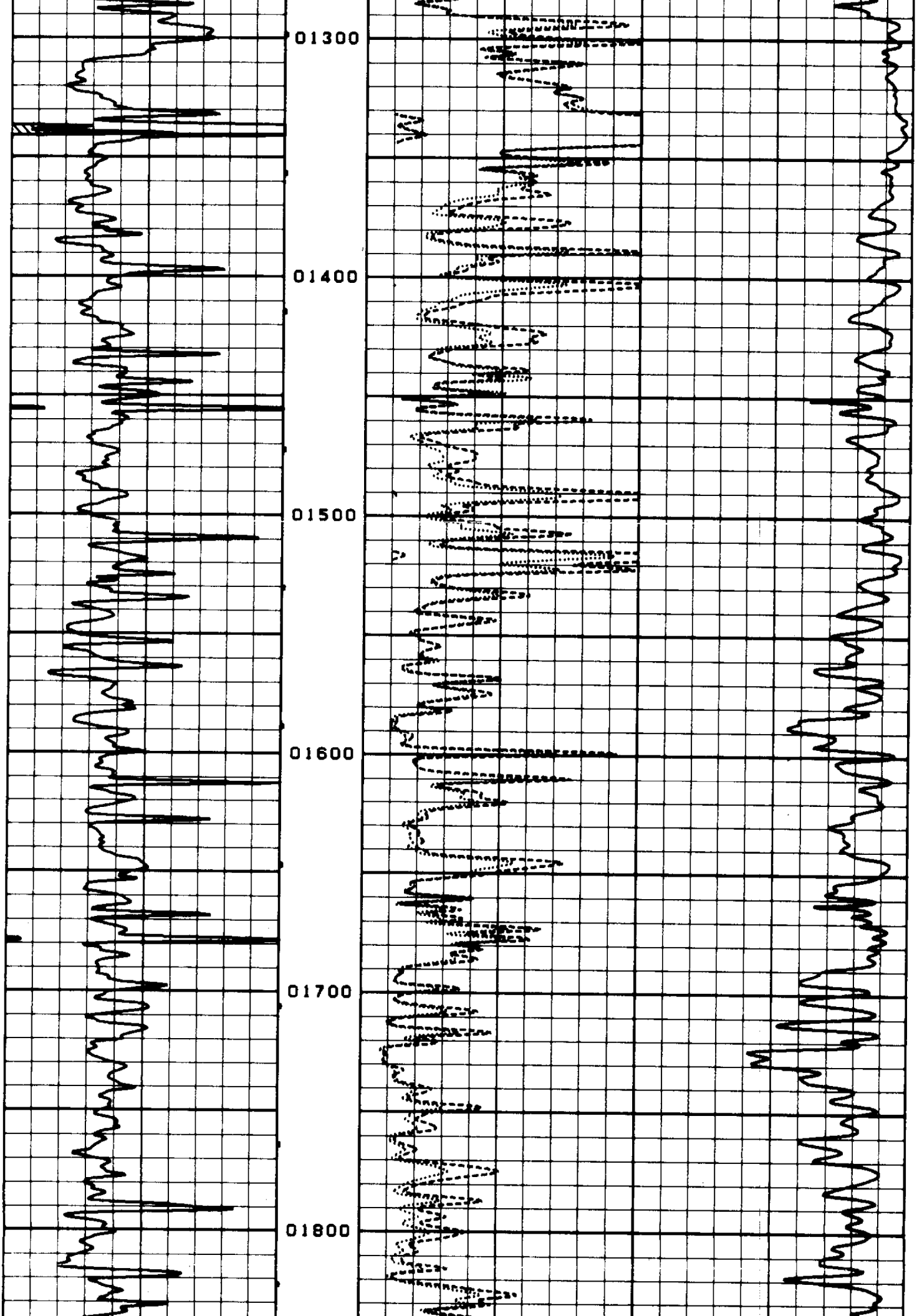
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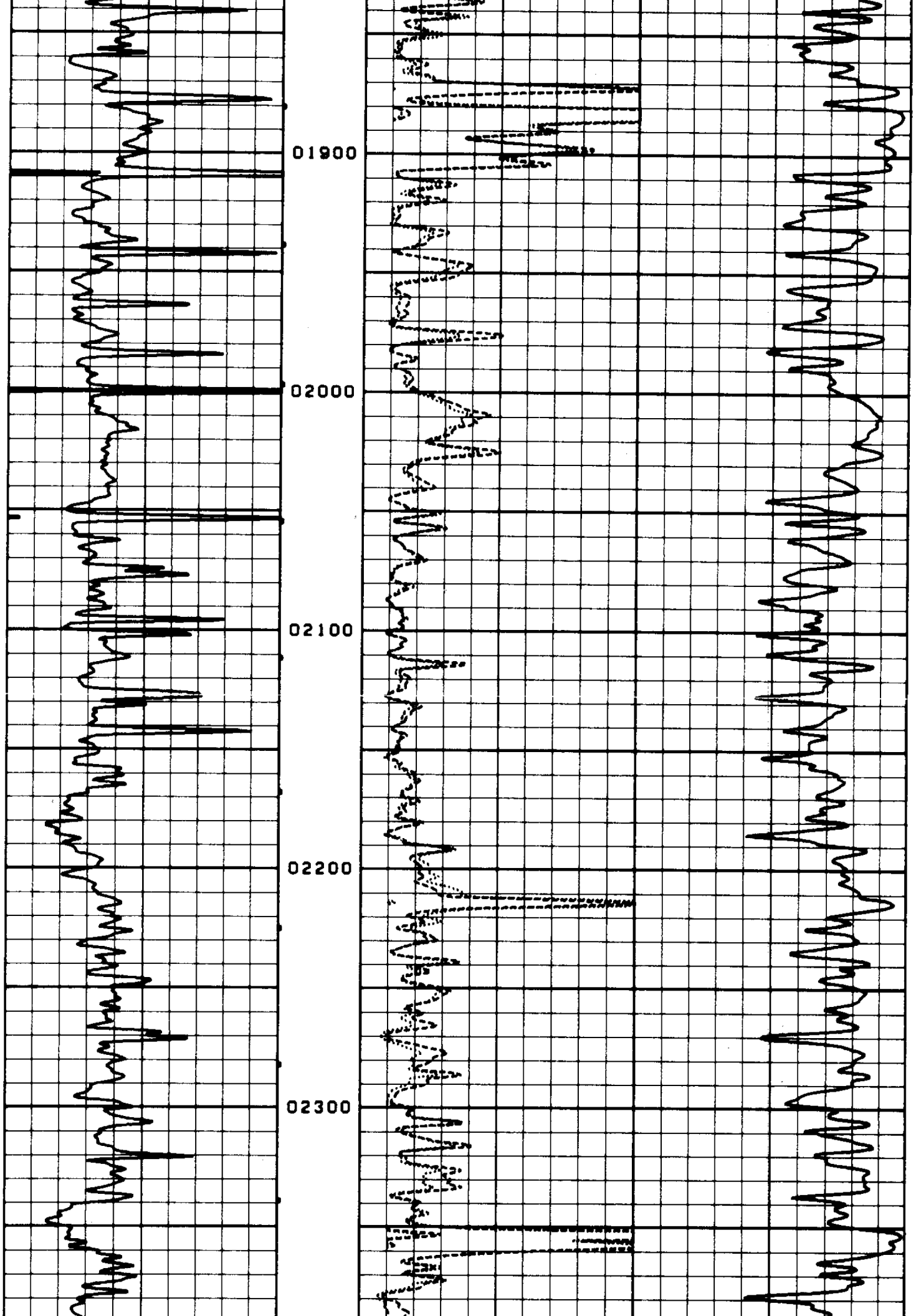
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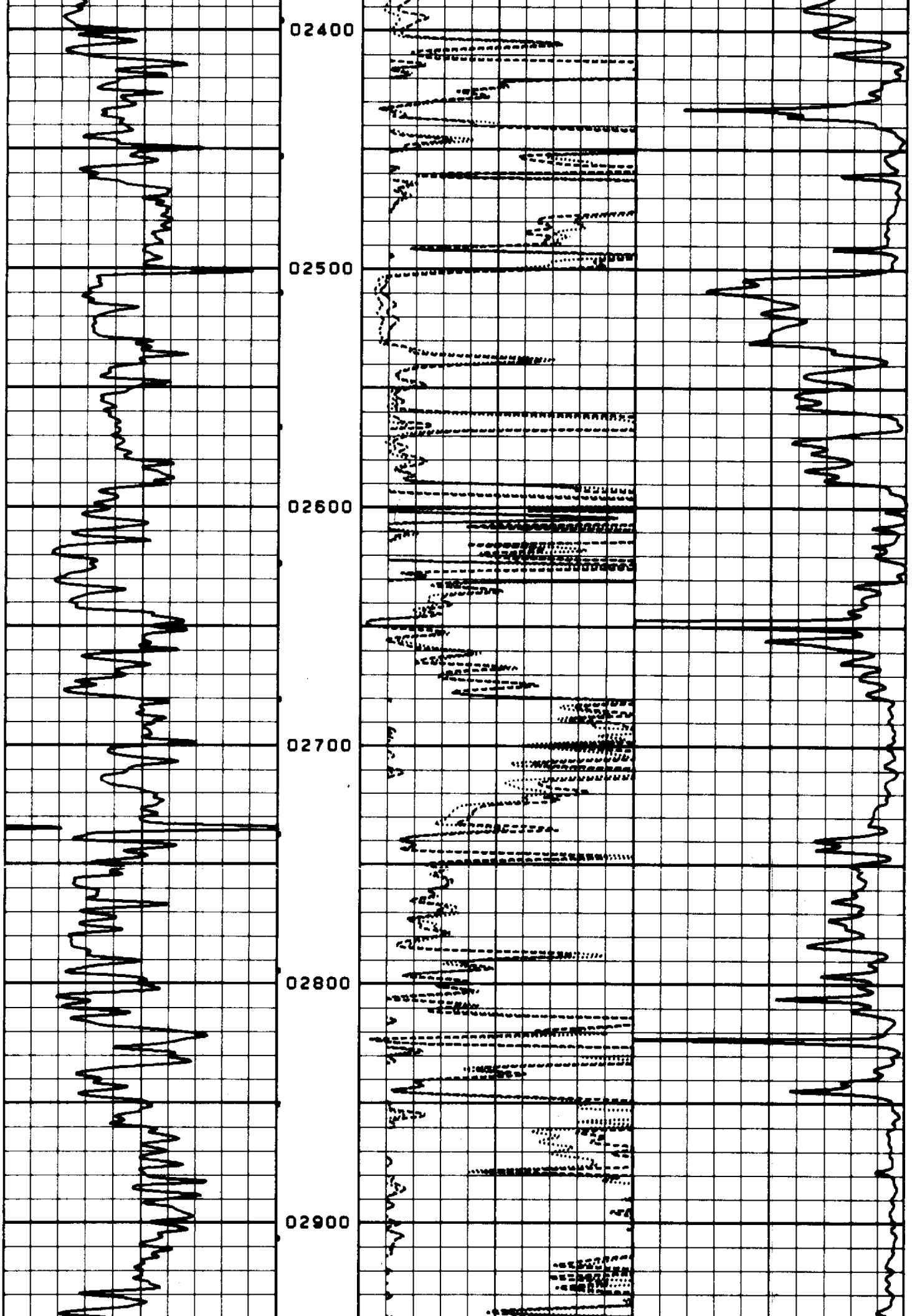
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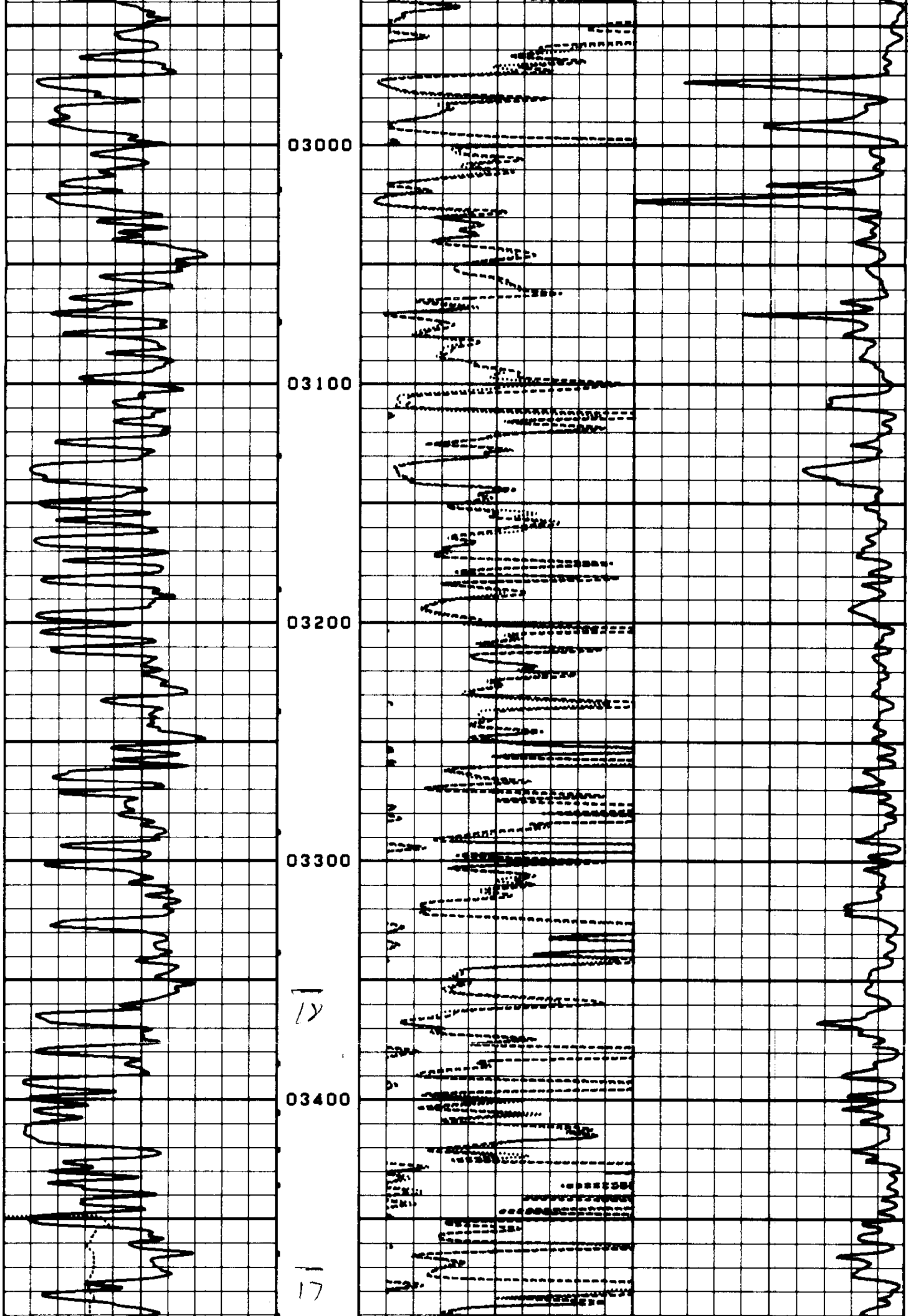
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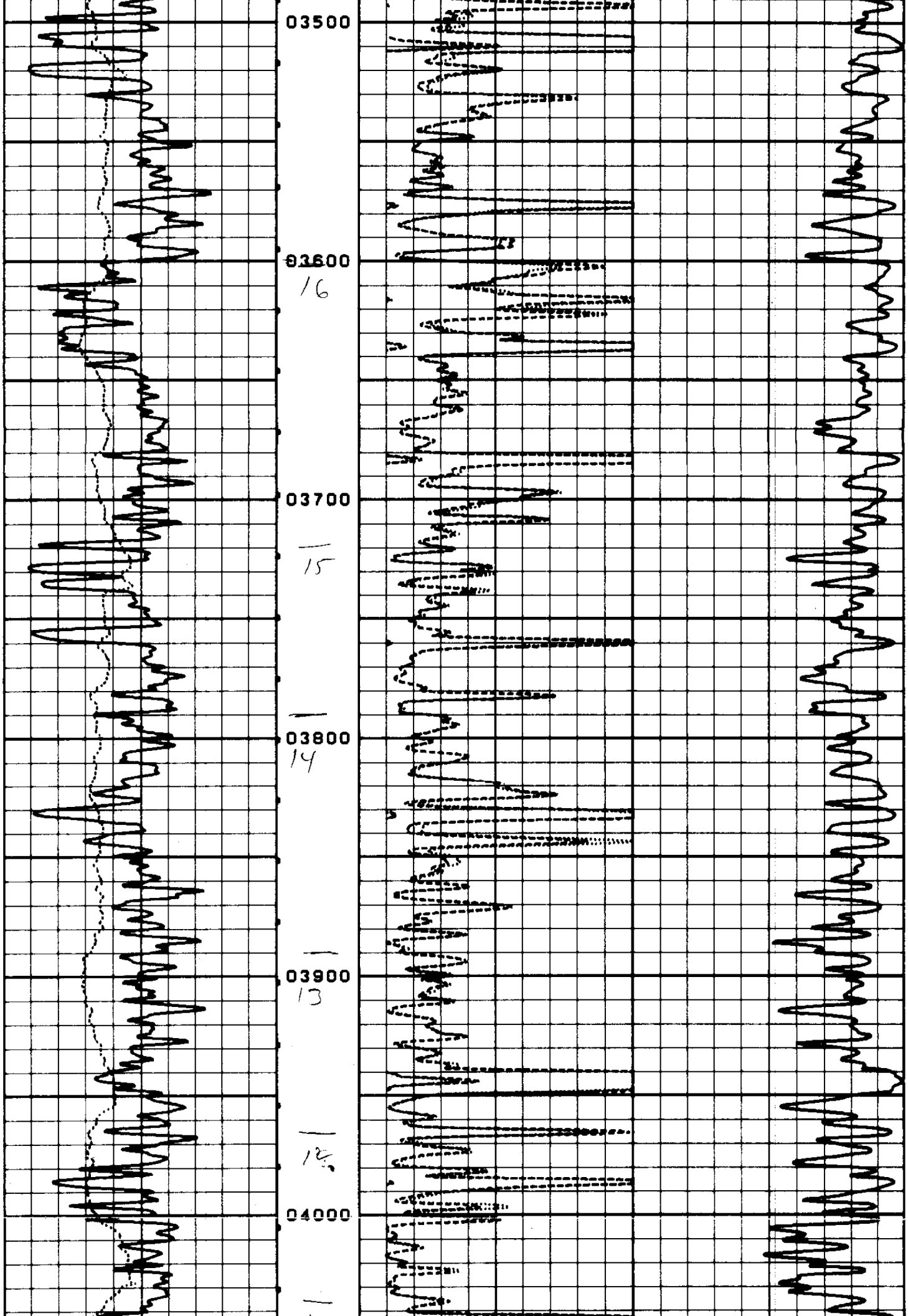
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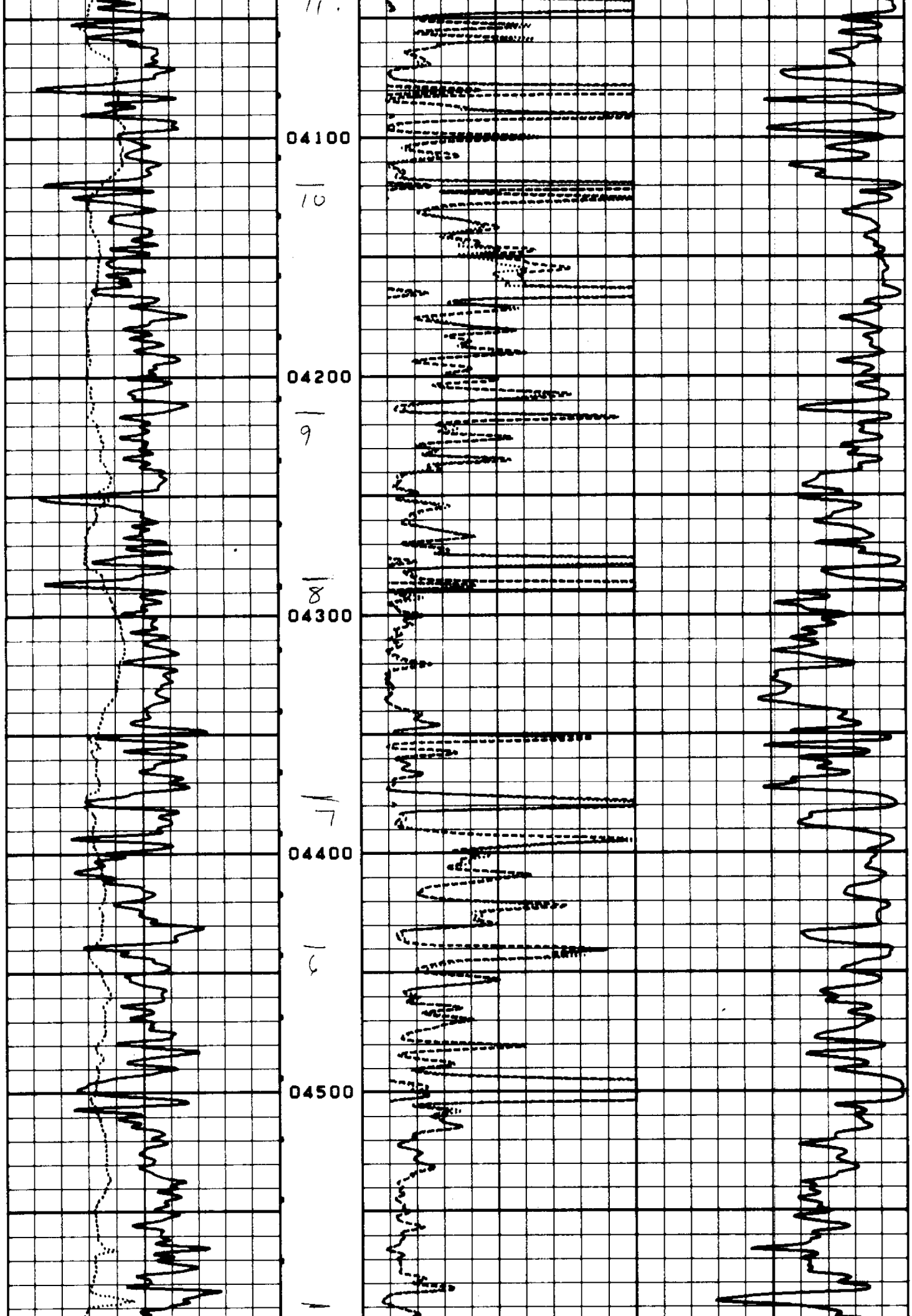
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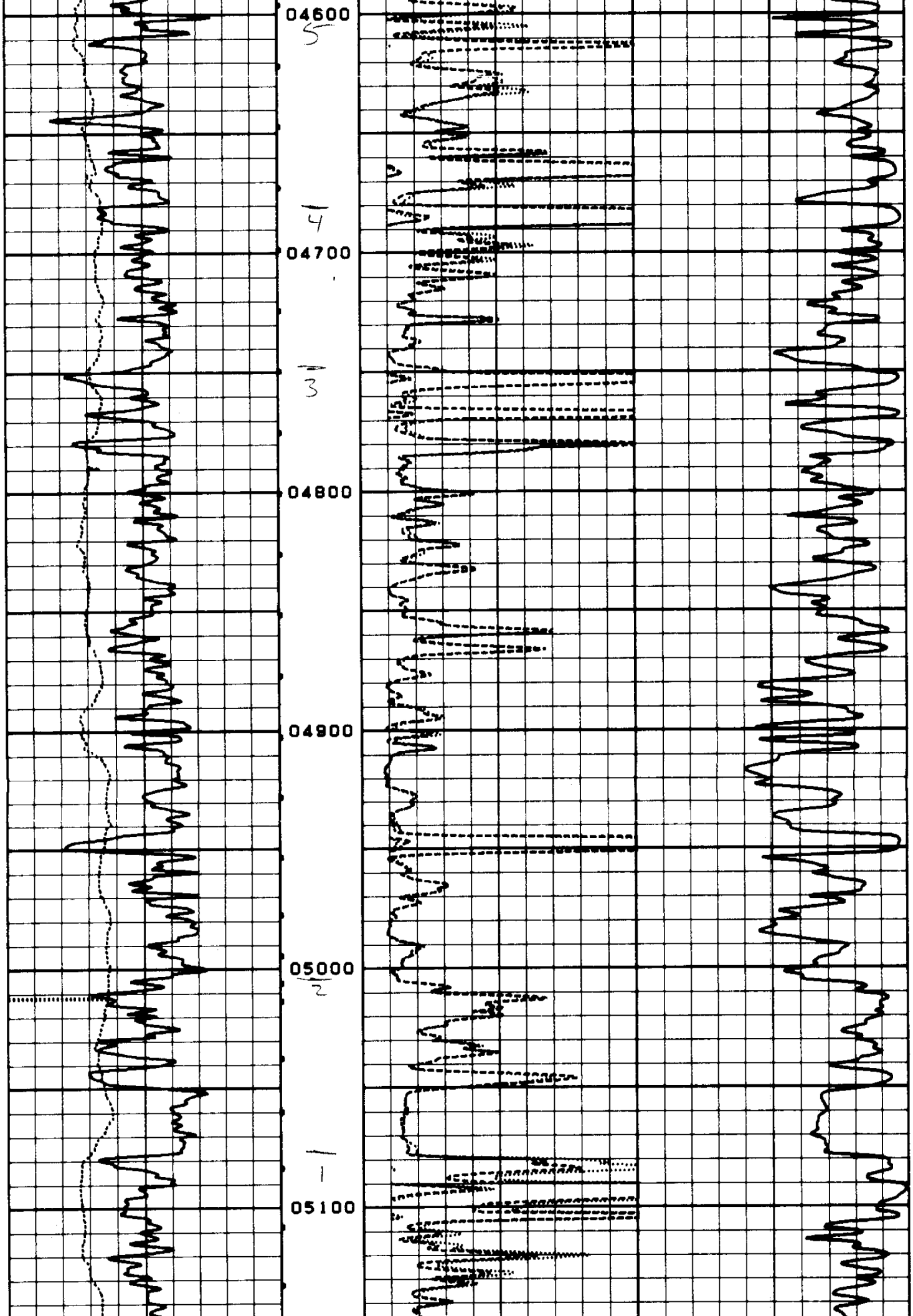
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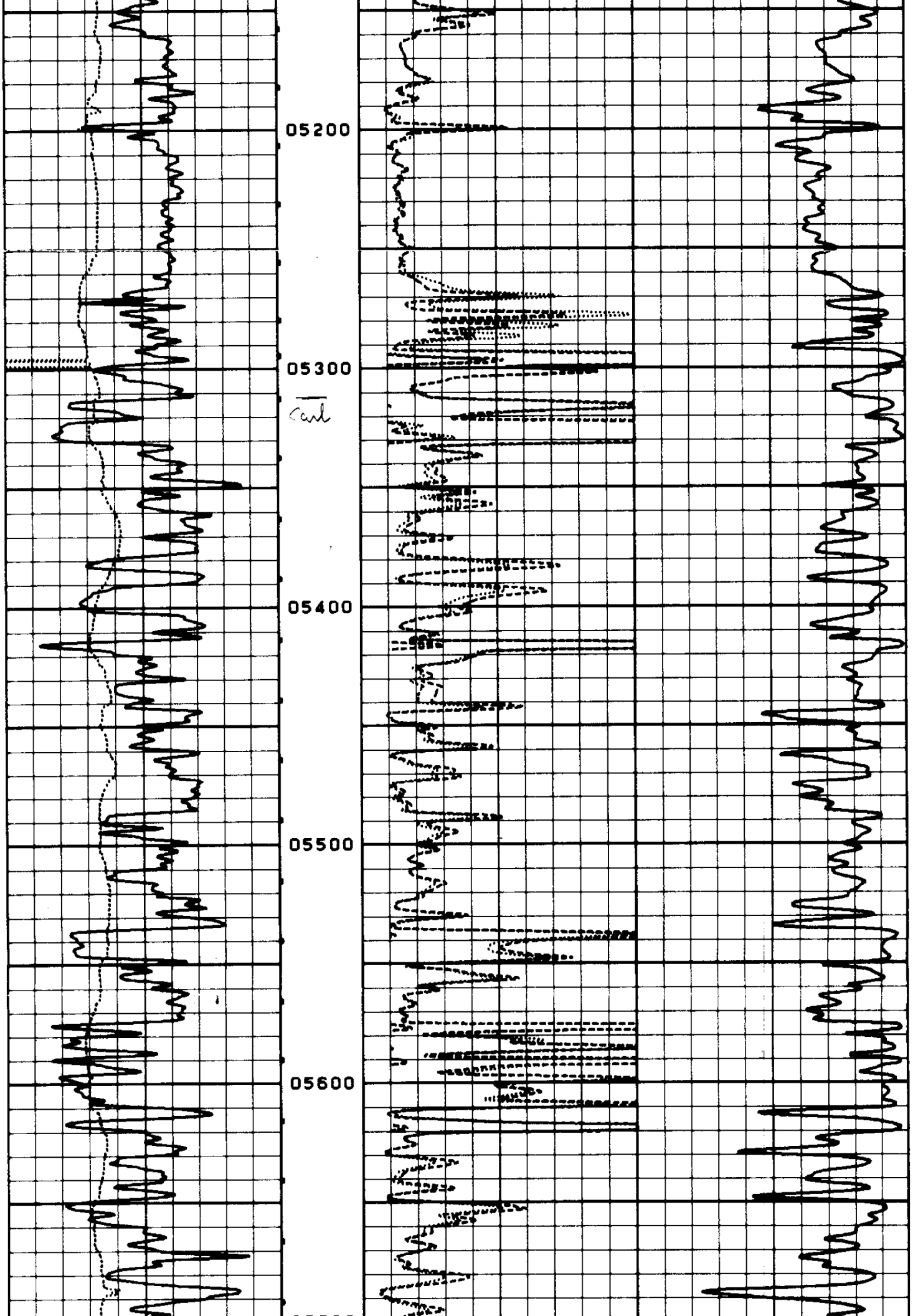
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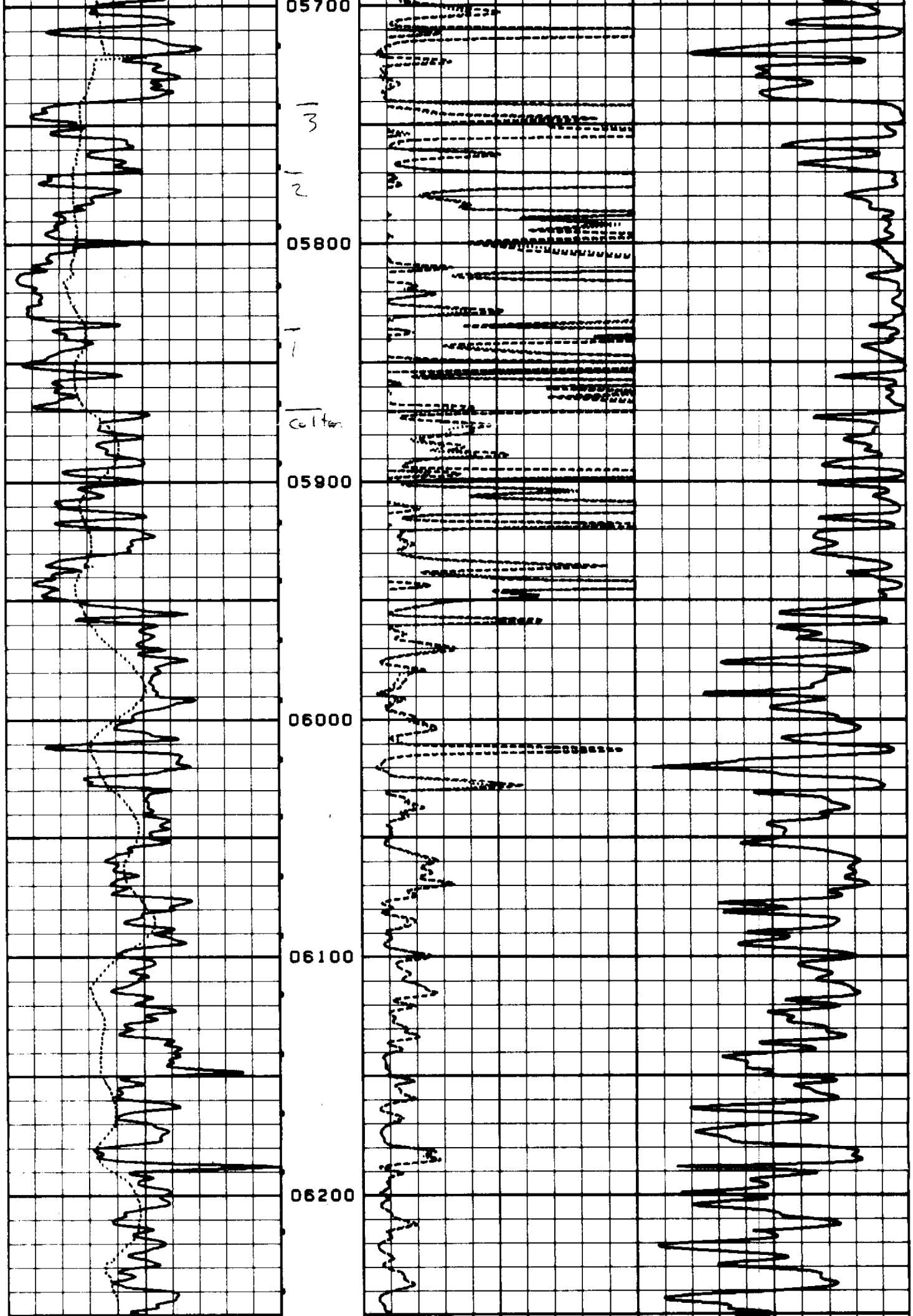
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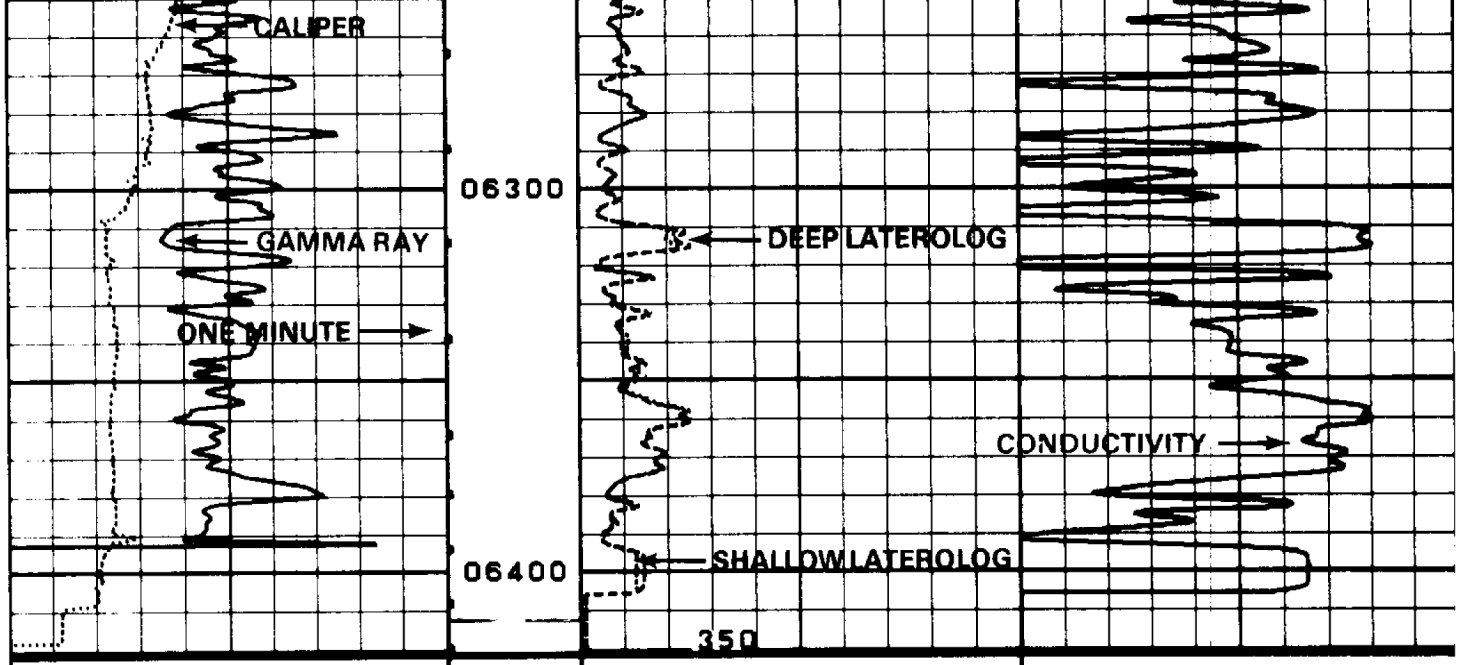
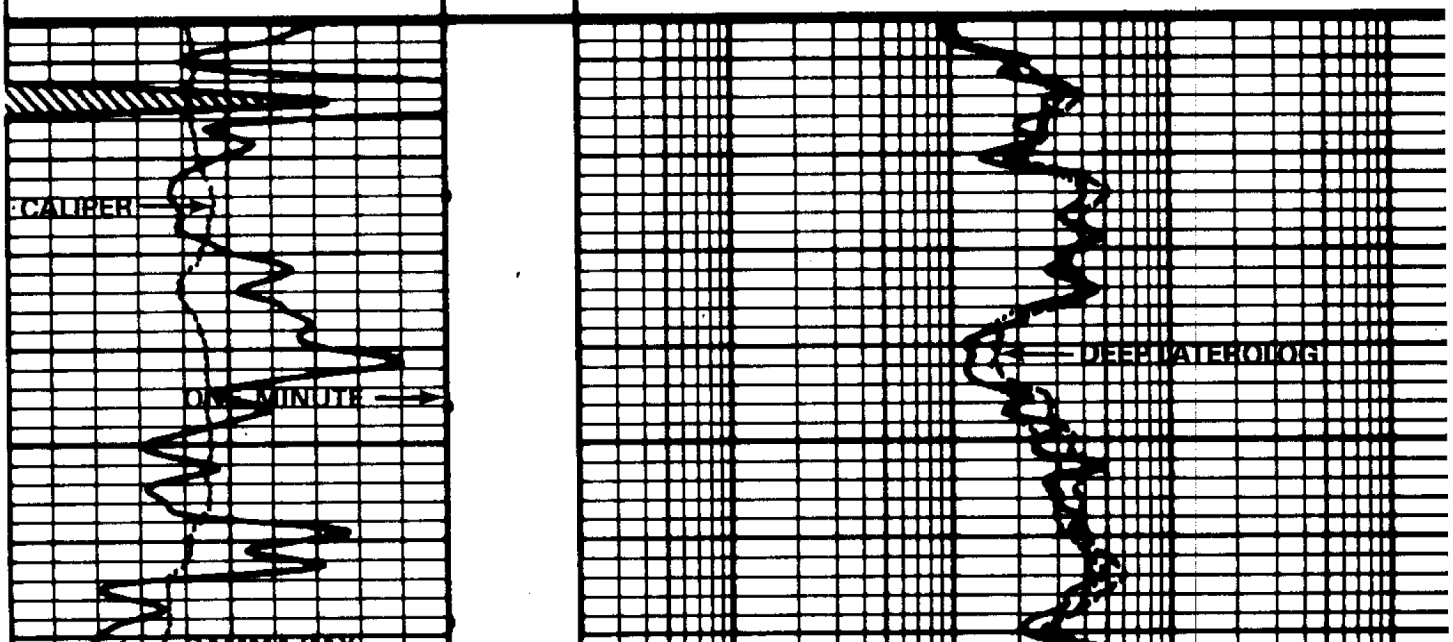


