UNDERGROUND INJECTION CONTROL
PERMIT APPLICATION

Ute Tribal # 31-05
1980' FNL & 660' FWL
Sec. 31, T5S-R3W
Duchesne County, Utah
API # 43-013-32035

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 31-05
API # 43-013-32035

The following document contains information provided in support of the application for the conversion of the Ute Tribal 31-05 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 31-05 is 1980' FNL & 660' FWL SW/NW Sec. 31, 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 31-05 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; those lands, and the the owners thereof, which must be provided notice of this application. The AOR has Ute Tribal 31-04 and Ute Tribal 31-12 well(s) located in its ¼ mile radius.

(4) Petroglyph proposes to utilize the Ute Tribal 31-05 as an injection well for enhanced recovery in the Antelope Creek Field.

(5) Injection Zone – The injection intervals are between 3420' and 5388' True Vertical Depth and located in the lower portion of the Green River Formation. The injection zone is confined within a 1968' 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 31-05 is 223 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 19-13, the most recent analysis of the water being injected into the Green River formation at this location is 7342 mg/L TDS. This analysis is also included in Attachment No. 5.

(7) A summary of completion data from the Ute Tribal 31-05 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 31-05 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 31-05 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 **1730**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 31-05:
1730psi = (0.88psi/ft - 0.43(1.00)) 3844ft

(12) Three wellbore diagrams for the Ute Tribal 31-05 are in Attachment No. 10. One diagram is for production, one for injection, and one for Plug & Abandonment (P&A).

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

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

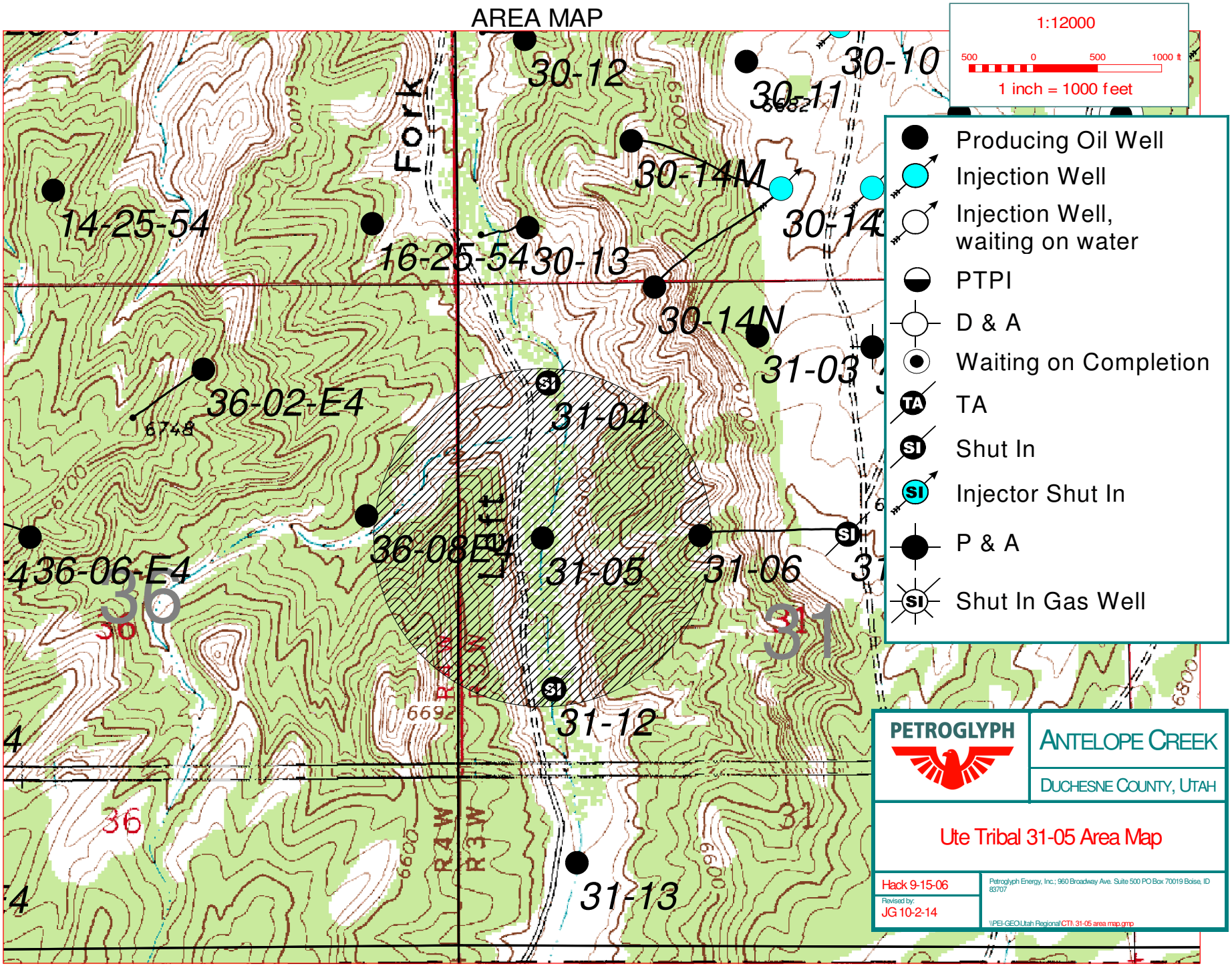
(15) Petroglyph will give proof of financial responsibility by posting a surety bond for the UIC well prior to final permit approval. A copy of this letter is contained in Attachment No. 13.

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

ATTACHMENT NO. 1

AREA MAP

ATTACHMENT NO. 1:
AREA MAP

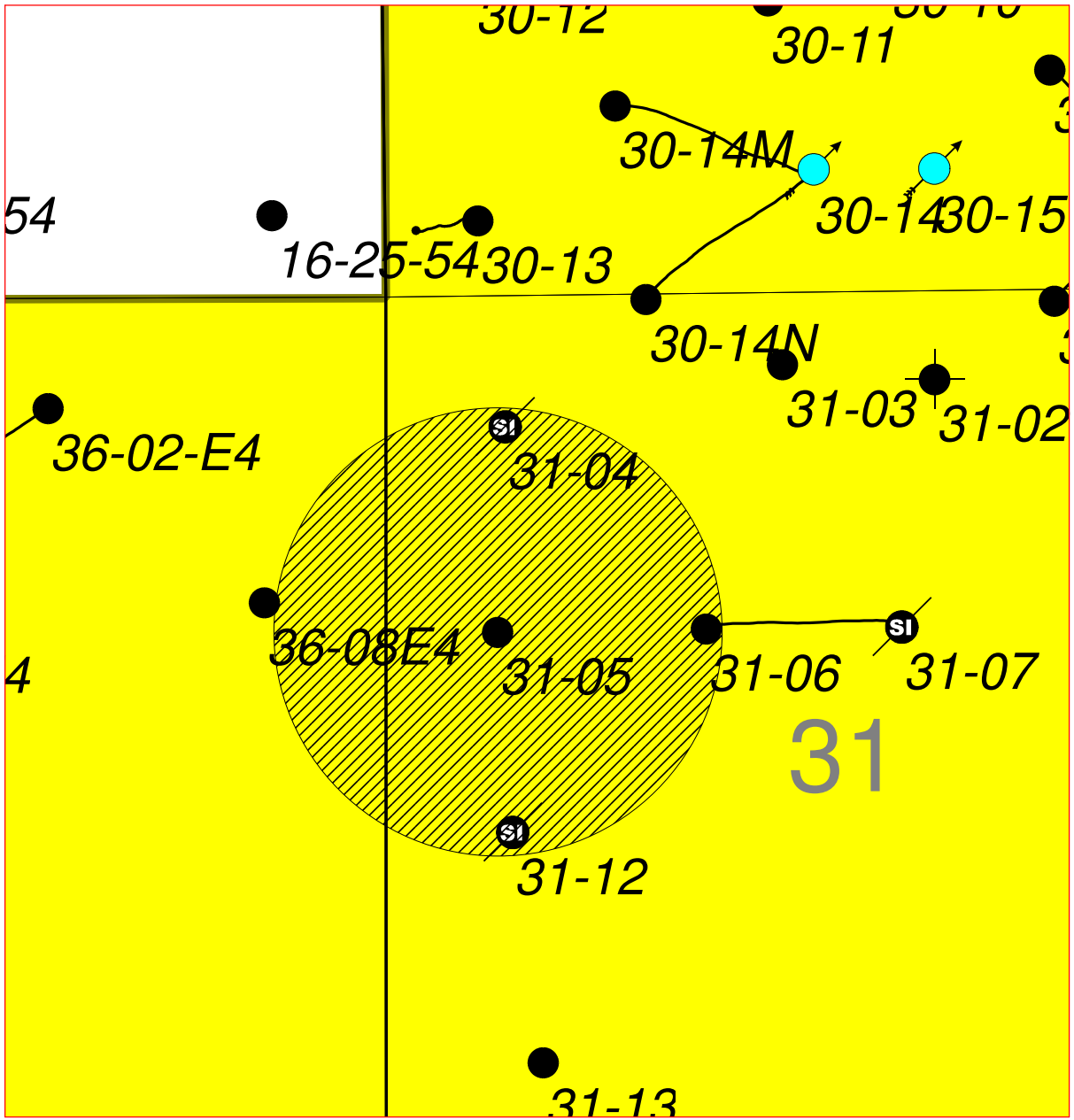


ATTACHMENT NO. 2

SITE MAP

RADIUS MAP OF ADJACENT WELLS

ATTACHMENT NO. 2:
SITE MAP



1:12000

500 0 500 1000 ft

1 inch = 1000 feet

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

PETROGLYPH

ANTELOPE CREEK

DUCHESNE COUNTY, UTAH

Ute Tribal 31-05 Plat and Quarter-mile radius map. Ute Indian lands under Petroglyph lease shown in yellow

Hack 9-15-06

Revised by:
JG 9-10-14

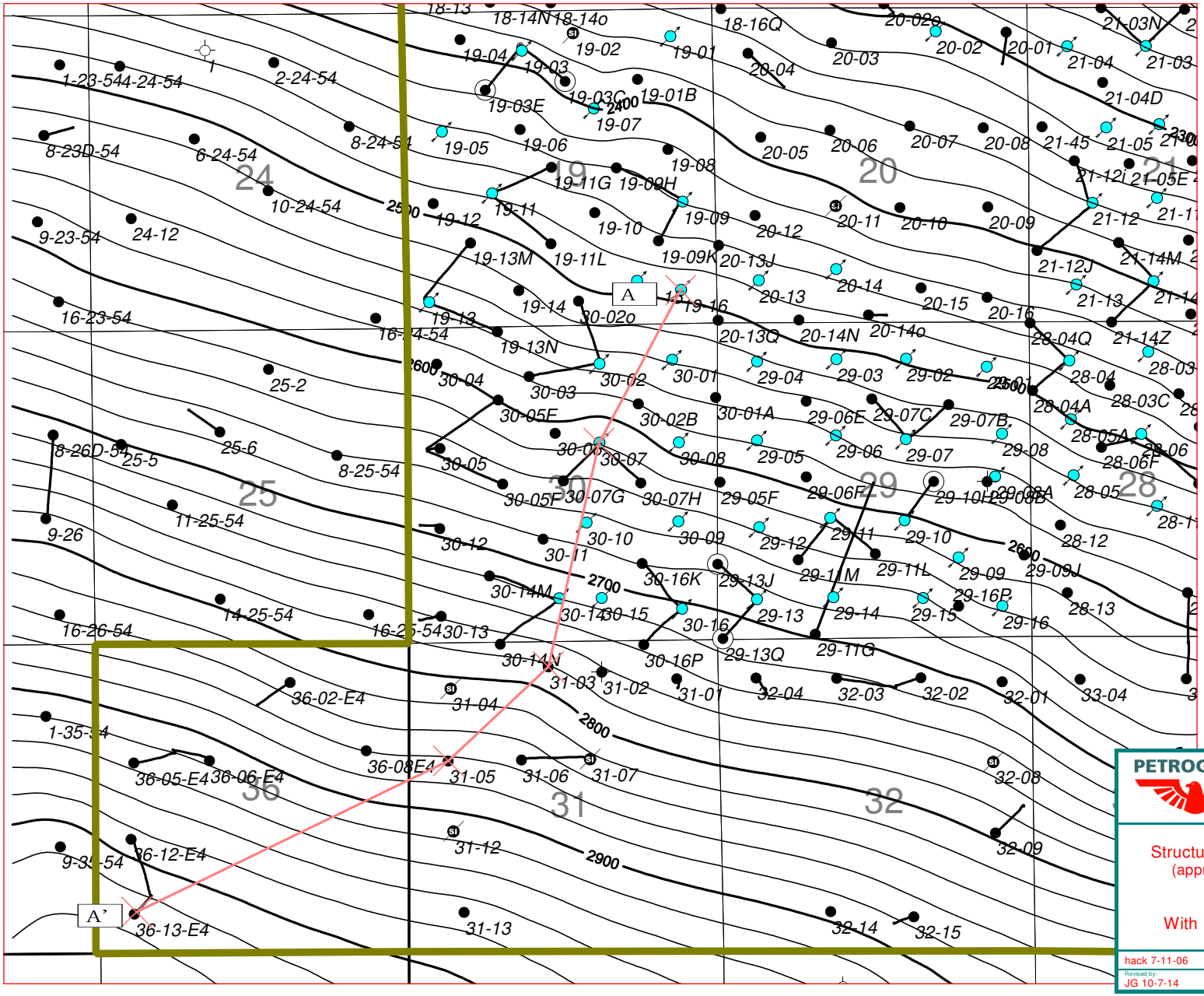
Petroglyph Energy, Inc.; 960 Broadway Ave. Suite 500 PO Box 70019 Boise, ID 83707

\\PEI-GEO\Utah Regional\CTI\ 31-05 quarter mile map.gmp

ATTACHMENT NO. 3

MAP OF THE A-LIME MARKER SURFACE

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



1:30000

1000 0 1000 2000 ft

1 inch = 2500 feet

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

PETROGLYPH

ANTELOPE CREEK

DUCHESNE COUNTY, UTAH

Structure Map of the "A" Lime Marker
(approximate top of Injection Zone)
in the Vicinity of the
Ute Tribal 31-05
With Line of Cross Section A to A'

hack 7-11-06

Revised by:
JG 10-7-14

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

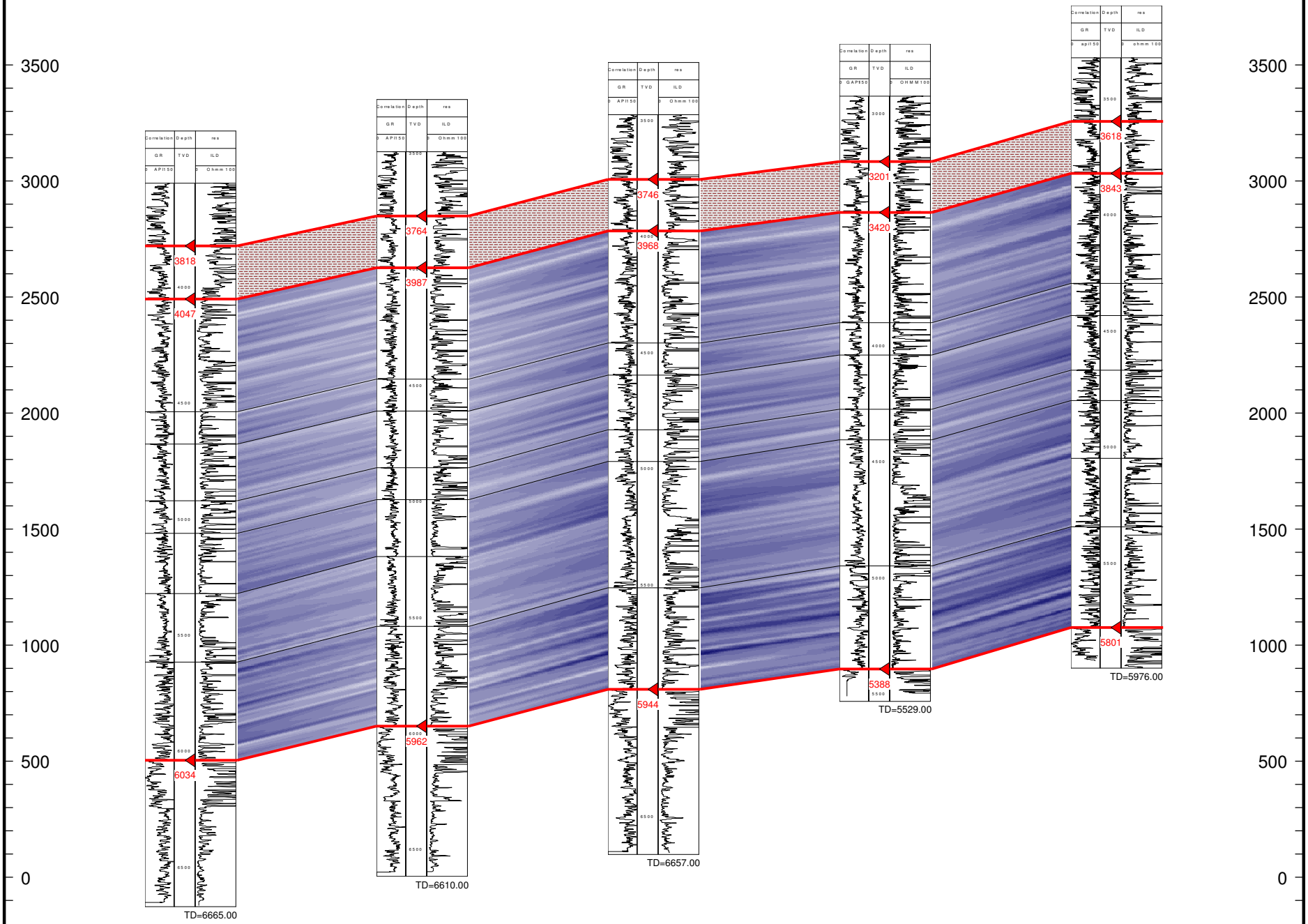
\\SERV\Geo\Utah Regional\CTI\31-05 structure map.gmp

ATTACHMENT NO. 4

CROSS SECTIONS OF THE INJECTION FORMATION

Structural Cross Section in the Vicinity of Ute Tribal 31-05

43013308030000	2903 ft	43013308520000	3842 ft	43013311880000	2303 ft	43013320350000	5807 ft	43013516030000
PETROGLYPH OPERATING COMPANY INC Ute Tribal 19-16 556 FSL 603 FEL TWP: 5 S - Range: 3 W - Sec. 19		PETROGLYPH OPERATING COMPANY INC Ute Tribal 30-07 1980 FNL 1980 FEL TWP: 5S - Range: 3W - Sec. 30		PETROGLYPH OPERATING COMPANY INC Ute Tribal 31-03 422 FNL 2338 FWL TWP: 5 S - Range: 3 W - Sec. 31		PETROGLYPH OPERATING COMPANY INC Ute Tribal 31-05 1980 FNL 660 FWL TWP: 5 S - Range: 3 W - Sec. 31		PETROGLYPH OPERATING COMPANY UTE TRIBAL 36-13-E4 954 FSL 935 FWL TWP: 5 S - Range: 4 W - Sec. 36



ATTACHMENT NO. 5

WATER ANALYSIS

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

multi-chem
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Water Analysis Report

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

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

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

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

Notes:

(PTB = Pounds per Thousand Barrels)

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

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

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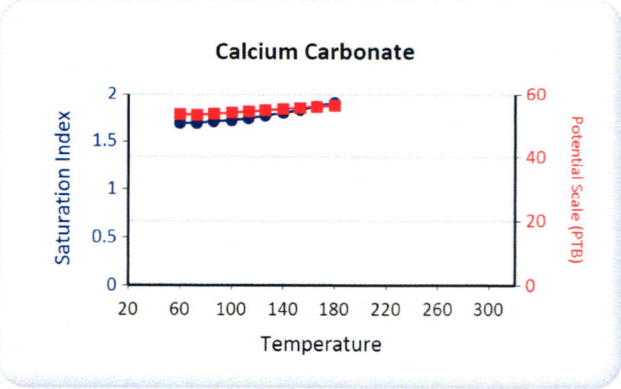
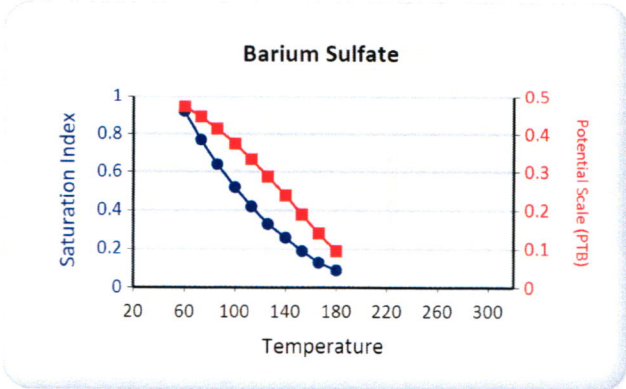
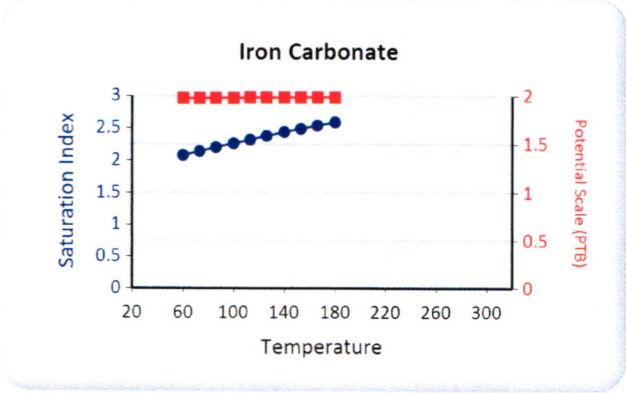
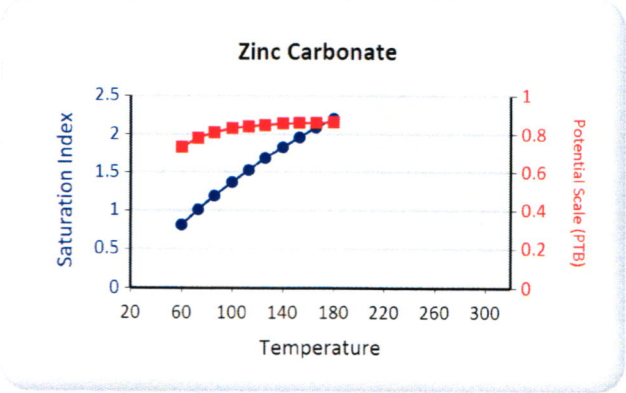
Water Analysis Report









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

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

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

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

Notes:

(PTB = Pounds per Thousand Barrels)

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

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

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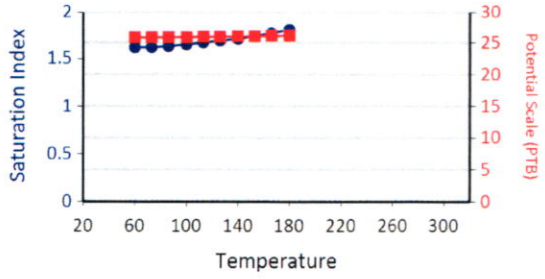
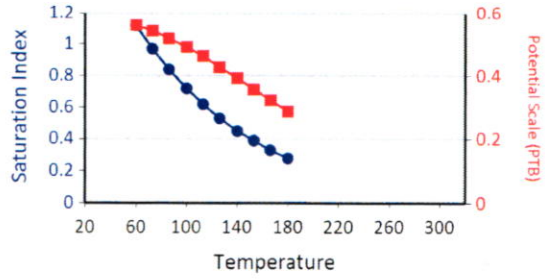
Water Analysis Report

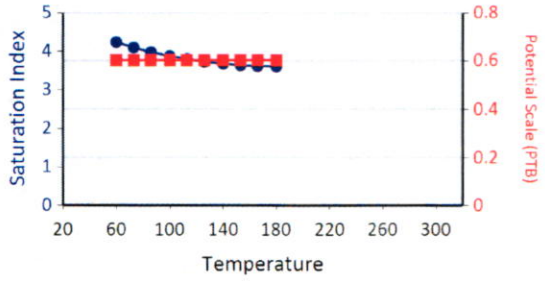
Calcium Carbonate



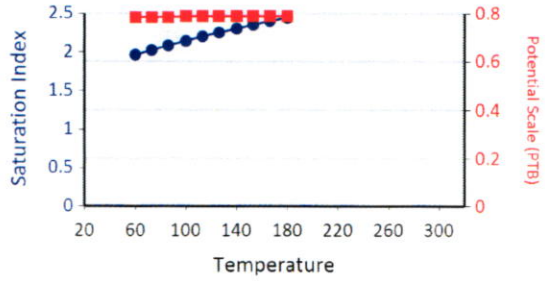
Barium Sulfate



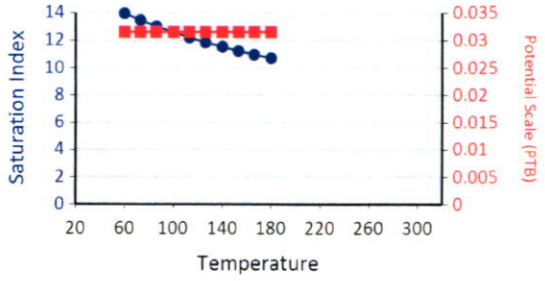
Iron Sulfide



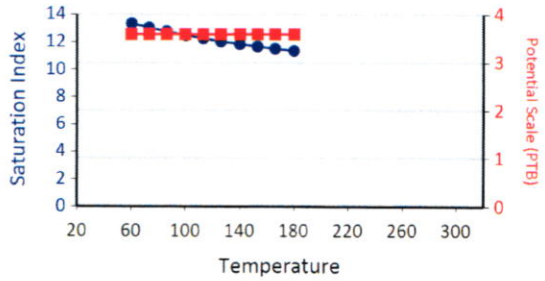
Iron Carbonate



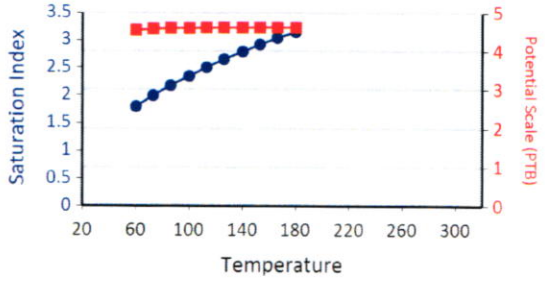
Lead Sulfide



Zinc Sulfide



Zinc Carbonate



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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

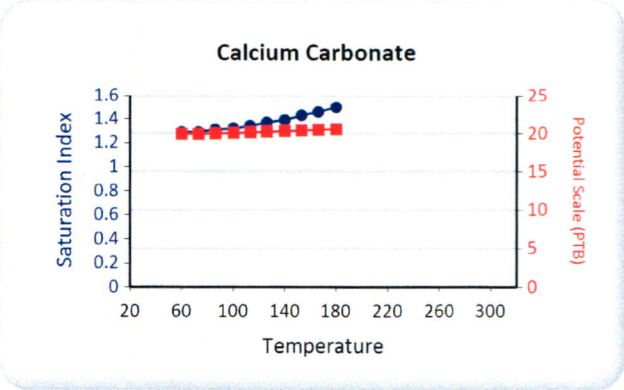
Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	5277.36	Chloride (Cl):	7000.00
Potassium (K):	65.03	Sulfate (SO_4):	0.00
Magnesium (Mg):	7.80	Bicarbonate (HCO_3):	2196.00
Calcium (Ca):	24.60	Carbonate (CO_3):	
Strontium (Sr):	5.20	Acetic Acid (CH_3COO)	
Barium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

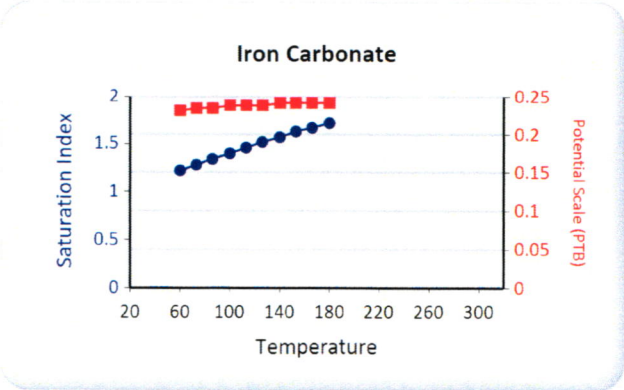
Notes:

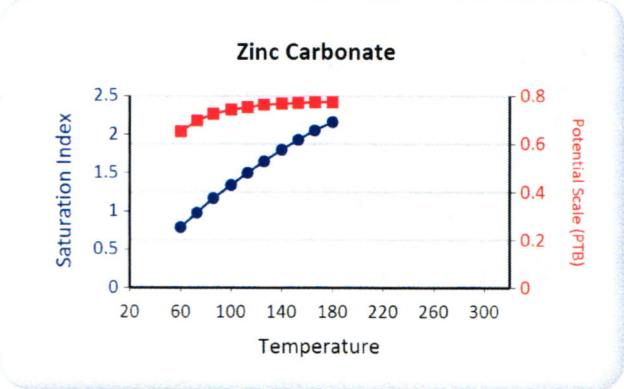
(PTB = Pounds per Thousand Barrels)