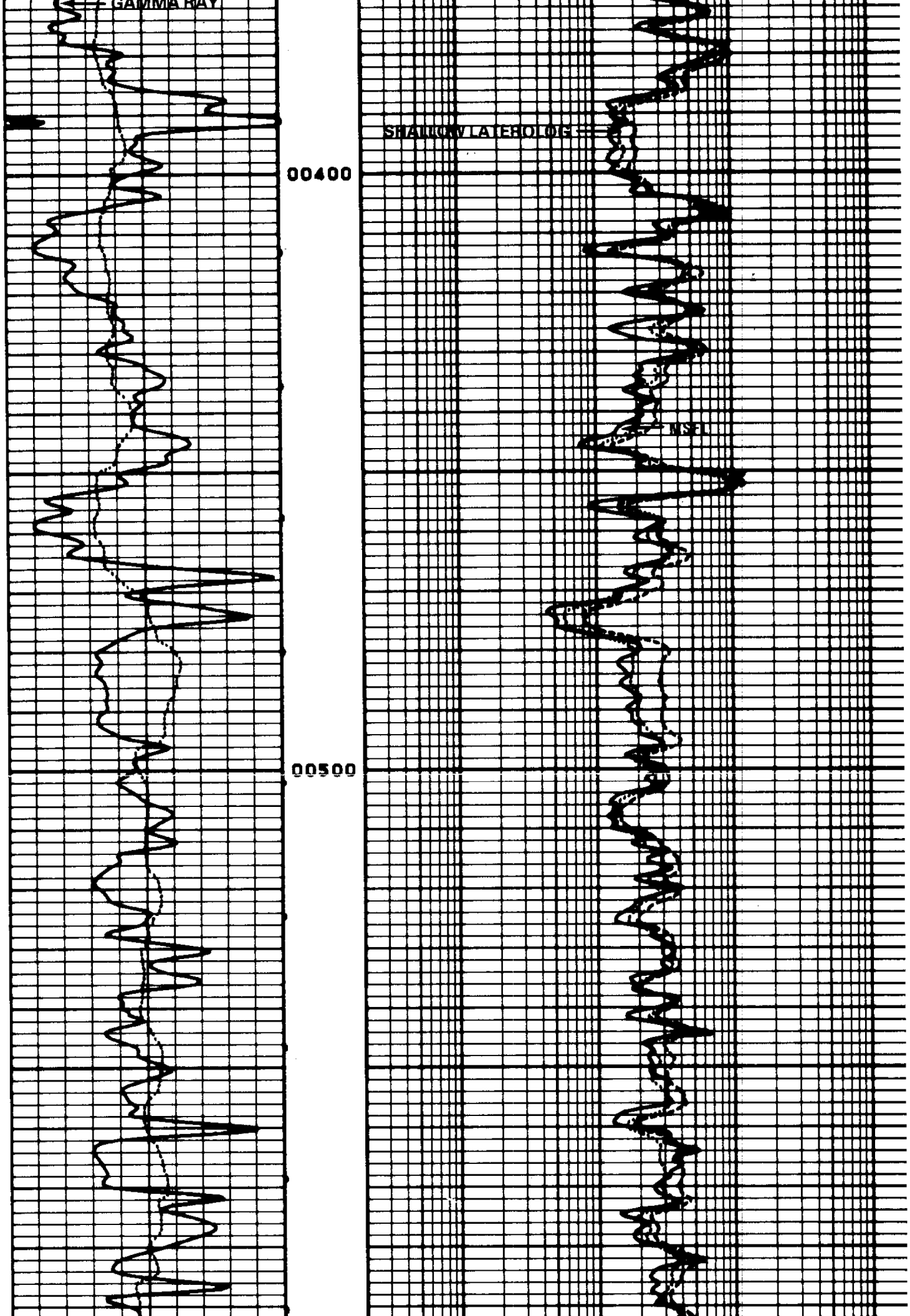
6	CAL-X (IN)	16	0	R-LLS (Ω-M)	100	
0	GR (API)	200	0	R-LLD (Ω-M)	100	
					200	C-LLD (MMHOS) 0

12-06-86	08:50	6420.5	359172	0093-55	0	0

12-06-86	12:25	305.5	359172	0093-55	0	0

		0.2	R-MSF (Ω-M)	2000	
-1000	TENSION (LBS)	0	0.2	R-LLS (Ω-M)	2000
			0.2	R-LLD (Ω-M)	2000
6	CAL-X (IN)	16			
0	GR (API)	200			




GAMMA RAY
SHALLOW LATEROLOG
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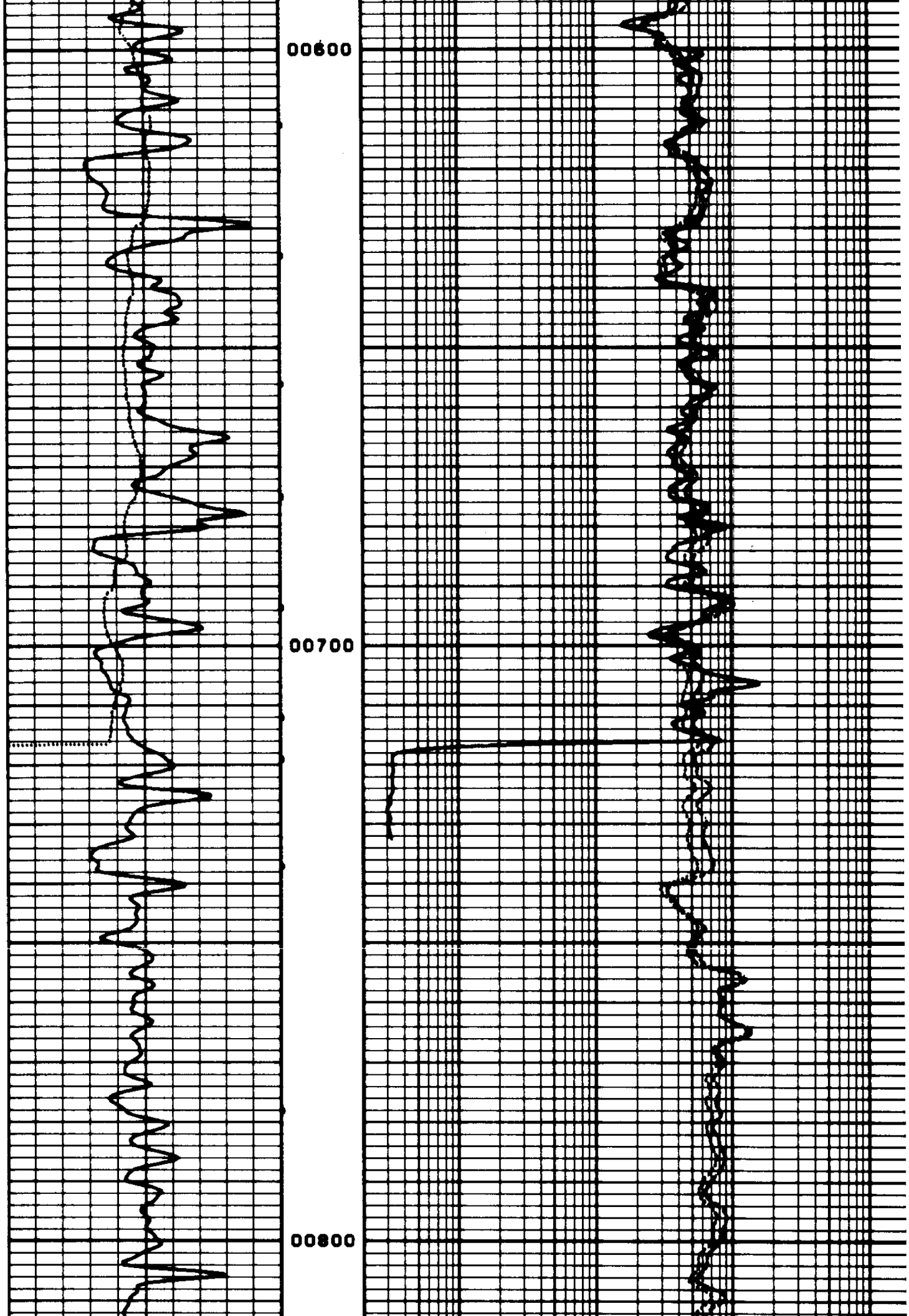
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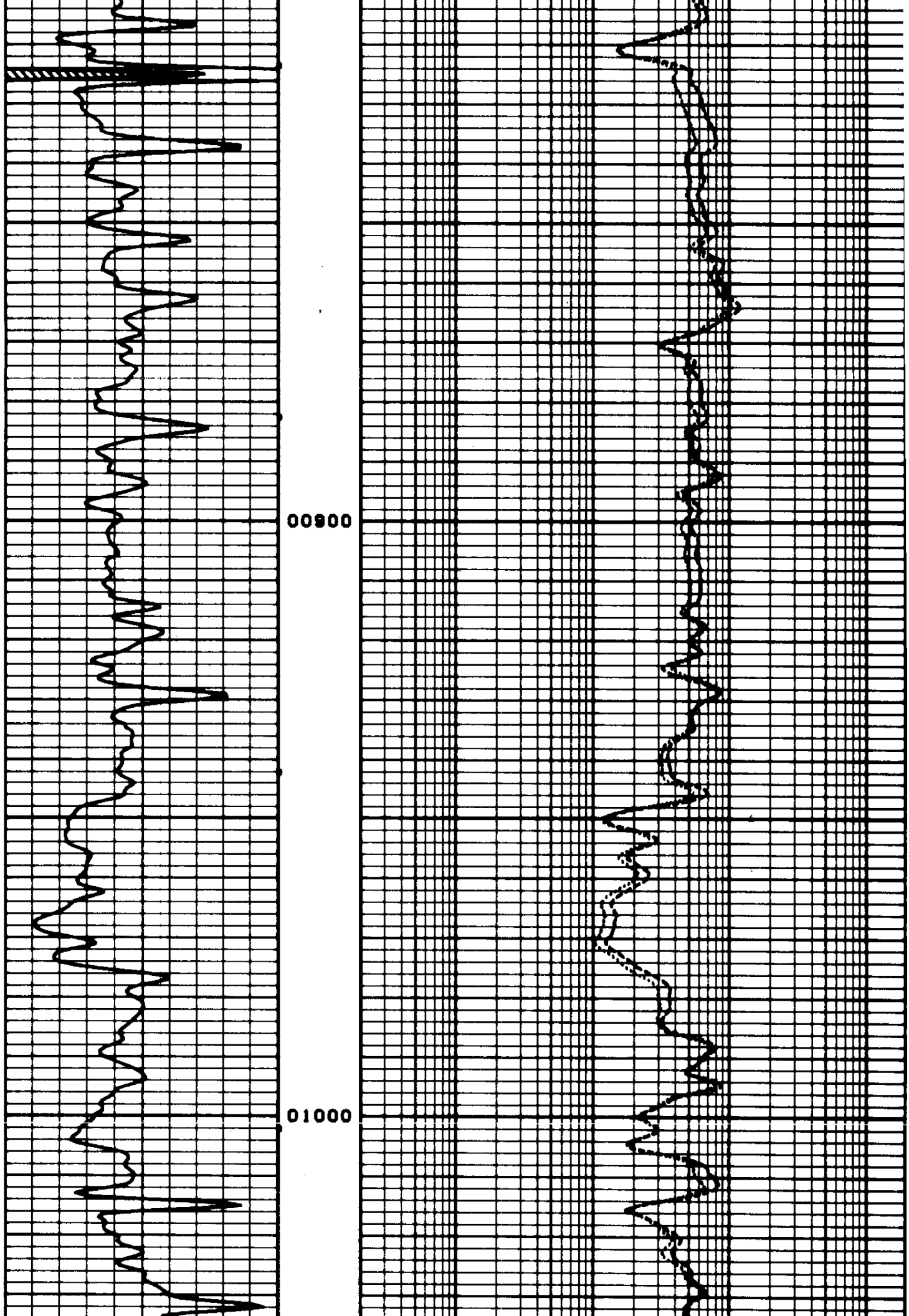
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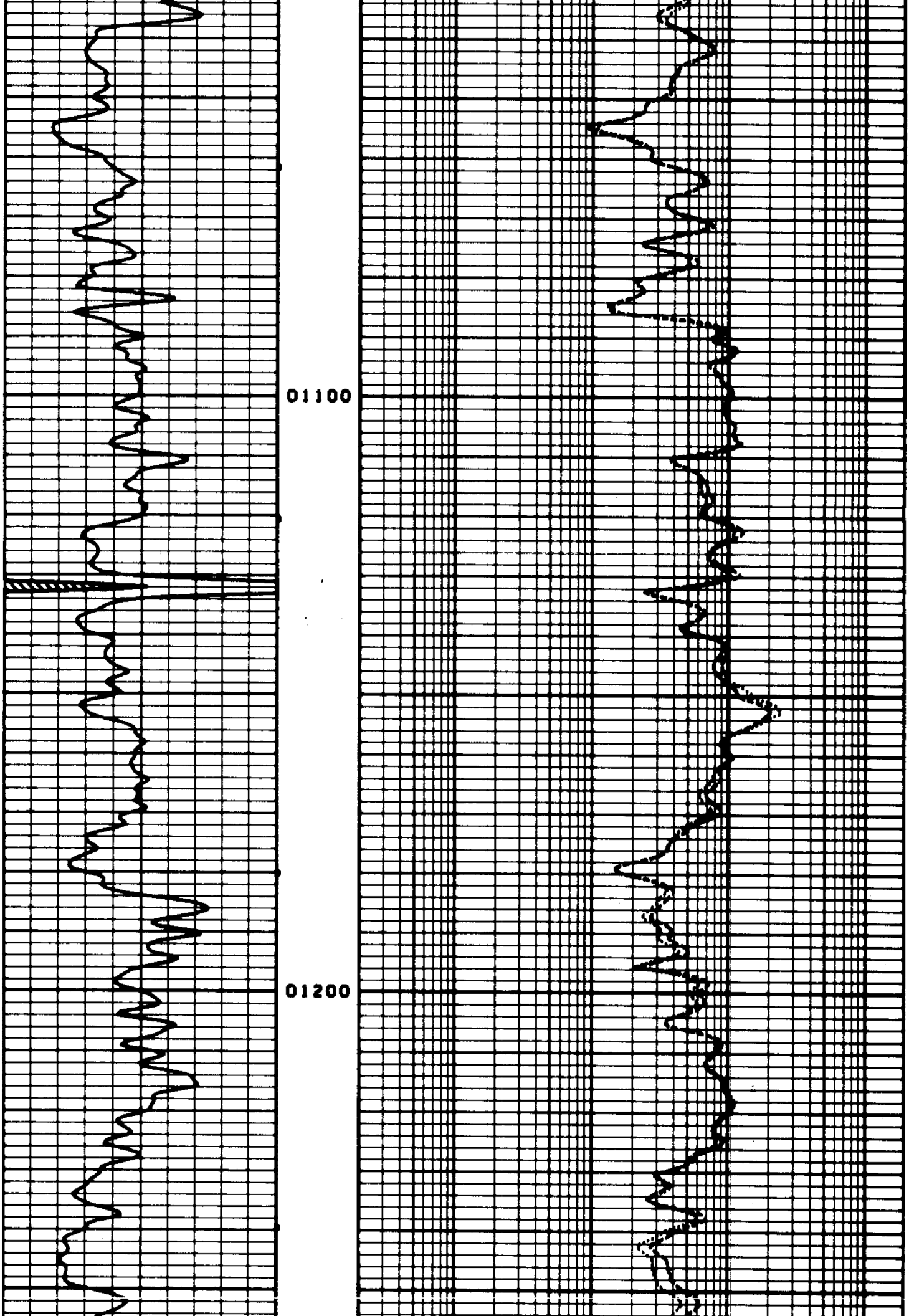
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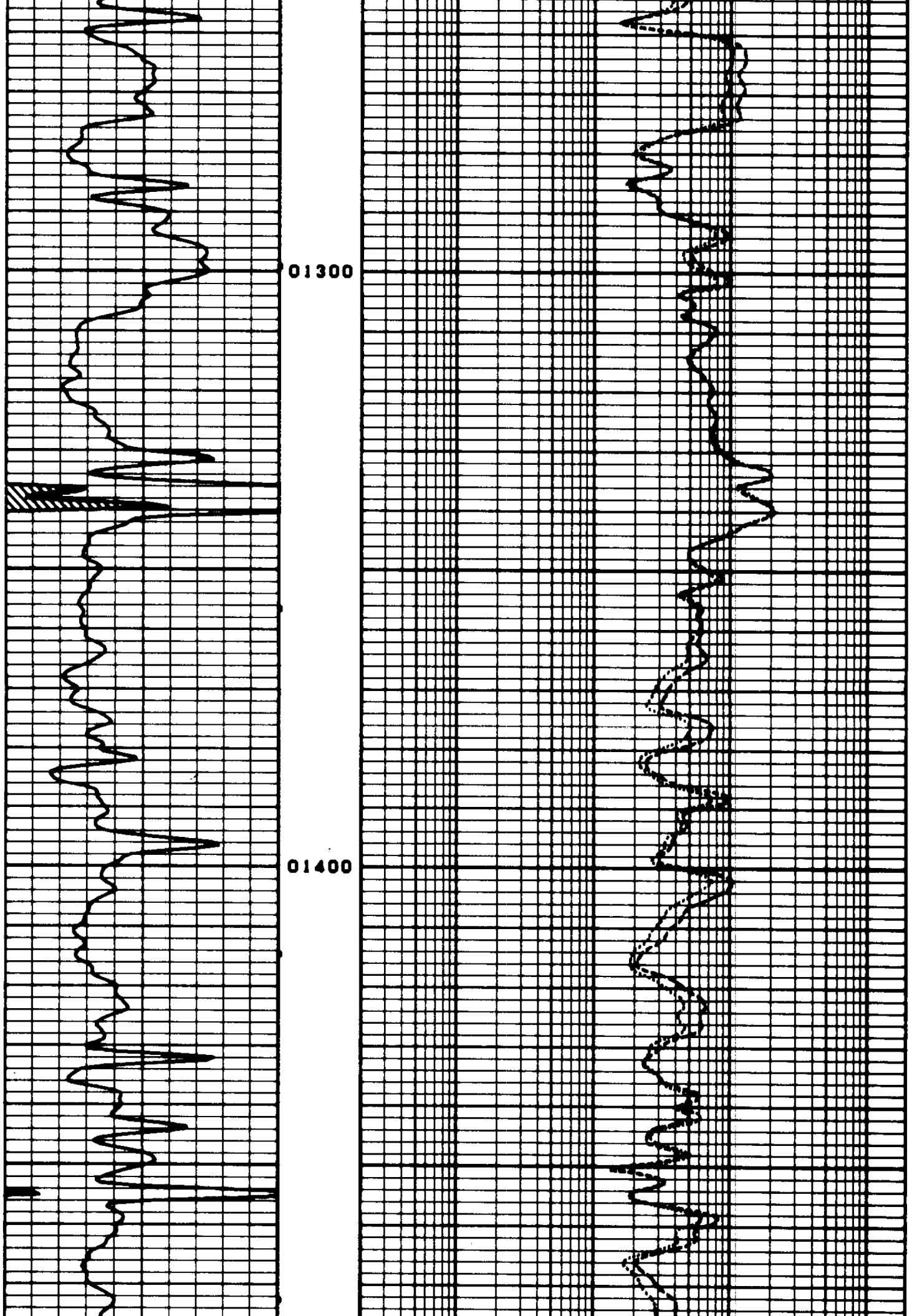
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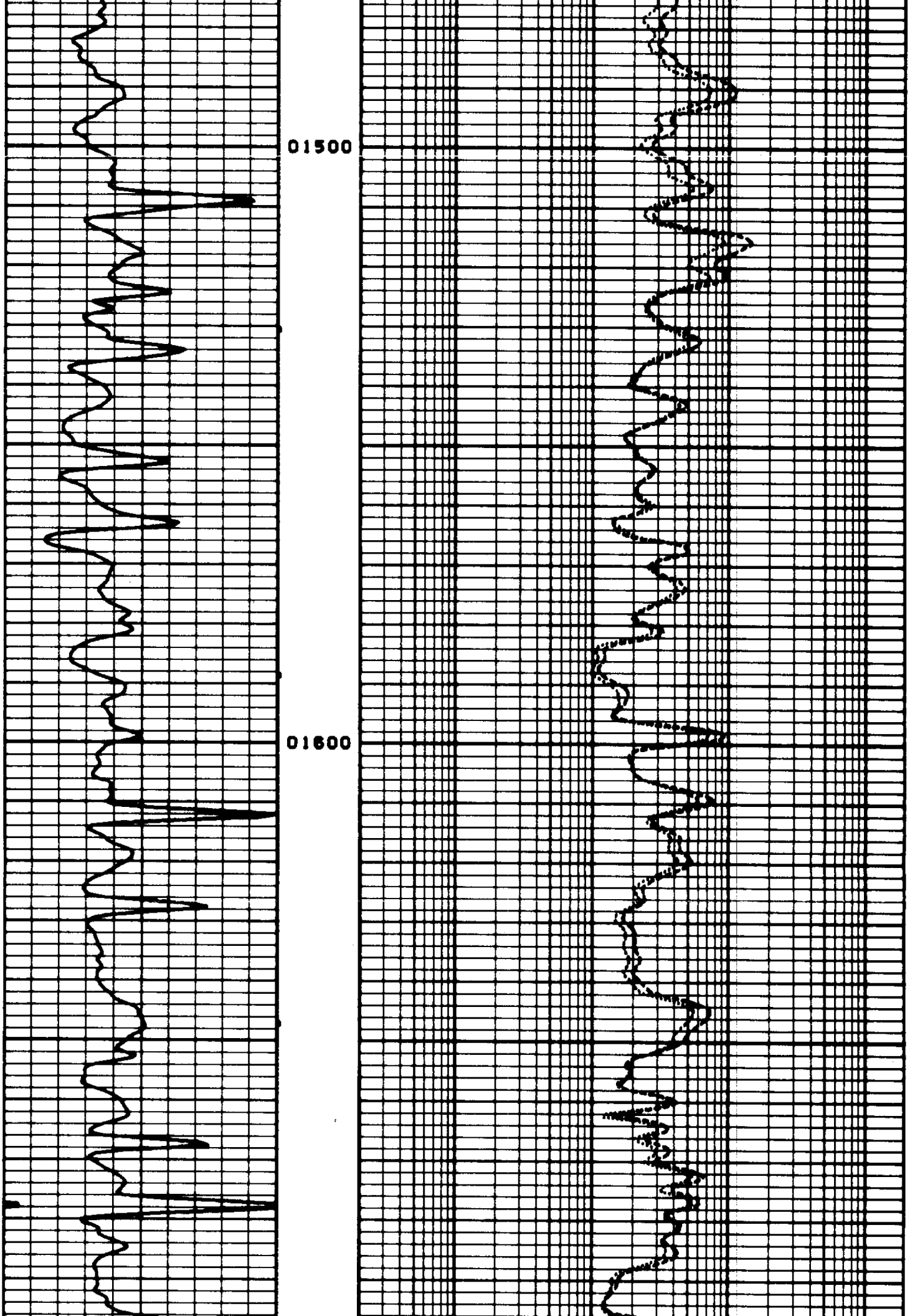
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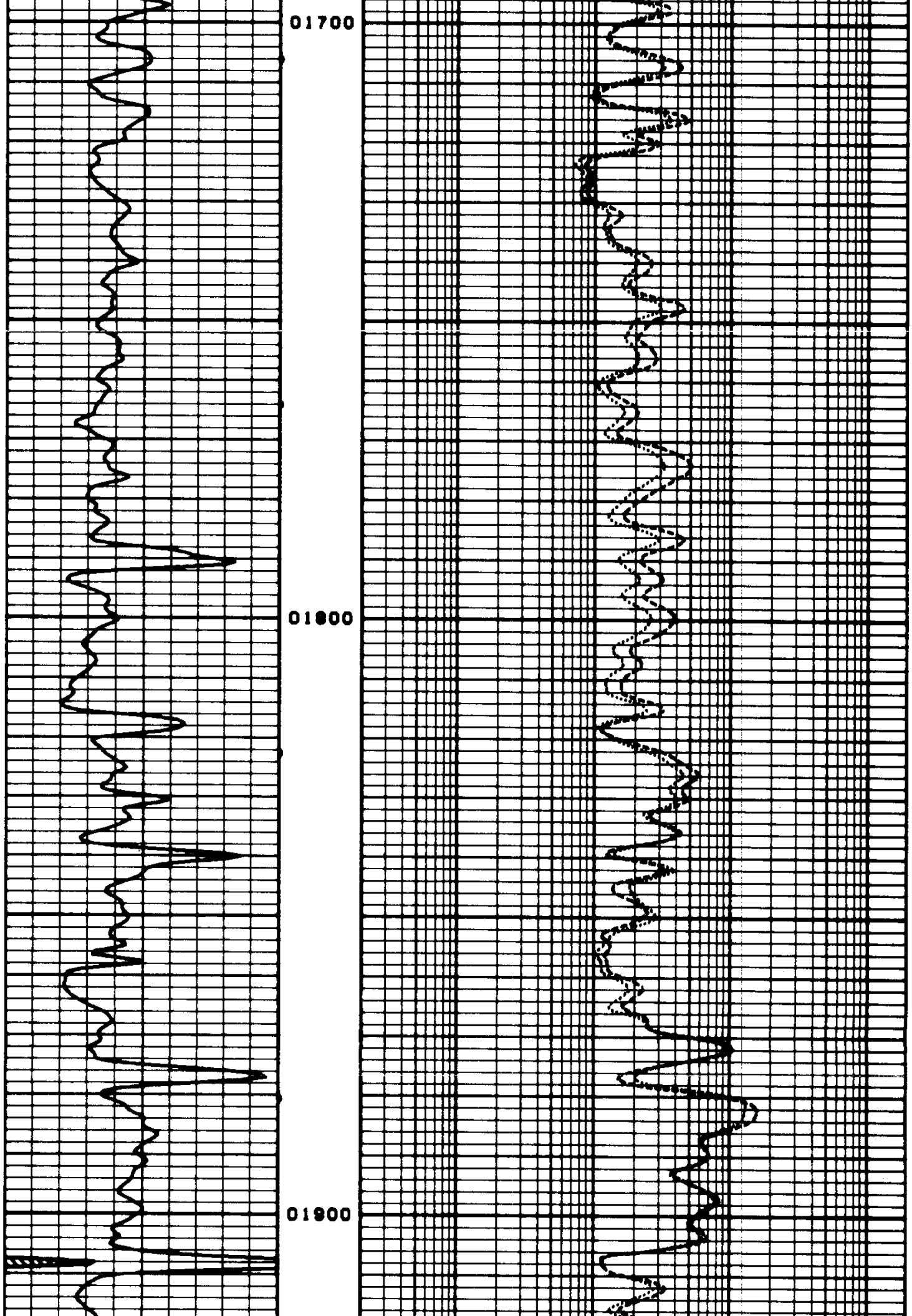
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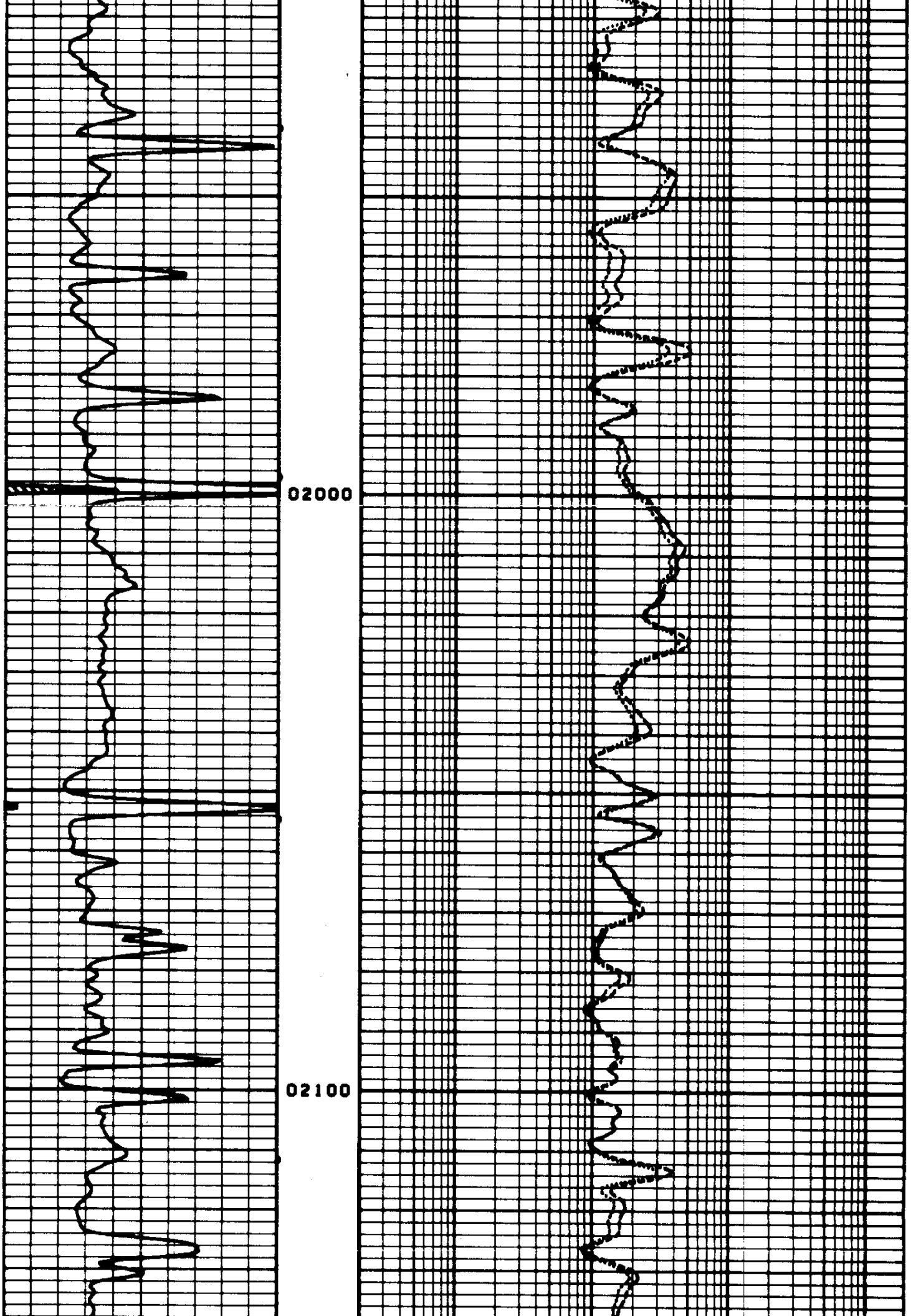