		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 19-13 INJ, DUCHESNE**	Lab Tech:	**Gary Winegar**
Sample Point:	**WELLHEAD**		
Sample Date:	**1/7/2015**		
Sample ID:	**WA-297434**		

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):	1.0020
pH:	8.10
Calculated TDS (mg/L):	7341.89
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):	1955.67	Chloride (Cl):	4000.00
Potassium (K):	33.86	Sulfate (SO_4):	141.00
Magnesium (Mg):	43.17	Bicarbonate (HCO_3):	1048.00
Calcium (Ca):	78.01	Carbonate (CO_3):	
Strontium (Sr):	5.06	Acetic Acid (CH_3COO)	
Barium (Ba):	4.37	Propionic Acid (C_2H_5COO)	
Iron (Fe):	5.10	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.58	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.00	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.09	Silica (SiO_2):	26.98

Notes:
B=3.97 Al=.03 Li=1.18

(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	1.26	44.14	1.57	2.53	3.33	2.81	1.91	3.66	0.00	0.00	0.00	0.00	0.00	0.00	10.56	0.30
88.00	157.00	1.24	42.24	1.49	2.52	3.23	2.81	1.92	3.66	0.00	0.00	0.00	0.00	0.00	0.00	10.35	0.30
97.00	300.00	1.26	43.30	1.41	2.50	3.17	2.81	1.97	3.66	0.00	0.00	0.00	0.00	0.00	0.00	10.20	0.30
106.00	443.00	1.29	44.44	1.34	2.48	3.13	2.81	2.02	3.67	0.00	0.00	0.00	0.00	0.00	0.00	10.05	0.30
115.00	585.00	1.31	45.64	1.28	2.46	3.09	2.81	2.07	3.67	0.00	0.00	0.00	0.00	0.00	0.00	9.91	0.30
124.00	728.00	1.34	46.88	1.22	2.44	3.06	2.81	2.12	3.68	0.00	0.00	0.00	0.00	0.00	0.00	9.78	0.30
133.00	871.00	1.37	48.16	1.17	2.42	3.04	2.81	2.17	3.68	0.00	0.00	0.00	0.00	0.00	0.00	9.66	0.30
142.00	1014.00	1.40	49.46	1.12	2.40	3.02	2.80	2.22	3.68	0.00	0.00	0.00	0.00	0.00	0.00	9.55	0.30
151.00	1157.00	1.43	50.78	1.08	2.38	3.01	2.80	2.27	3.68	0.00	0.00	0.00	0.00	0.00	0.00	9.45	0.30
160.00	1300.00	1.46	52.09	1.04	2.36	3.01	2.80	2.31	3.69	0.00	0.00	0.00	0.00	0.00	0.00	9.35	0.30

		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	0.30	0.19	0.00	0.00	0.78	3.45	0.07	0.45	6.57	3.92
88.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.23	0.00	0.00	0.94	3.87	0.12	0.64	6.57	3.91
97.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.27	0.00	0.00	1.34	5.61	0.34	1.60	6.81	3.92
106.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.30	0.00	0.00	1.75	7.48	0.56	2.61	7.06	3.93
115.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.32	0.00	0.00	2.17	9.51	0.79	3.68	7.33	3.94
124.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.34	0.00	0.00	2.58	11.68	1.03	4.79	7.60	3.94
133.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	0.97	0.35	0.00	0.00	3.01	14.00	1.26	5.96	7.88	3.95
142.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	1.08	0.36	0.00	0.00	3.43	16.43	1.50	7.15	8.17	3.95
151.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18	0.36	0.00	0.00	3.86	18.94	1.75	8.37	8.46	3.96
160.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	0.37	0.00	0.00	4.28	21.45	1.99	9.58	8.76	3.96

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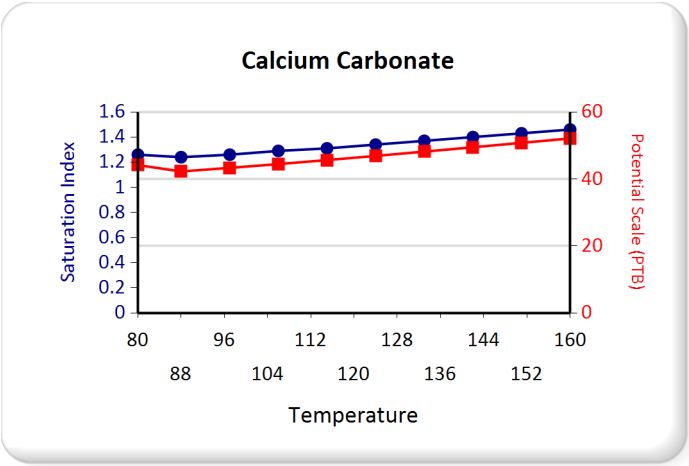
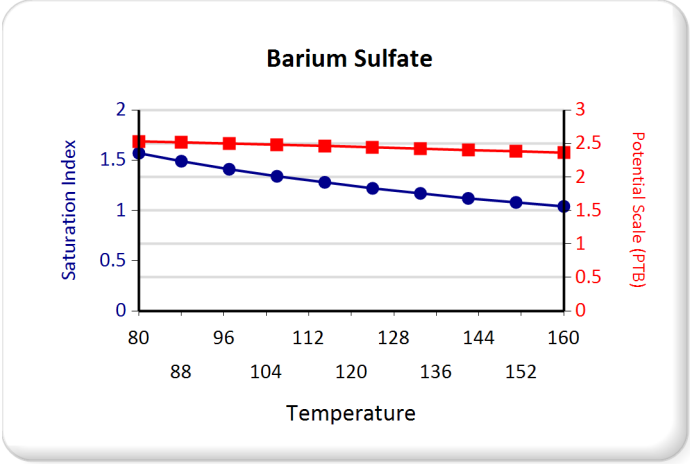
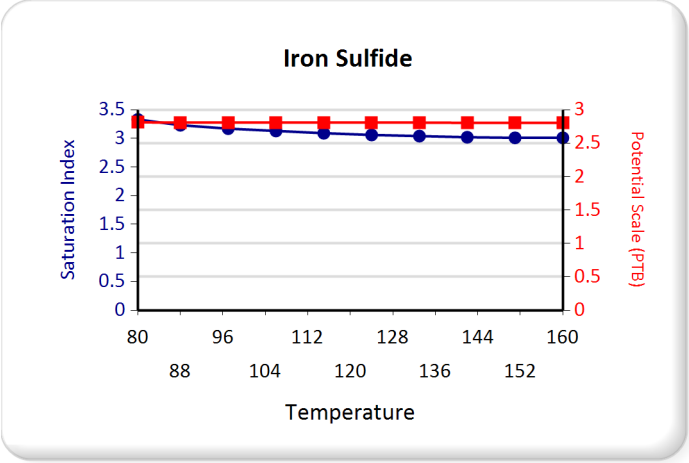
Water Analysis Report

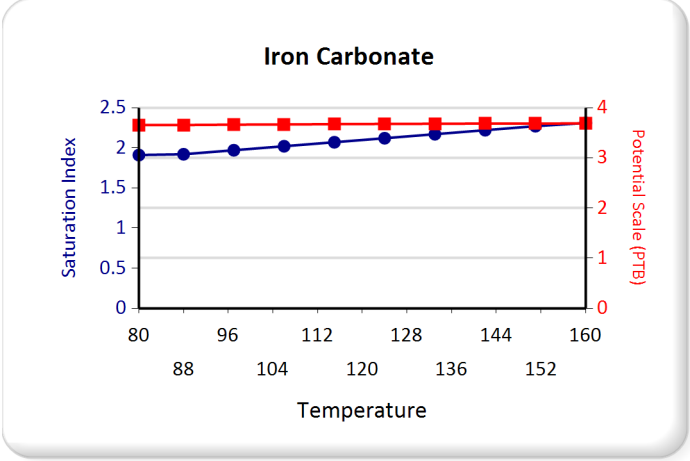
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

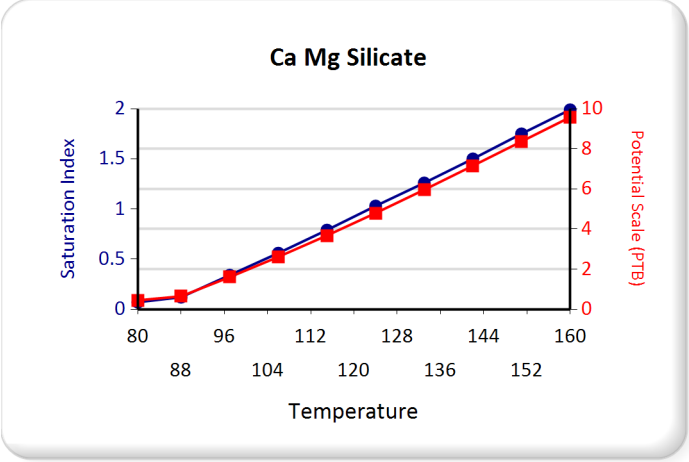
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

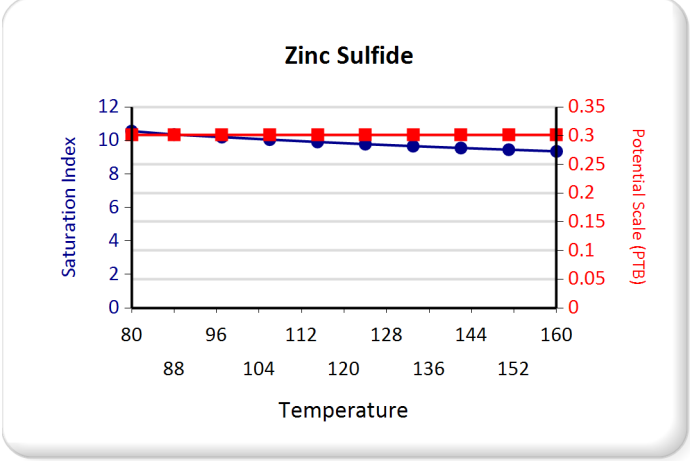


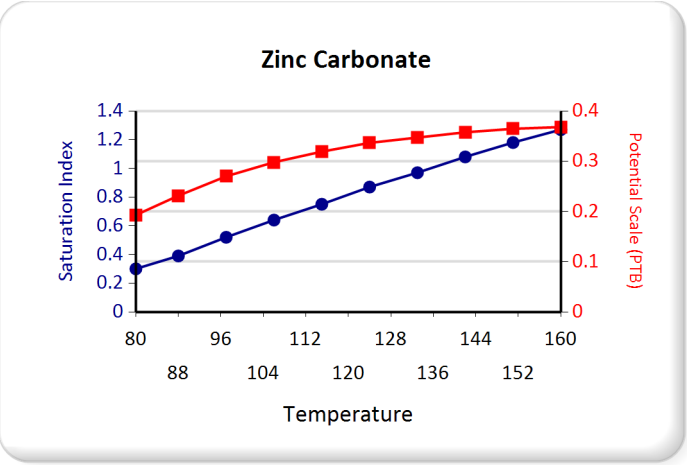


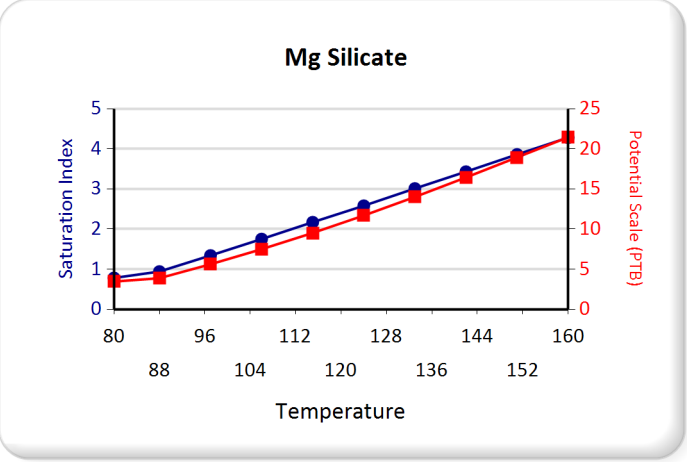


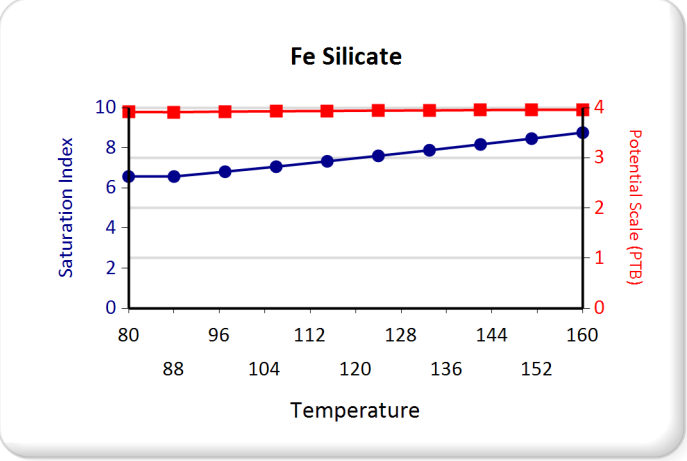







Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.4
0.3
0.2
0.1
0
80
88
96
104
112
120
128
136
144
152
160


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
5
4
3
2
1
0
25
20
15
10
5
0
80
88
96
104
112
120
128
136
144
152
160


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
10
8
6
4
2
0
4
3
2
1
0
80
88
96
104
112
120
128
136
144
152
160

ATTACHMENT NO. 6

COMPLETION DATA FOR ALL WELLS IN THE AOR

Well Completion Data
Ute Tribal 31-05

	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 31-05	**8-5/8**	**368**	**300**	**surface**	**5-1/2**	**5483**	**430**	**1565**
Ute Tribal 31-04	8-5/8	355	300	surface	5-1/2	5517	565	170
Ute Tribal 31-12	8-5/8	371	300	surface	5-1/2	5452	450	1780

ATTACHMENT NO. 7

CBL FOR THE UIC WELL

Extra

HALLIBURTON

EXCELL 2000

CEMENT BOND LOG

F

COMPANY PETROGLYPH OPERATING COMPANY

WELL UTE TRIBAL #31-05

FIELD ANTELOPE CREEK

COUNTY DUCHESNE STATE UT.

API No 43-013-32035

Location SW/SW 1980' FNL & 660' FWL

Sec 31 Twp 5S Rge 3W

Other Services

Permanent Datum: G.L. Elev. 6274

Log measured from K.B. 10 ft above perm. datum

Drilling measured from K.B.

Elev K.B. 6284 D.F. 6283 G.L. 6274

Date @ Time Logged	3-31-98 @ 1015	Type fluid in hole	WATER
Run No	1	Density of Fluid	
Depth – Driller	6509	Fluid Level	FULL
Depth – Logger	6421	Cement Top Est. Logged	1565
Bottom – Logged interval	6416	Equipment – Location	7609 556e5
Top – Logged interval	1330	Recorded by	EDMUNDS
Max. rec. temp. deg F	129	Witnessed by	MR. SEARLE

CEMENTING DATA	Surface String	Protection String	Production String	Liner
Date/Time Cemented				
Primary Squeeze				
Expected Compressive Strength	psi@ hrs	psi@ hrs	psi@ hrs	psi@ hrs
Cement Volume				
Cement Type / Weight				
Formulation				
MUD Type / MUD Wgt				

RUN No	BOREHOLE RECORD Bit	From	To	CASING & TUBING RECORD Size	Wgt	From	To
				8.625"		SURF	365
				5.50"	17#	SURF	T.D.

Service Ticket No. 376-27 API Serial No. 43-013-32035 Field Version 4.0 rev 10

This Well Data is calculated using Data & Borehole Description furnished by Client

CEMENT PROPERTIES DATA

Tail Cement Pumped cu ft

Preceding Fluid bbl Centralizers

Returns: Full Partial None? volume

Pipe Rotated / Reciprocated

During Pumping Yes No?

After Plug Down (Yes No?)

Plug Bumped (Yes No)

Plug Bumping Pressure

Pressure held PSI Hrs After Pumping

Scratchers

Joint From To

Joint From To

Joint From To

EQUIPMENT DATA

GAMMA

Run No	
Serial No	33109
Model No	HA-GRUH
Diameter	3.375
Detector Offset No	
Type	SCINT
Length	
Distance to Source	

NEUTRON

Run No	
Serial No	
Model No	
Diameter	
Log Type	
Source Type	
Serial No	
Strength	

ACOUSTIC

Run No	
Serial No	HA046
Model No	HA-CBT
Diameter	3.25"
No of Cent	2
Spacing	3 & 5

LOGGING DATA

GENERAL					GAMMA Scale		NEUTRON Scale		ACOUSTIC Scale	
Run No.	Depth From	Depth To	Wellhead Pressure	Speed Ft/Min	L	R	L	R	L	R
1	5421	1330	0 PSI	60	0	150			200 0	1200 100

Remarks:

THANK YOU FOR USING HALLIBURTON ENERGY SERVICES 1-800-874-2550
CORRELATED TO HES SDL/DSN LOG DATED 3-23-98
SHORT JOINTS: 3232 TO 3238 & 4214 TO 4254

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF

HALLIBURTON

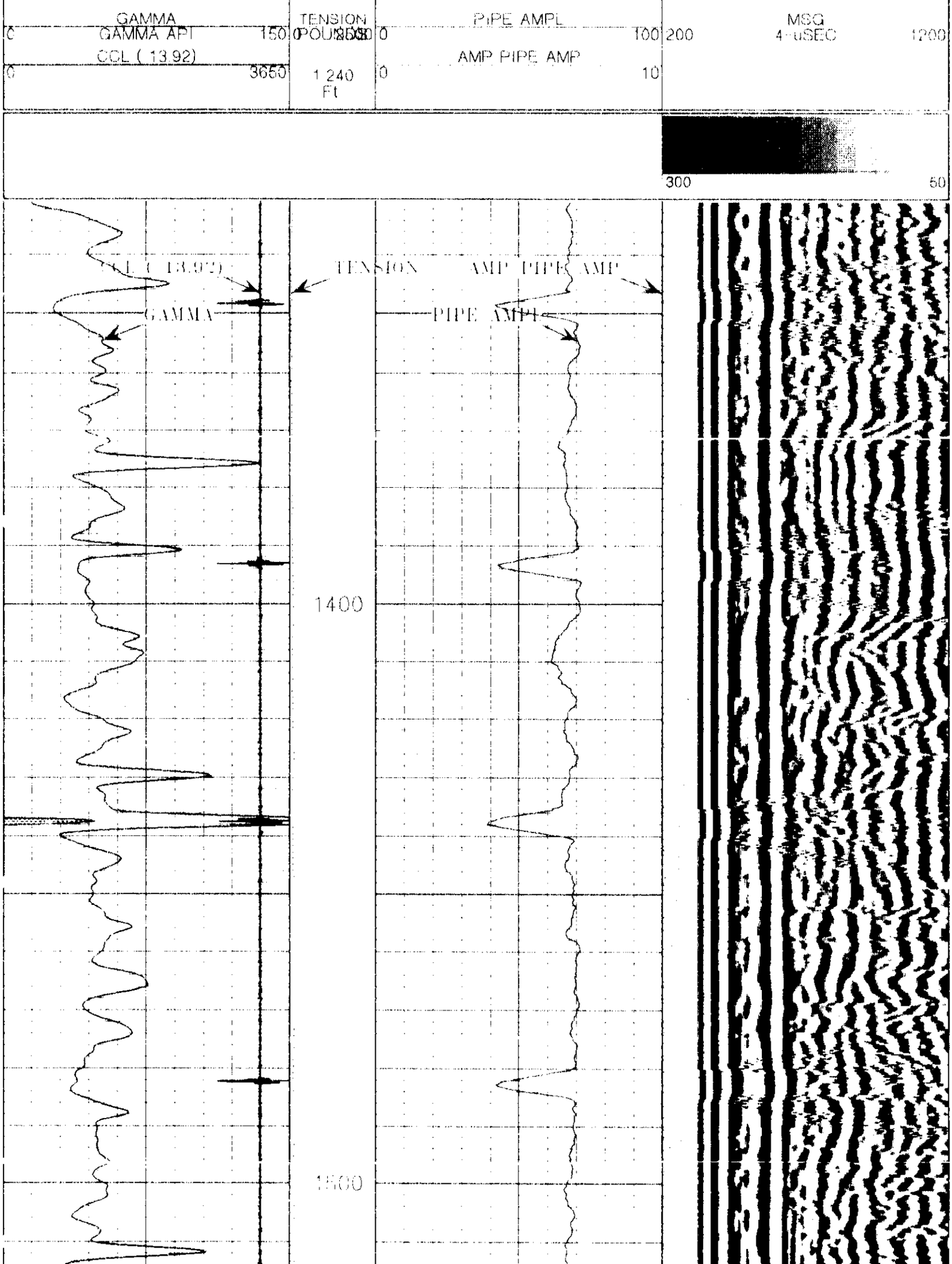
Current EXCELL-2000 Parameter Values
Depth: 34.000
Date: 31-Mar-1998 11:33

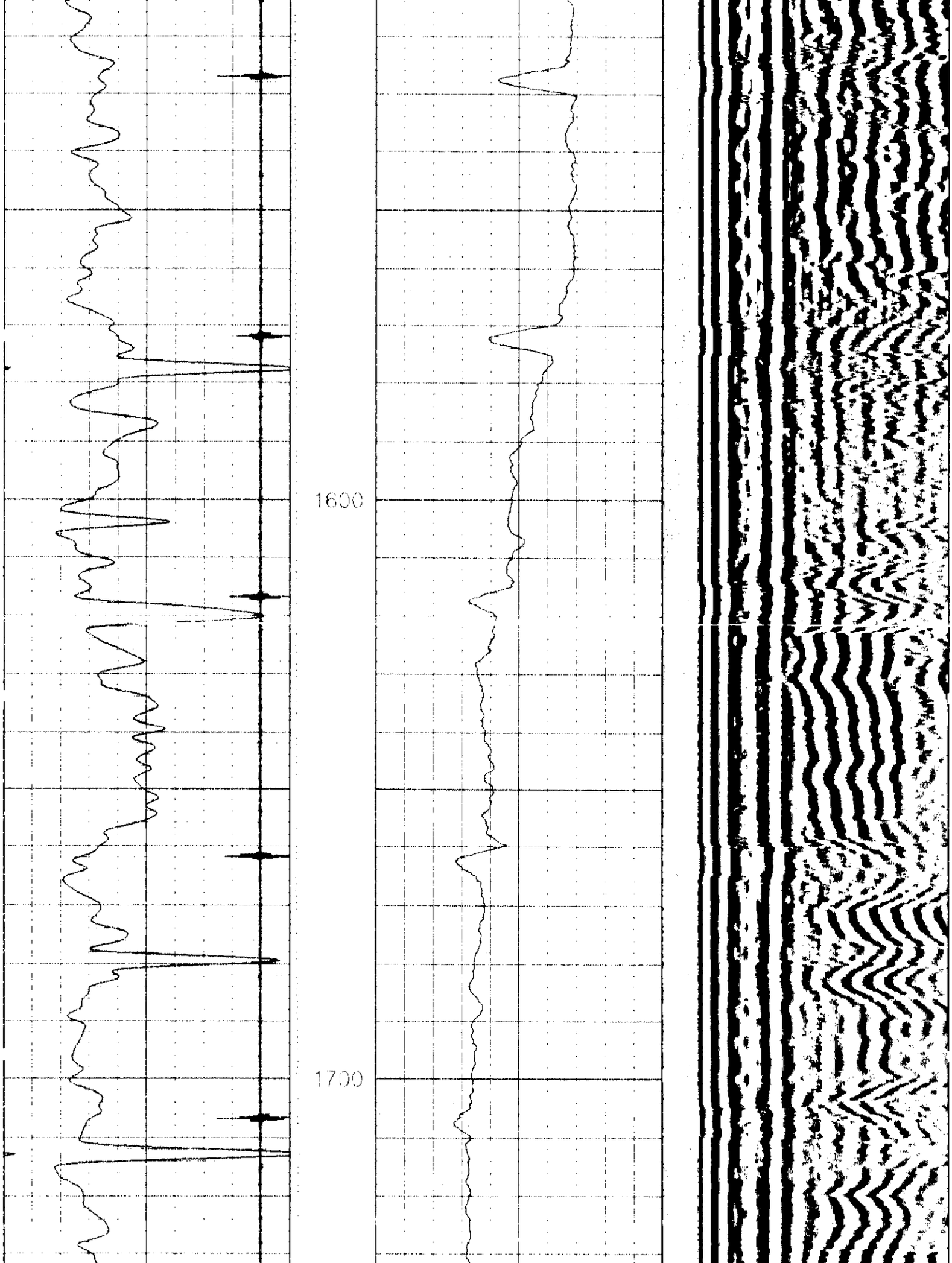
Mnemonic	Tool	Parameter Description	Value	Units
PERF	AN_HD	PERFORATED INTERVAL	NO	
TD	AN_HD	TOTAL DEPTH	0.	FT
GR_OK	UGR	DO GAMMA CALCULATIONS	YES	
CASED	UGR	IS THIS A CASED HOLE	YES	
CCLSEL	UCCL	CCL PROCESSING SELECTION	RAW	
CCLOFS	UCCL	CCL PERFORATION OFFSET	0	
BONDOK	CBL	DO BOND CALCULATIONS?	YES	
INVWVF	CBL	INVERT WAVEFORMS?	NO	
SELA	CBL	AMP RECEIVER SELECTED	NEAR	
SELM	CBL	MSG RECEIVER SELECTED	FAR	
SELT	CBL	TT RECEIVER SELECTED	NEAR	
S_GATE	CBL	SHOW PIPE GATE ON MSG ?	YES	
BI_OK	CBL	DO BOND INDEX CALCULATIONS?	YES	
BIMT	CBL	BONDINDEX CALCULATION METHOD	CHRT	
CASEOD	CBL	CASING DIAMETER (OD)	5.5	Inches
CASEWT	CBL	CASING WEIGHT	17.	Lbs/Ft.
CSTR	CBL	COMPRESSIVE STRENGTH	1000.	PSI
ISFOAM	CBL	IS THE CEMENT TYPE FOAM?	NO	
ISMUD	CBL	IS FLUID IN HOLE DRILLING MUD?	NO	
MUDWT	CBL	BOREHOLE FLUID WEIGHT	9.5	Pounds/Gal.
TTLVL	CBL	TRAVEL TIME THRESHOLD MV.?	5.	
GADT	CBL	PIPE GATE WIDTH (USEC) ?	40	USEC
TDU_OK	TDUB	USE TDU DISPLAY CONTROLS?	YES	

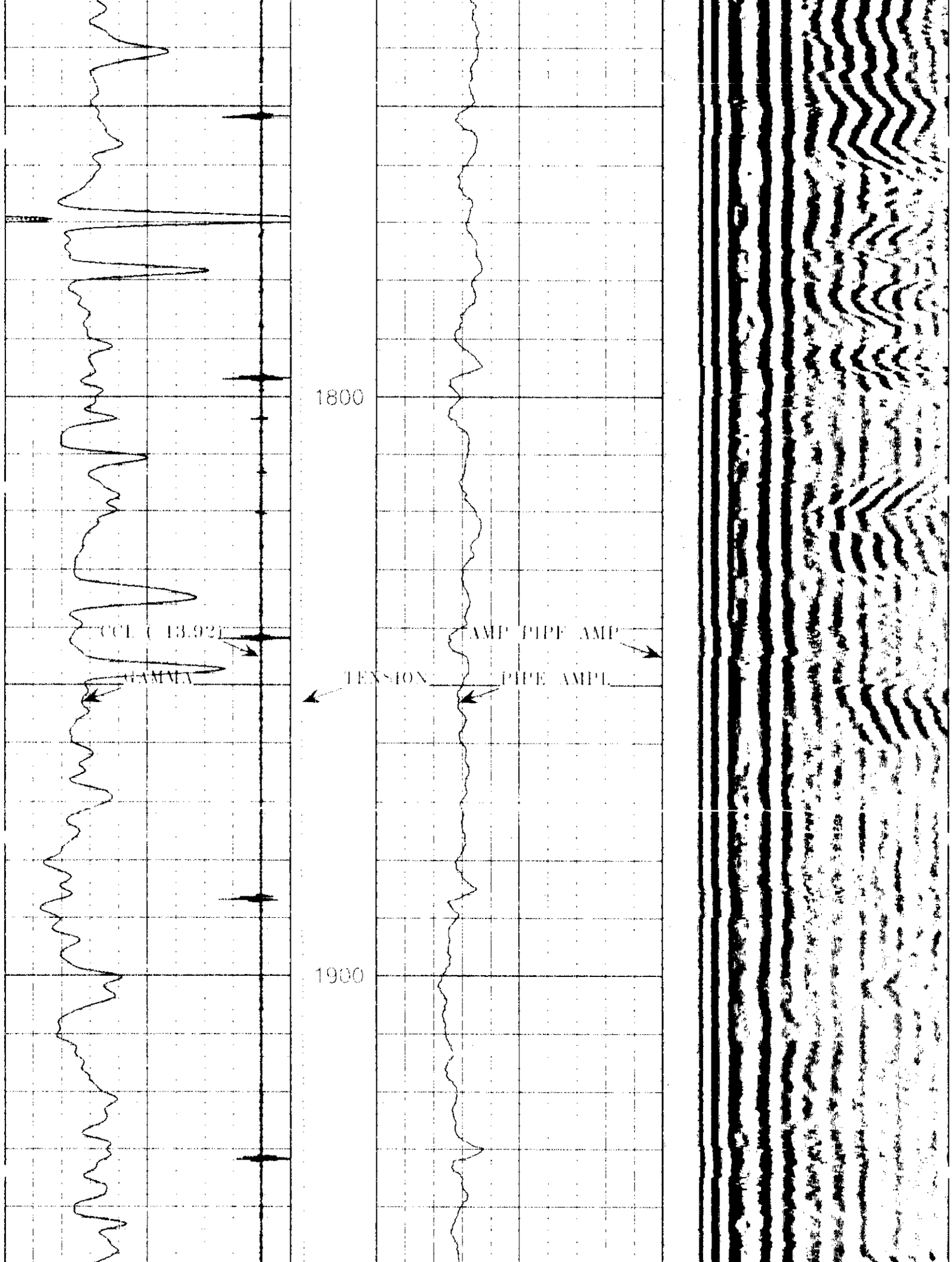
MAIN LOG

HALLIBURTON

EXCELL-2000


GAMMA
GAMMA API
0
150
CCL (13.92)
0
3650
TENSION
POUNDS
1 240
Ft
PIPE AMPL
0
100
AMP PIPE AMP
0
10
MSG
200
1200
300
50
CCL (13.92)
TENSION
AMP PIPE AMP
GAMMA
PIPE AMPL
1400
1500