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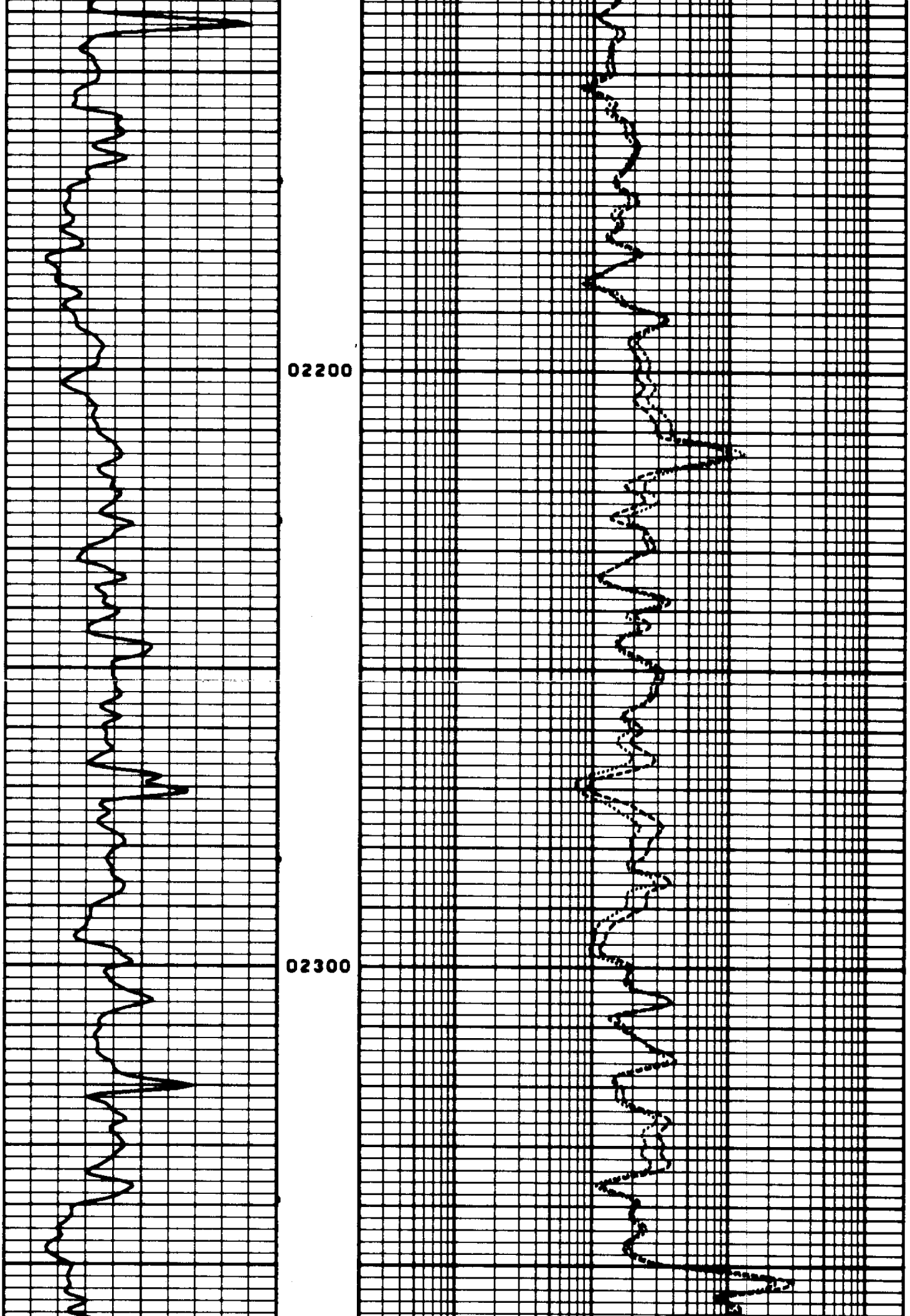
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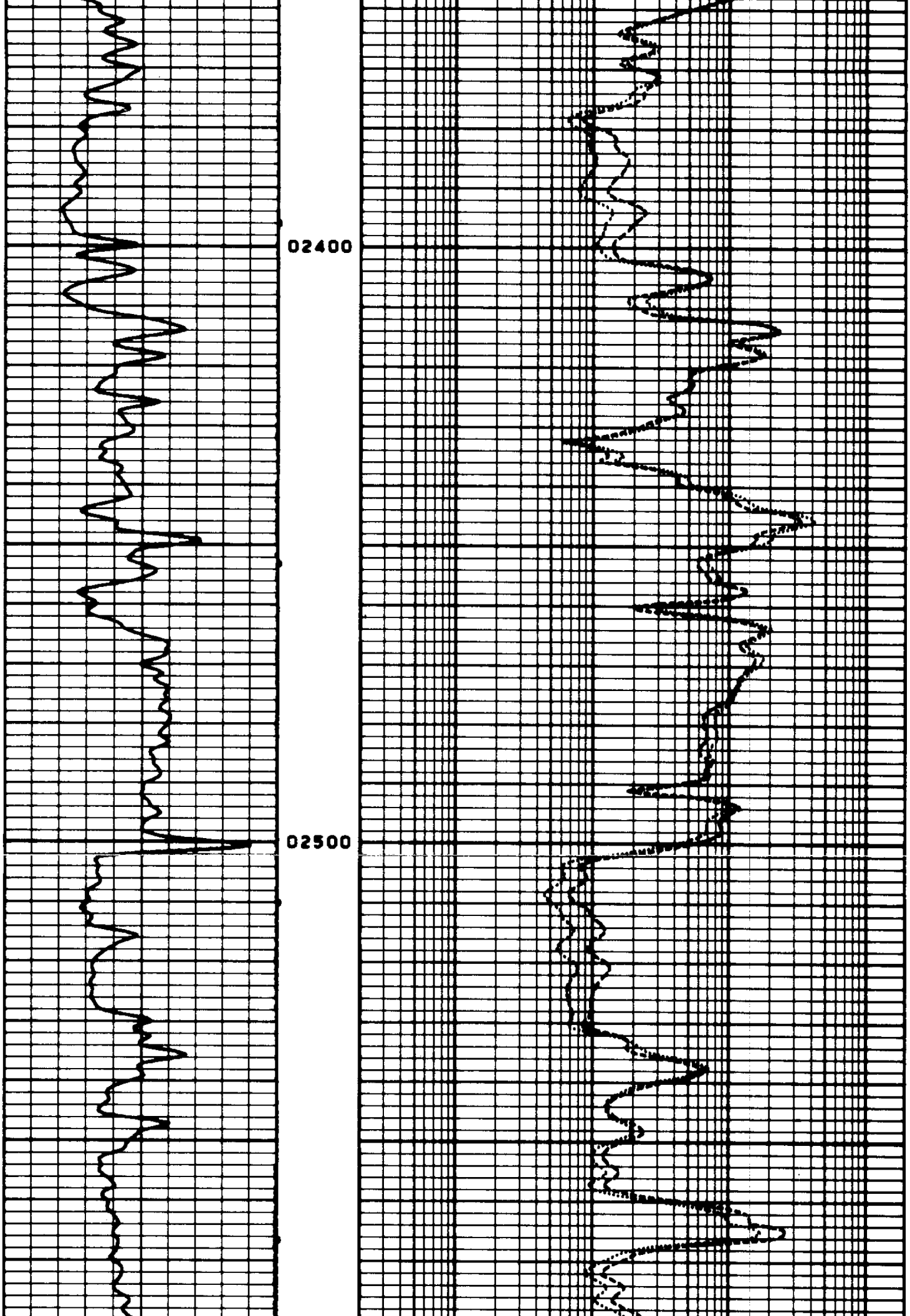
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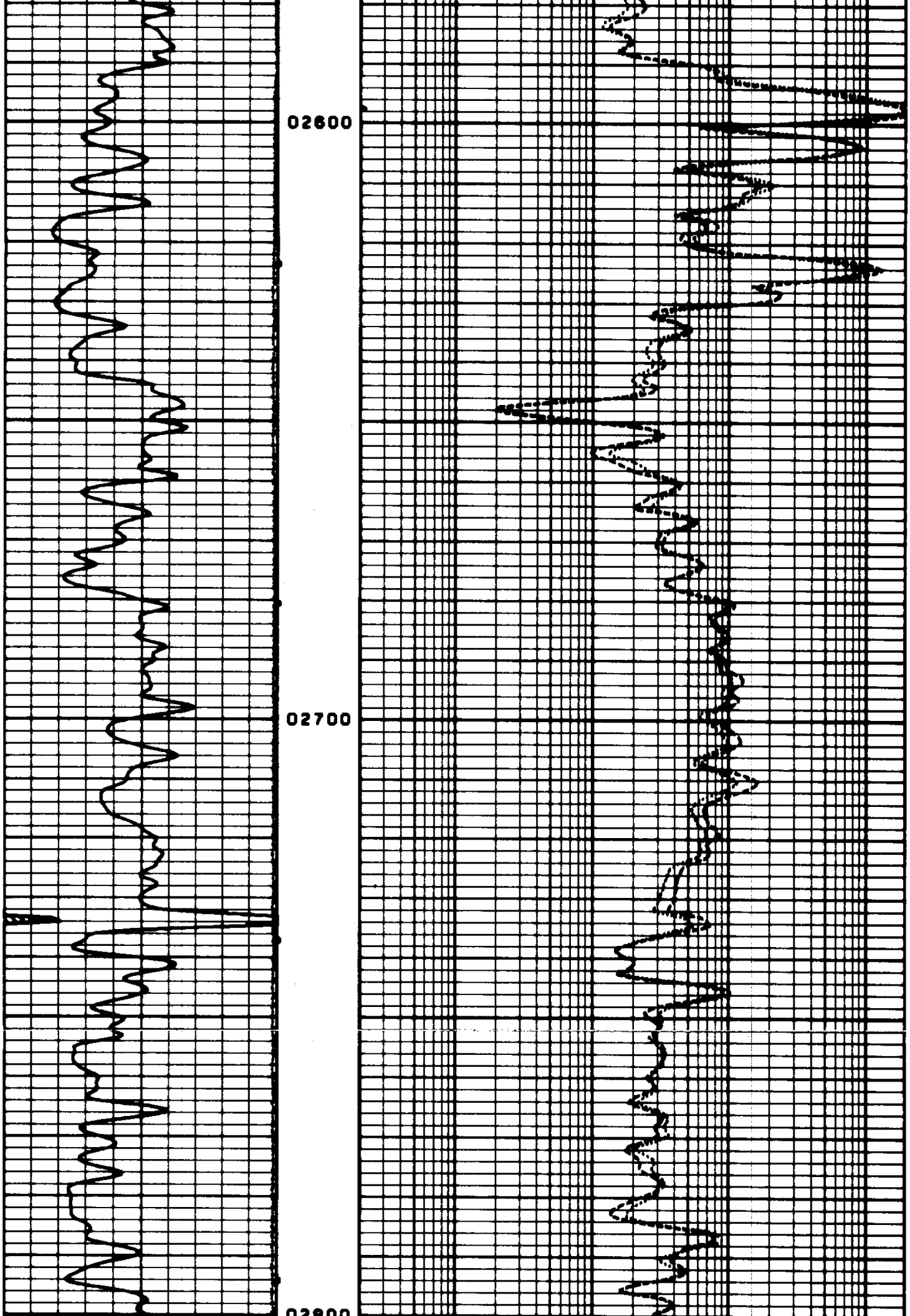
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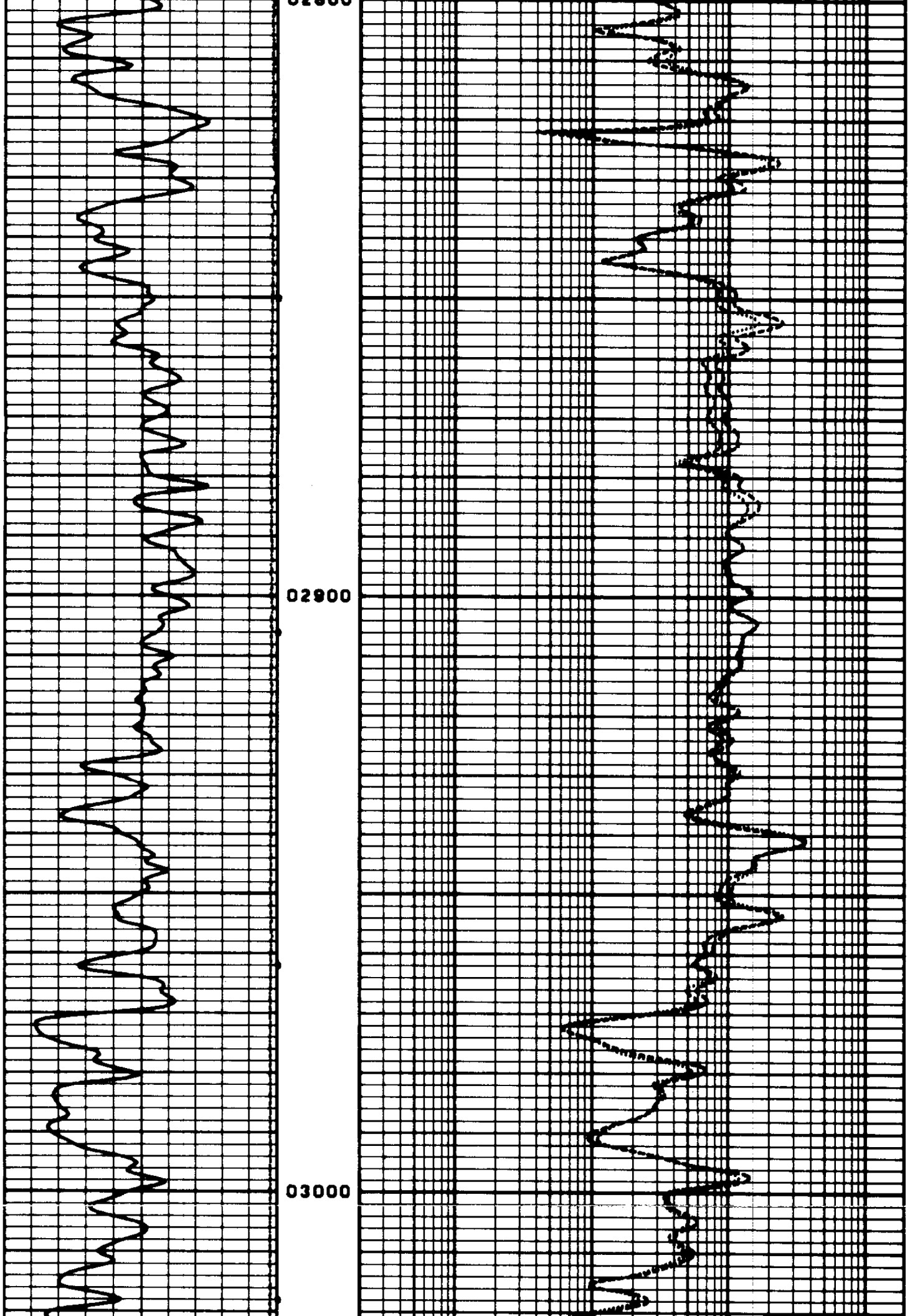
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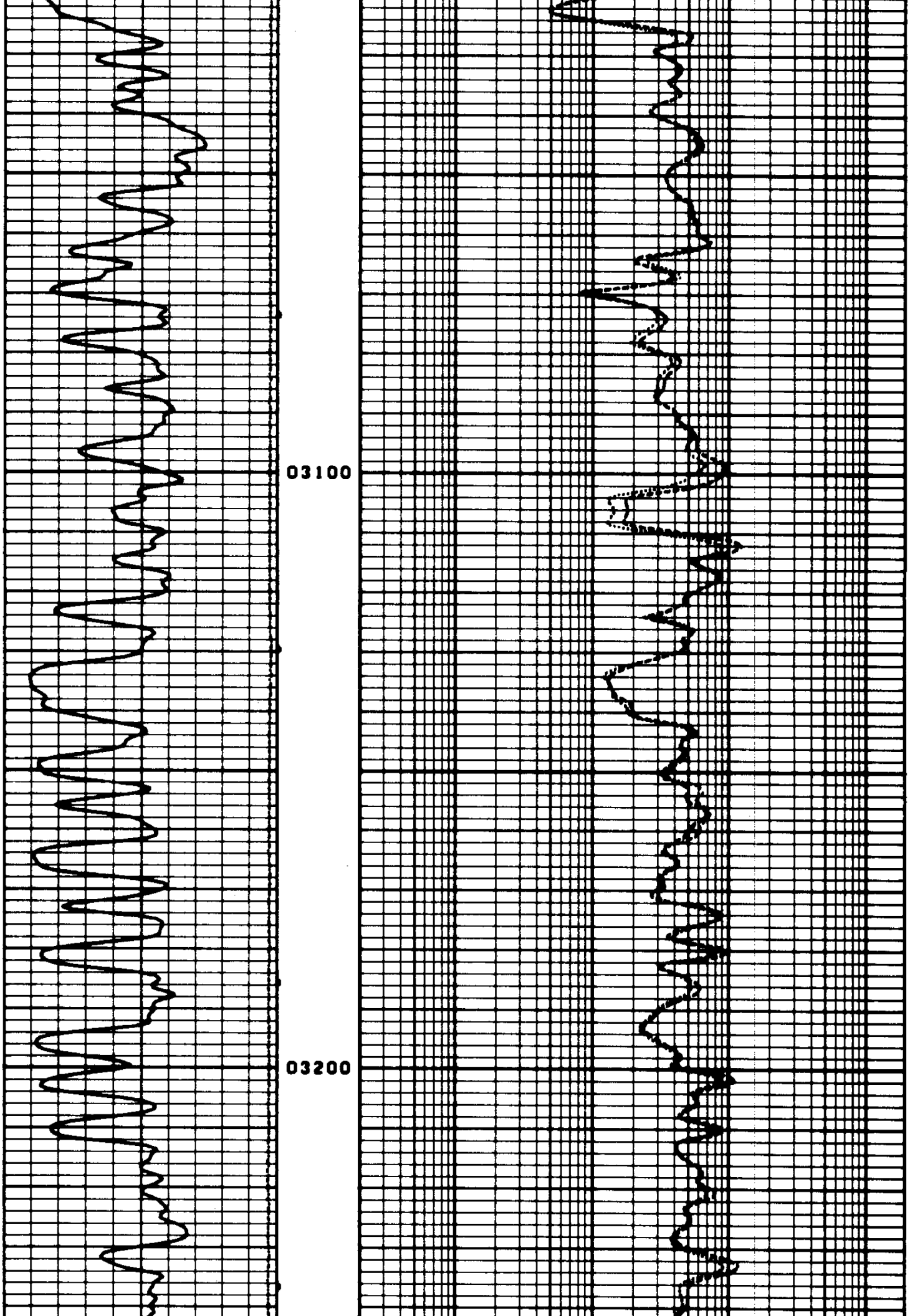
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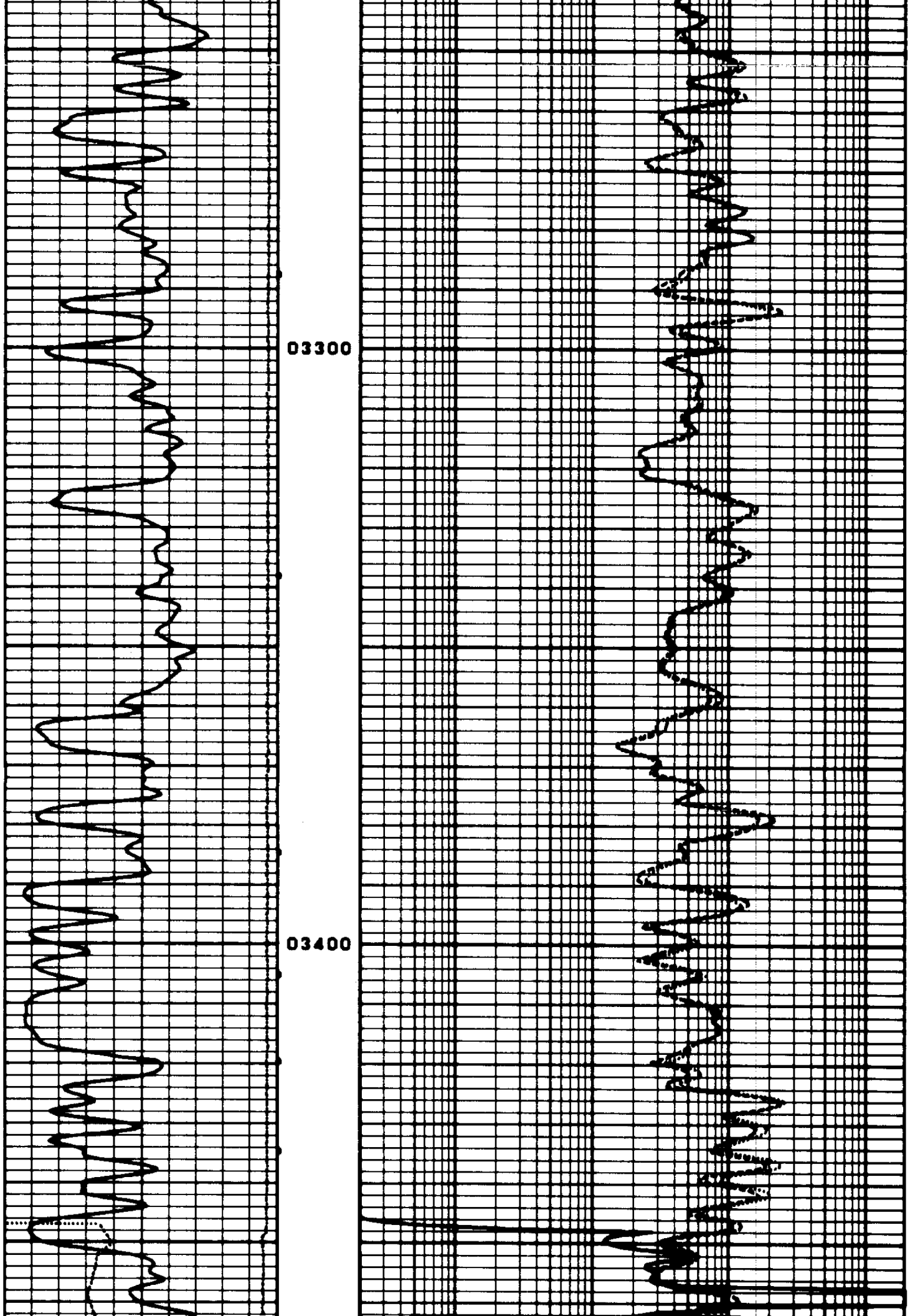
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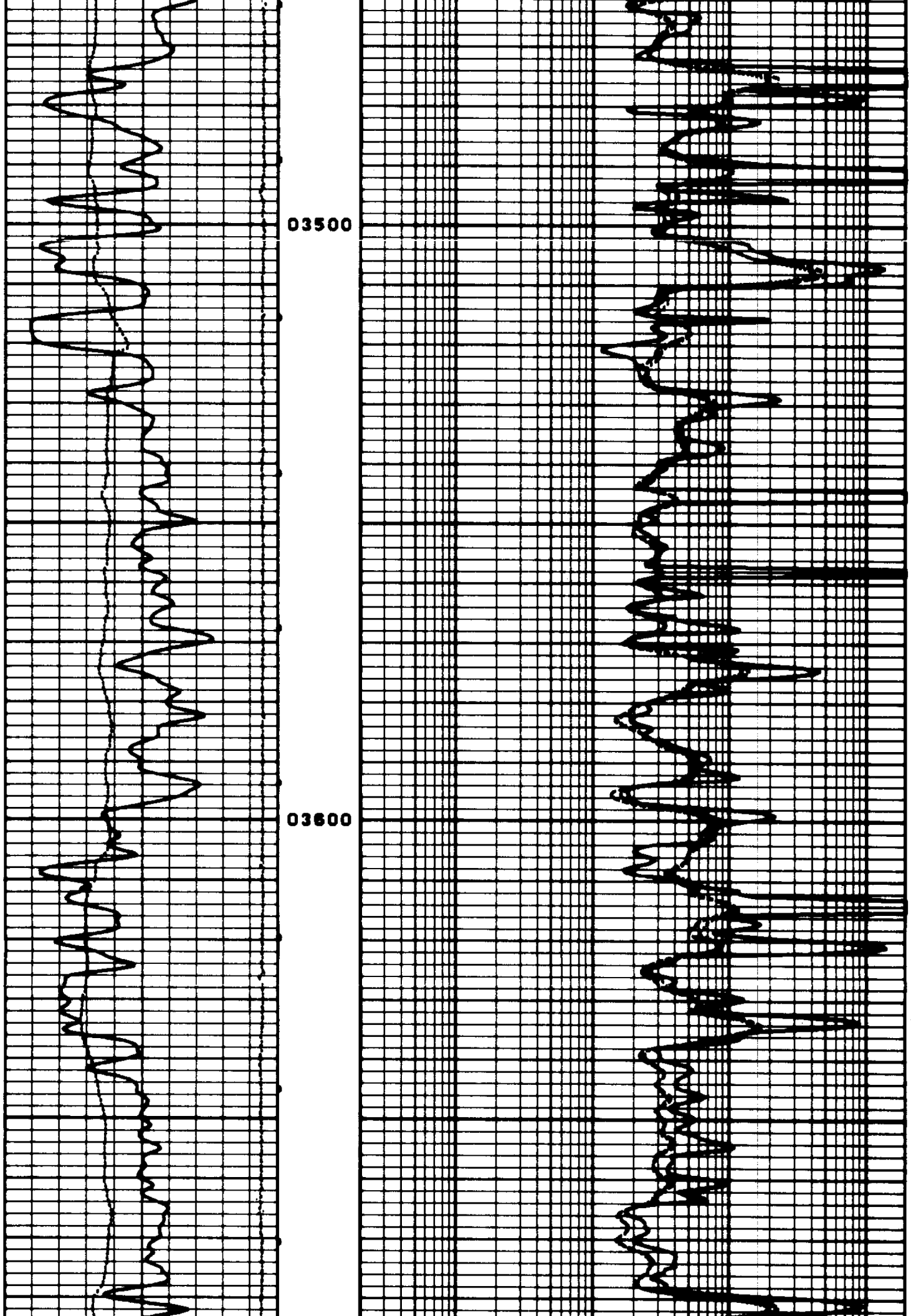
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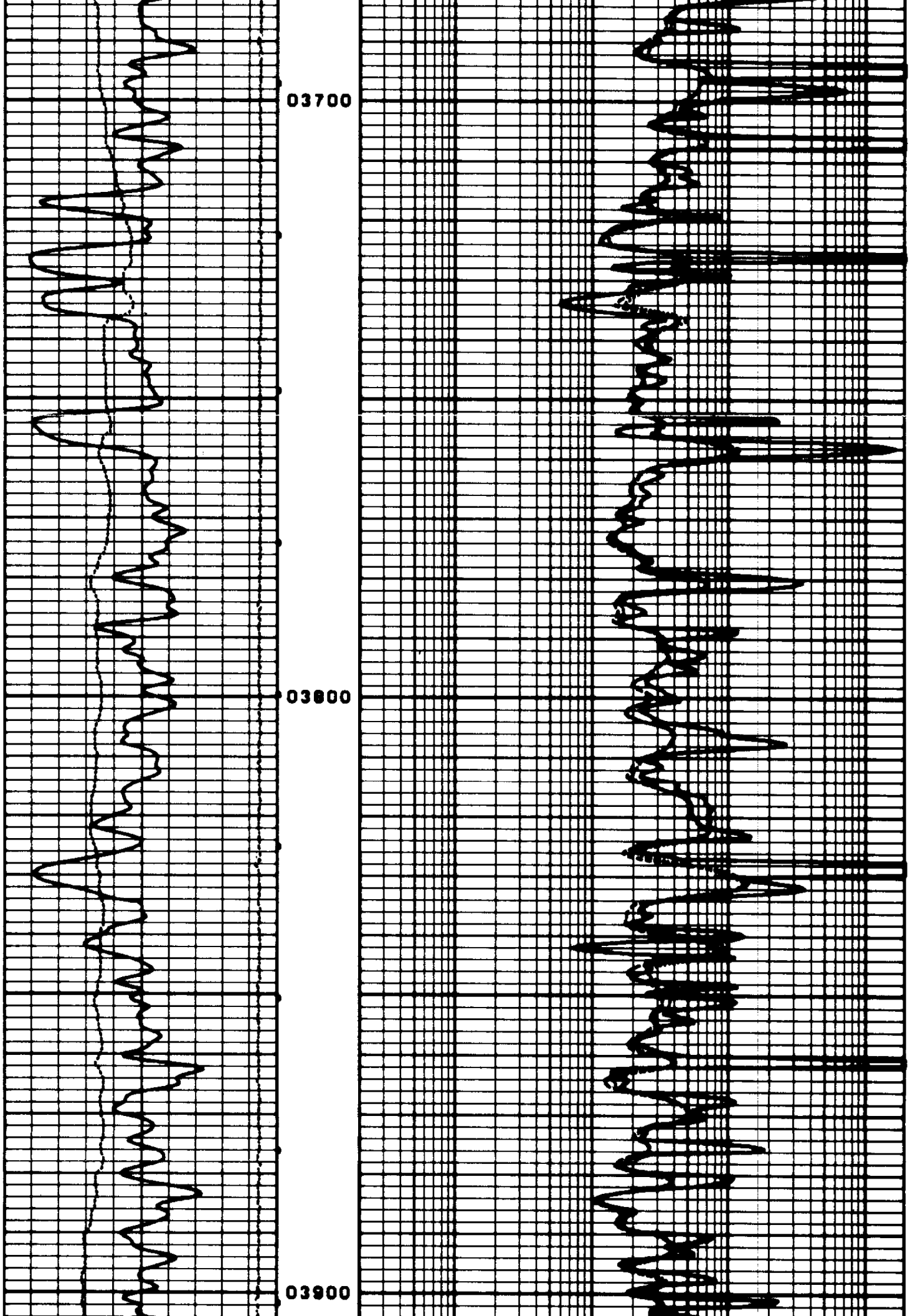
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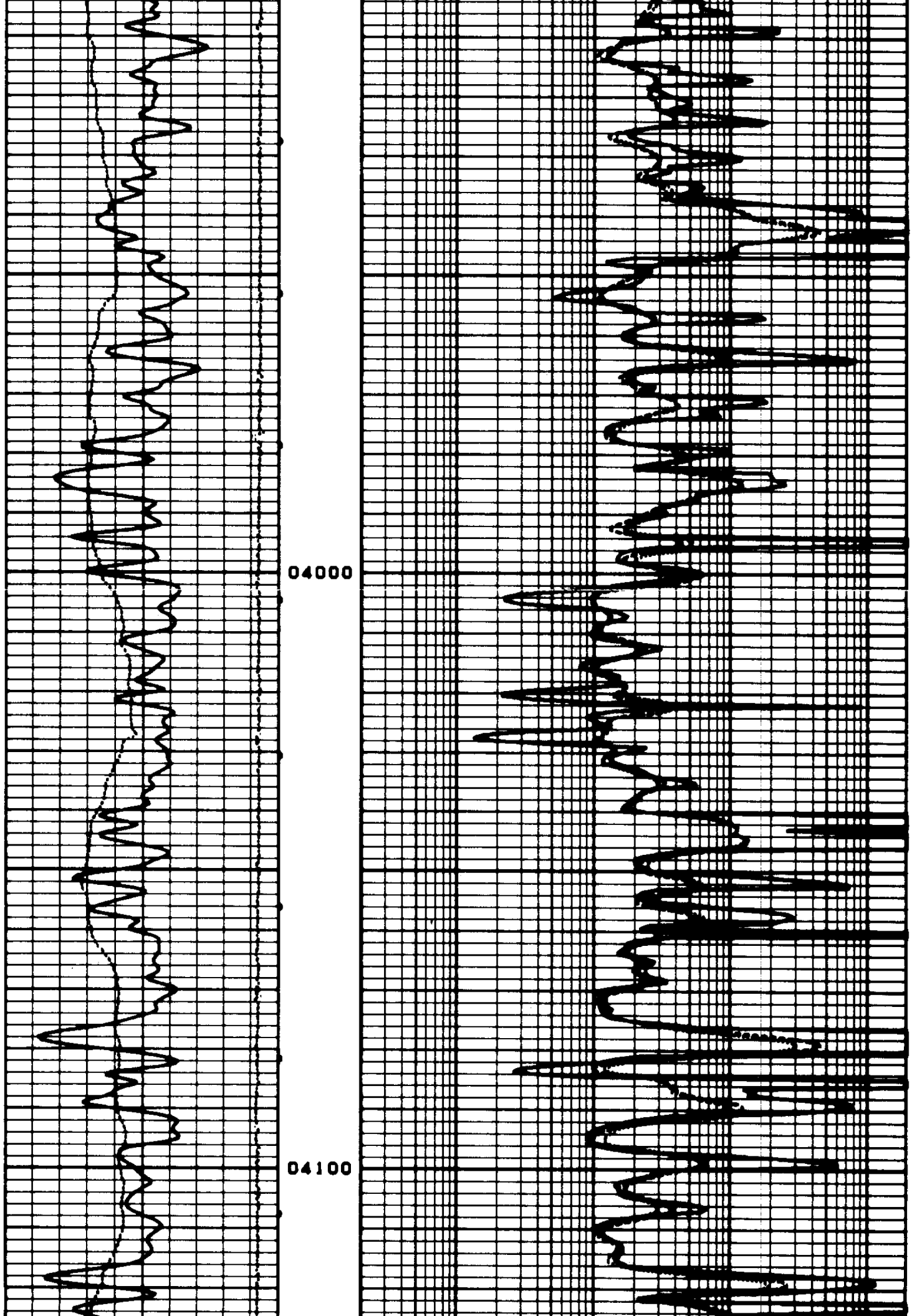
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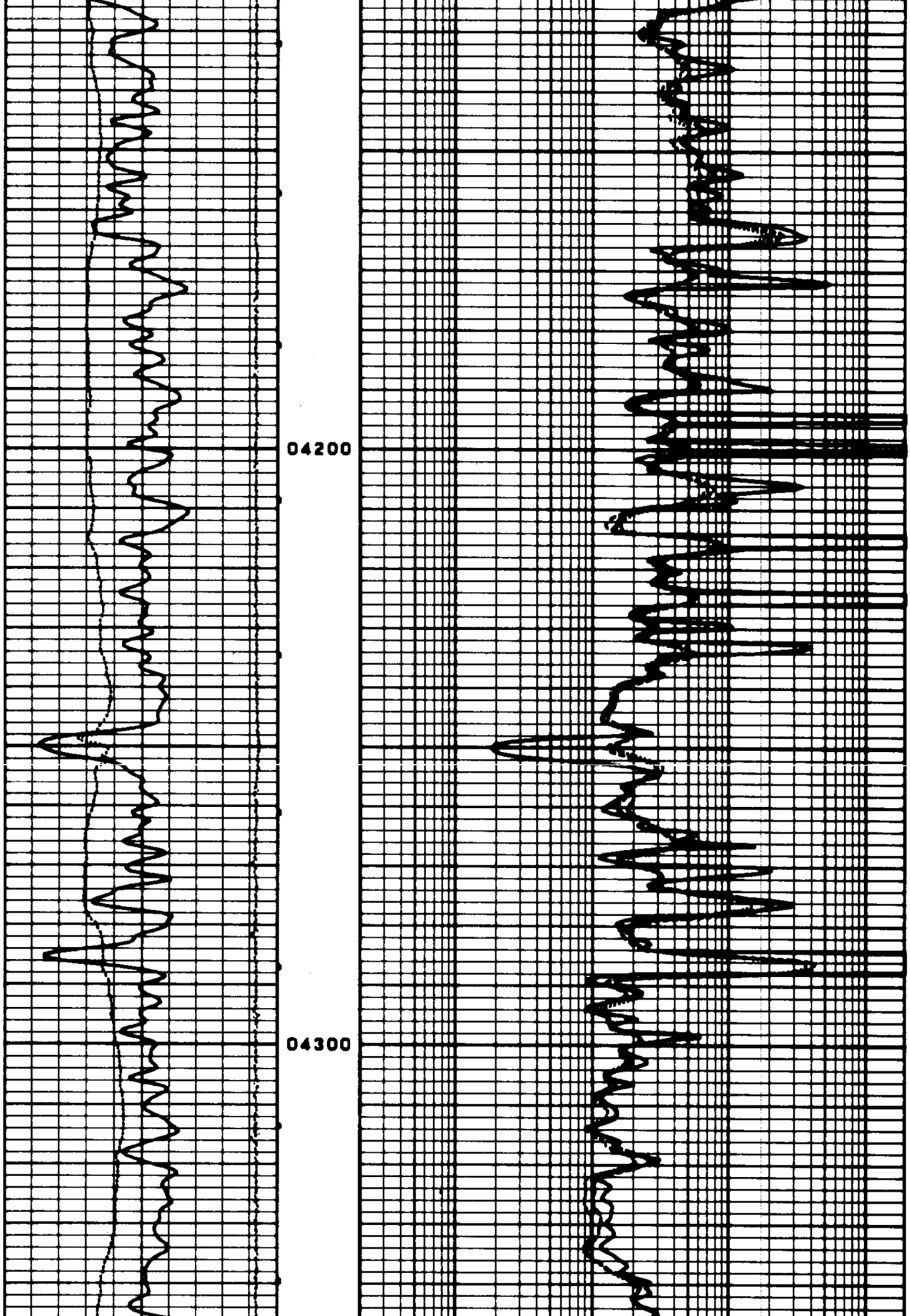
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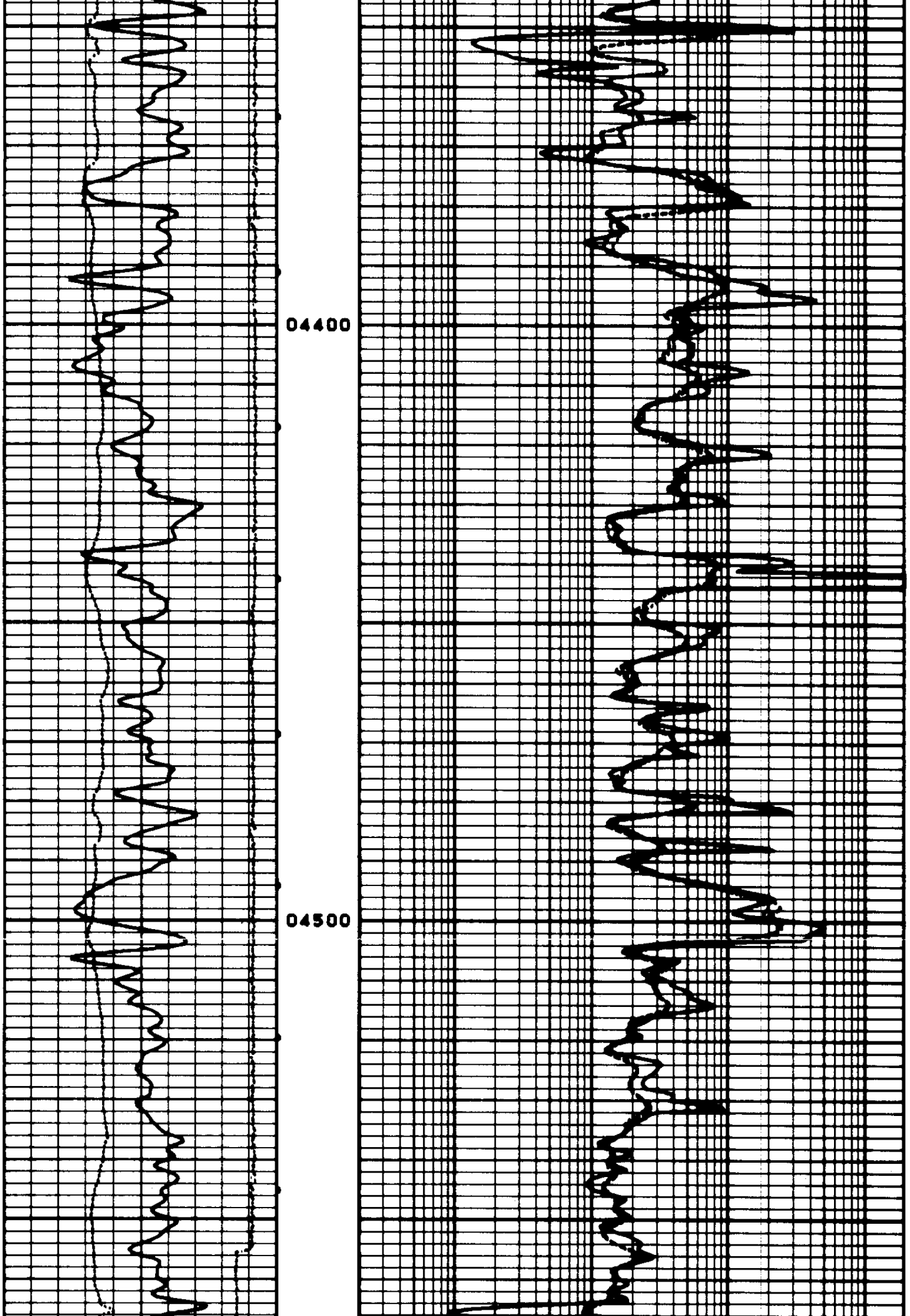
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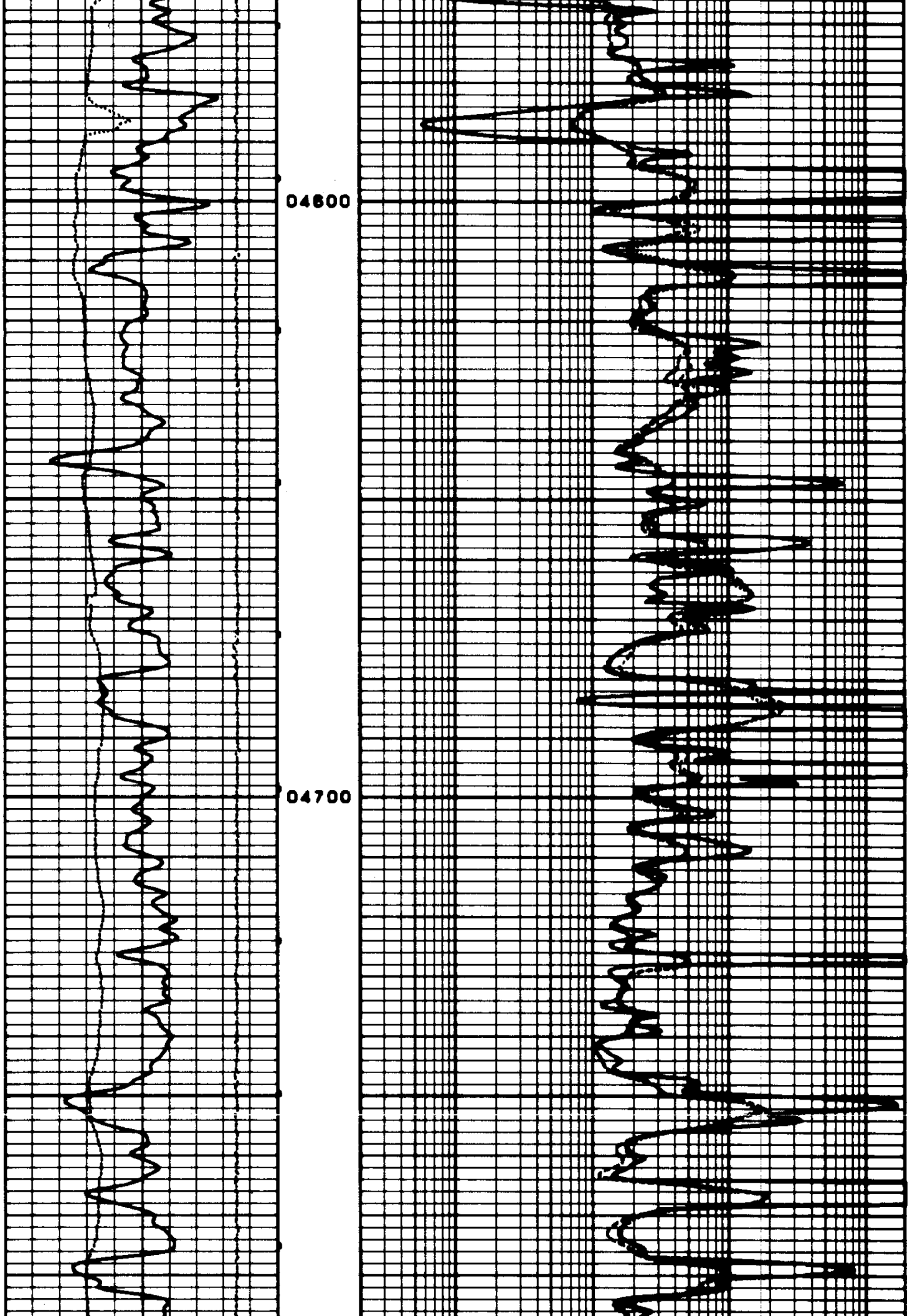
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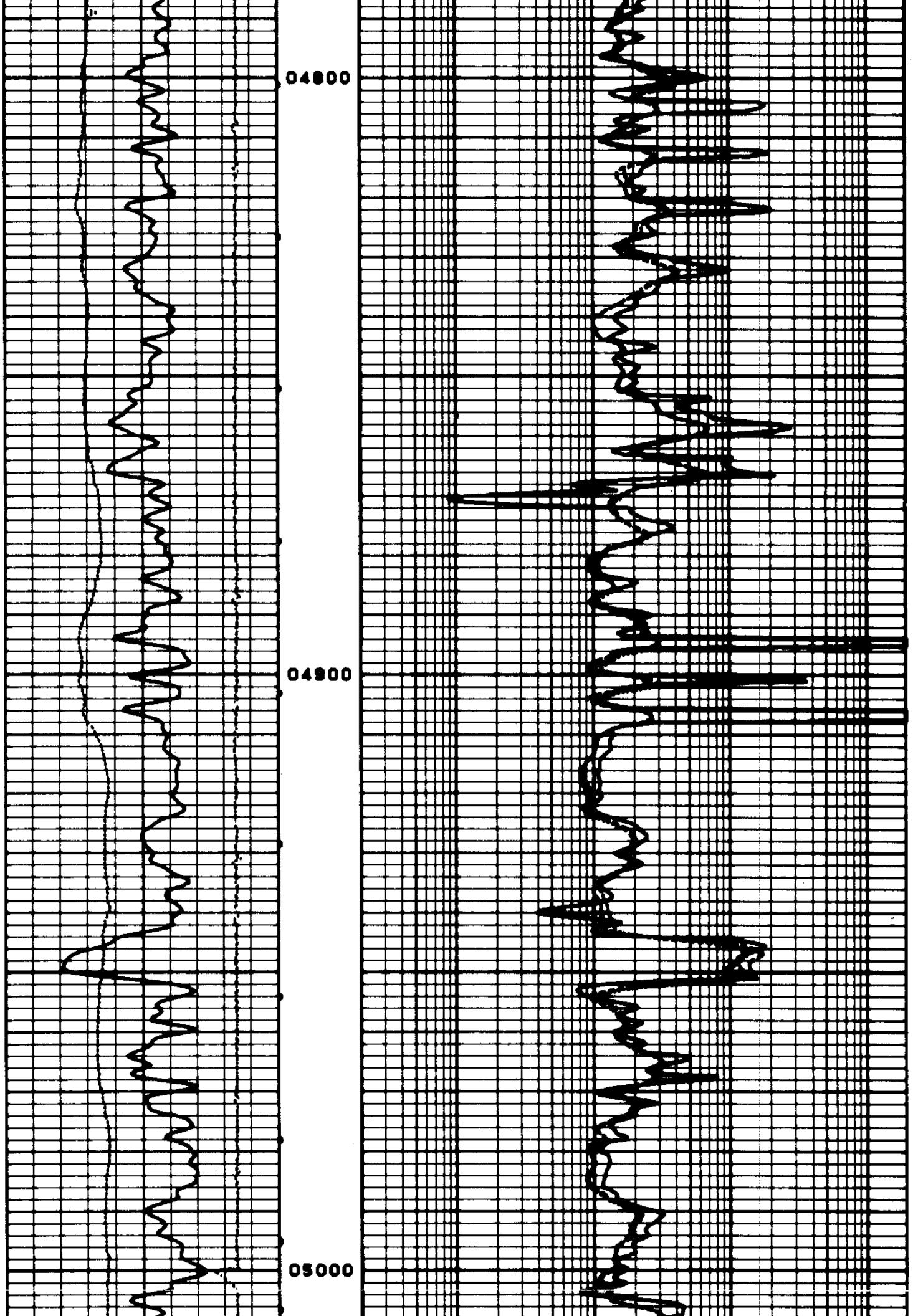