1600
1700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1900
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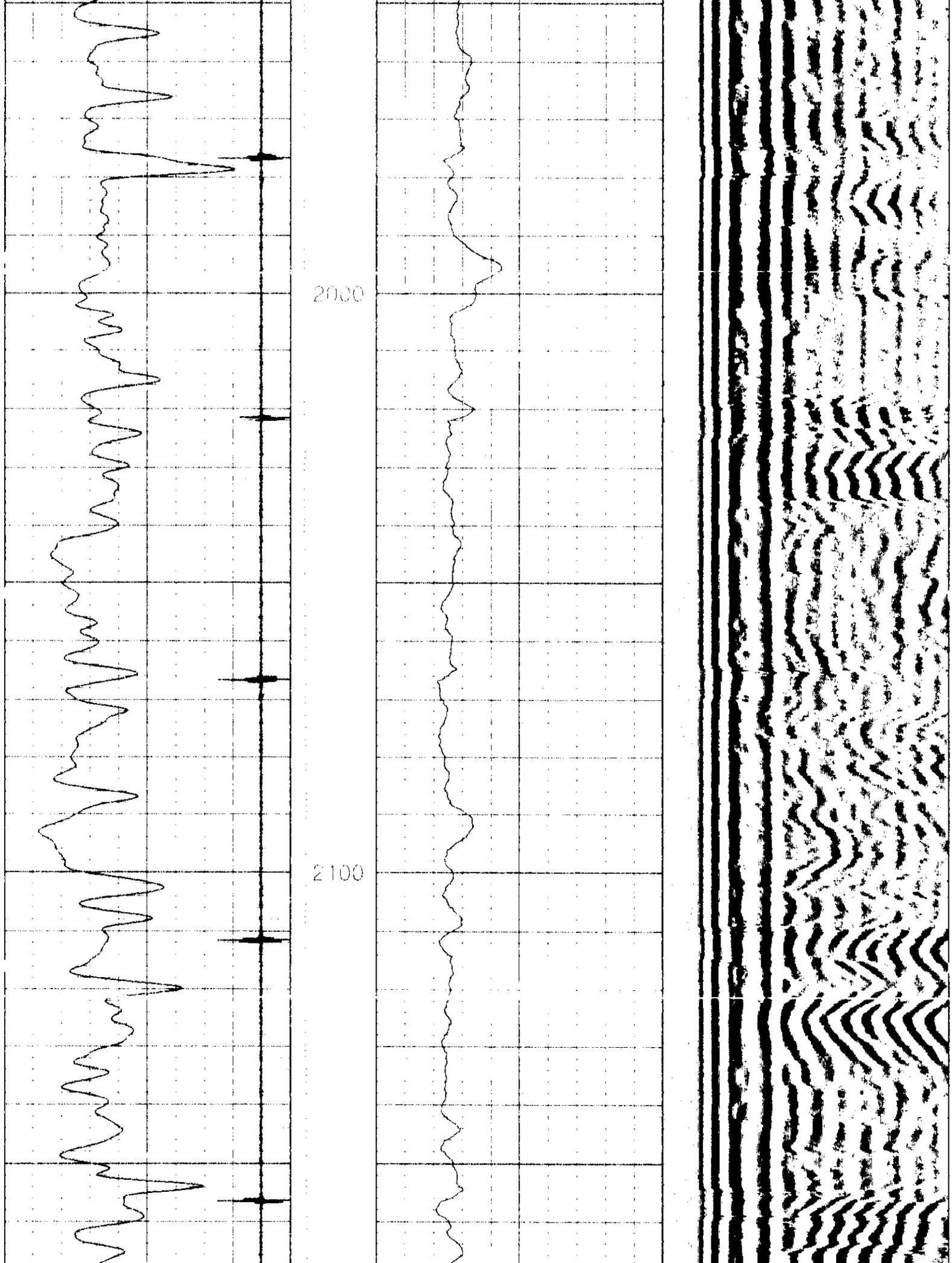
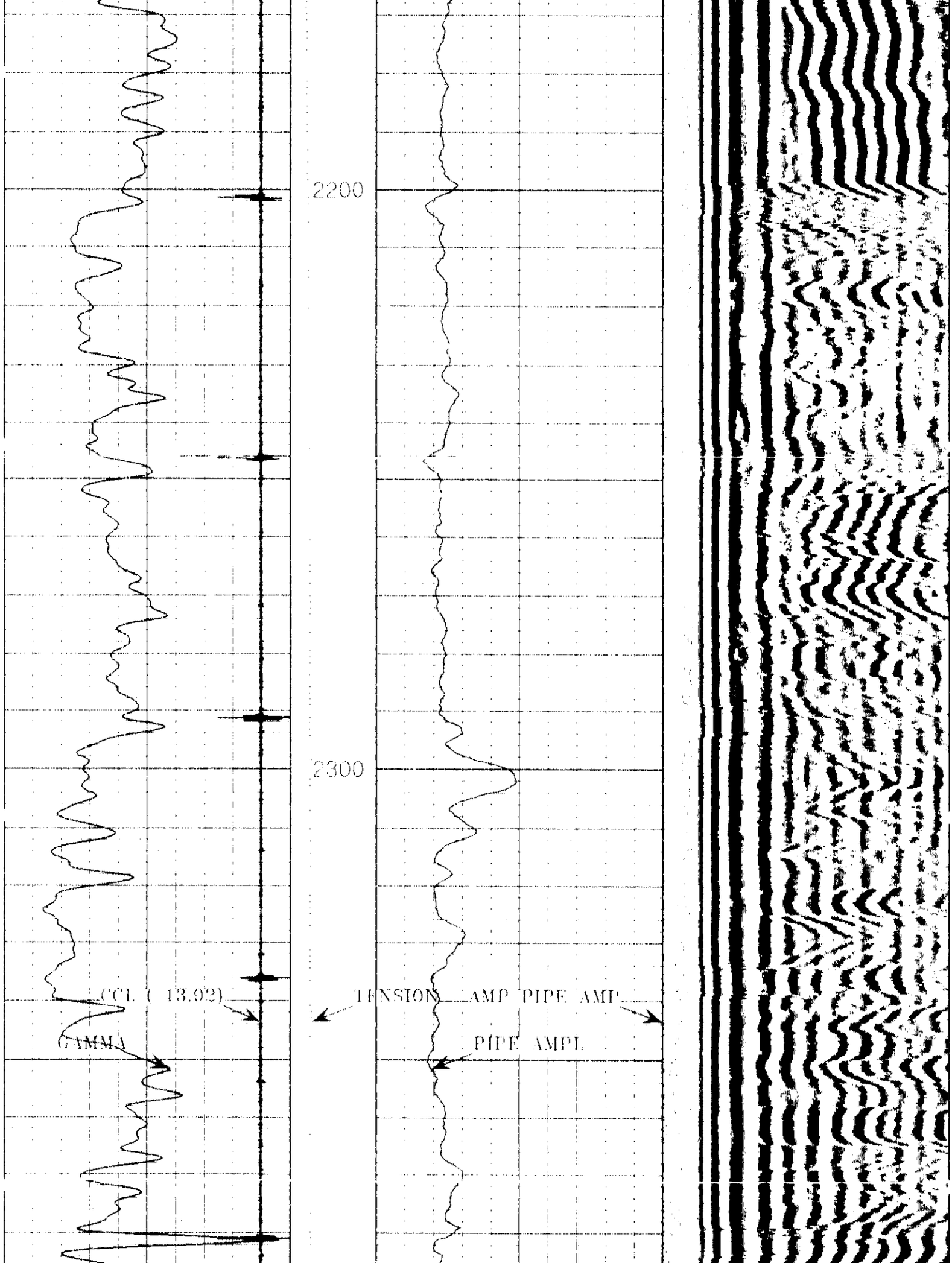
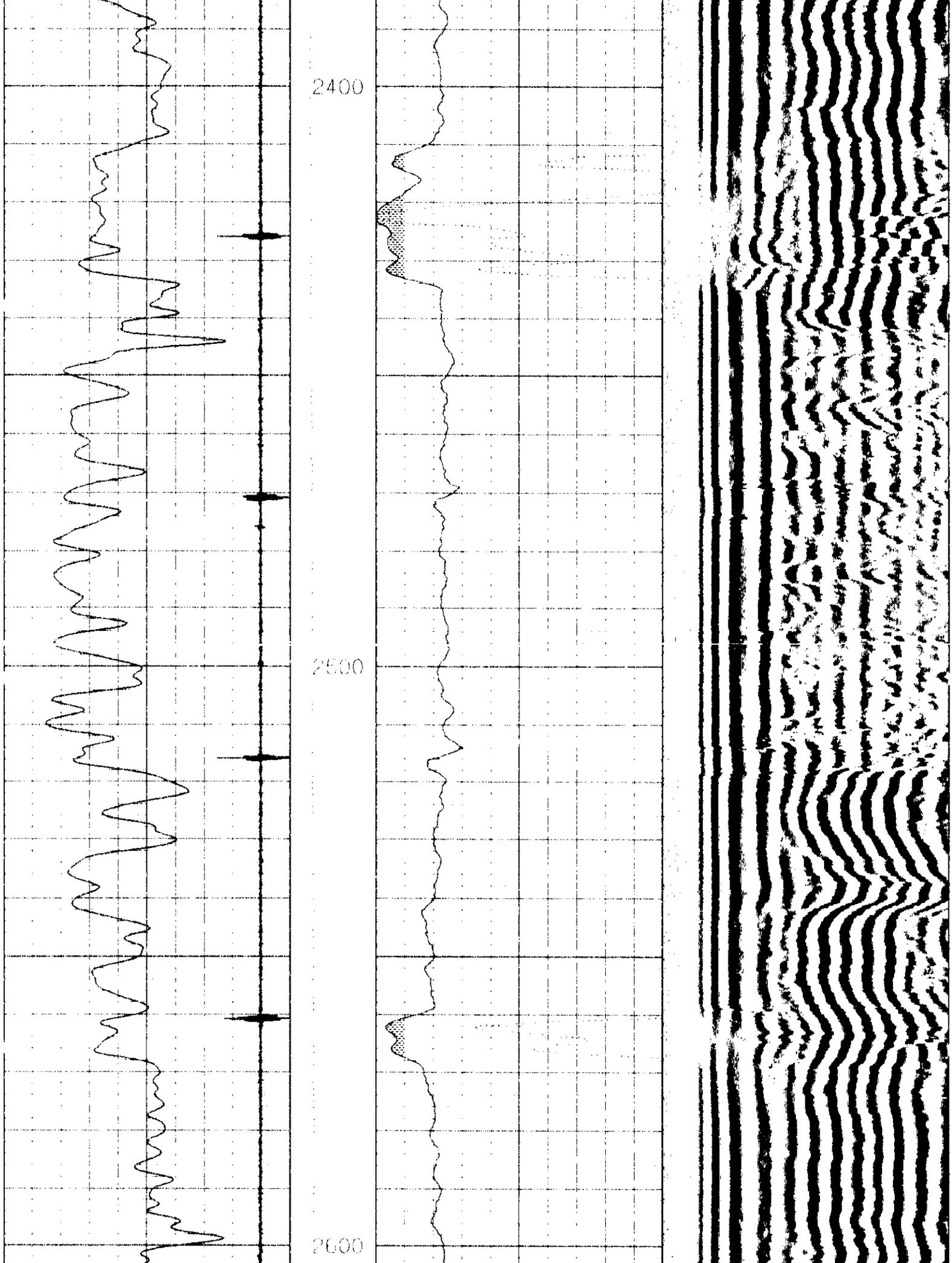
GAMMA
TENSION
AMP PIPE AMP
PIPE AMPL


2000
2100


2200
2300
(CCL (13.92)
TENSION
AMP PIPE AMP
GAMMA
PIPE AMPL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2500
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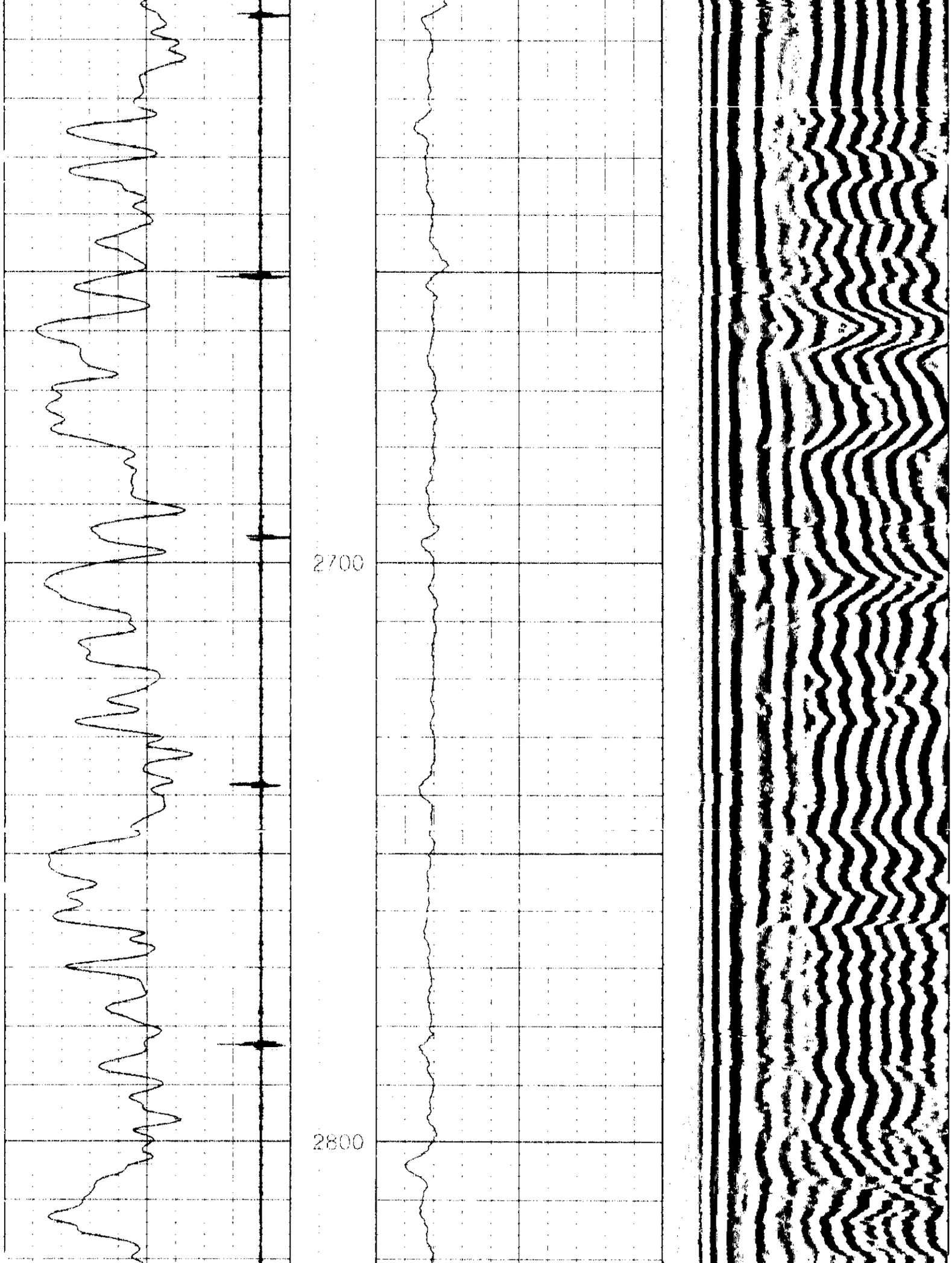
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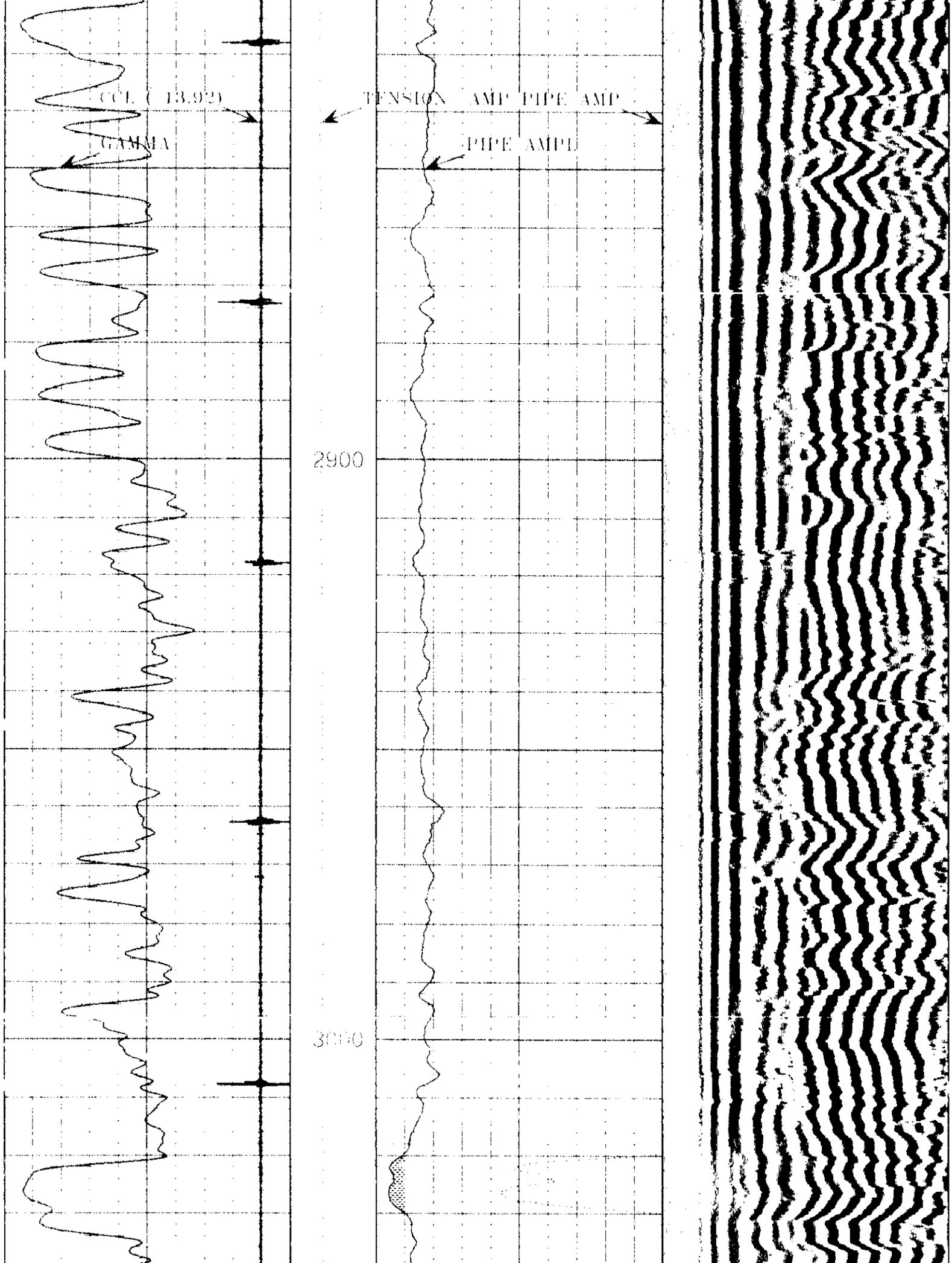
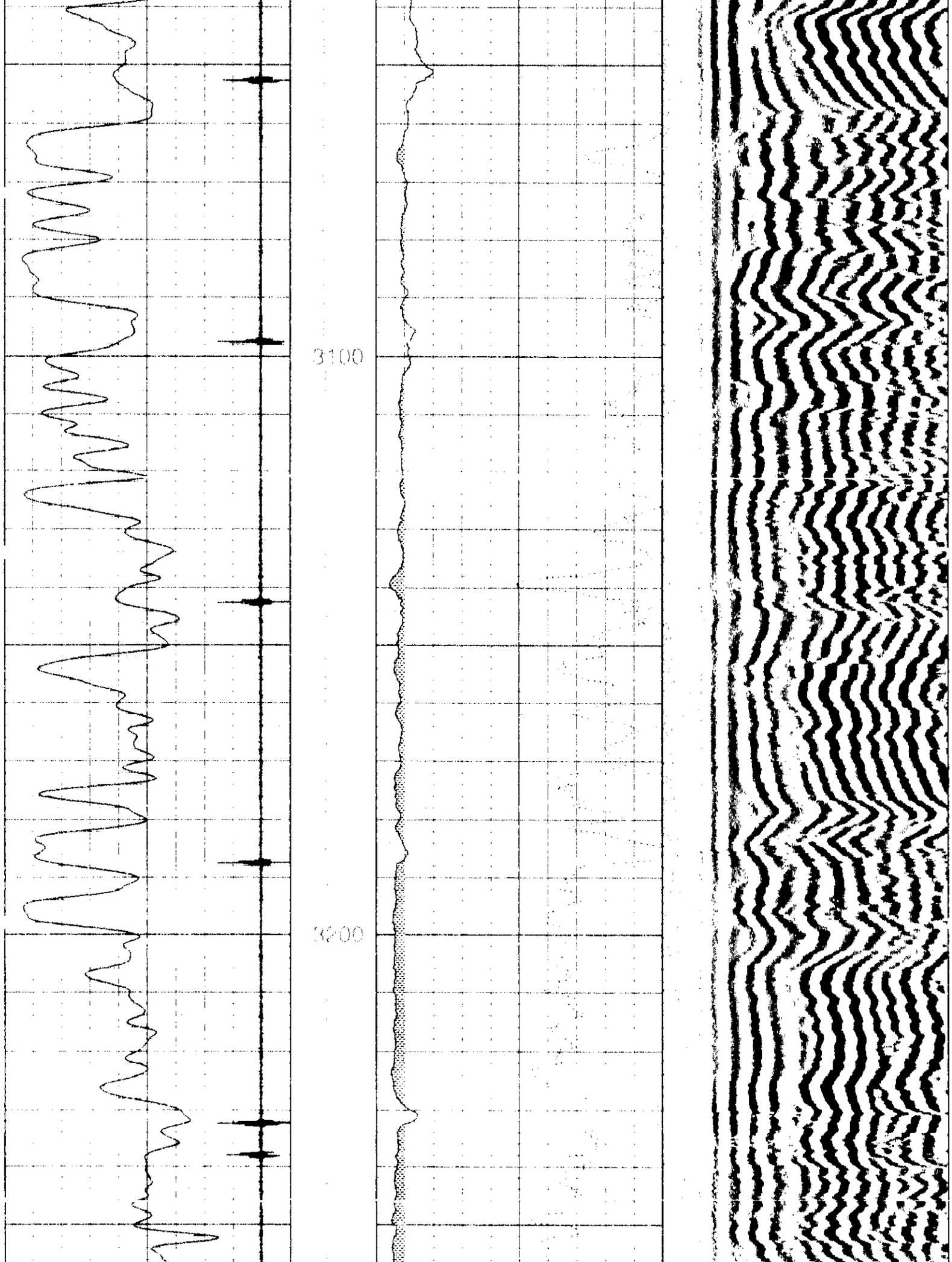
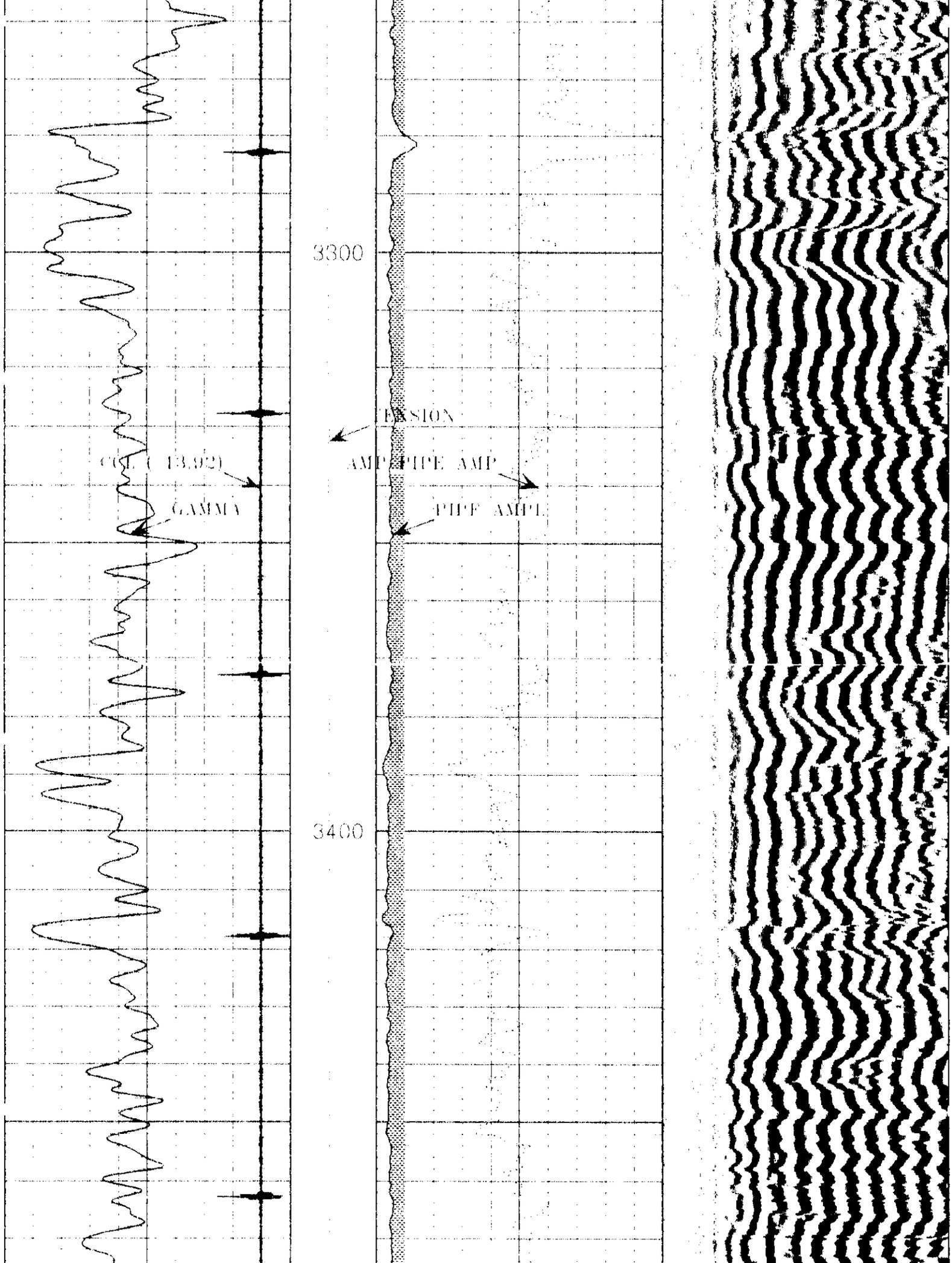