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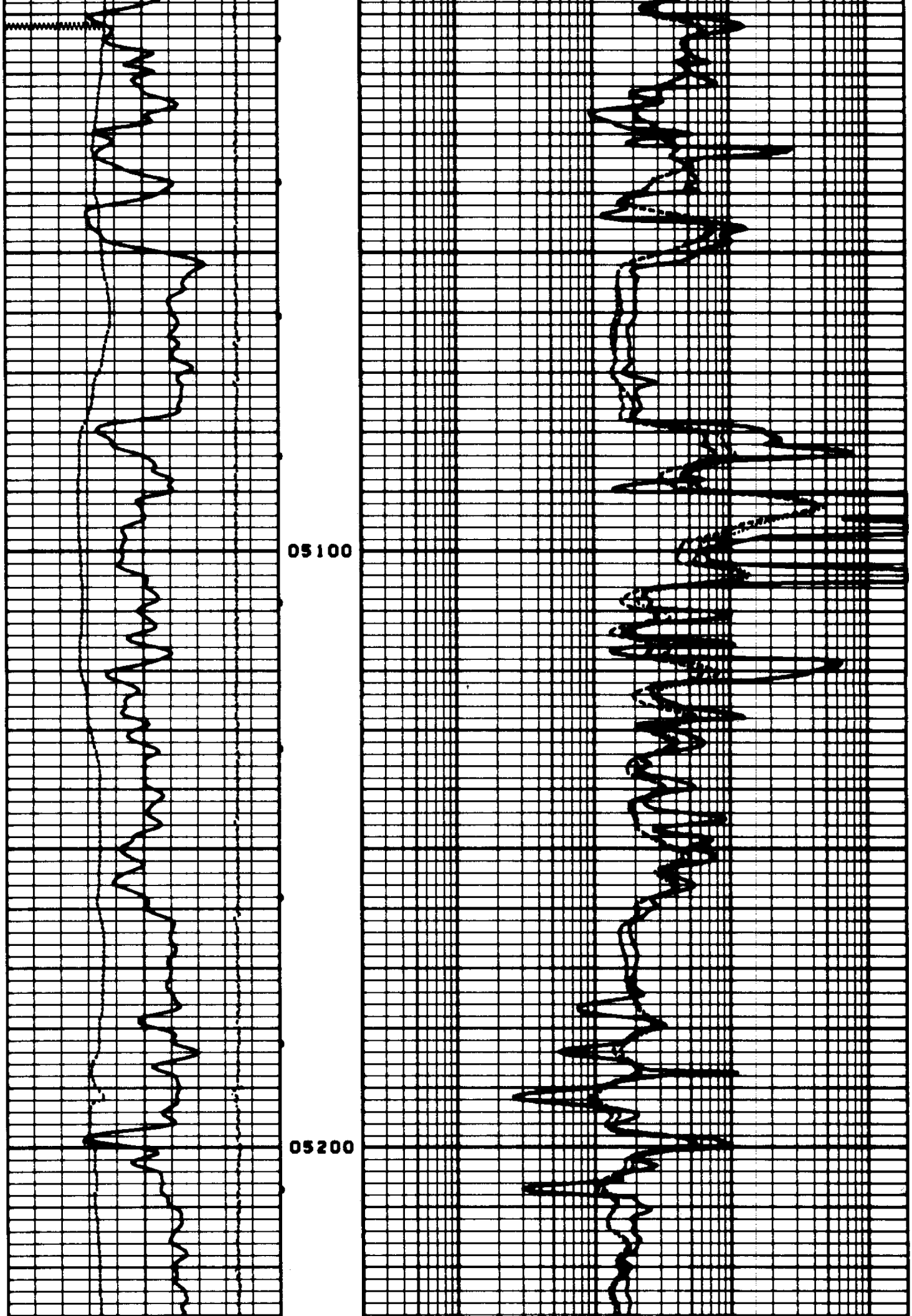
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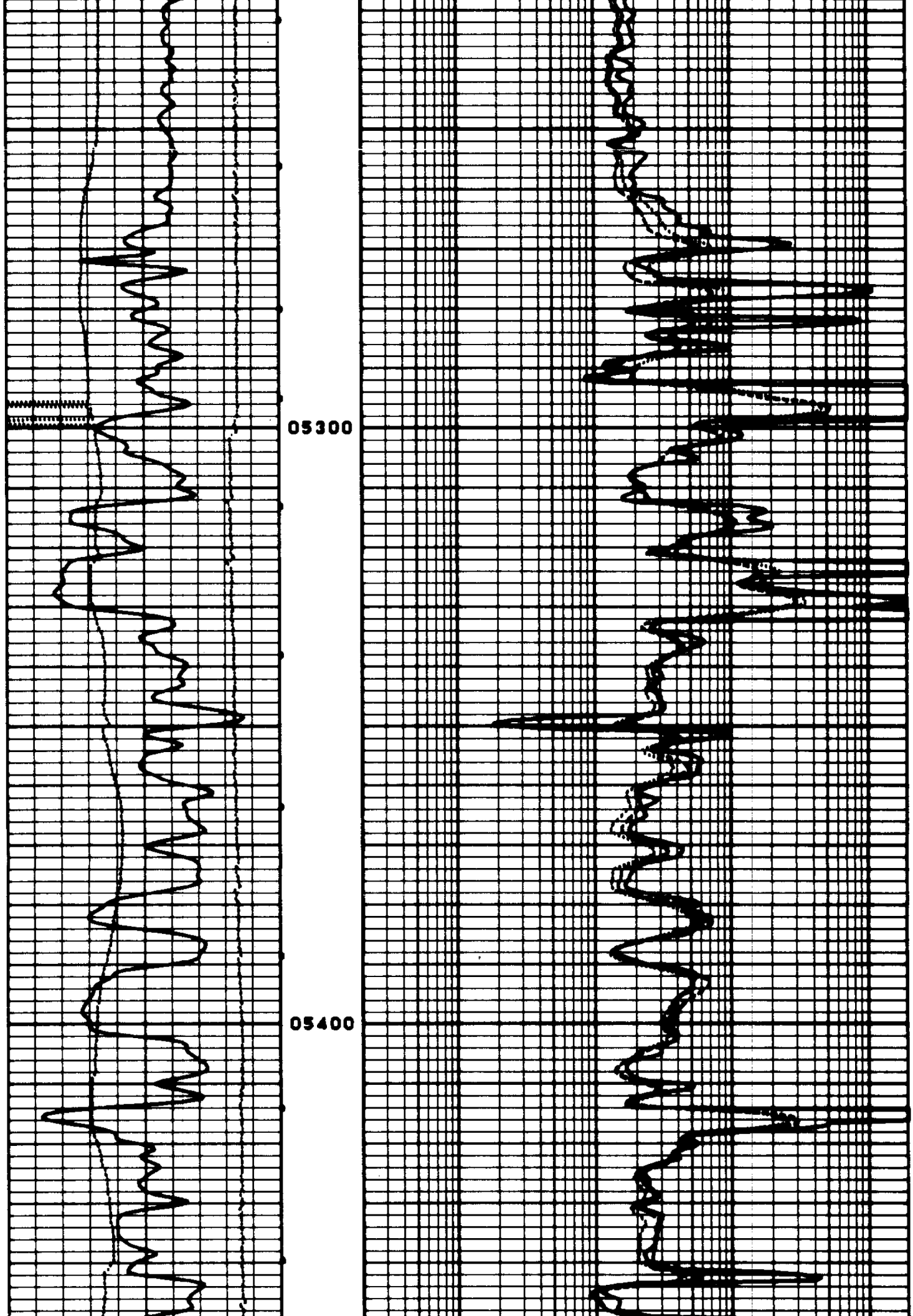
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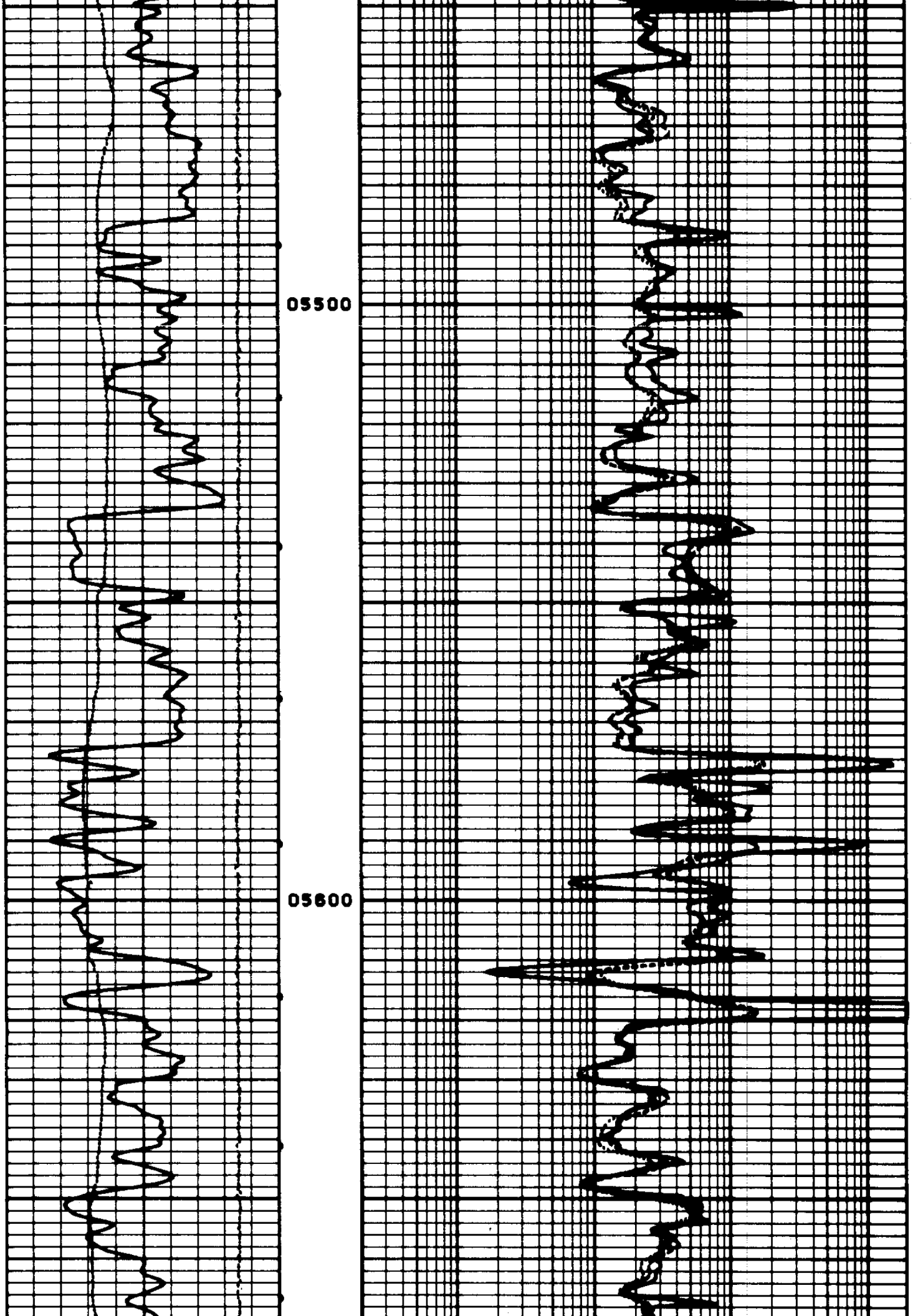
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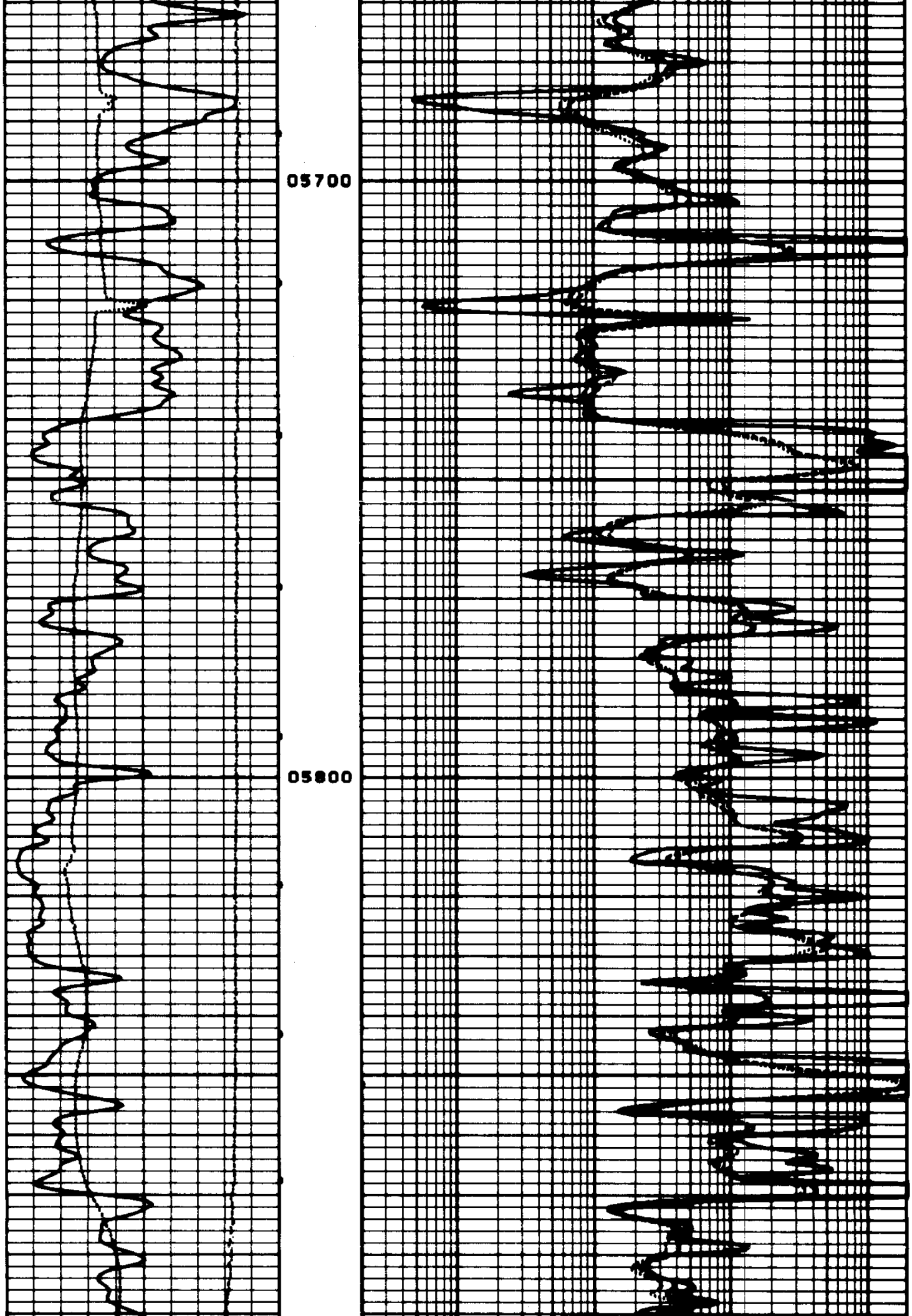
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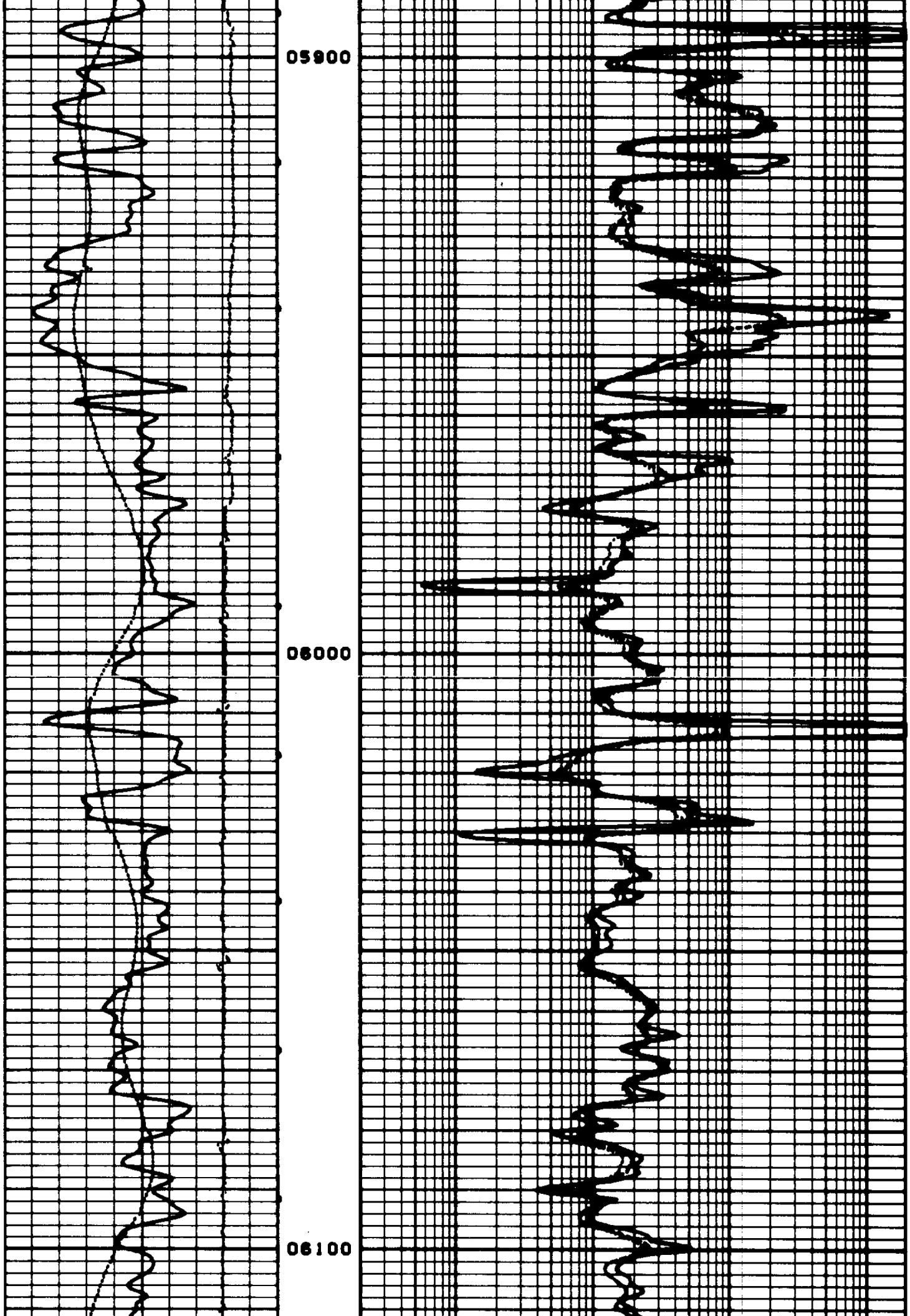
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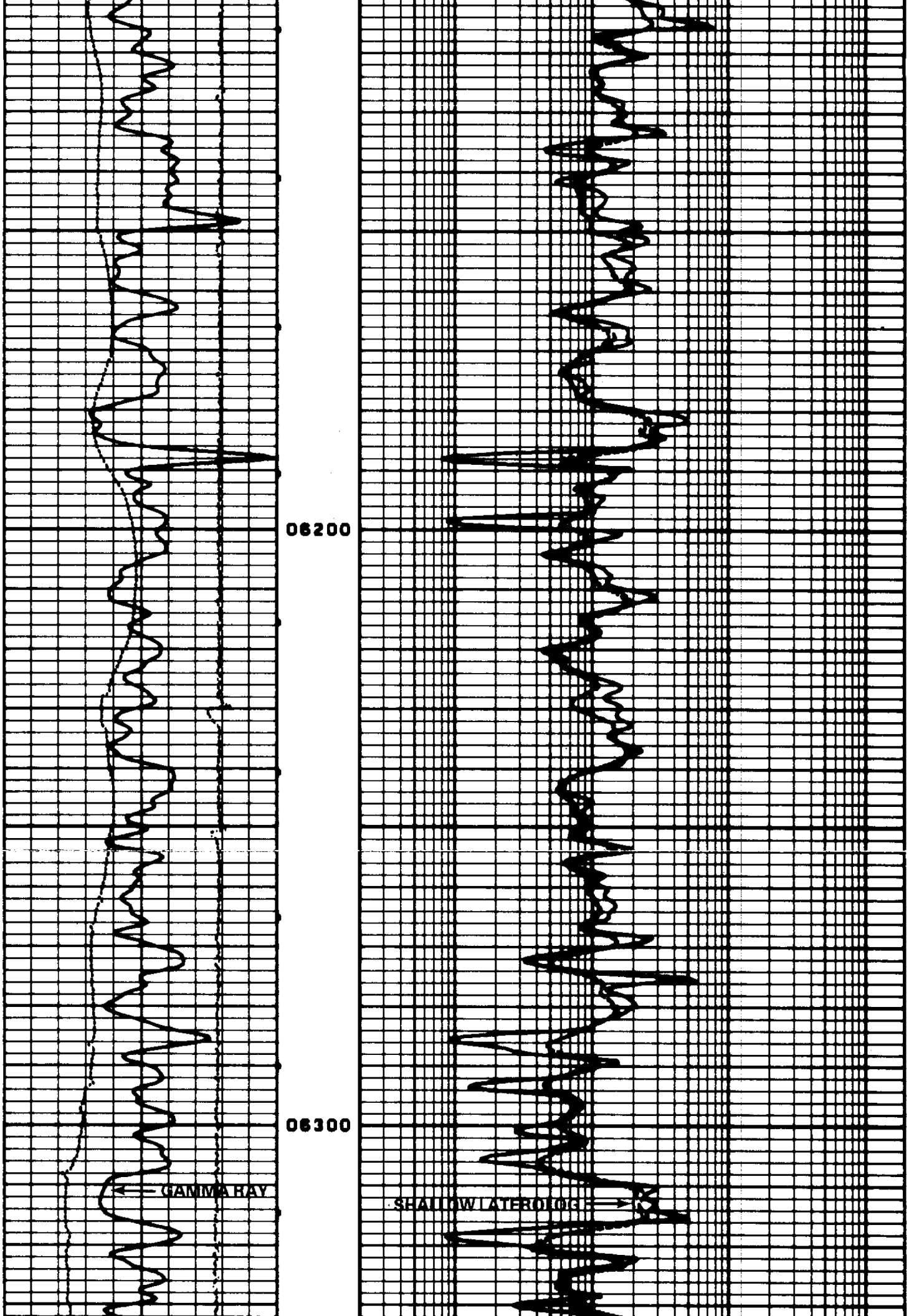
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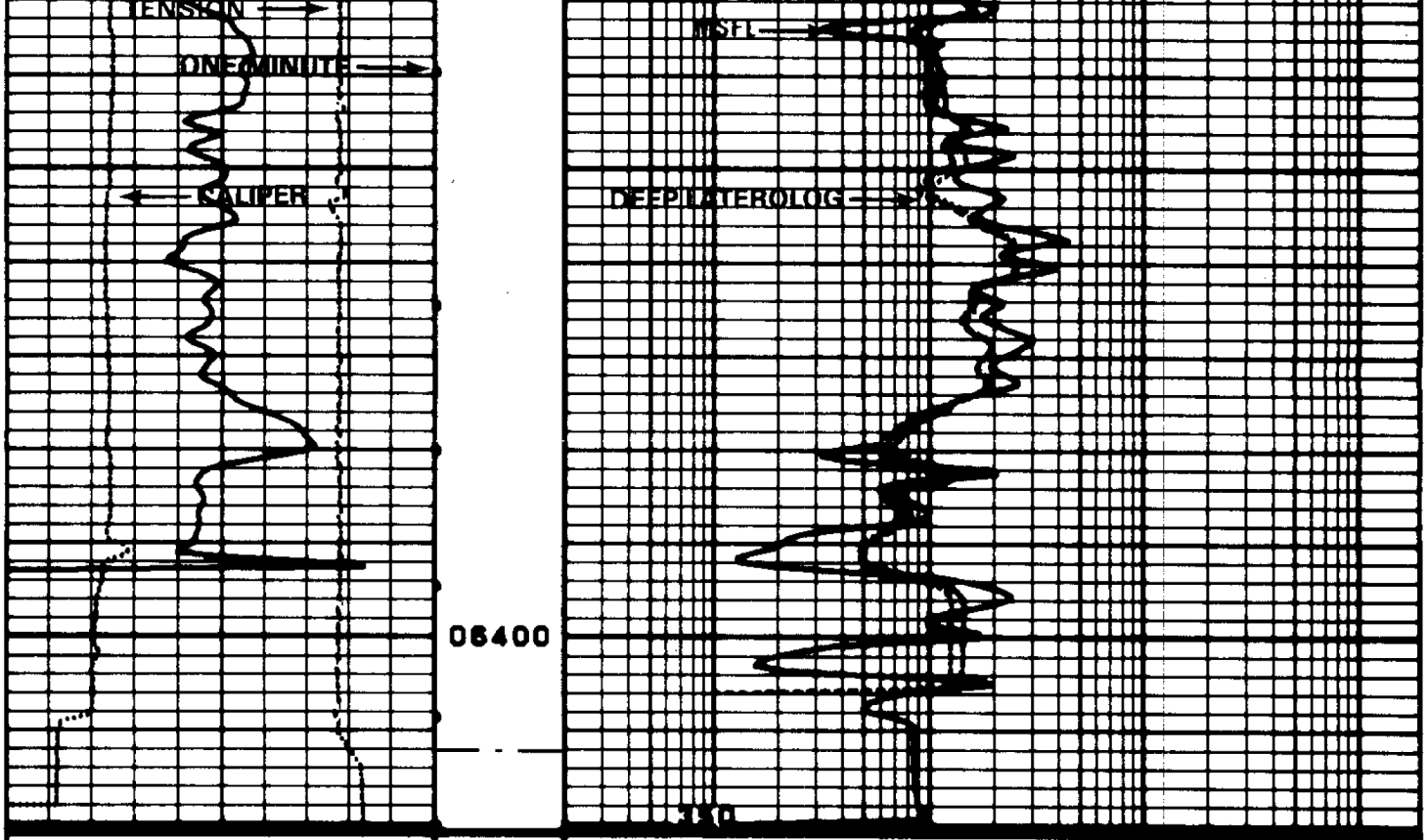
GAMMA RAY
SHALLOW LATEROLOG



-1000	TENSION (LBS)		0
6	CAL-X (IN)		16
0	GR (API)		200
0.2	R-MSF (Ω-M)		2000
0.2	R-LLS (Ω-M)		2000
0.2	R-LLD (Ω-M)		2000

12-06-86 08:50 6420.5 359172 0093-55 0 0

Company COORS ENERGY COMPANY

Well UTE TRIBAL NO. 4-8

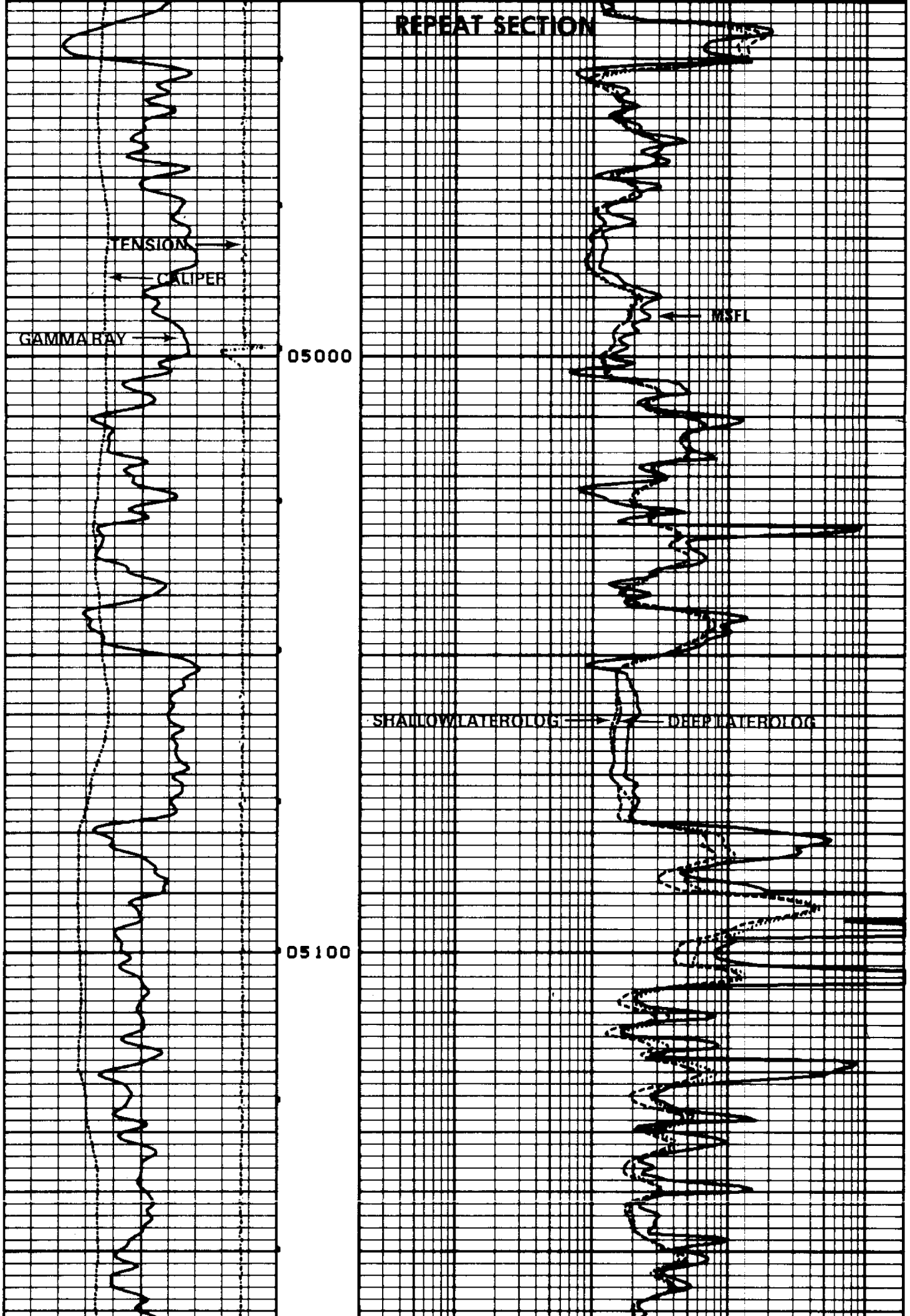
Field ANTELOPE CREEK

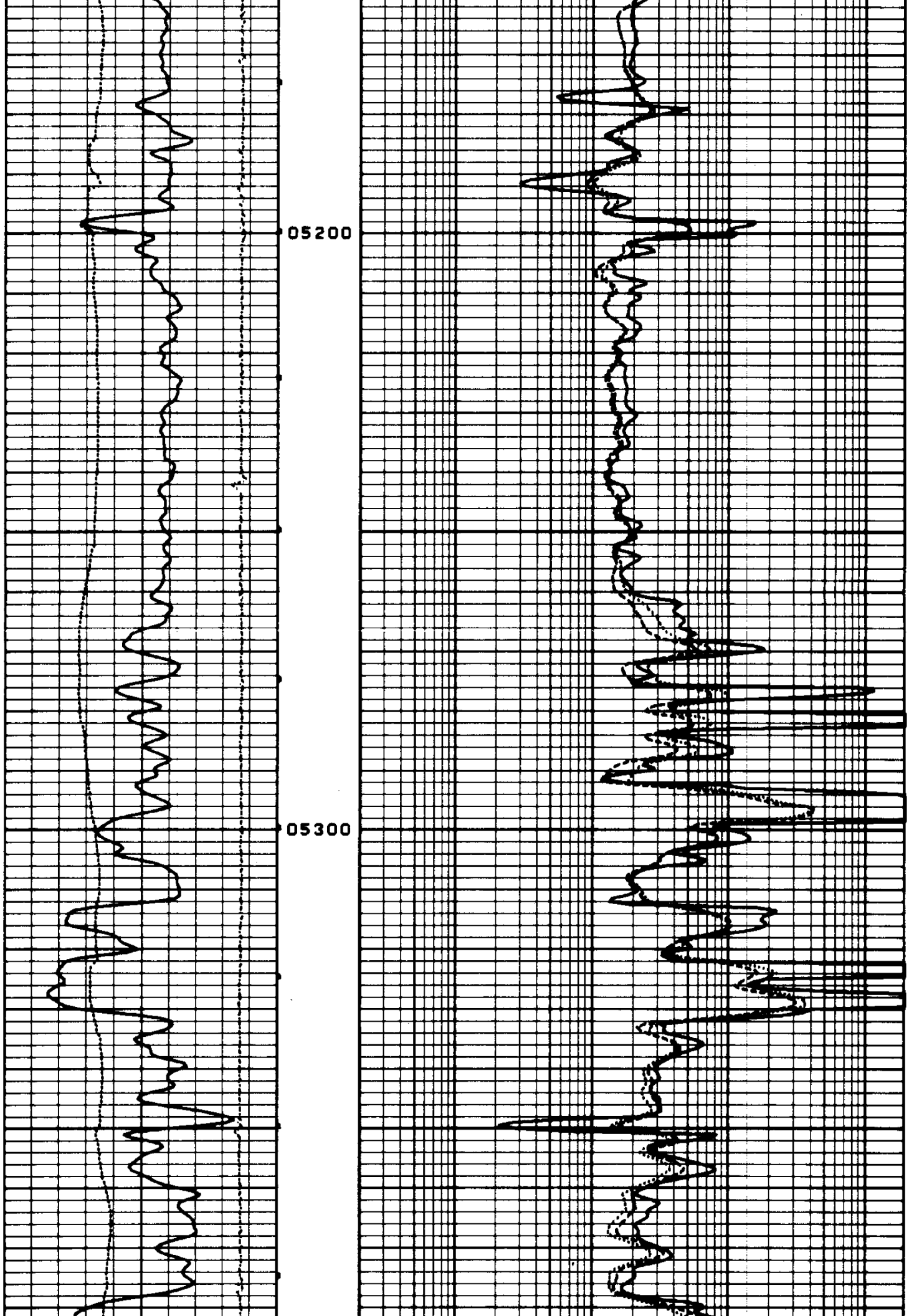
County DUCHESNE State UTAH

GO FR 6412
GO TD 6414
DRLR TD 6420
Elev:
KB 5881
DF --
GL 5866

12-06-86 13:25 4940.0 359172 0093-55 0 14

1000	TENSION (LBS)		0
6	CAL-X (IN)		16
0	GR (API)		200
0.2	R-MSF (Ω-M)		2000
0.2	R-LLS (Ω-M)		2000
0.2	R-LLD (Ω-M)		2000


REPEAT SECTION
TENSION
CALIPER
GAMMA RAY
05000
MSFL
SHALLOW LATEROLOG
DEEP LATEROLOG
05100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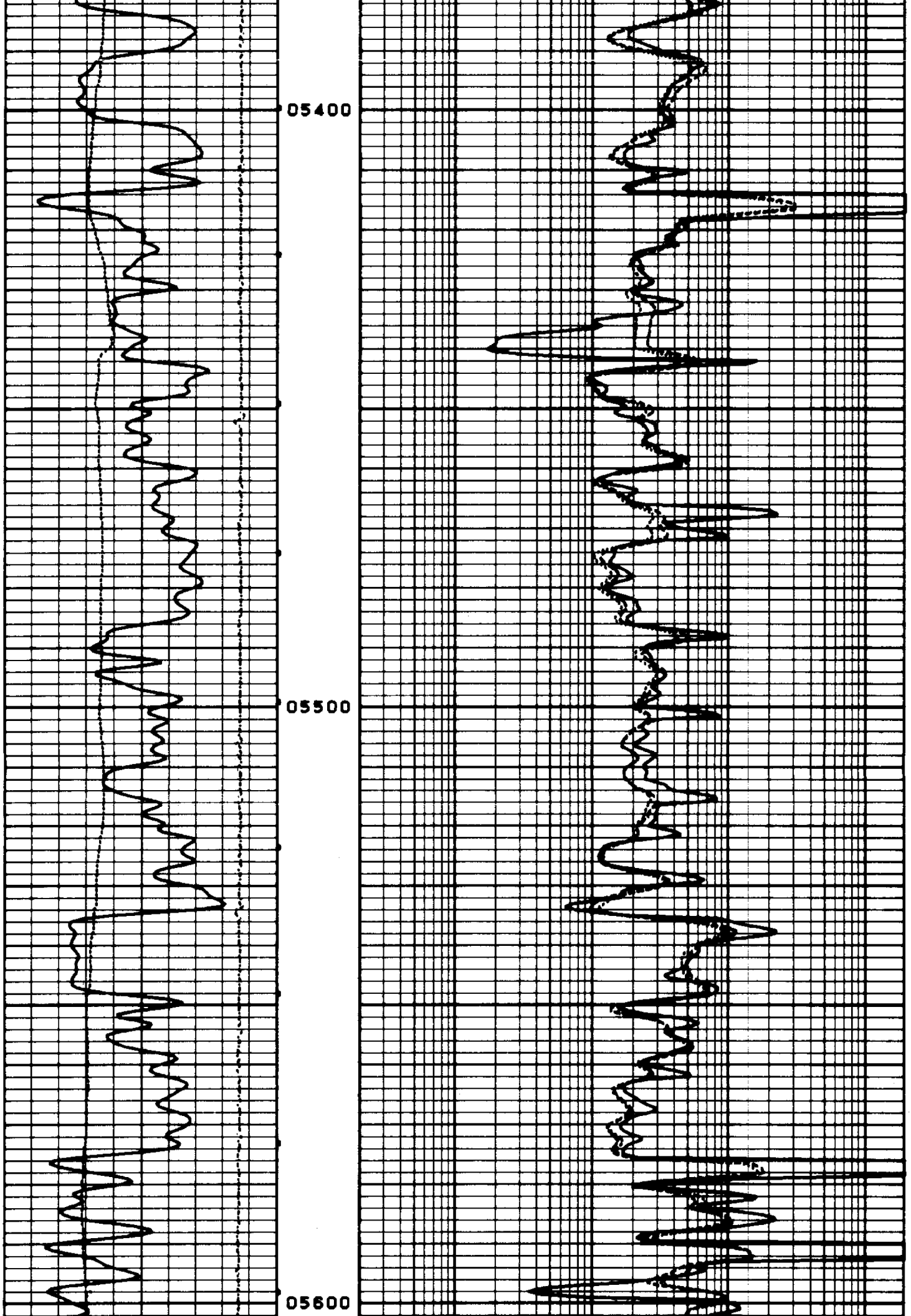
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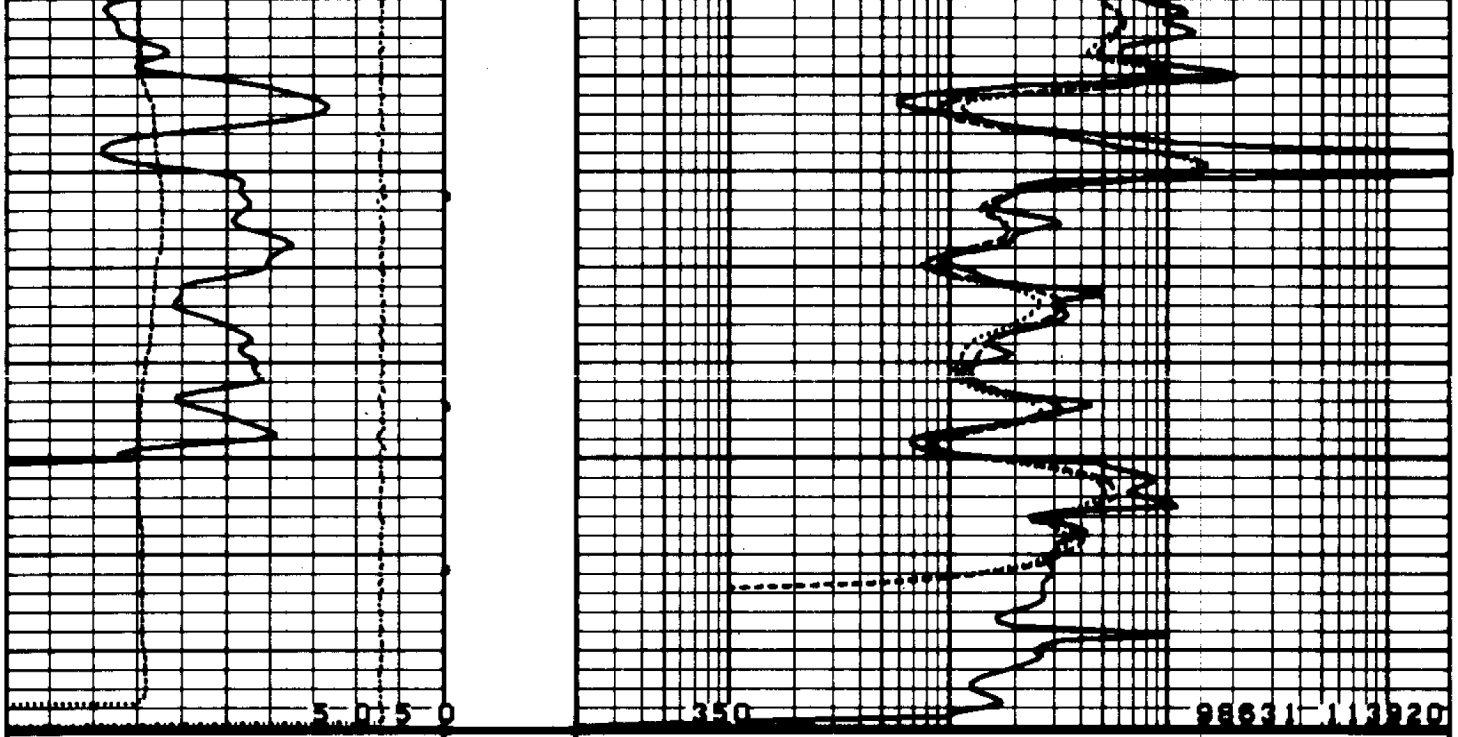
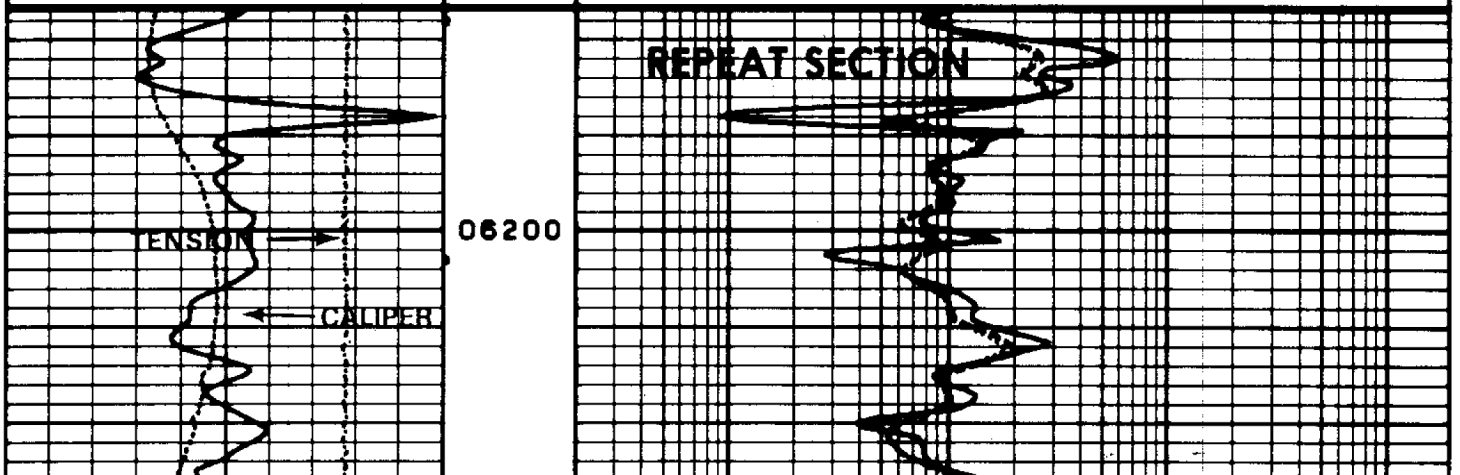