CCL (13.92)
GAMMA
TENSION
AMP
PIPE
AMP
PIPE AMPL
2900
3000


3100
3200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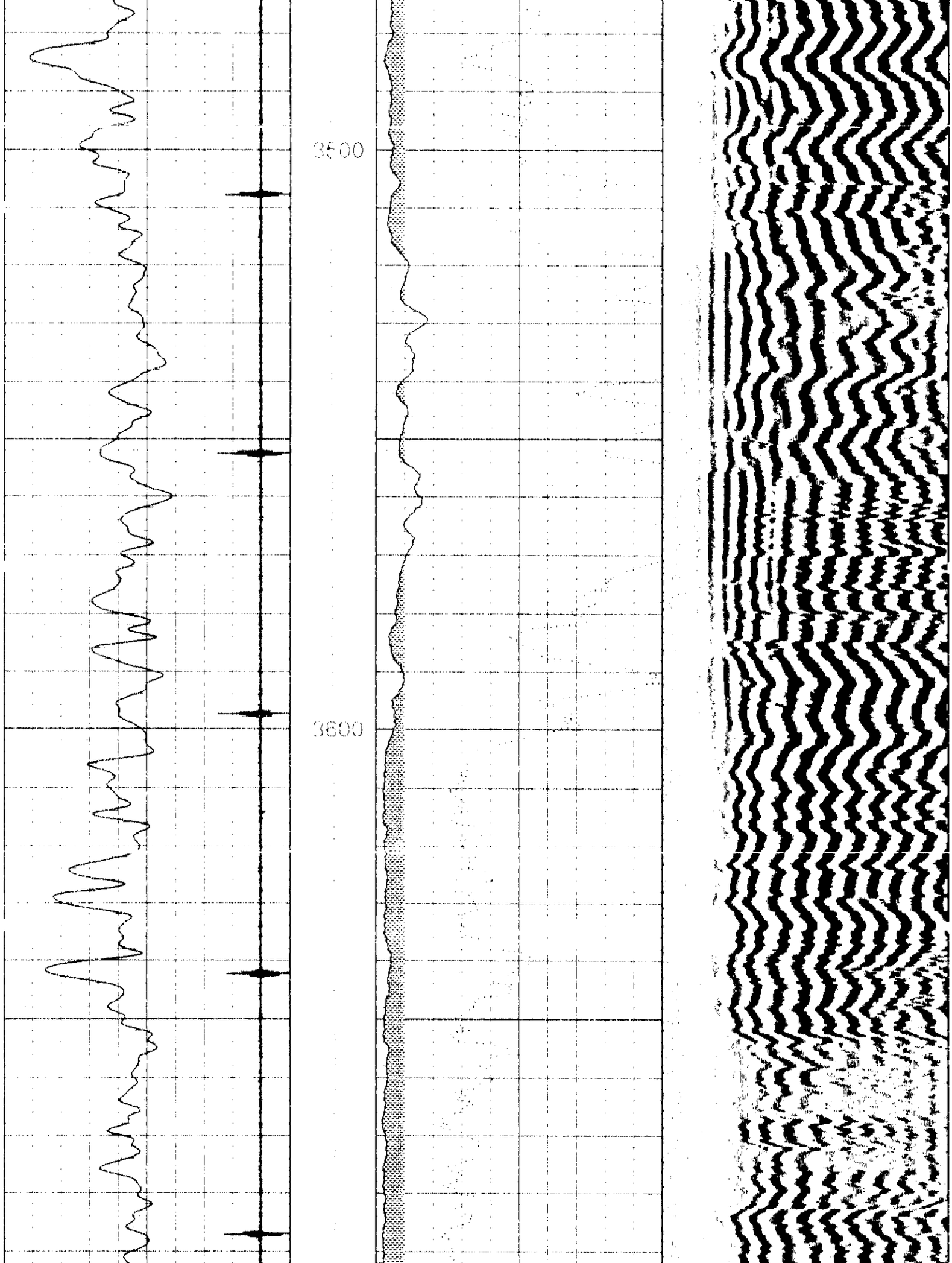
TENSION
CCL (13.92)
AMP
PIPE AMP
GAMMA
PIPE AMPL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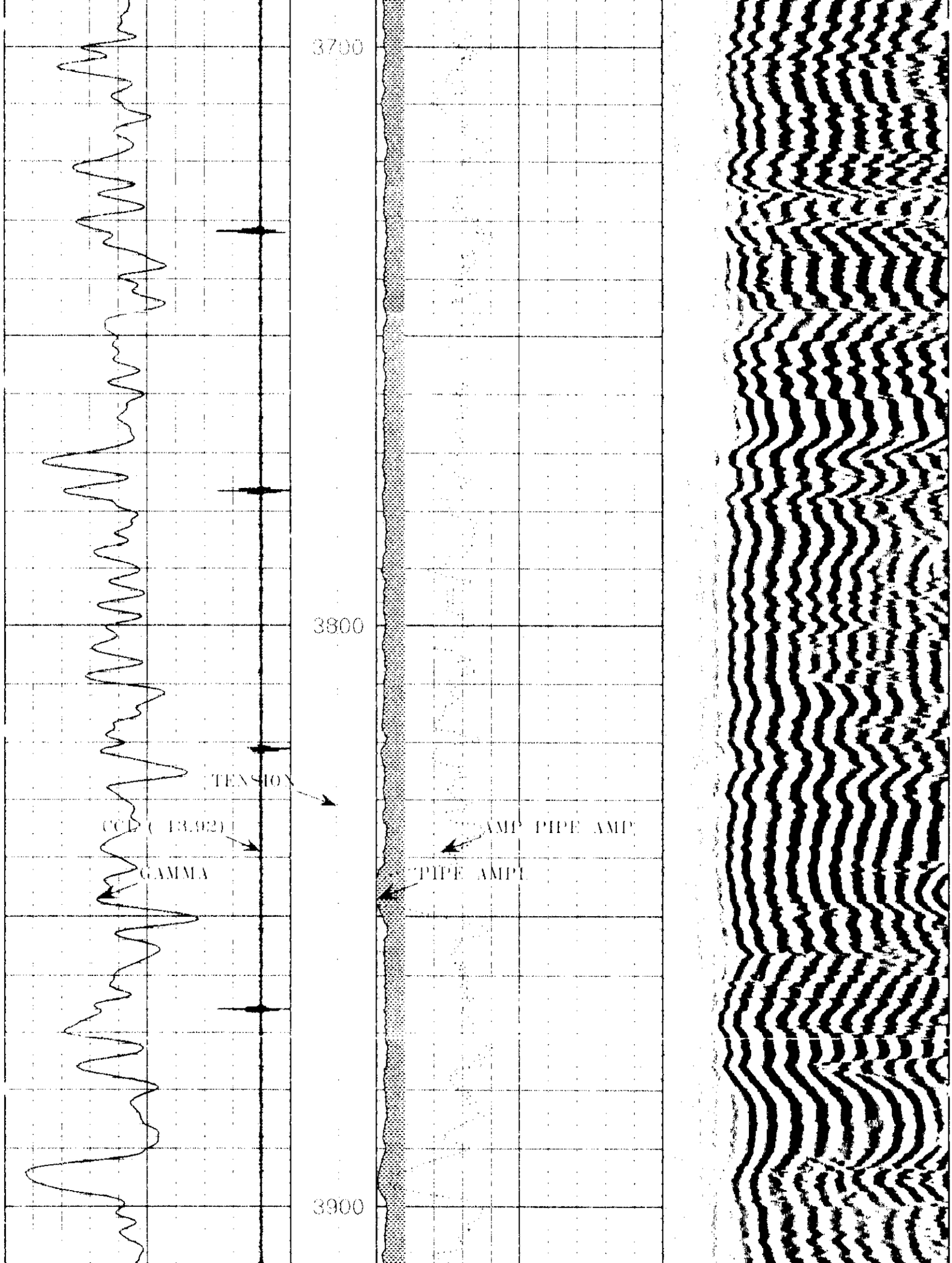
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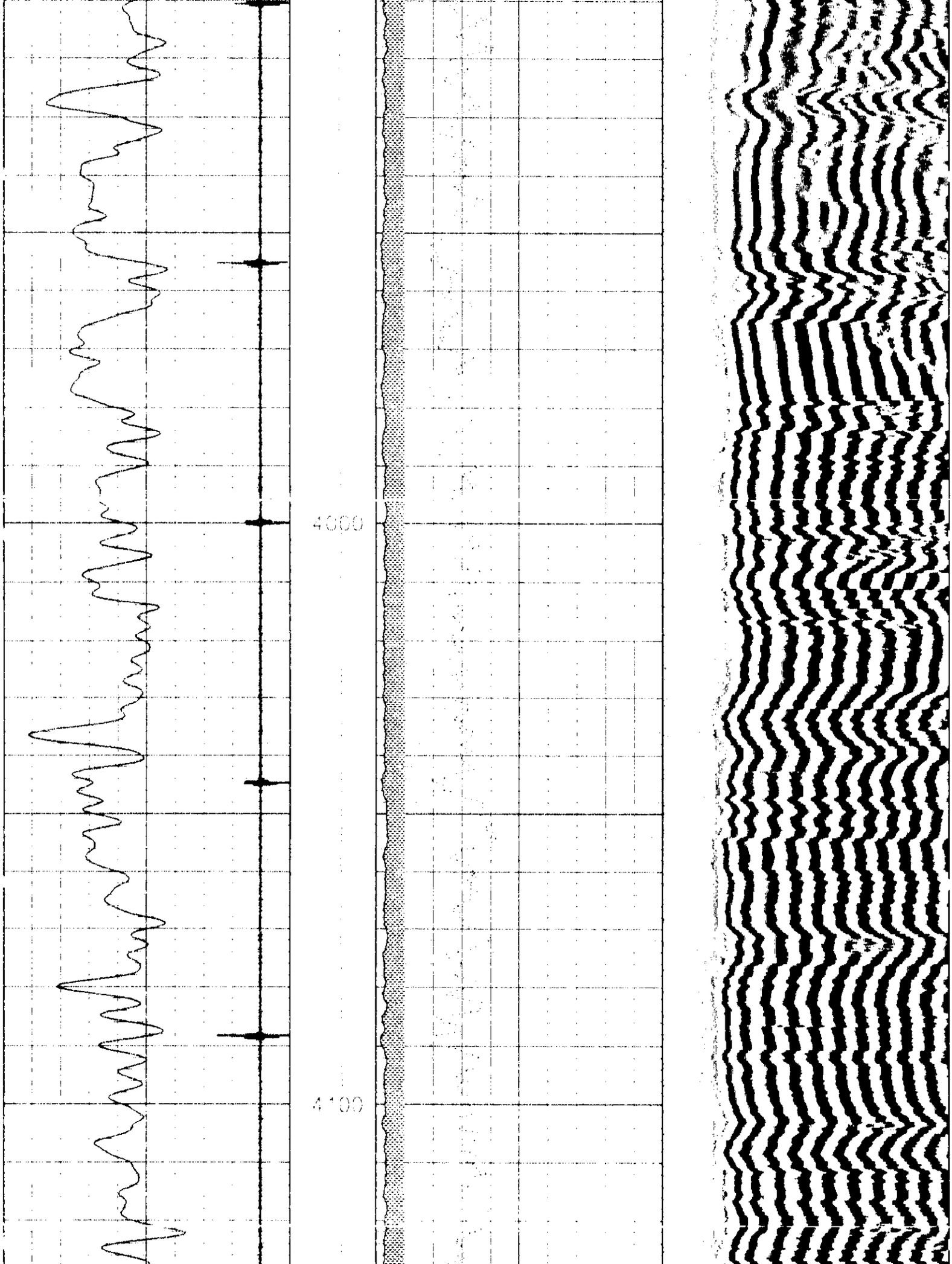
3800
3900
TENSION
CCL (13.92)
GAMMA
AMP PIPE AMP
PIPE AMP


4000
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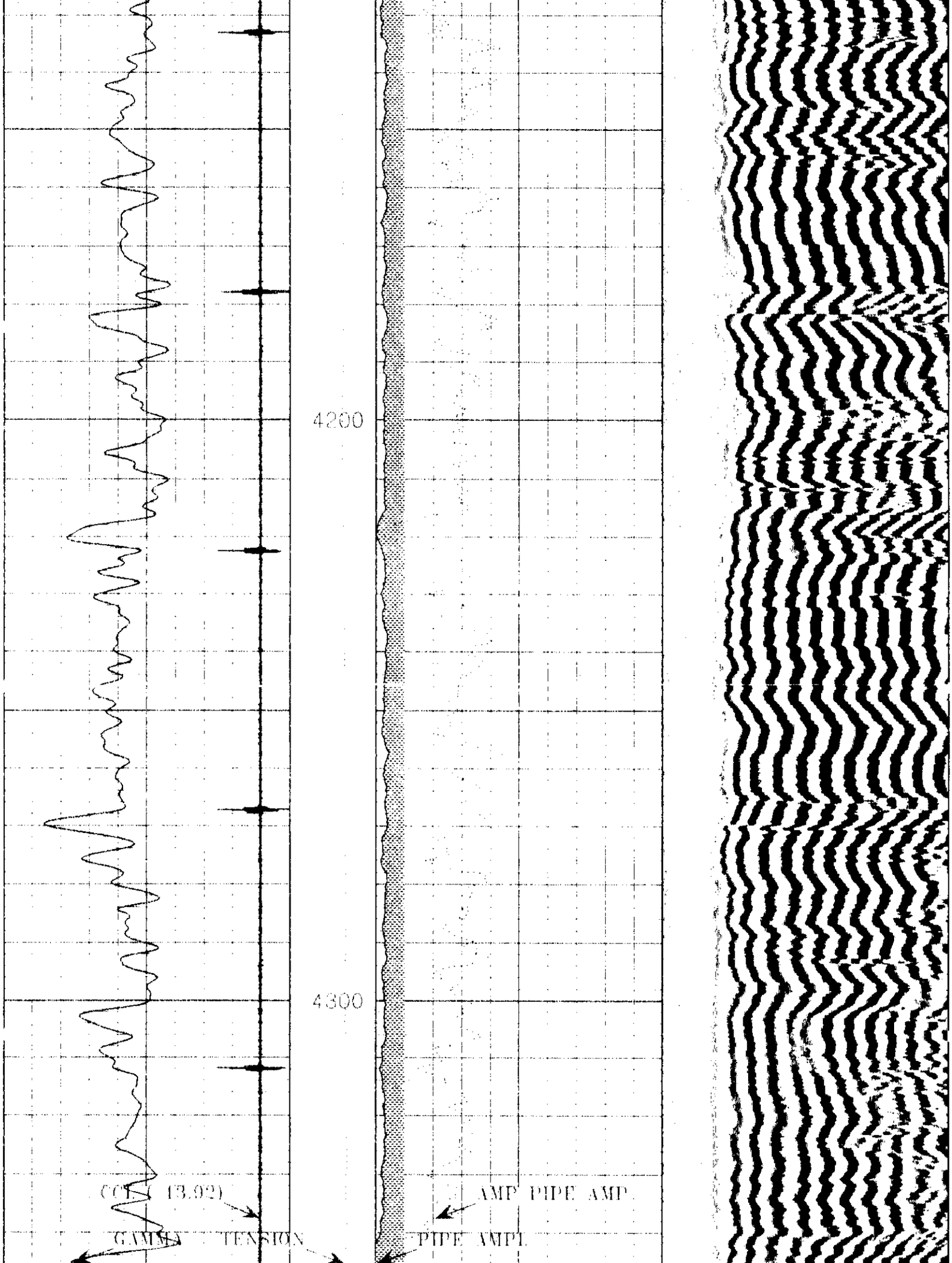
4200
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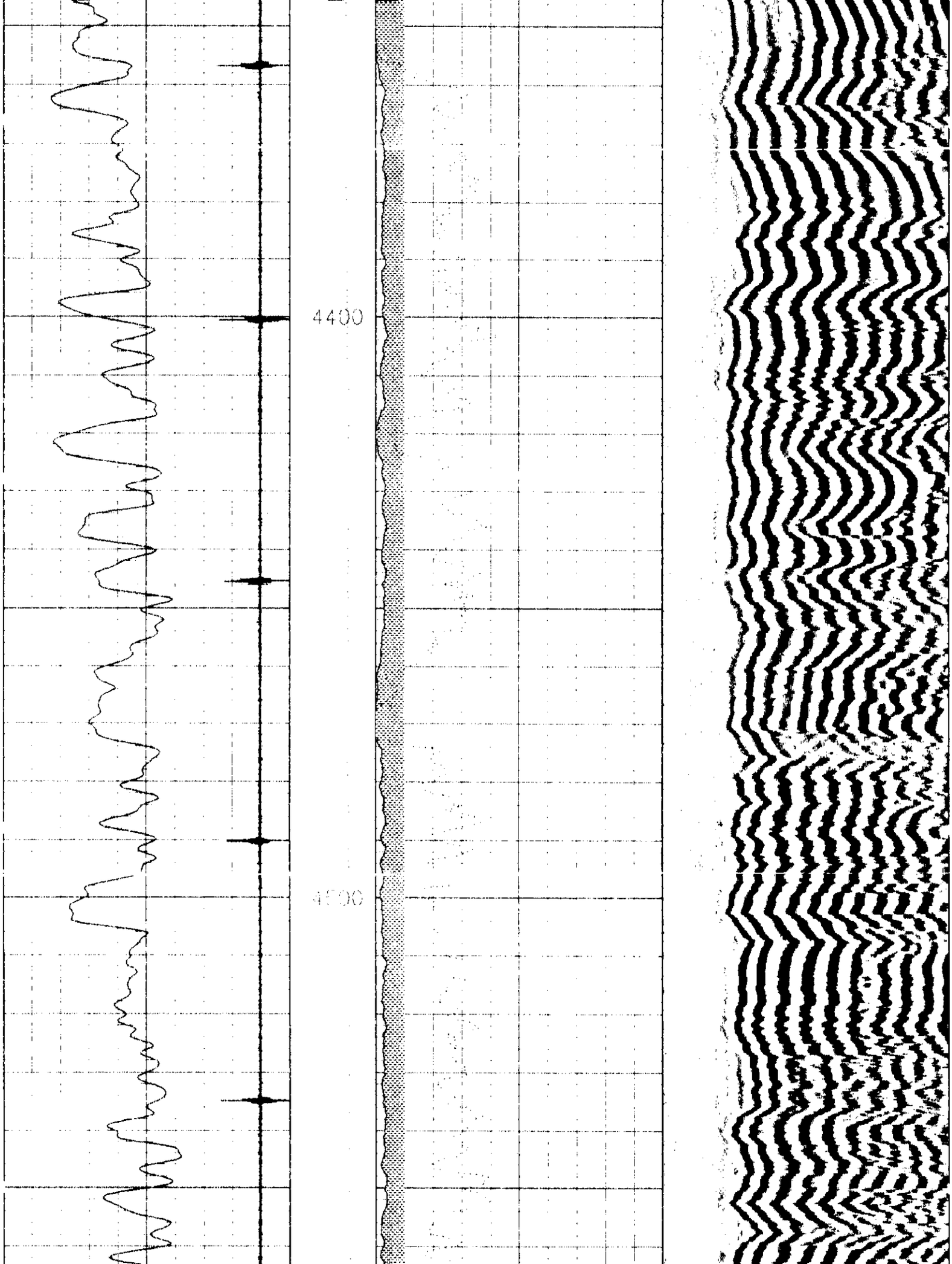
GAMMA
TENSION
AMP PIPE AMP
PIPE AMPL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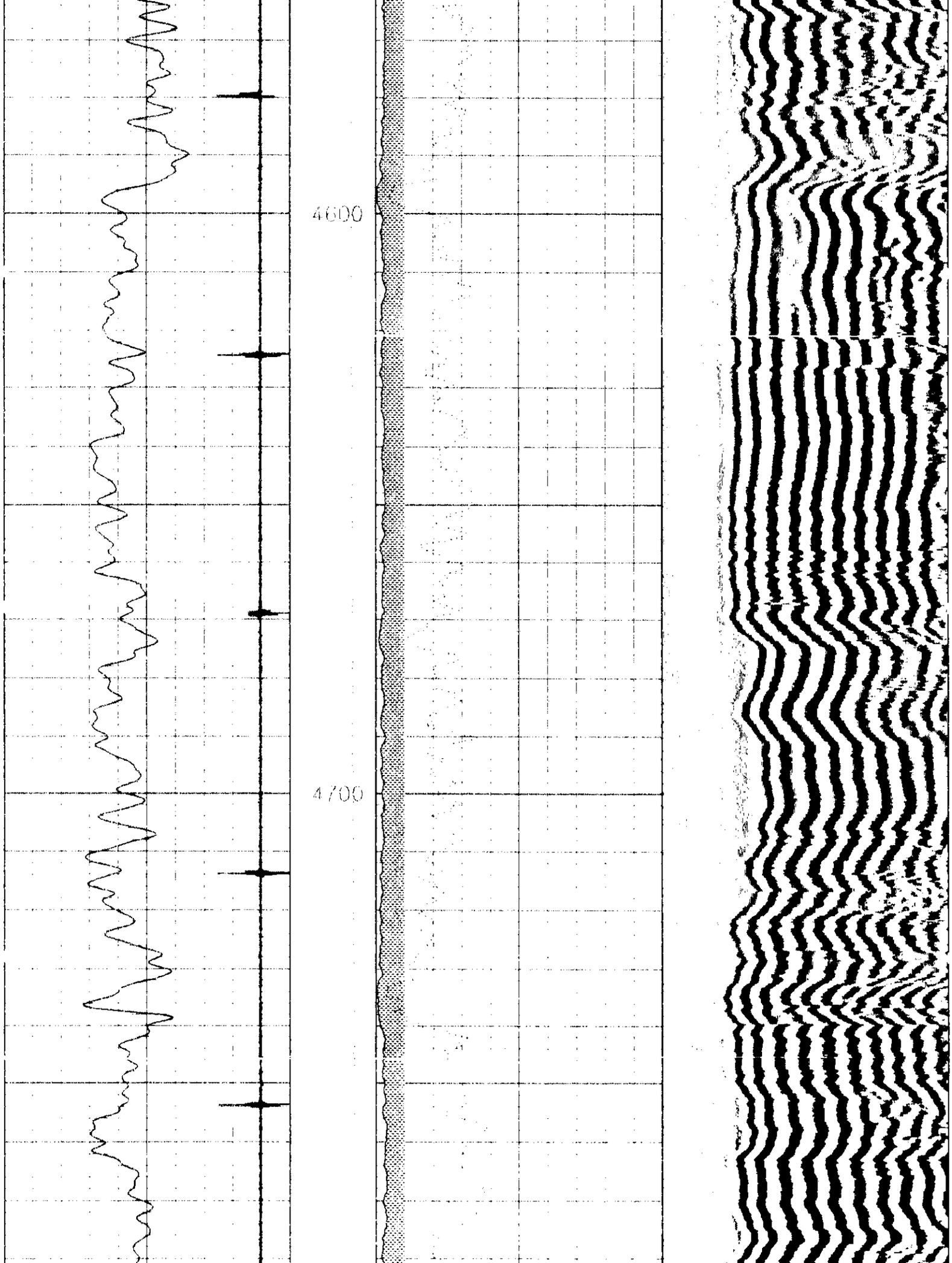
4500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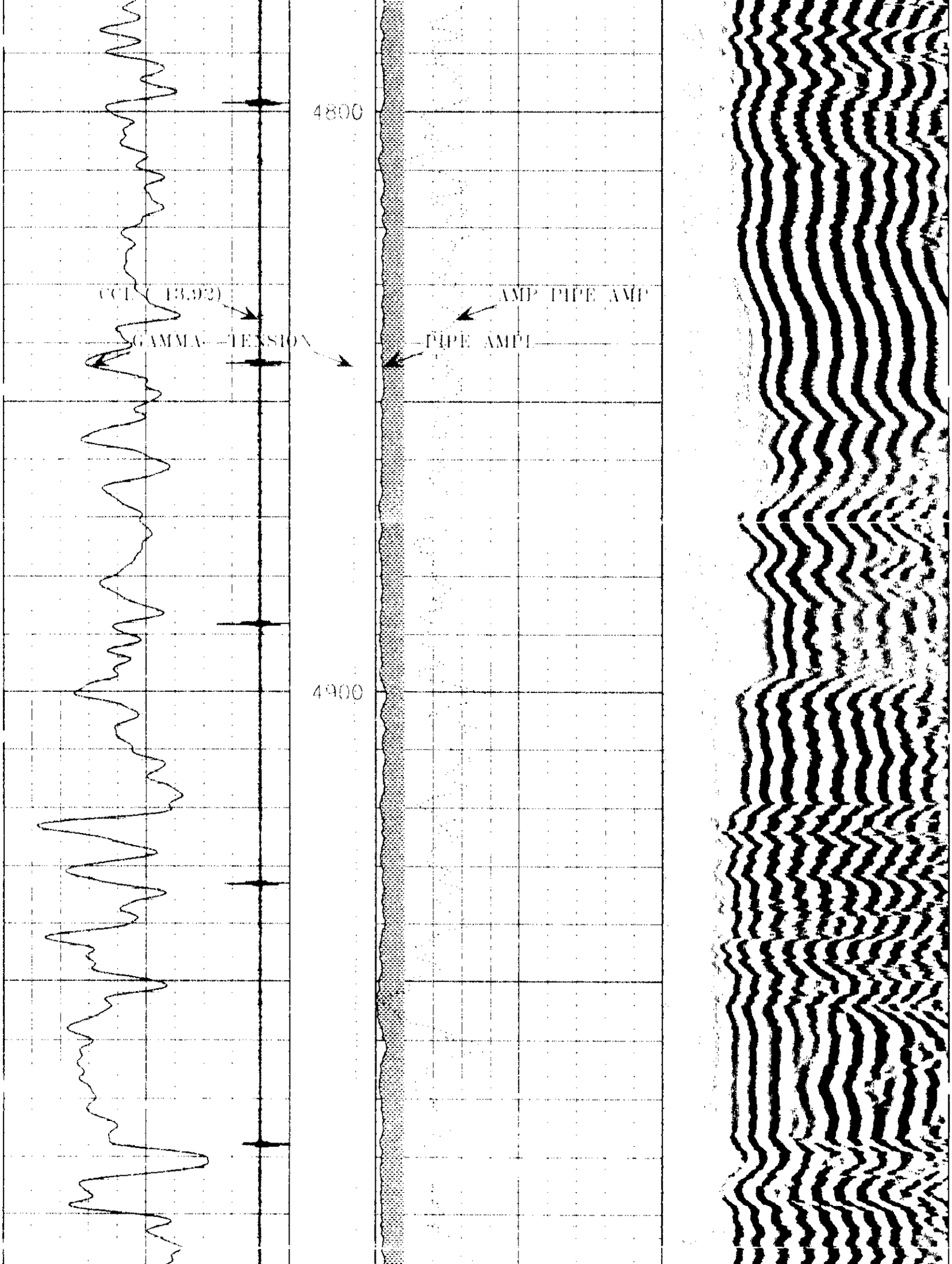
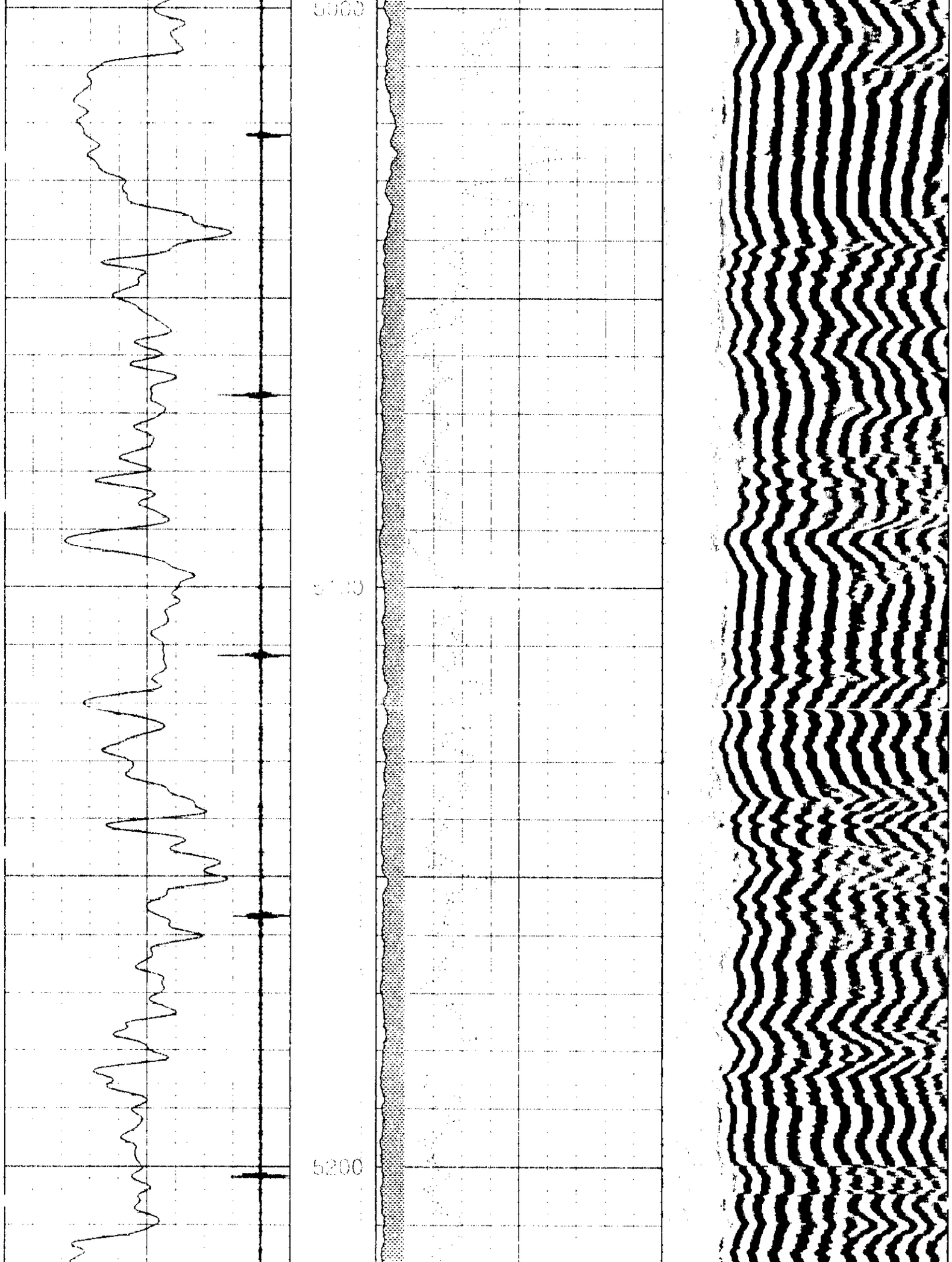