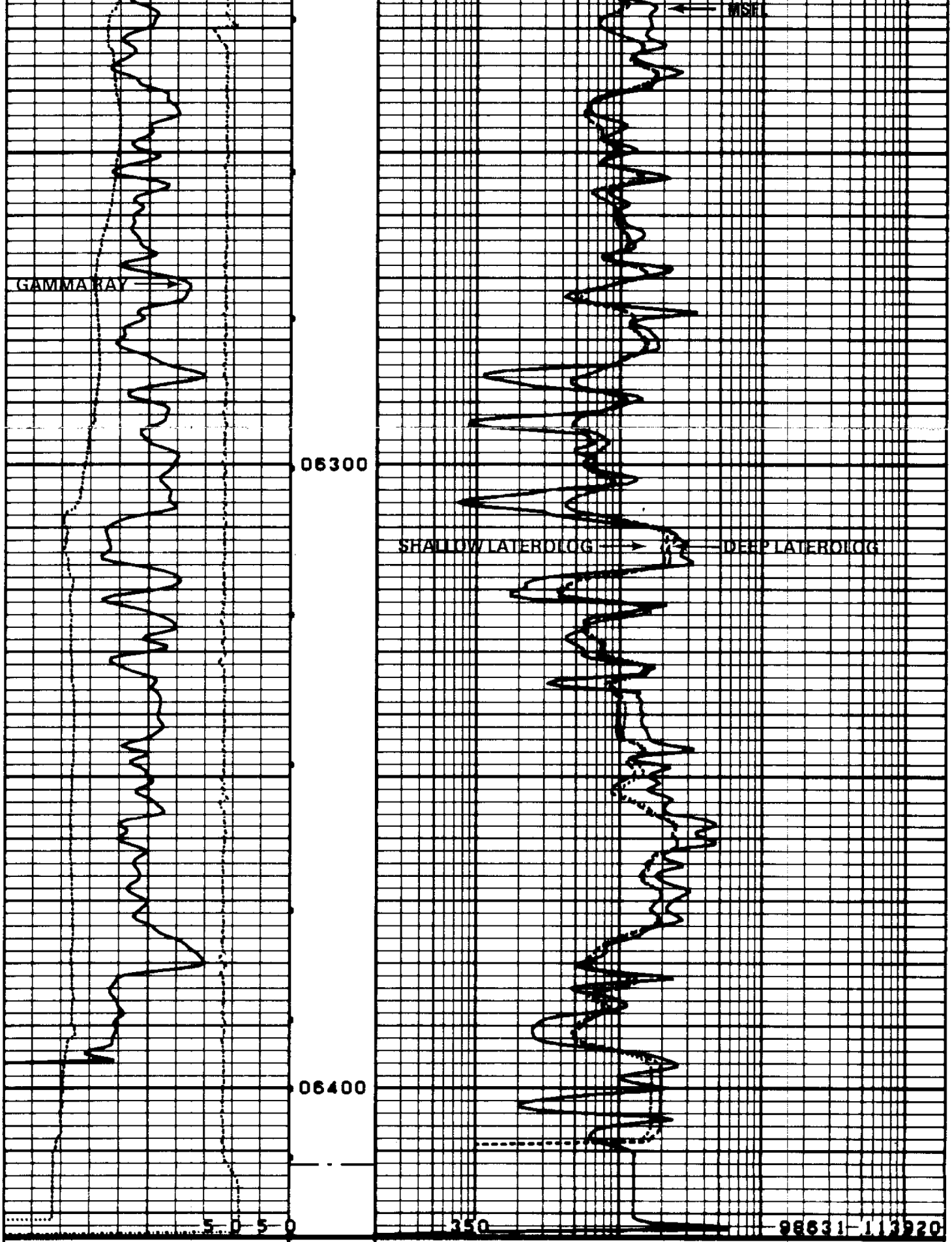
1000TENSION(LBS) 0	0.2	R-MSF (Ω-M)	2000
	0.2	R-LLS (Ω-M)	2000
	0.2	R-LLD (Ω-M)	2000
6 CAL-X (IN) 16			
0 GR (API) 200			

12-06-86 12:56 5678.0 359172 0093-55 0 14

12-06-86 08:44 6176.5 359172 0093-55 0 12

1000TENSION(LBS) 0	0.2	R-MSF (Ω-M)	2000
	0.2	R-LLS (Ω-M)	2000
	0.2	R-LLD (Ω-M)	2000
6 CAL-X (IN) 16			
0 GR (API) 200			





0.2	R-MSF (Ω-M)	2000
1000TENSION(LBS) 0		
0.2	R-LLS (Ω-M)	2000
0.2	R-LLD (Ω-M)	2000

6	CAL-X (IN)	16
0	GR (API)	200

12-06-86	08:33	6423.5	359172	0093-55	0	12
12-06-86	05:30	0.0	359172	0093-55	0	4

CALIPER BEFORE SURVEY CALIBRATION

TOOL TYPE: MSF- SERIAL NO:18013

	MEASURED			CALIBRATED		
	SMALL	LARGE	UNITS	SMALL	LARGE	UNITS
CALX	6.15	12.99	IN	7.00	14.00	IN

12-06-86	05:25	0.0	359172	0093-55	0	3

GAMMA RAY BEFORE SURVEY CALIBRATION

TOOL TYPE: GRT-DC SERIAL NO:04413

BACKGROUND	CALIBRATOR	STANDARD	UNITS
175.8	496.4	120.0	GAPI

DELTA COUNTS PER SEC: 320.6 CPS/API = 2.671

12-06-86	13:54	986.5	359172	0093-55	0	10

DUAL LATEROLOG AFTER SURVEY CALIBRATION

TOOL TYPE: DLL- SERIAL NO:00017

100 OHM-METER MEASUREMENT

REISTIVITY	BEFORE	AFTER	UNITS
LLD	100	98	OHM-M
LLS	100	100	OHM-M

REFERENCE DATA

	LLD	LLS	UNITS
DRIVE OUTPUT	1136	1911	
CHANNEL OFFSETS V(0)	155	178	MV
CHANNEL OFFSETS V(90)	183	178	MV
CHANNEL OFFSETS I(0)	159	173	MV
CHANNEL OFFSETS I(90)	175	164	MV

12-06-86	13:53	986.5	359172	0093-55	0	9

MICRO-SPHERICALLY FOCUSED AFTER SURVEY TOOL CHECK

TOOL TYPE: MSF- SERIAL NO:18013

	LOW		HIGH		
	BEFORE	AFTER	BEFORE	AFTER	UNITS
MSFL	0.0	0.0	500.0	499.9	MMHO/M

12-06-86	07:28	350.0	359172	0093-55	0	8

DUAL LATEROLOG BEFORE SURVEY CALIBRATION

TOOL TYPE: DLL- SERIAL NO:00017

100 OHM-METER CAL

	MEASURED	CALIBRATED	UNITS
LLD	124	100	OHM-M
LLS	111	100	OHM-M

REFERENCE DATA

	LLD	LLS	UNITS
ZERO OFFSET	-0.02	-0.05	OHM-M
CALIBRATION RATIO	0.800	0.898	

POWER REFERENCE	98631	113920	
DRIVE OUTPUT	1137	1937	
CHANNEL OFFSETS V(0)	157	181	MV
CHANNEL OFFSETS V(90)	182	179	MV
CHANNEL OFFSETS I(0)	156	173	MV
CHANNEL OFFSETS I(90)	176	169	MV

12-06-86	07:27	350.0	359172	0093-55	0	7

MICRO-SPHERICALLY FOCUSED BEFORE SURVEY CALIBRATION

TOOL TYPE: MSF- SERIAL NO:18013

	MEASURED		CALIBRATED		
	LOW	HIGH	LOW	HIGH	UNITS
MSFL	-1.7	501.5	0.0	500.0	MMHO/M

12-06-86	07:21	235.0	359172	0093-55	0	6

CALIPER CASING CHECK

TOOL TYPE: MSF- SERIAL NO:18013

MEASURED CASING ID. X-CALIPER = 7.99 IN

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)

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U		

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For Official Use Only

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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

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

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- [ ] Yes
- [x] No

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- [ ] Federal
- [ ] Other

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- [ ] 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

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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

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)

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- [ ] Other

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- [ ] 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)
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						8	5S	3W	SW				

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- [x] Yes
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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)

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		T/A	C
U			

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For Official Use Only

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

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- [ ] Federal
- [ ] Other

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- [ ] Owner
- [x] Operator

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

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

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- [ ] 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)
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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				

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- [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)*: 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 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

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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 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

(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

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

(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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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		

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 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

XIII. Attachments

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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

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 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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D. Date Signed: 07/27/2015

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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 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

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Kevin Dickey, Vice President, Operations	(208) 685-7600
C. Signature	D. Date Signed
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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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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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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 20-06

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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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

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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 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)

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

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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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)

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)*: 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

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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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
	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 31-07

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

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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 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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C. Signature: Kevin Dickey

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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 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

(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

ATTACHMENT NO. 10

WELL BORE DIAGRAMS FOR THE UIC WELL

Ute Tribal 08-12 Well History

Well History:

Spud Well: 11/17/1986

Completed: 12/23/1986

First Production: 12/23/1986

Tops (KB):

BMSW* Found at 881'

Green River 1090'

A Marker 3759'

X Marker 4246'

Douglas Creek 4391'

B Limestone 4782'

Castle Peak 5296'

Basal Carbonate 5739'

Perf History

12/21/1986

D05	4943' to 4945'	E04.2	5536' to 5541'
D7	5008' to 5012'		
D7	5028' to 5031'		
D7	5041' to 5043		
E01.2	5393' to 5396'		
E02.1	5424' to 5433'		
E03.3	5487' to 5493'		

4/13/1988

C05.2	4490' to 4498
C08.1	4656' to 4665'
C08.2	4678' to 4686'

4/29/2011

B06	3937' to 3946'	D7 (reperf)	5028' to 5034'
B08.1	4089' to 4091'	D7 (reperf)	5041' to 5047'
B10	4144' to 4164'	E01.2	5378' to 5382'
C05.2 (reperf)	4492' to 4499'	E01.2	5390' to 5399'
C08.1 (reperf)	4660' to 4666'	E02.1 (reperf)	5424' to 5439'
C08.2 (reperf)	4678' to 4686'	E03.3	5486' to 5494'
D05 (reperf)	4943' to 4949'	E04.2 (reperf)	5536' to 5546'
D7 (reperf)	5008' to 5022'		

Petroglyph Operating Co., Inc.

Ute Tribal #08-12

(2100' FSL & 515' FWL)

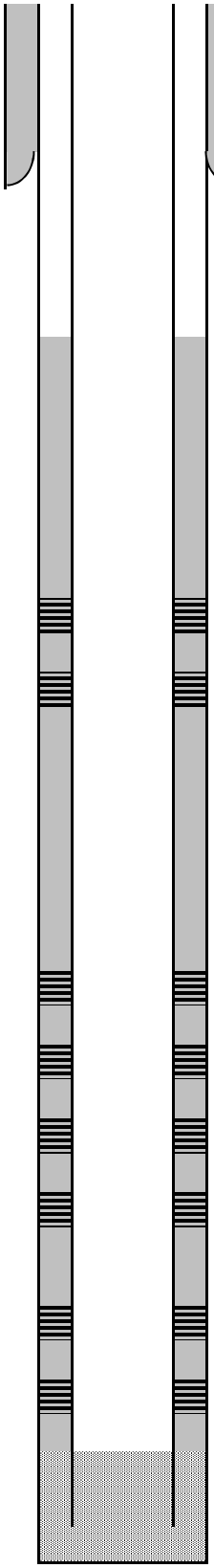
NW SW Section 8, 5S- 3W

Antelope Creek Field

Duchesne Co. Utah

API#: 43013311640000

*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: 5866'

KB: 5881'

8 5/8" 24# 25' CSG @ 285' KB

cmt'd w/250 sx

Surface Hole size 12 1/4"

Cement top @ 2450'

5 1/2" 15.5# J-55 CSG @ 5923'

cmt'd w/1375sx

Hole Size 7 7/8" bit

Perf's:

B06 3937' to 3946'

B08.1 4089' to 4091'

B10 4144' to 4164'

C05.2 4492' to 4499'

C08.1 4660' to 4666'

C08.2 4678' to 4686'

D05 4943' to 4949'

D7 5008' to 5022'

D7 5028' to 5034'

D7 5041' to 5047'

E01.2 5378' to 5382'

E01.2 5390' to 5399'

E02.1 5424' to 5439'

E03.3 5486' to 5494'

E04.2 5536' to 5546'

PBTD @ 5815' KB

TD @ 6420' KB

Ute Tribal 08-12 Injection

Well History:

Spud Well: 11/17/1986

Completed: 12/23/1986

First Production: 12/23/1986

Tops (KB):

BMSW* Found at 881'

Green River 1090'

A Marker 3759'

X Marker 4246'

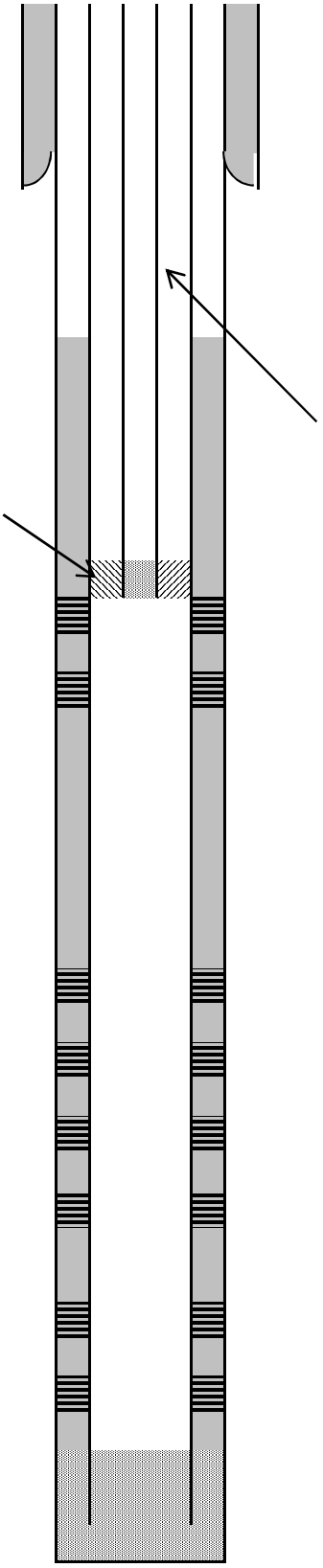
Douglas Creek 4391'

B Limestone 4782'

Castle Peak 5296'

Basal Carbonate 5739'

Injection packer @ 3847'



GL: 5866'

KB: 5881'

8 5/8" 24# 25' CSG @ 285' KB

cmt'd w/250 sx

Surface Hole size 12 1/4"

Cement top @ 2450'

5 1/2" 15.5# J-55 CSG @ 5923'

cmt'd w/1375sx

Tubing 2 7/8" 6.5# J55

Hole Size 7 7/8" bit

Perf's:

B06 3937' to 3946'

B08.1 4089' to 4091'

B10 4144' to 4164'

C05.2 4490' to 4499'

C08.1 4656' to 4666'

C08.2 4678' to 4686'

D05 4943' to 4949'

D7 5008' to 5022'

D7 5028' to 5034'

D7 5041' to 5047'

E01.2 5378' to 5382'

E02.1 5424' to 5439'

E03.3 5486' to 5494'

E04.2 5536' to 5546'

PBTD @ 5815' KB

TD @ 6420' KB

(Not to Scale)

Petroglyph Operating Co., Inc.

Ute Tribal #08-12

(2100' FSL & 515' FWL)

NW SW Section 8, 5S- 3W

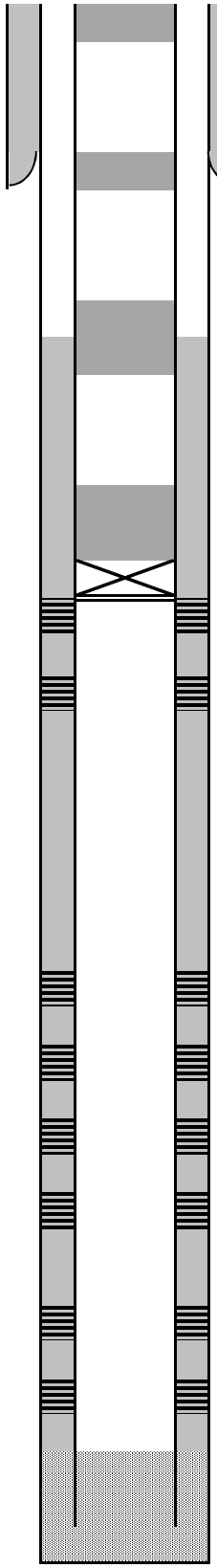
Antelope Creek Field

Duchesne Co. Utah

API#: 43013311640000

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

Ute Tribal 08-12 Plug and Abandonment



GL: 5866'
KB: 5881'

8sx Class G Cement-50' plug

8 5/8" 24# 25' CSG @ 285' KB
cmt'd w/250 sx

15sx Class G Cement-100' plug

Surface Hole size 12 1/4"

Cement top @ 2450'
5 1/2" 15.5# J-55 CSG @ 5923'
cmt'd w/1375sx

30sx Class G Cement-200' plug

Hole Size 7 7/8" bit

30sx Class G Cement-200' plug
CIBP @ 3847'

Perf's:
B06 3937' to 3946'
B08.1 4089' to 4091'
B10 4144' to 4164'
C05.2 4490' to 4499'
C08.1 4656' to 4666'
C08.2 4678' to 4686'
D05 4943' to 4949'
D7 5008' to 5022'
D7 5028' to 5034'
D7 5041' to 5047'
E01.2 5378' to 5382'
E02.1 5424' to 5439'
E03.3 5486' to 5494'
E04.2 5536' to 5546'

Petroglyph Operating Co., Inc.
Ute Tribal #08-12
(2100' FSL & 515' FWL)
NW SW Section 8, 5S- 3W
Antelope Creek Field
Duchesne Co. Utah
API#: 43013311640000

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

(Not to Scale)

PBTD @ 5815' KB
TD @ 6420' KB

ATTACHMENT NO. 11

P&A PROCEDURE

Plug and Abandonment Procedure

Ute Tribal 08-12

43-013-31164

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 @ 3847‘.

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 2450’ and set balanced 200’ cement plug using 30sxs of Class G cement.

6. Raise the tubing to 285’ 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 08-12

43-013-31164

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 3847'.
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.