4800
CCL (13.93)
AMP PIPE AMP
GAMMA TENSION
PIPE AMPL
4900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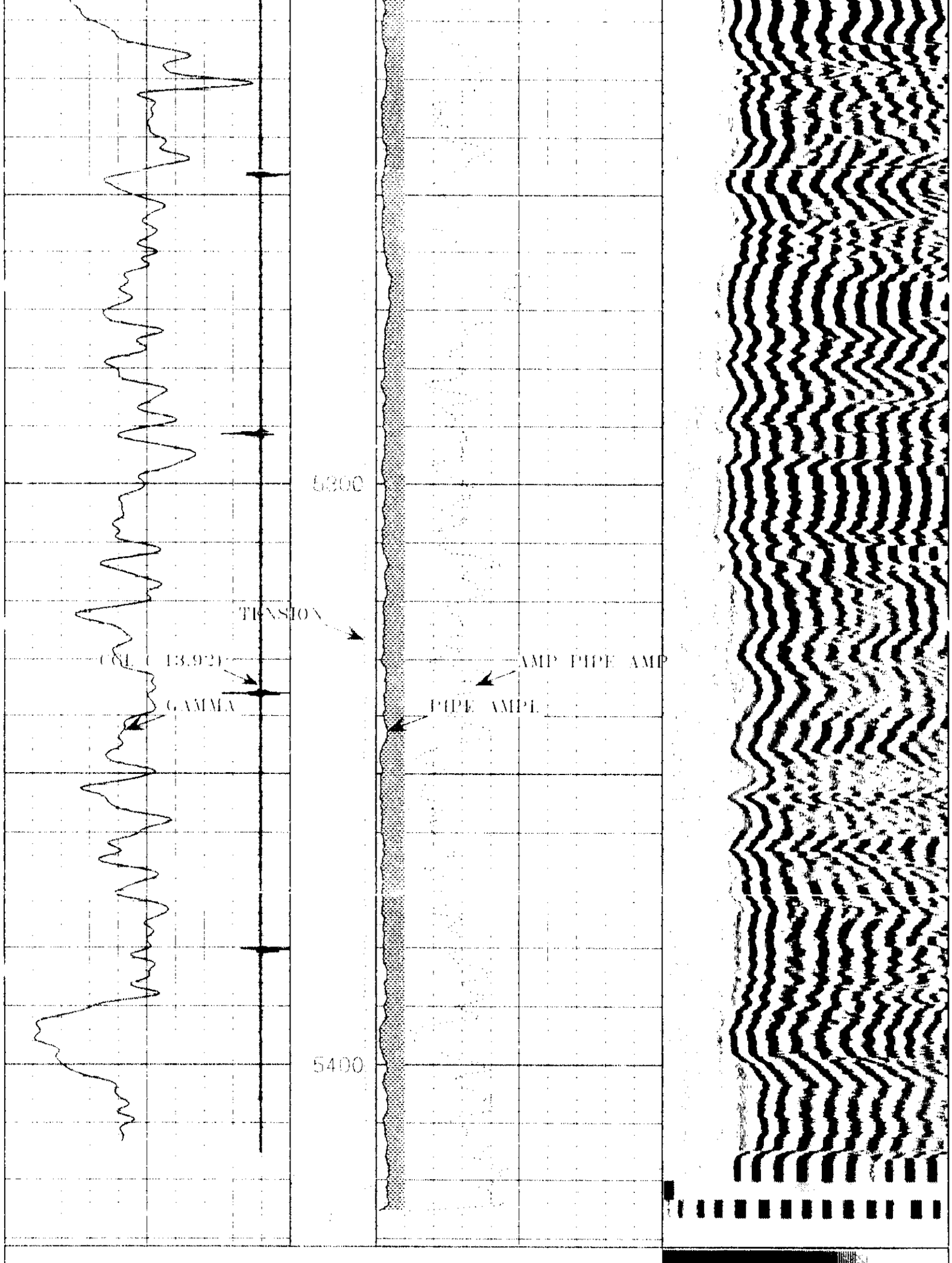
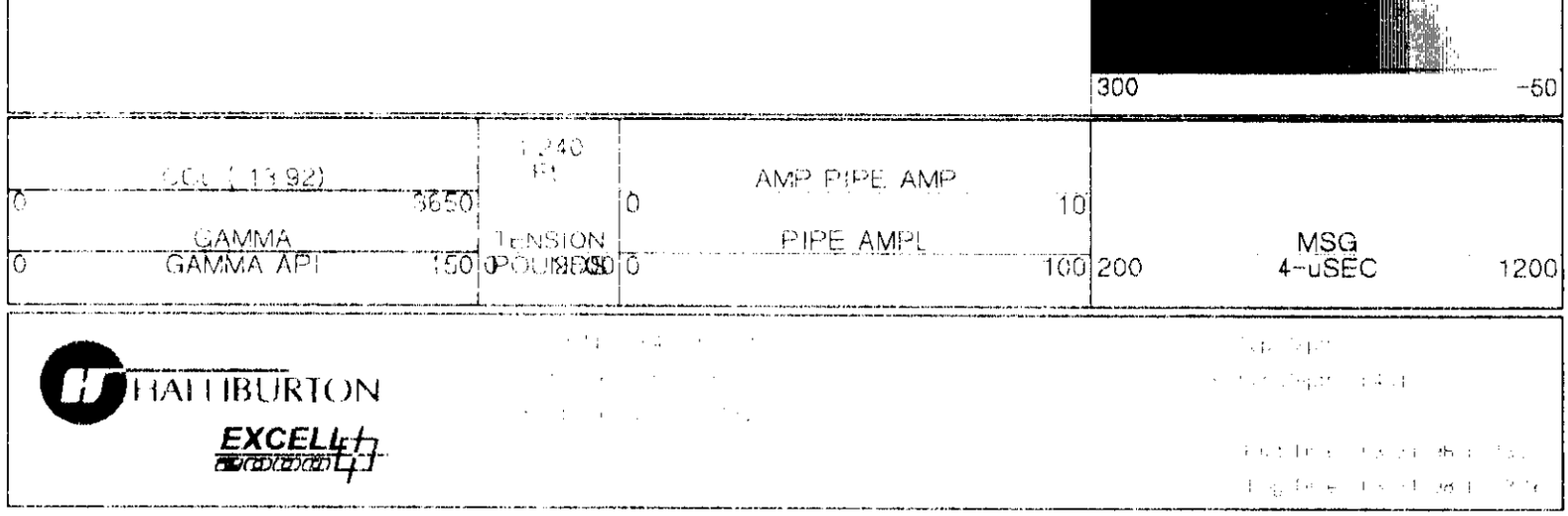
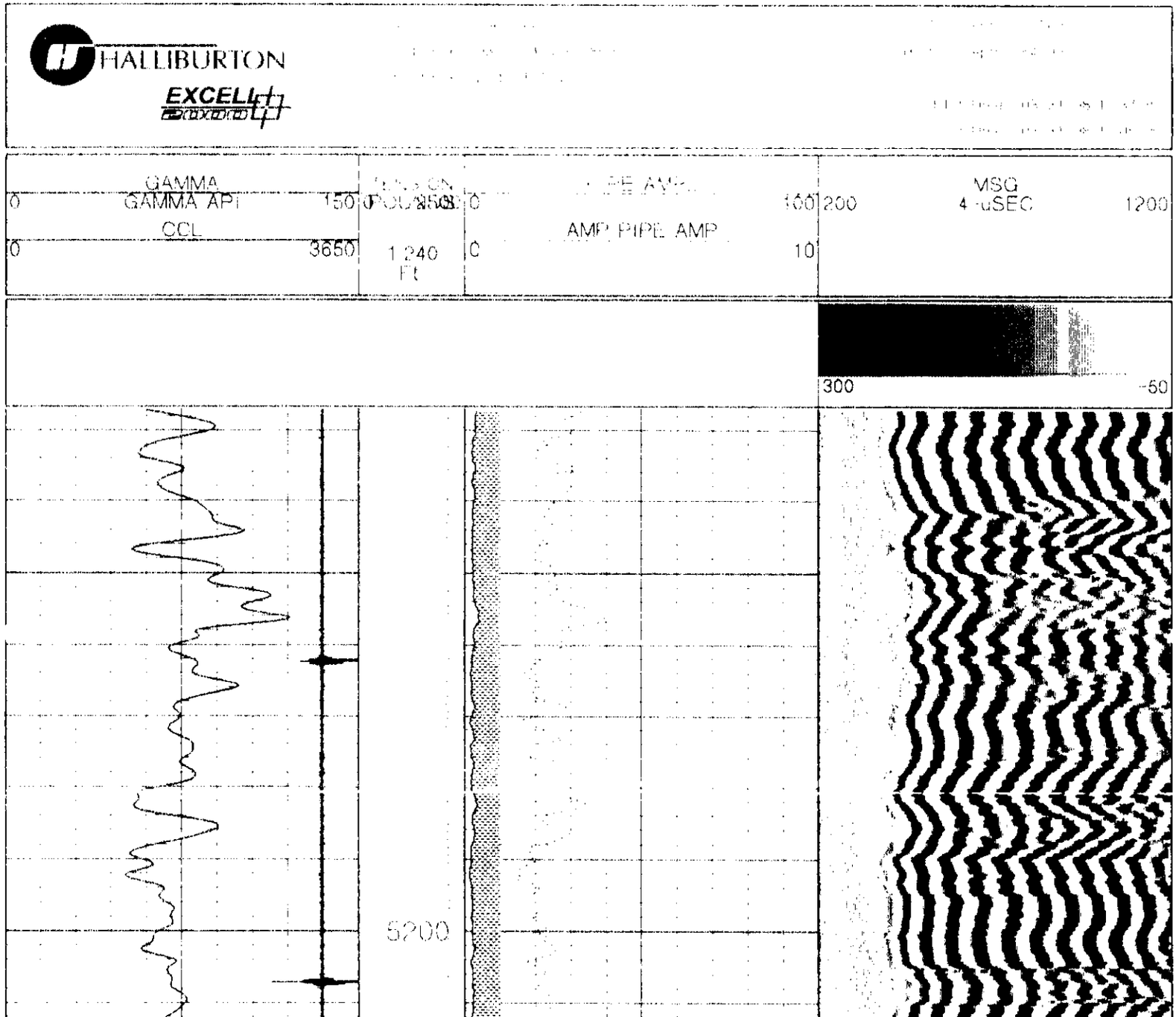
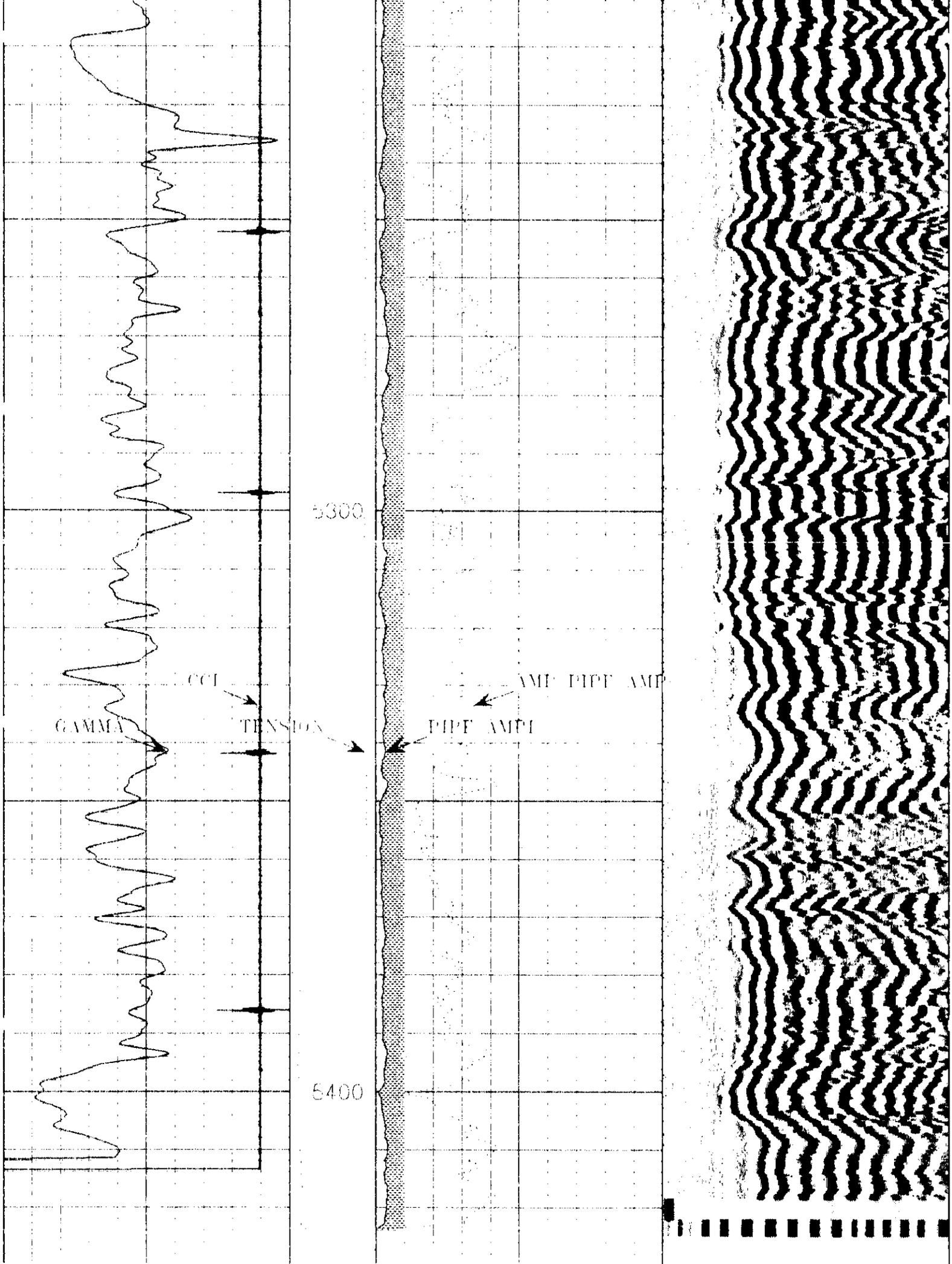

6300
TENSION
COL (13.92)
GAMMA
AMP PIPE AMP
PIPE AMPL
5400



MAIN LOG

REPEAT SECTION




5300
5400
CCL
GAMMA
TENSION
PIPE AMPL
AMP PIPE AMP

CCL 0 3650	1240 FT	AMP PIPE AMP 0 10		
GAMMA 0 GAMMA API 150	TENSION 0 POUNDS 1000	PIPE AMPL 0 100	200	MSG 4-uSEC 1200

HALLIBURTON

EXCELL 2000

REPEAT SECTION

EXCELL-2000 Calibration Report
Date: 31-Mar-1998 09:33

DC NATURAL GAMMA SHOP CALIBRATION SUMMARY

PERFORMED: 23-Mar-1998 15:50 LAST SHOP CALIBRATION: 23-Feb-1998 16:38
SERIAL NUMBER: 33108 MODEL: UGR-HA
TRUCK UNIT NUMBER: 7609 PROGRAM VERSION: 3.40
PERFORMED BY: CLIFF EDMUNDS

	MEASURED	CALIBRATED	UNITS
BACKGROUND	-27467	82	GAPI
BACKGROUND+CALIBRATOR	-98256	294	GAPI
CALIBRATOR	-70788	212	GAPI
GAPI CONVERSION FACTOR	0.351		GAPI/CPS

DC NATURAL GAMMA BEFORE SURVEY FIELD CHECK SUMMARY

PERFORMED: 23-Mar-1998 15:53 LAST SHOP CALIBRATION: 23-Mar-1998 15:50

	SHOP	FIELD	UNITS
BACKGROUND	82	83	GAPI
BACKGROUND+CALIBRATOR	294	291	GAPI
CALIBRATOR	212	208	GAPI

CEMENT BOND TOOL - CBT-HA SHOP CALIBRATION SUMMARY

PERFORMED: 31-Mar-1998 09:31 LAST SHOP CALIBRATION: 31-Mar-1998 09:28
SERIAL NUMBER: HA046 MODEL: CBT-HA
TRUCK UNIT NUMBER: 7609 PROGRAM VERSION: 3.40
PERFORMED BY: CLIFF EDMUNDS

	MEASURED	CALIBRATED	UNITS
ZERO PIPE AMP NEAR	*******	3.09	API PU
PIPE REFERENCE AMP NEAR	104.16	71.93	API PU
ZERO PIPE AMP FAR	226.01	0.00	API PU
PIPE REFERENCE AMP FAR	69.02	71.93	API PU

PIPE REFERENCE TT N	218.19	USECS

CEMENT BOND TOOL - CBT- HA BEFORE SURVEY FIELD CHECK SUMMARY

PERFORMED: 31-Mar-1998 09:33 LAST SHOP CALIBRATION: 31-Mar-1998 09:31

	FIELD BEFORE MEASURED	FIELD BEFORE CALIBRATED	UNITS
BOND PIPE AMP	2.99	3.09	API PU
FREE PIPE AMP	70.56	71.93	API PU

EXCELL-2000 Calibration Summary Table

Date: 31-Mar-1998 09:33

Service or Signal	Shop	Before	After	Change	Tolerance
GAMMA	212	208		4	+/- 9.0
FREE PIPE AMP	71.926	71.926		-1.365	+/- 5

EXCELL-2000 CUSTOMER EVENT LOG

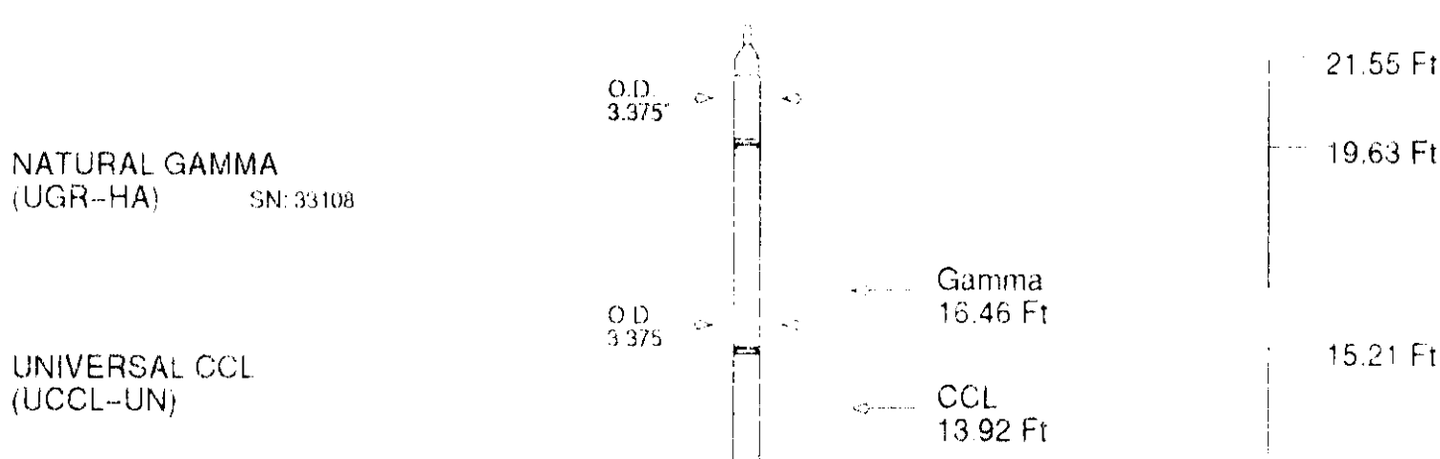
Date: 31-Mar-1998 11:33

Event	Time	Section	Depth	Event Description	Data	Repeat
0001	09:23:20	0	0.00	Engineer is. CLIFF EDMUNDS		
0002	09:33:41	0	5181.16	Exiting EXCELL-2000 tool calibrations.	FIELD	
0003	09:37:43	1	579.25	Begining new Uplog section.		1
0004	09:39:46	1	491.25	End logging section		1
0005	09:43:45	1	523.83	Exiting EXCELL-2000 tool calibrations.	FIELD	
0006	10:05:06	2	5430.75	Begining new Uplog section.		2
0007	10:10:36	2	5125.25	End logging section		2
0008	10:13:17	3	5432.25	Begining new Uplog section.		3
0009	11:20:13	3	1324.91	End logging section		3

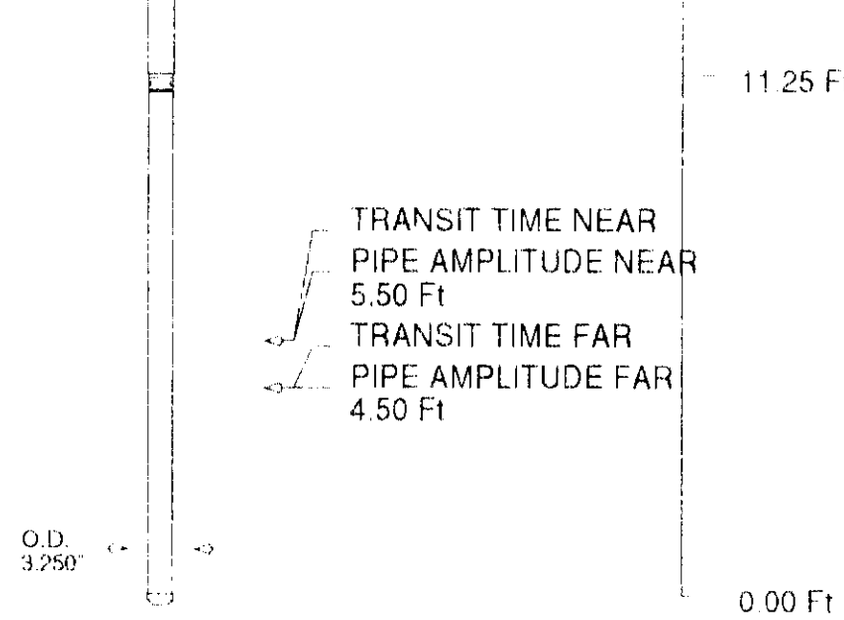
HALLIBURTON

CEMENT BOND LOG

excell 2000 Tool String Diagram



CEMENT BOND TOOL
(CBT-HA) SN: HA046



Tool Mnemonic	Length (Ft)	Weight In Air (lbs)	Logging Speed (Ft/min)
UGR-HA	4.42	10.00	200.00
UCCL-UN	3.96	10.00	N/A
CBT-HA	11.25	215.00	30.00
Tool String	19.63	235.00	30.00

COMPANY	PETROGLYPH OPERATING COMPANY		
WELL	UTE TRIBAL #31-05		
FIELD	ANTELOPE CREEK		
COUNTY	DUCHESNE	STATE	UT.

HALLIBURTON

CEMENT
BOND
LOG

RECEIVED APR 0 1 1998

ATTACHMENT NO. 8

OPEN HOLE LOG FOR THE UIC WELL

DOGM

HALLIBURTON

EXCELL 2000

SPECTRAL DENSITY
DUAL SPACED NEUTRON

COMPANY PETROGLYPH OPERATING COMPANY
WELL UTE TRIBAL 31-05
FIELD ANTELOPE CREEK
COUNTY DUCHESNE STATE UTAH

COMPANY PETROGLYPH OPERATING COMPANY

WELL UTE TRIBAL 31-05

FIELD ANTELOPE CREEK

COUNTY DUCHESNE STATE UTAH

API No. 43-013-32035

Location SW/NW
1980' FNL
660' FWL

POW

Sect 31 Twp 5S Rge 3W

Other Services
GR
HRI

Permanent Datum GROUND LEVEL Elev 6274'

Log measured from K. B. , 10 ft. above perm. datum

Drilling measured from KELLY BUSHING

Elev.: K.B. 6284'
D.F. 6283'
G.L. 6274'

Date	3-23-98			
Run No.	ONE			
Depth – Driller	5529'			
Depth – Logger	5511'			
Bottom – Logged Interval	5476'			
Top – Logged Interval	CASING			
Casing – Driller	8.625 @ 365'	@	@	@
Casing – Logger	363'			
Bit Size	7.875"			
Type Fluid in Hole	KCL			
Dens. | Visc.	8.3 | 27	|	|	|
Ph | Fluid Loss	10 | N/A	|	|	|
Source of Sample	FLOWLINE			
Rm @ Meas. Temp.	1.37 @ 62	@	@	@
Rmf @ Meas. Temp.	N/A @ N/A	@	@	@
Rmc @ Meas. Temp.	N/A @ N/A	@	@	@
Source Rmf | Rmc	N/A | N/A	|	|	|
Rm @ BHT	.62 @ 145	@	@	@
Time Since Circ.	7 HRS			
Time on Bottom	23:30			
Max. Rec. Temp.	145 @ T.D.	@	@	@
Equip. | Location	52546 | VERN	|	|	|
Recorded By	J. MELANCON			
Witnessed By	C. WHITE			

Field Here

Service Ticket No: 376137 API Serial No.: 43-013-32035 PGM Version: XL v3.44

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLES

RESISTIVITY SCALE CHANGES

Date | Sample No | Type Log | Depth | Scale Up Hole | Scale Down Hole

Date | Sample No.						
Depth – Driller						
Type Fluid						
In Hole						
Dens. | Visc.	|	|				
Ph | Fluid Loss	|	|				
Source of Sample			RESISTIVITY EQUIPMENT DATA			
Rm @ Meas. Temp	@	@	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Rmf @ Meas. Temp.	@	@	ONE	HRIT A133	N/A	1.5" SO	
Rmc @ Meas. Temp.	@	@					
Source Rmf | Rmc	|	|					
Rm @ BHT	@	@					
Rmf @ BHT	@	@					
Rmc @ BHT	@	@					

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.	ONE	Run No.	ONE
Serial No.	R108646	Serial No.		Serial No.	WA031	Serial No.	A132
Model No.	NGRT	Model No.		Model No.	SDL_BC	Model No.	DSN-II
Diameter	3.625"	No. of Cent.		Diameter	4"	Diameter	3.625"
Detector Model No	102A	Spacing		Log Type	GR-GR	Log Type	THERMAL
Type	SCINT			Source Type	Cs 137	Source Type	Am241Be
Length	4"	LSA [Y / N]		Serial No.	SDL-186	Serial No.	DSN-083
Distance to Source	11'	FWDA [Y / N]		Strength	1.5 Ci	Strength	18.5 Ci

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No.	From	To	Ft / Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	55''	SURF	REC	0	200				30%	-10%	2.68	30%	-10%	SAND

Remarks:

GR-DSN-SDL-HRI RAN IN COMBINATION.

ANNULAR HOLE VOLUME BASED ON 5.5" CASING.

CHLORIDES: 1500 PPM

RIG: UNION 16

CREW: R. PLUMHOF, D.SMUIN

THANK YOU FOR USING HALLIBURTON ENERGY SERVICES (435)789-2550 VERNAL, UTAH

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

HALLIBURTON

Current EXCELL-2000 Parameter Values
Depth: 80.167
Date: 23-Mar-1998 01:37

Mnemonic	Tool	Parameter Description	Value	Units
PERF	DITSHD	PERFORATED INTERVAL	NO	
TD	DITSHD	TOTAL DEPTH	0.	FT
GR_OK	GAMMA	DO GAMMA CALCULATIONS?	YES	
CASED	SHARED	CASED HOLE?	NO	
CASEOD	SHARED	CASING DIAMETER (OD)	5.5	Inches
MUDWT	SHARED	BOREHOLE FLUID WEIGHT	8.399999	Pounds/Gal.
GRSO	GAMMA	GAMMA RAY STANDOFF	0.	Inches
BS	SHARED	BIT SIZE	7.875	Inches
DSN_OK	DSN_II	DO DSN II CALCULATIONS?	NO	
HRI_OK	HRIDF	DO HRI INDUCTION CALCULATION?	NO	

DFL_OK	HRIDE	DO DFL CALCULATIONS?	NO	
PYRITE	HRIDE	PYRITE SWITCH	NO	OHMM
CTEM	HRIDE	CONST TEMPERATURE	75.	
BHT	HRIDE	BOTTOM HOLE TEMPERATURE	175.	Degrees F.
TSURF	HRIDE	SURFACE TEMPERATURE	60.	Degrees F.
BHD	HRIDE	BOTTOM HOLE DEPTH	10000.	Feet
RHOFLU	SHARED	FLUID DENSITY	1.	Grams/CC
XPHLOC	XP_RWA	CROSSPLOT SELECTION FOR XPHI	XPLT	
ARCHA	XP_RWA	ARCHIE A	0.62	
ARCHM	XP_RWA	ARCHIE M	2.15	
FSEL	XP_RWA	POROSITY SELECTION FOR F	DEN	
SDL_OK	SDL_BC	DO SDL CALCULATIONS?	NO	
RHOMAT	SDL_BC	MATRIX DENSITY	2.68	Grams/CC
CAL_OK	CAL_BC	DO CALIPER CALCULATIONS?	NO	
AHVOK	CAL_BC	DO ANNULAR VOLUME CALCULATION?	NO	

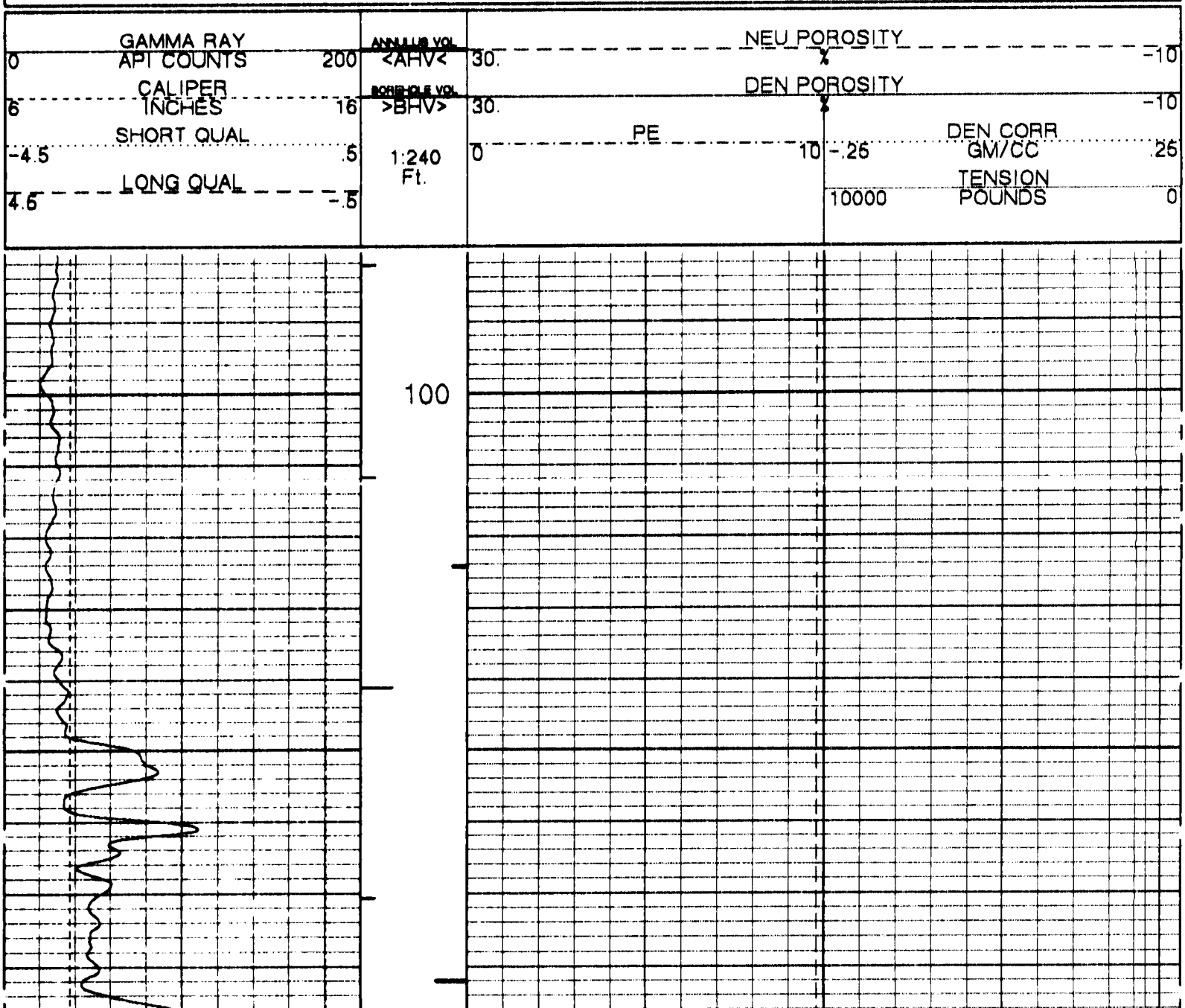
MAIN PASS 5" = 100'

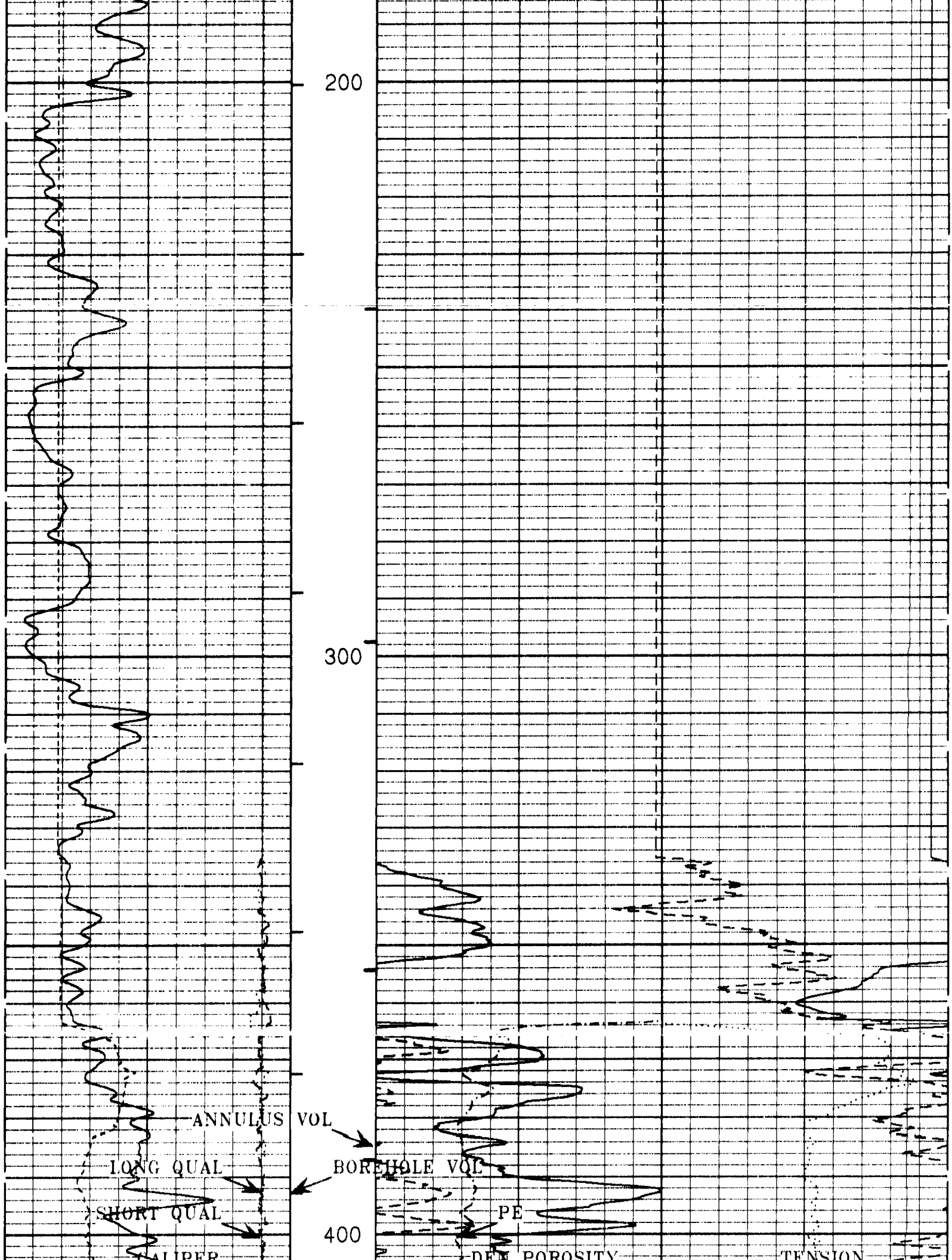
HALLIBURTON EXCELL

Version No. 3.44 | nc:3.0
Data File 0322_2150_s2100.4.cls
Format File plot_01_1.spc

Top Depth: 80.25
Bottom Depth: 5505.00

Plot Time: 03-23-98 01:33:01
Log Time: 03-22-98 23:46:15

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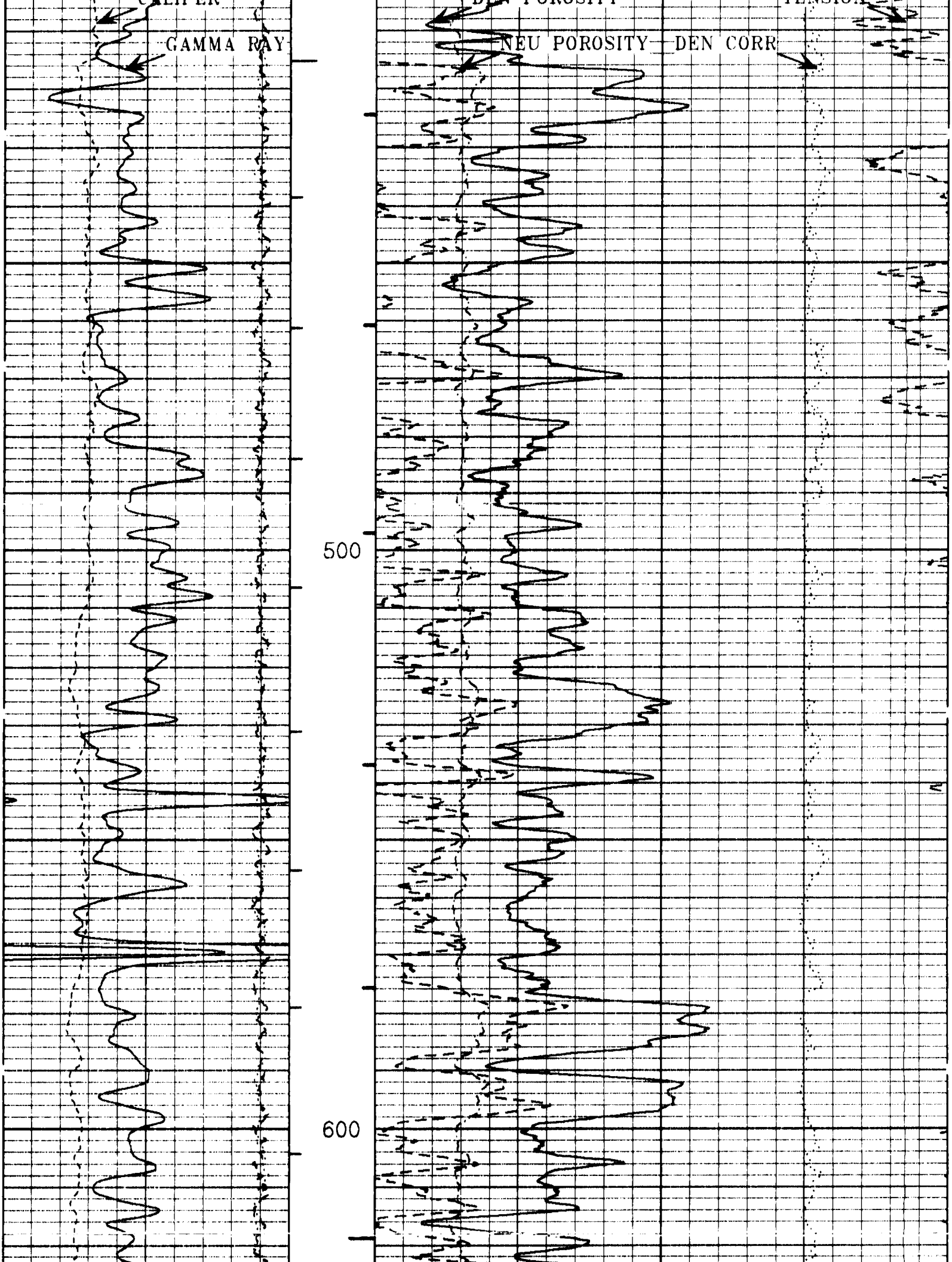
BOREHOLE VOL
SHORT QUAL
PE
CALIPER
DEN POROSITY
TENSION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GAMMA RAY
NEU POROSITY
DEN CORR
500
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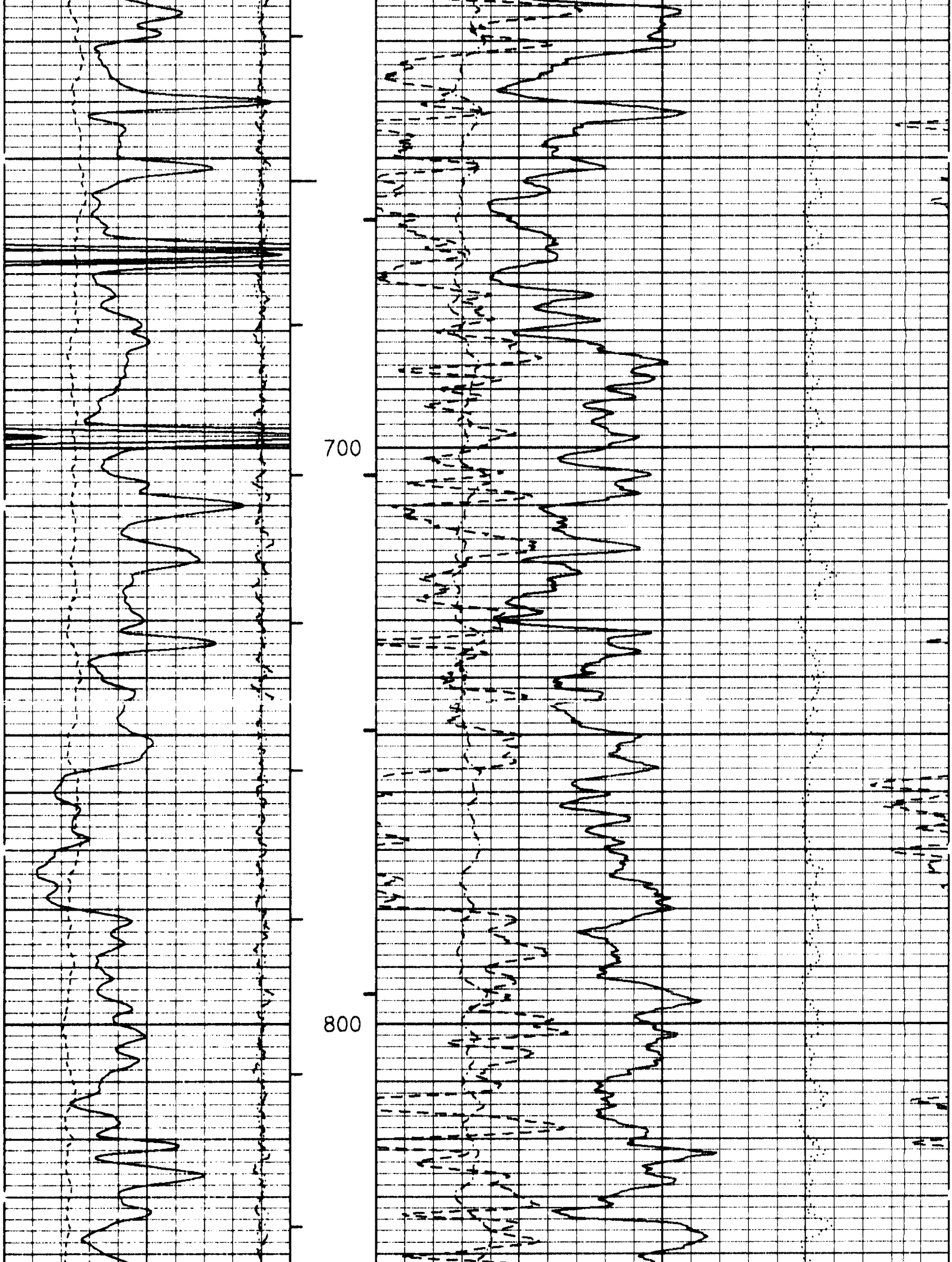
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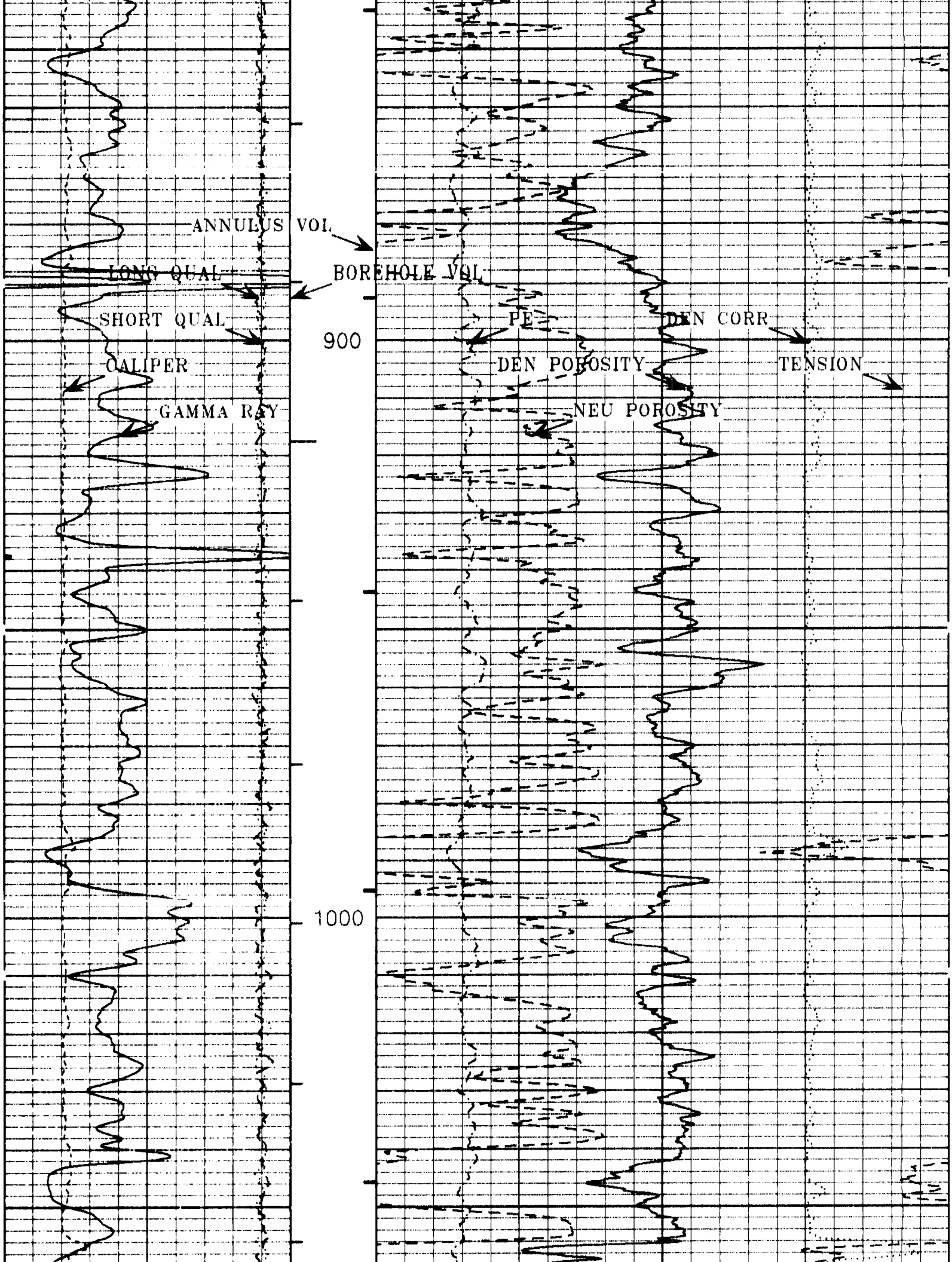
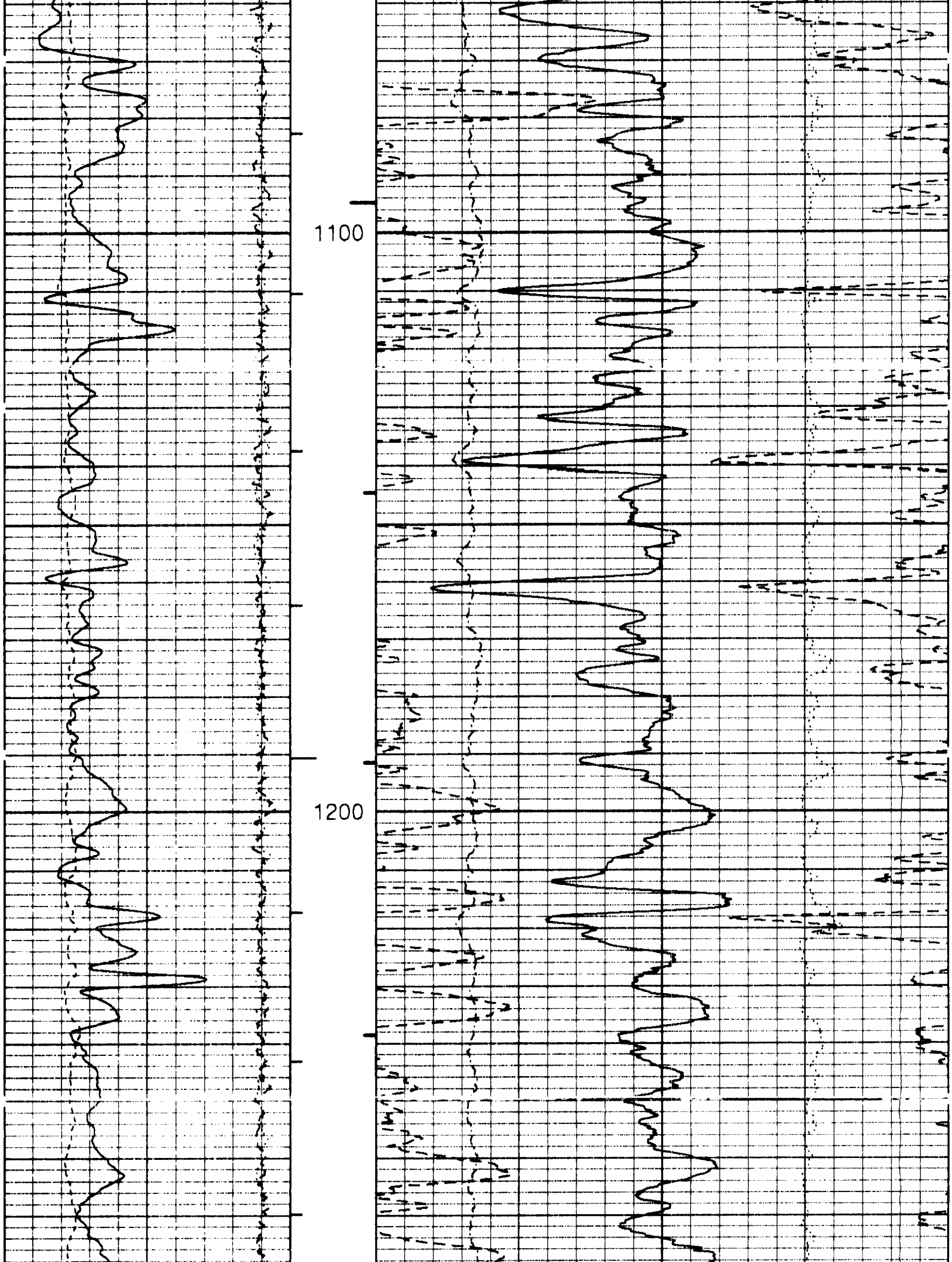

ANNULUS VOL
LONG QUAL
BOREHOLE VOL
SHORT QUAL
PE
DEN CORR
900
CALIPER
DEN POROSITY
TENSION
GAMMA RAY
NEU POROSITY
1000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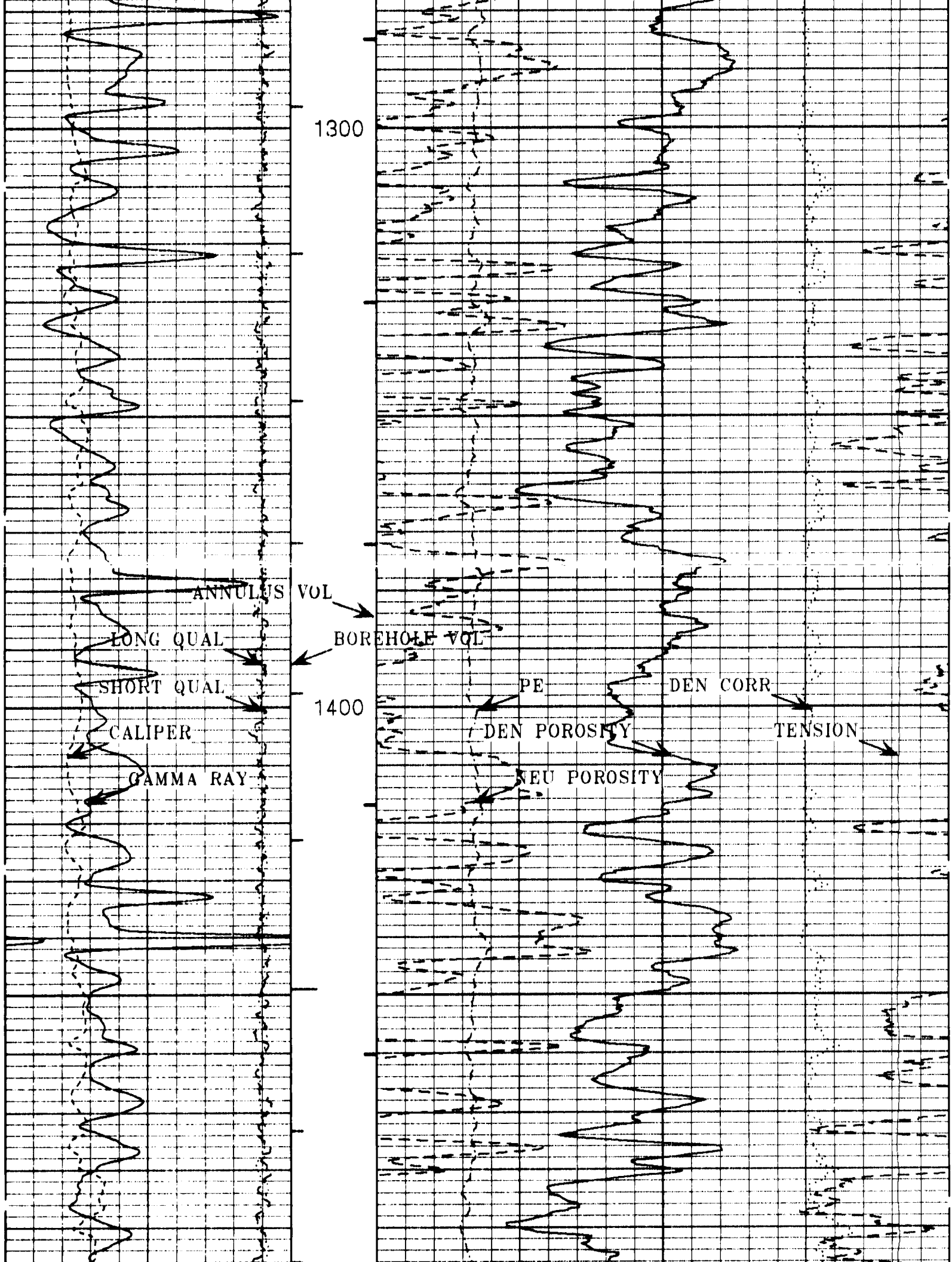
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1400
ANNULUS VOL
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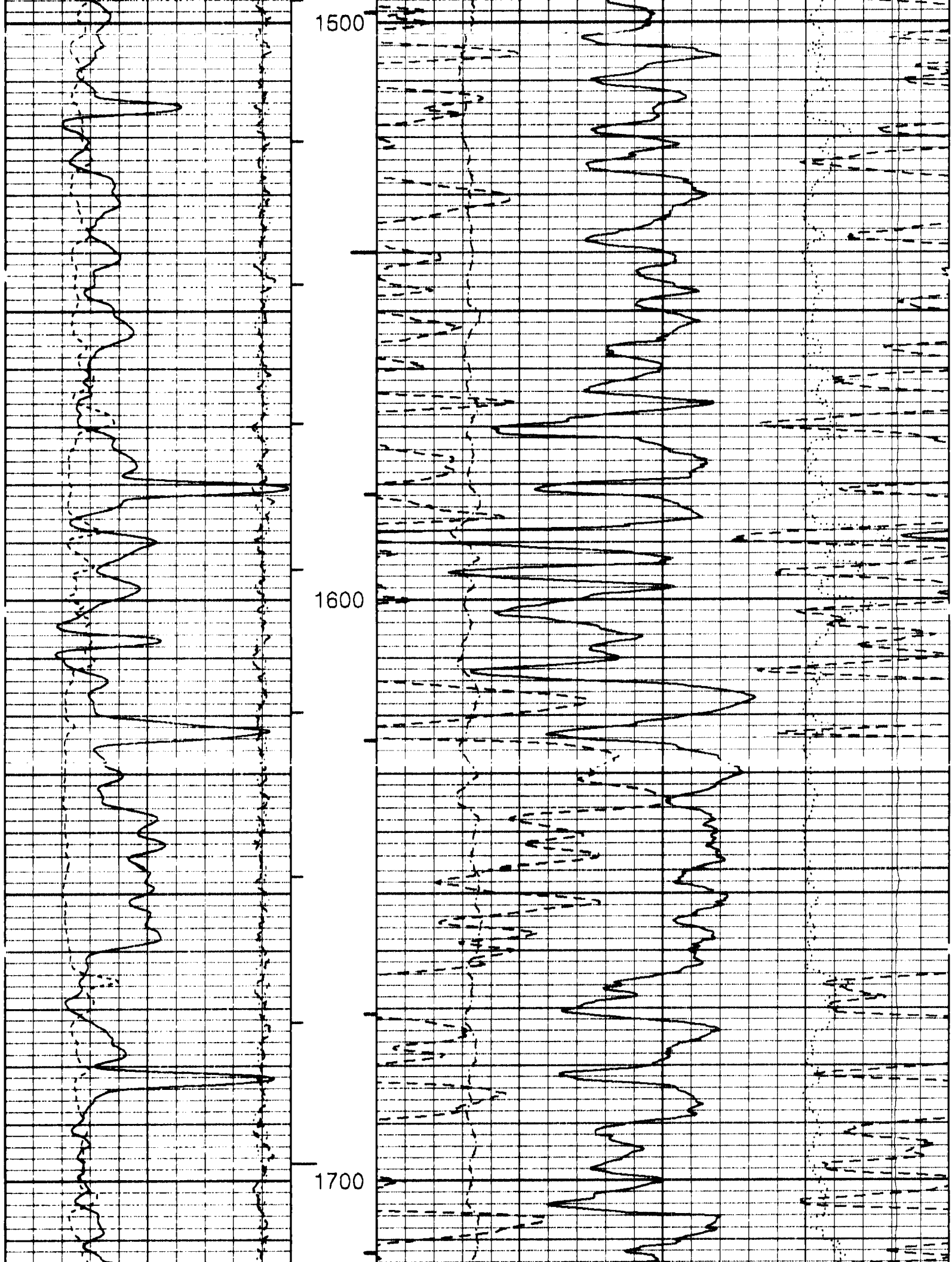
BOREHOLE VOL
SHORT QUAL
CALIPER
GAMMA RAY
PE
DEN CORR
DEN POROSITY
TENSION
NEU POROSITY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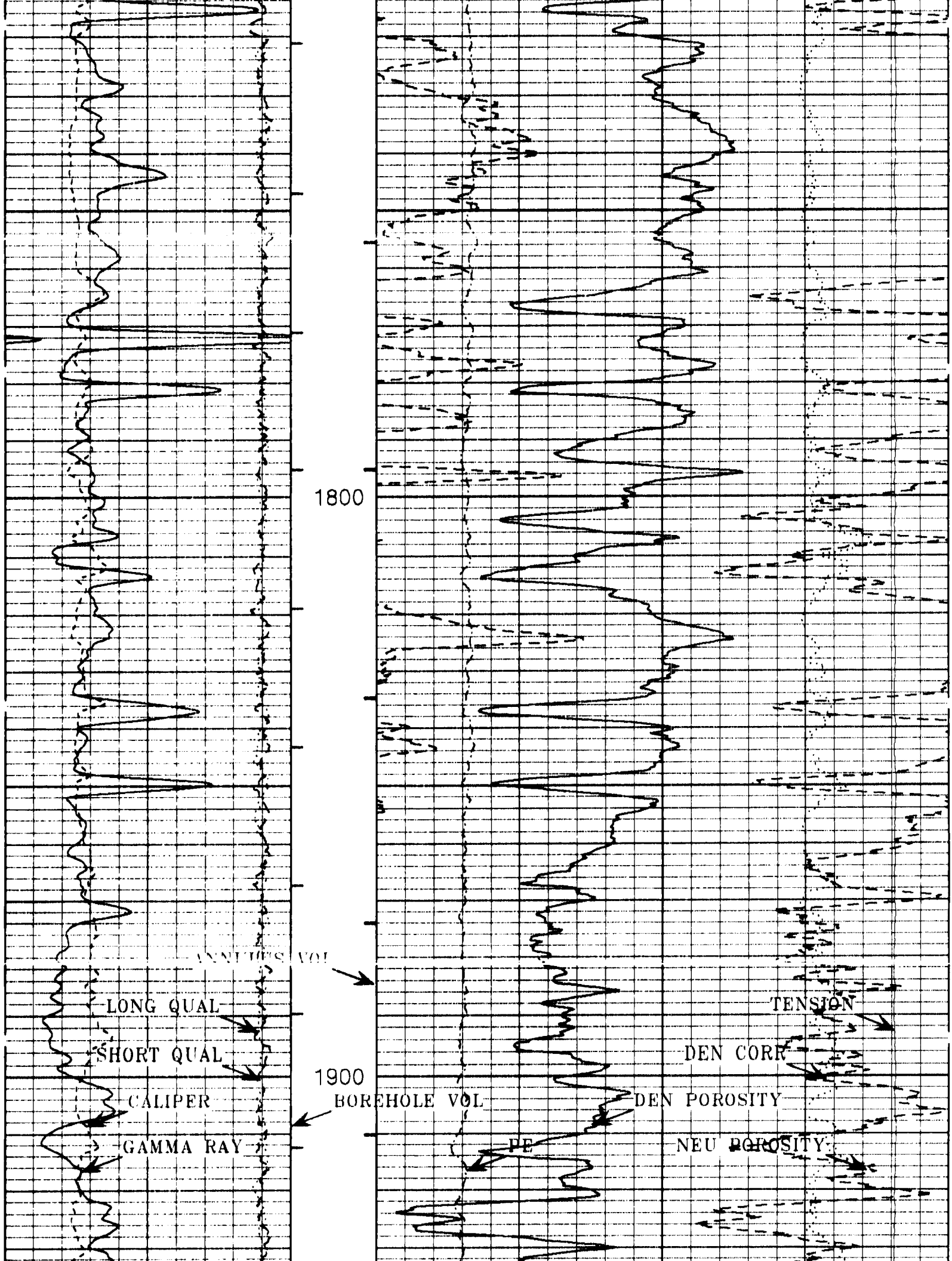
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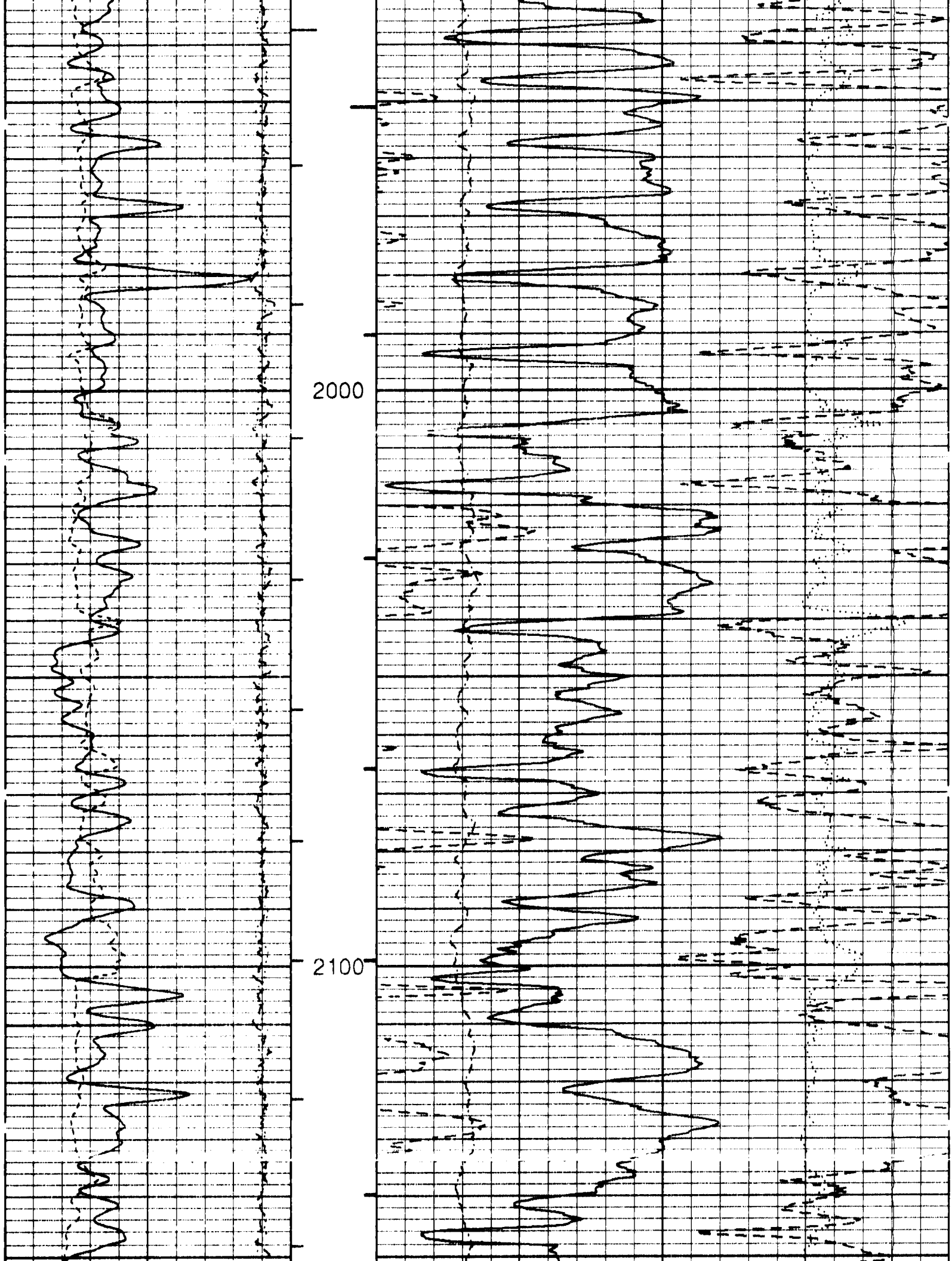
CALIPER
GAMMA RAY
BOREHOLE VOL
TENSION
DEN CORR
DEN POROSITY
PE
NEU POROSITY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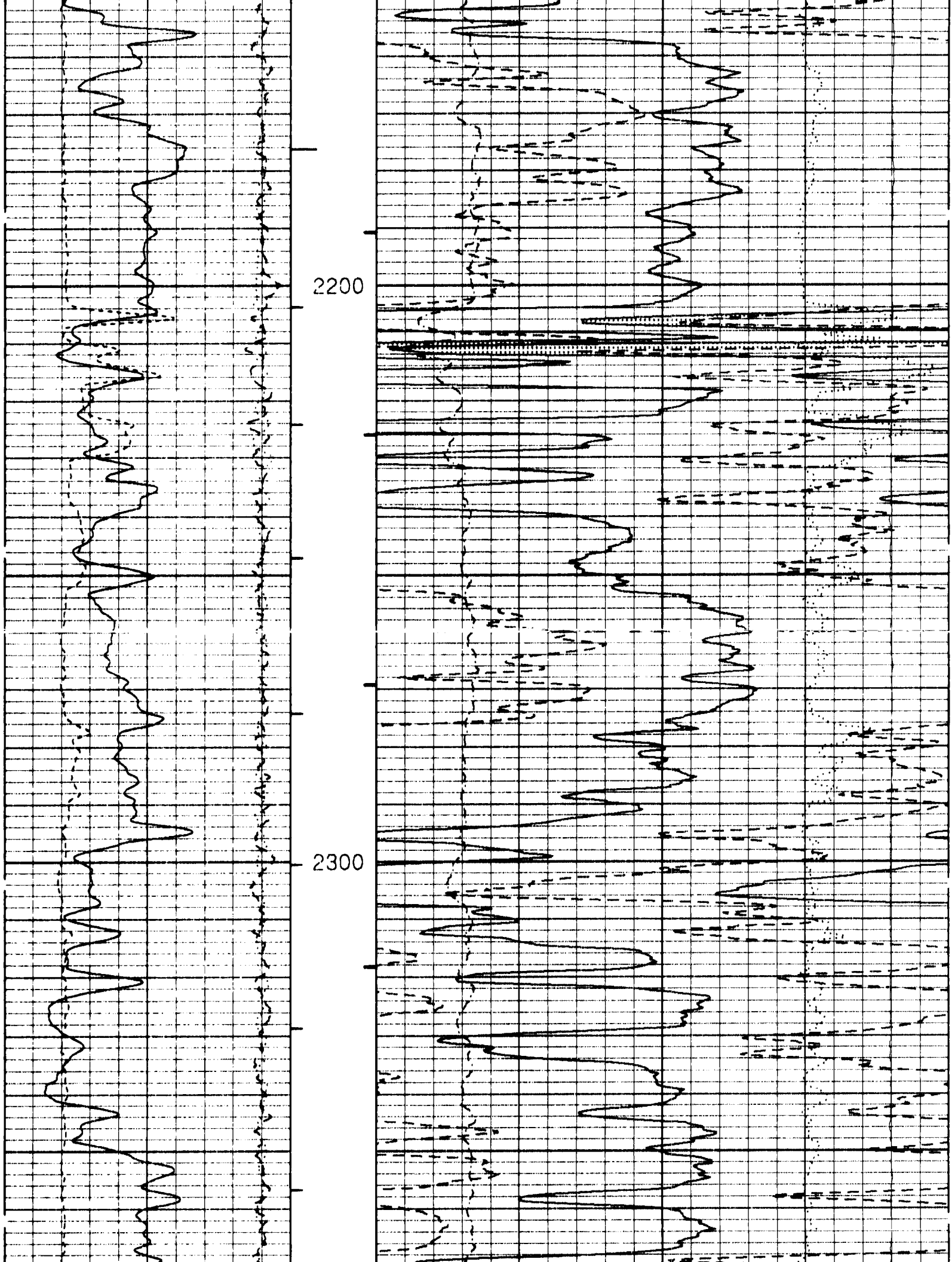
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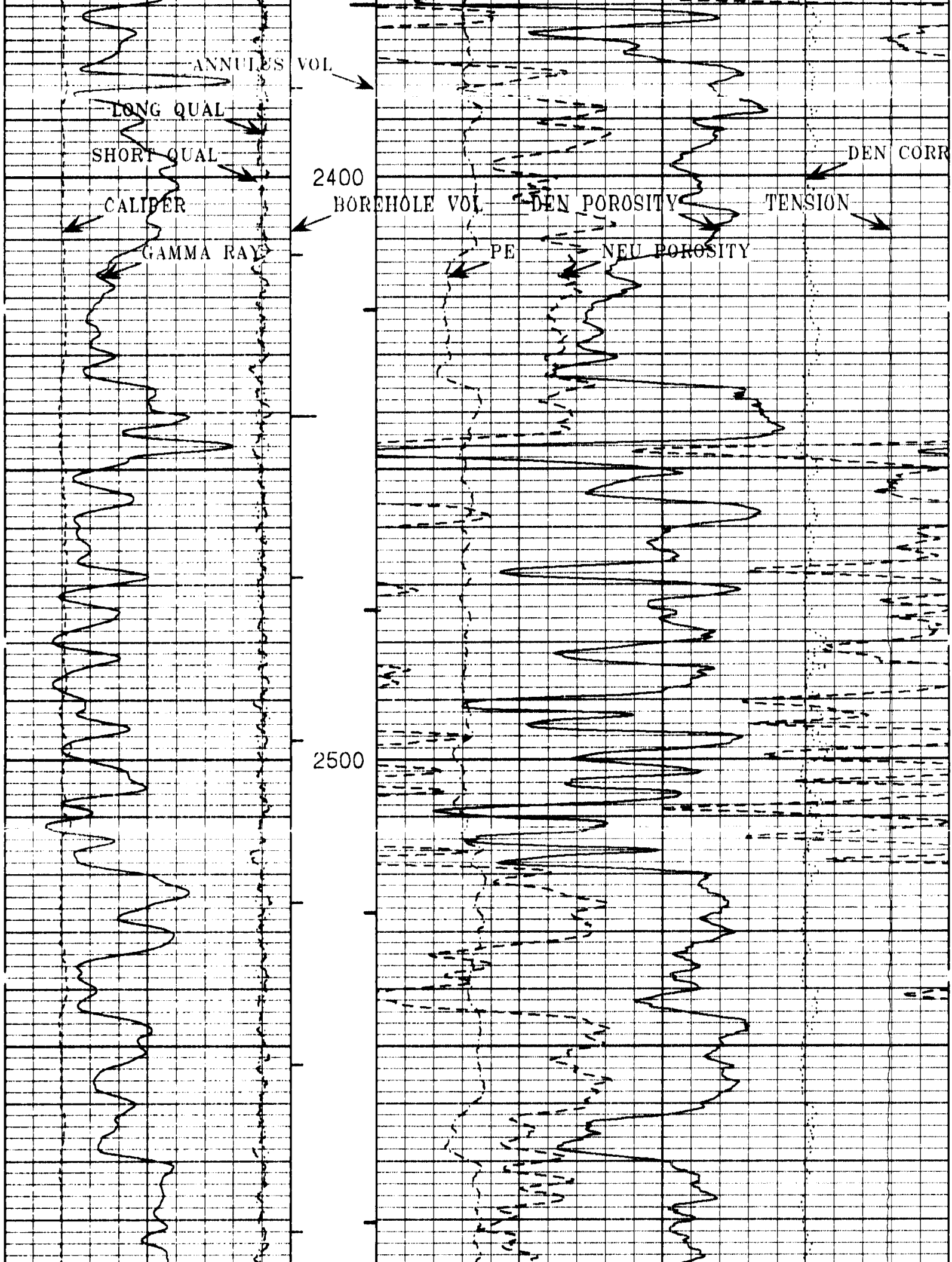
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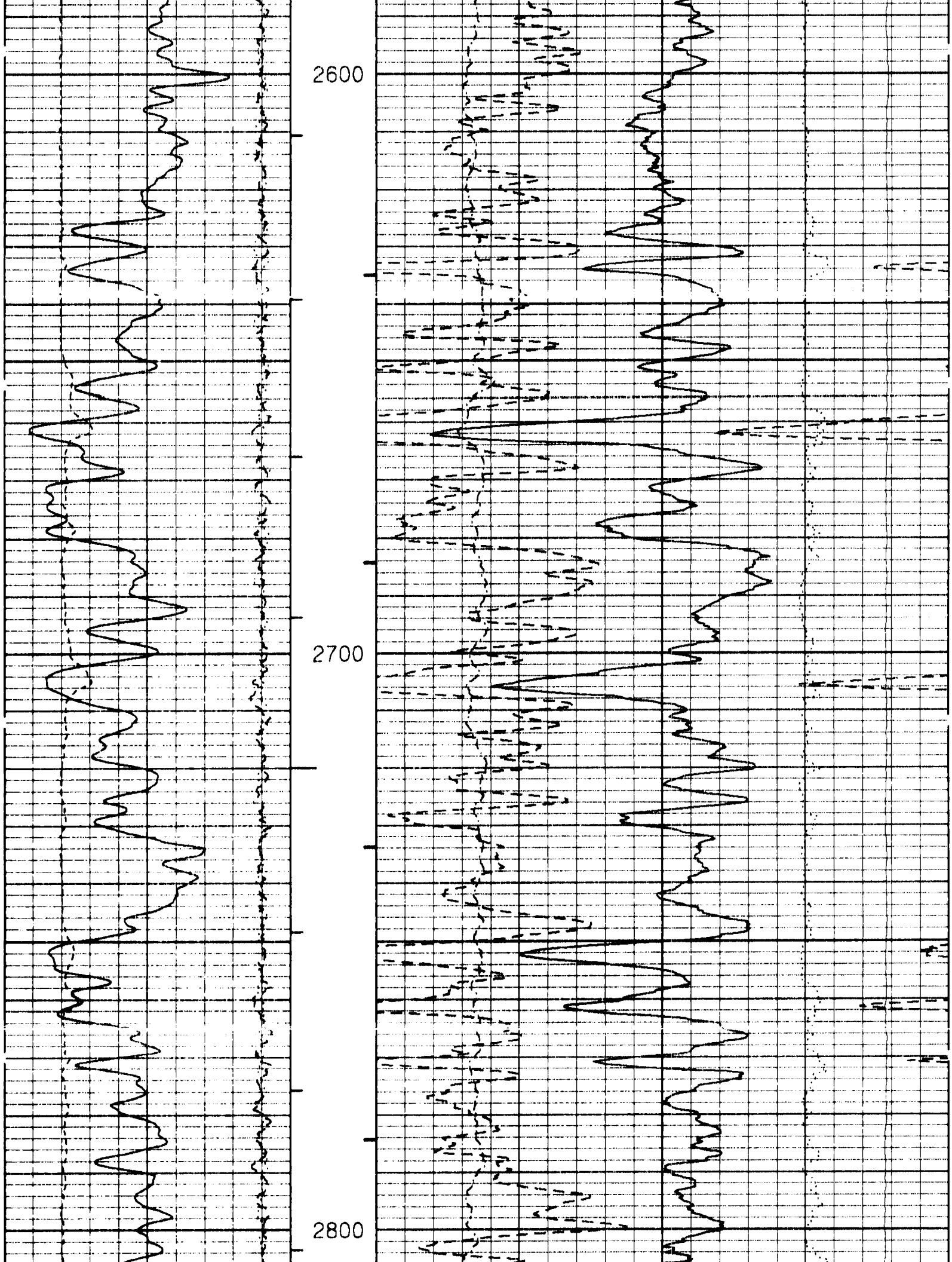
LONG QUAL
SHORT QUAL
CALIPER
GAMMA RAY
2400
BOREHOLE VOL
DEN POROSITY
PE
NEU POROSITY
DEN CORR
TENSION
2500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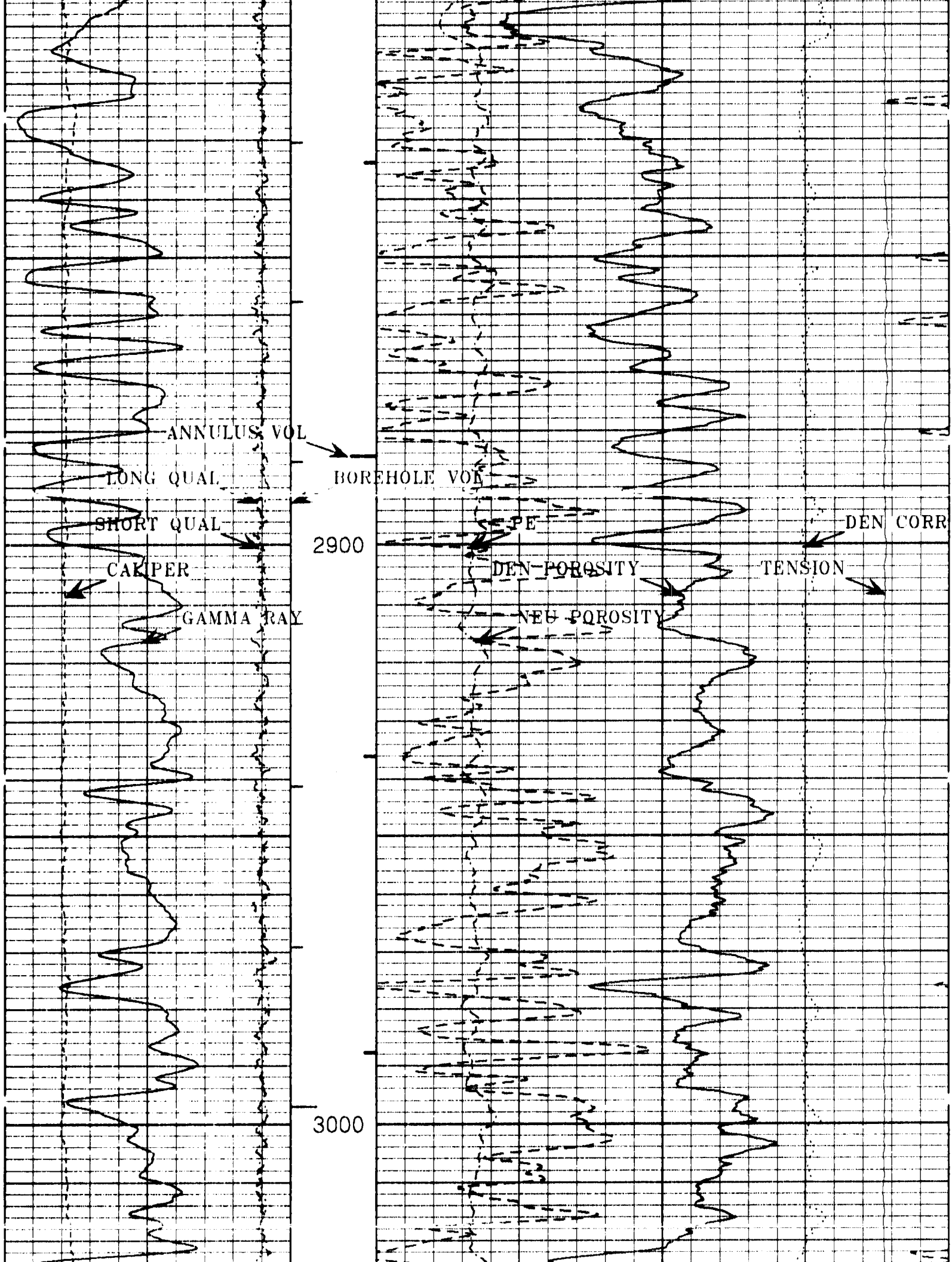
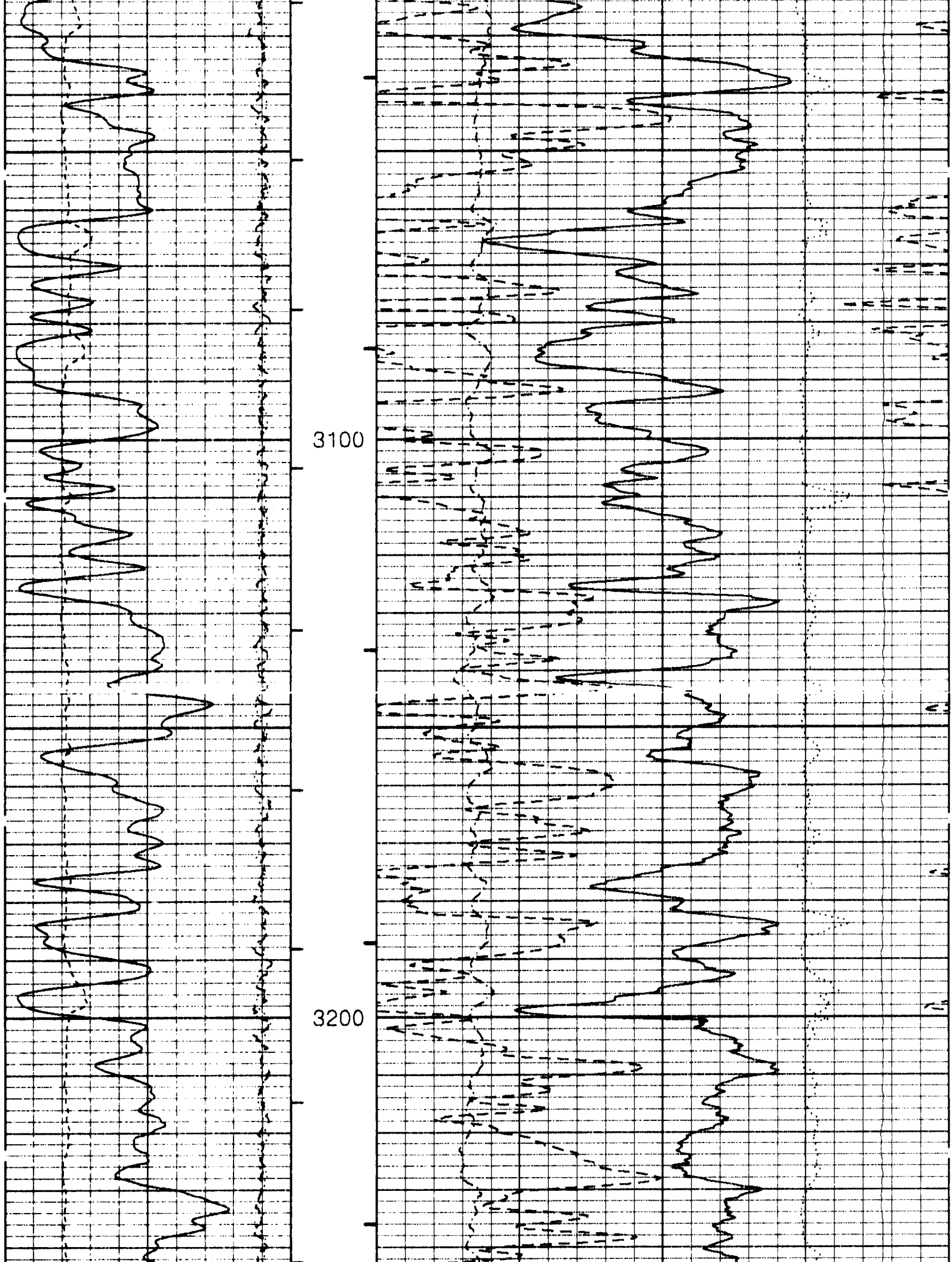

ANNULUS VOL
LONG QUAL
BOREHOLE VOL
SHORT QUAL
PE
DEN CORR
2900
CALIPER
DEN POROSITY
TENSION
GAMMA RAY
NEU POROSITY
3000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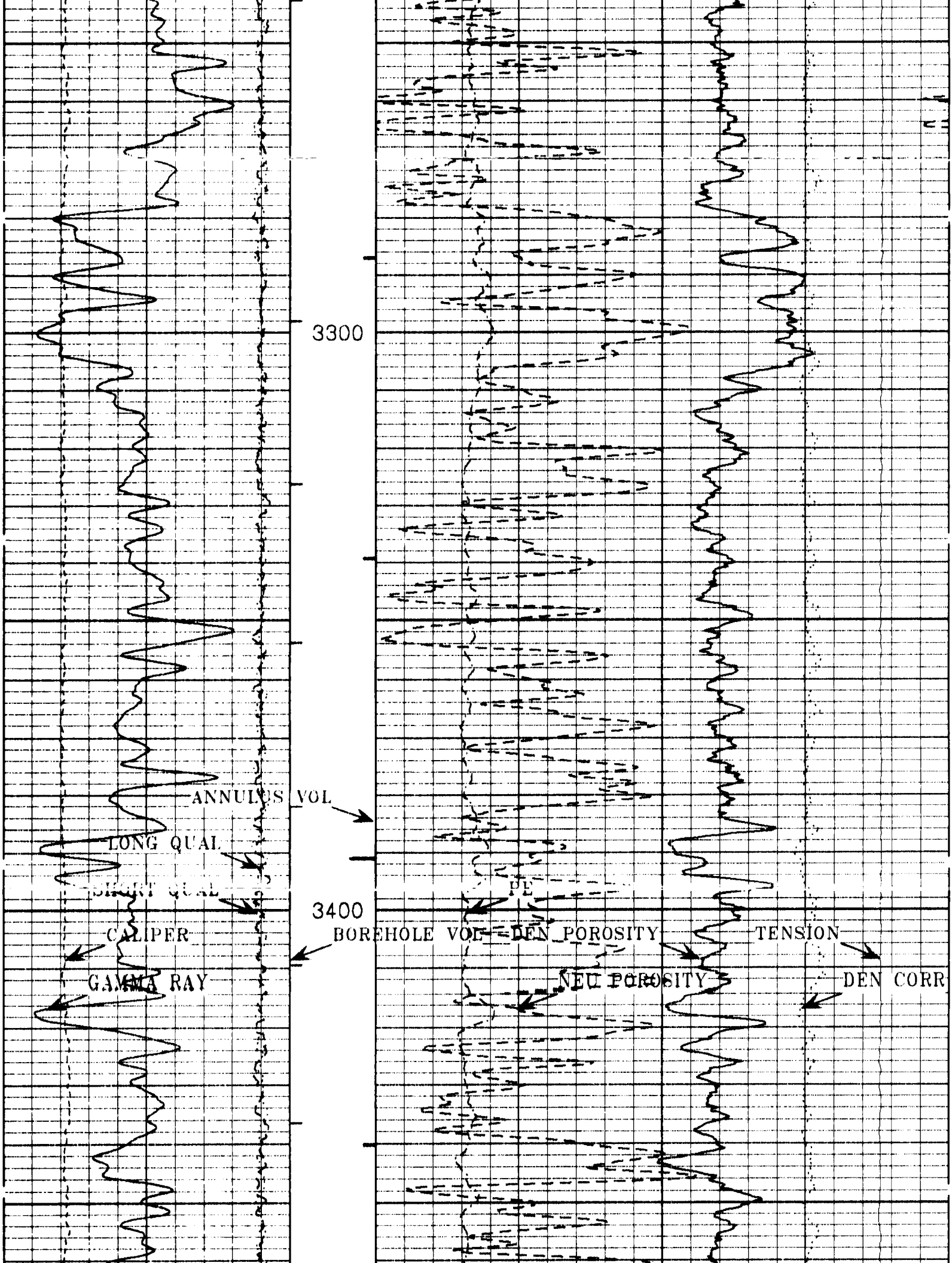
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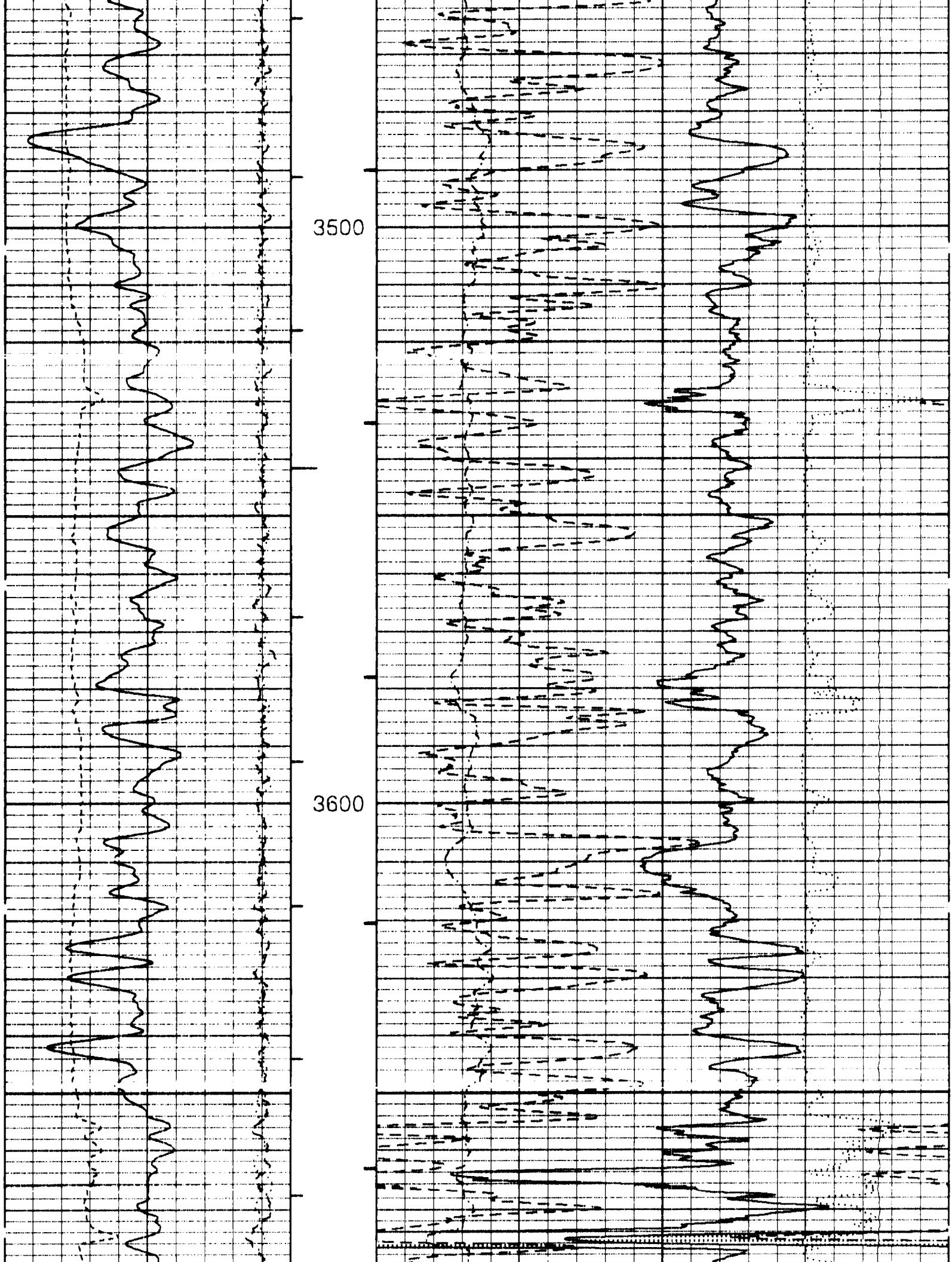
SHORT QUAL
3400
CALIPER
BOREHOLE VOL
DEN POROSITY
TENSION
GAMMA RAY
NEU POROSITY
DEN CORR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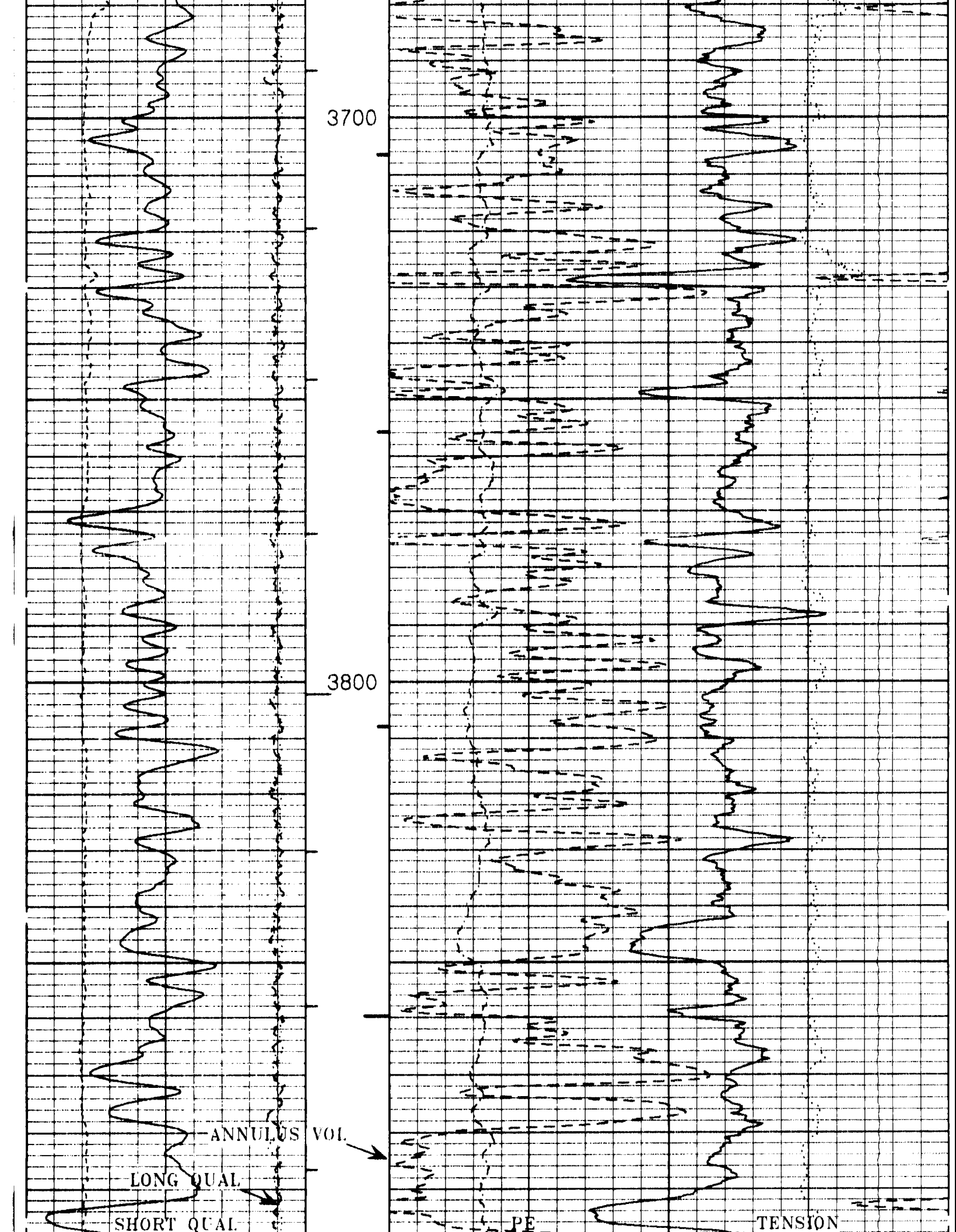
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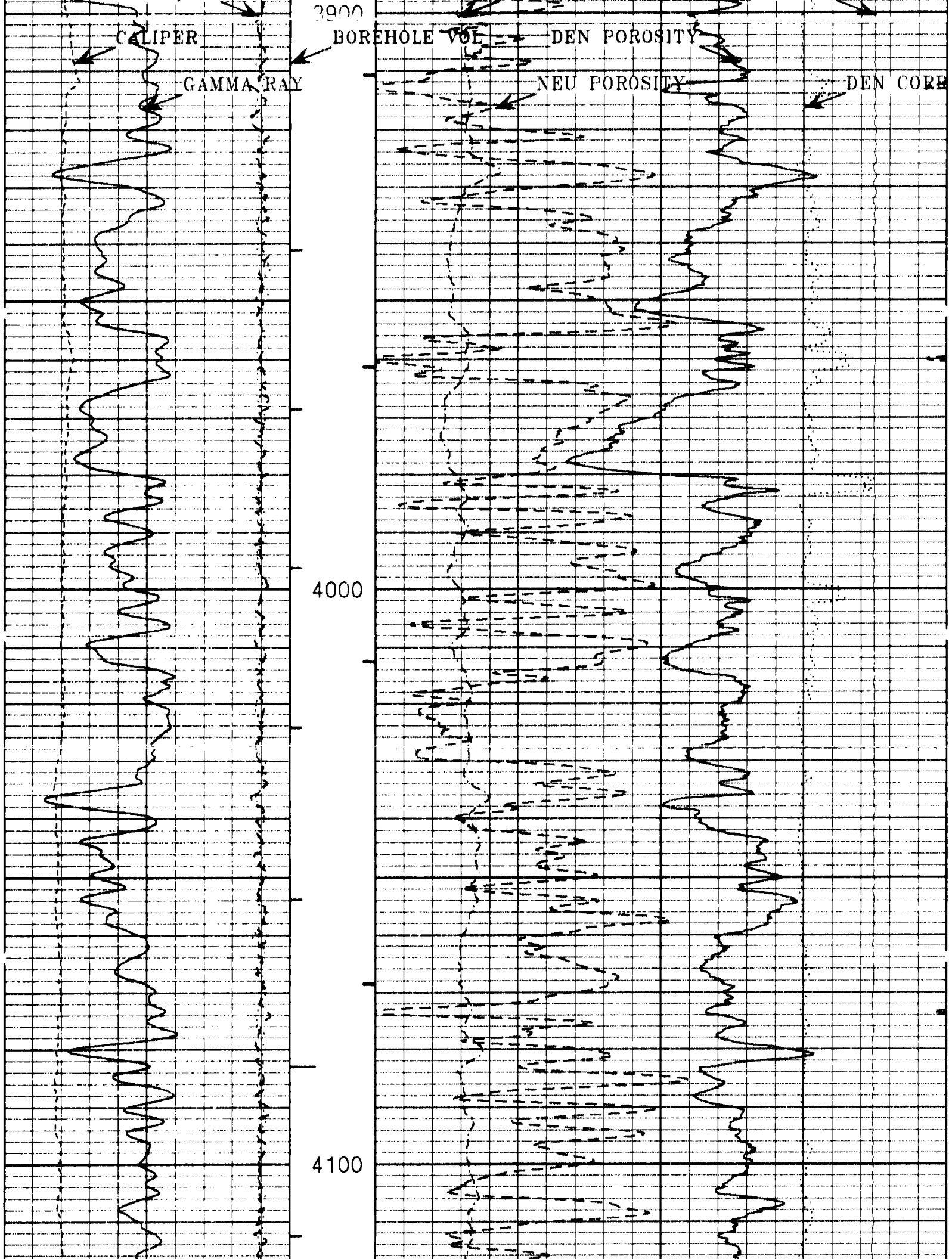
ANNULUS VOL
LONG QUAL
SHORT QUAL
PE
TENSION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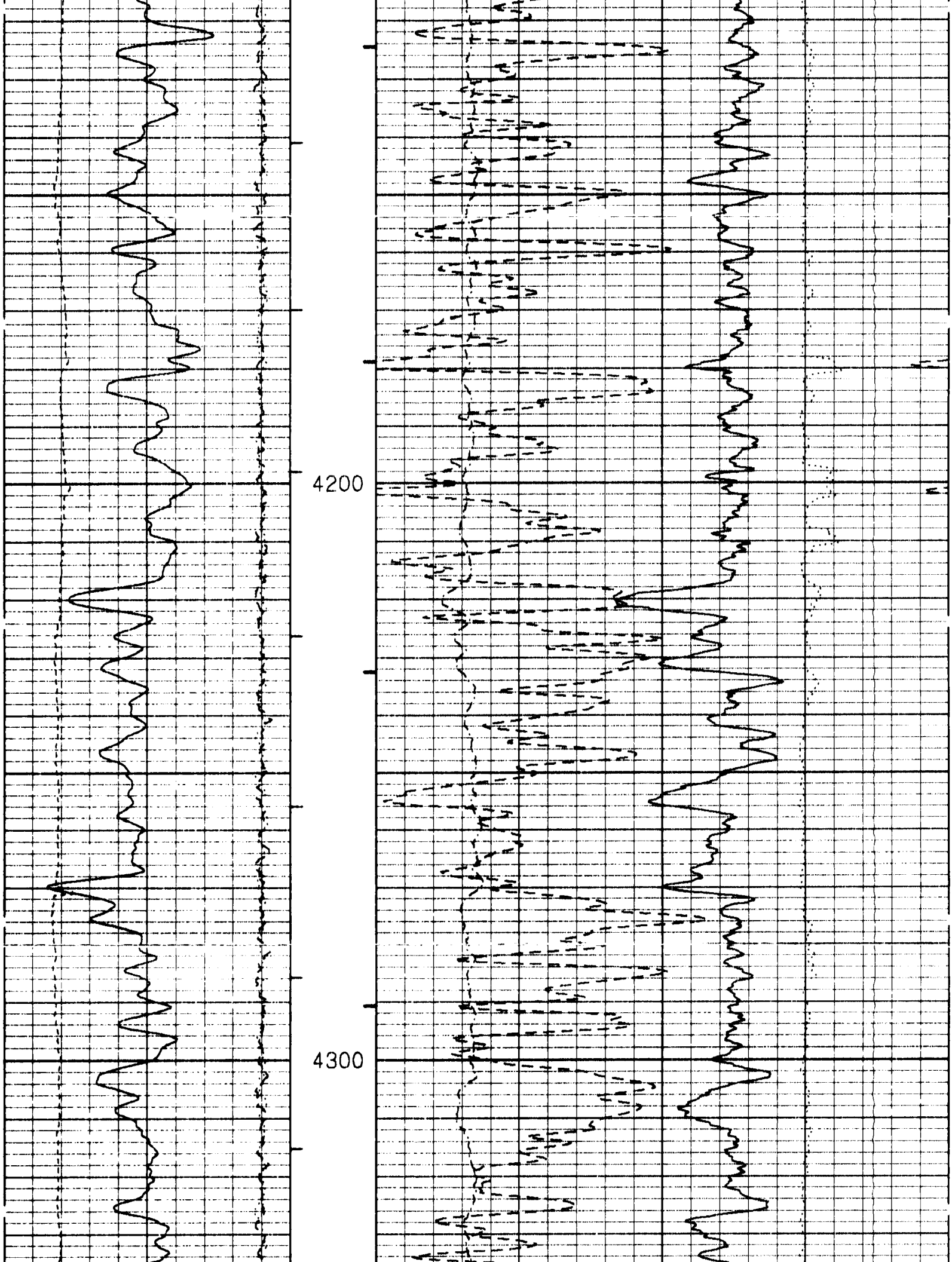
CALIPER
BOREHOLE VOL
DEN POROSITY
GAMMA RAY
NEU POROSITY
DEN CORR
4000
4100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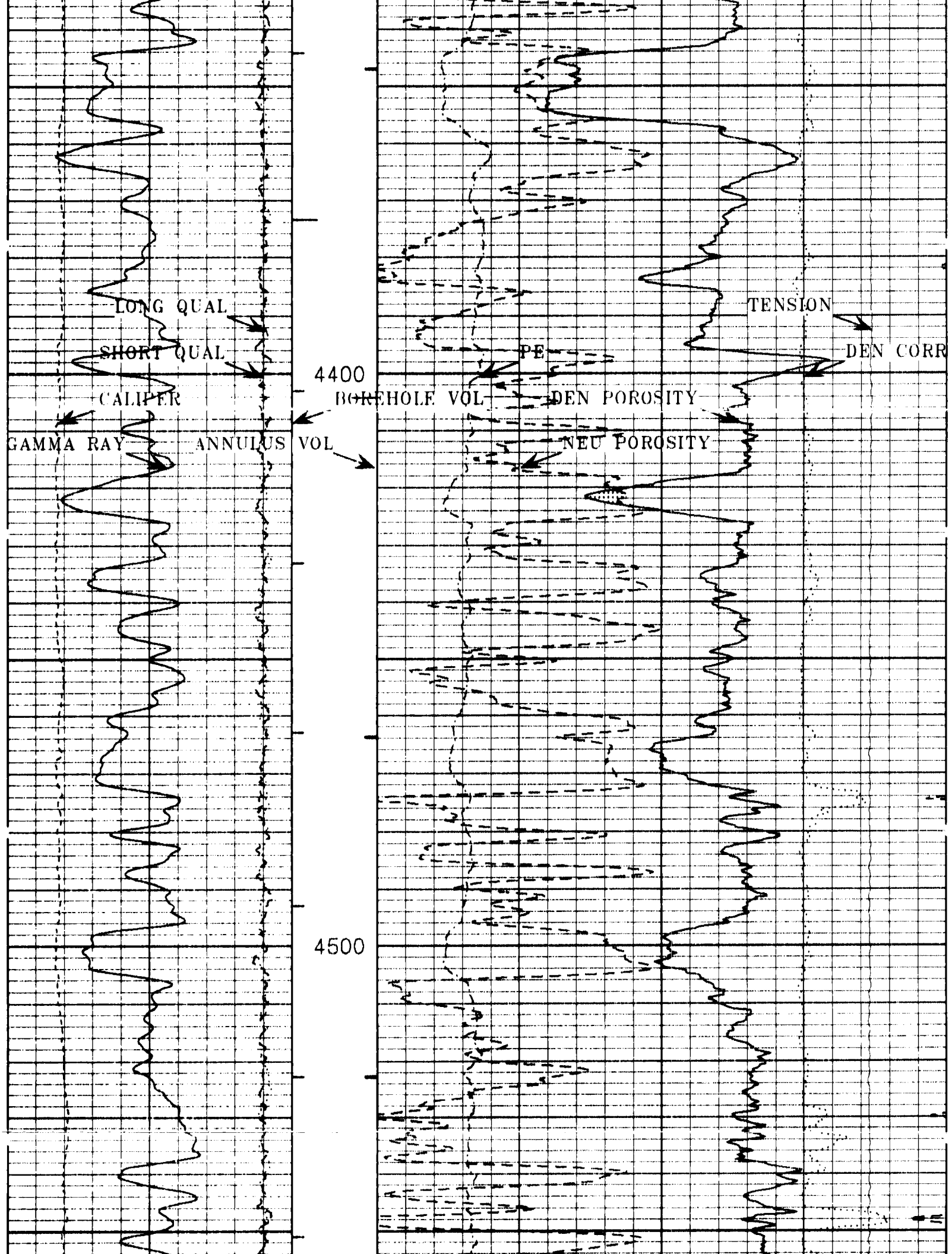
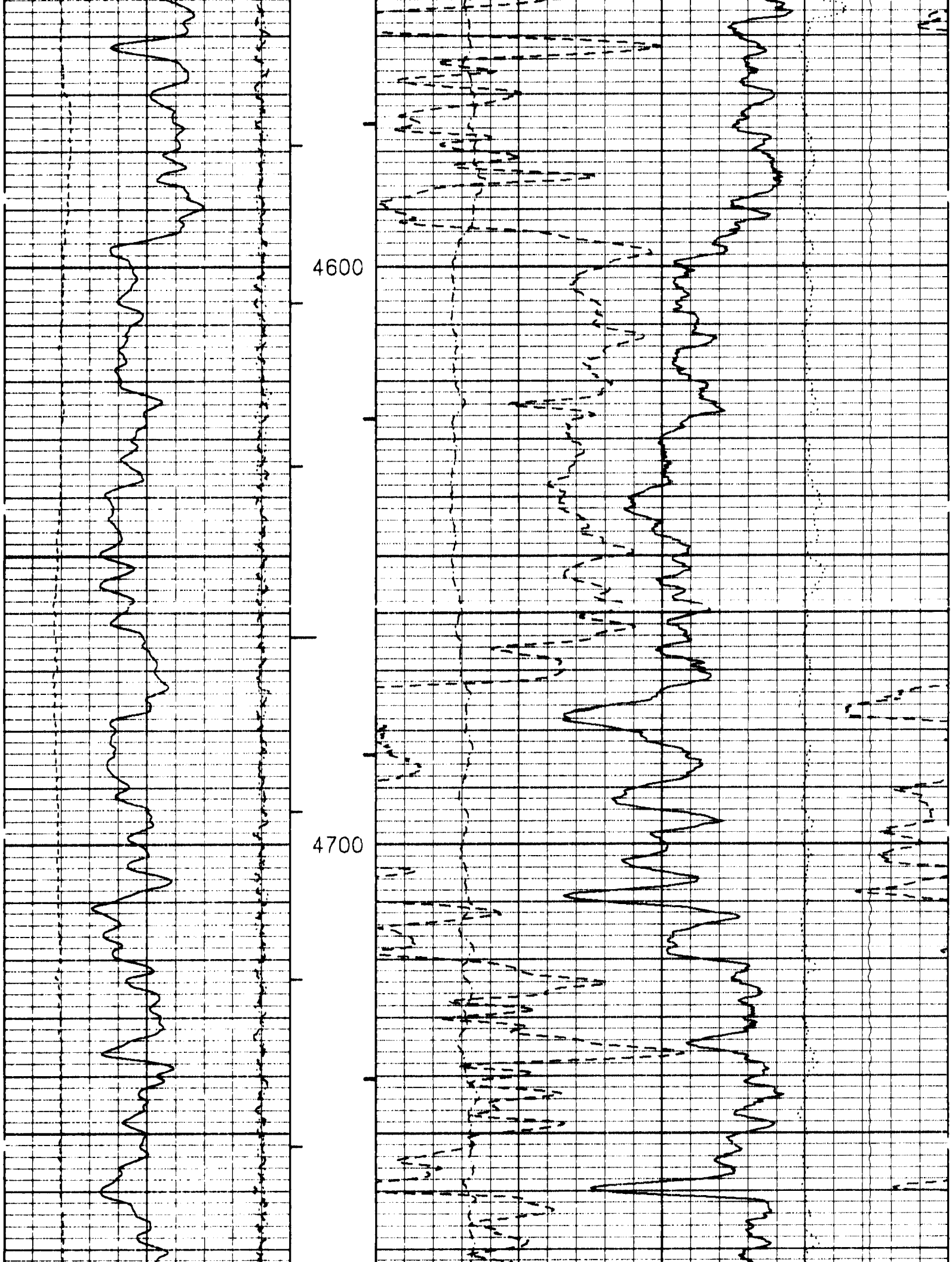

LONG QUAL
SHORT QUAL
CALIPER
GAMMA RAY
ANNULUS VOL
4400
4500
TENSION
DEN CORR
PE
BOREHOLE VOL
DEN POROSITY
NEU POROSITY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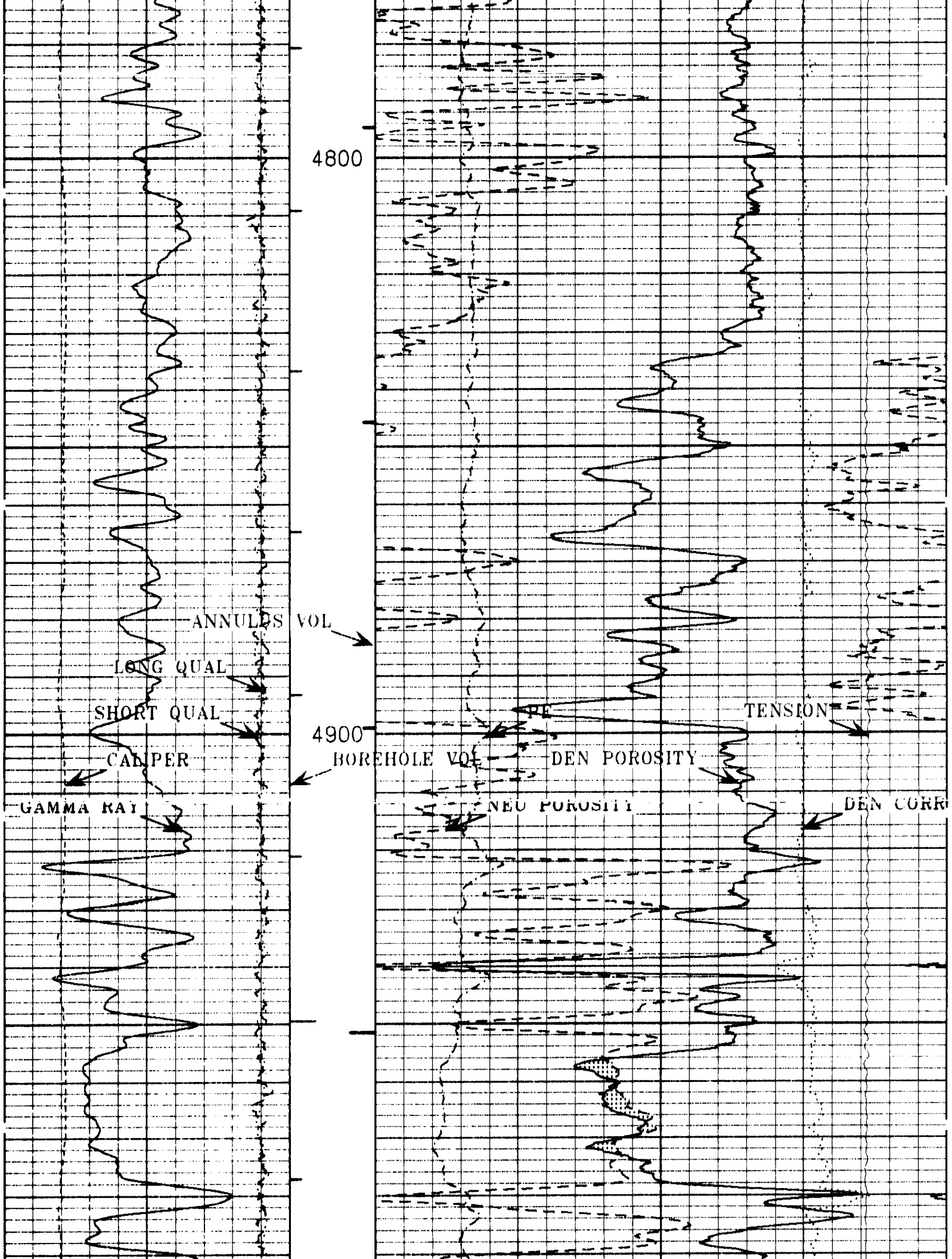
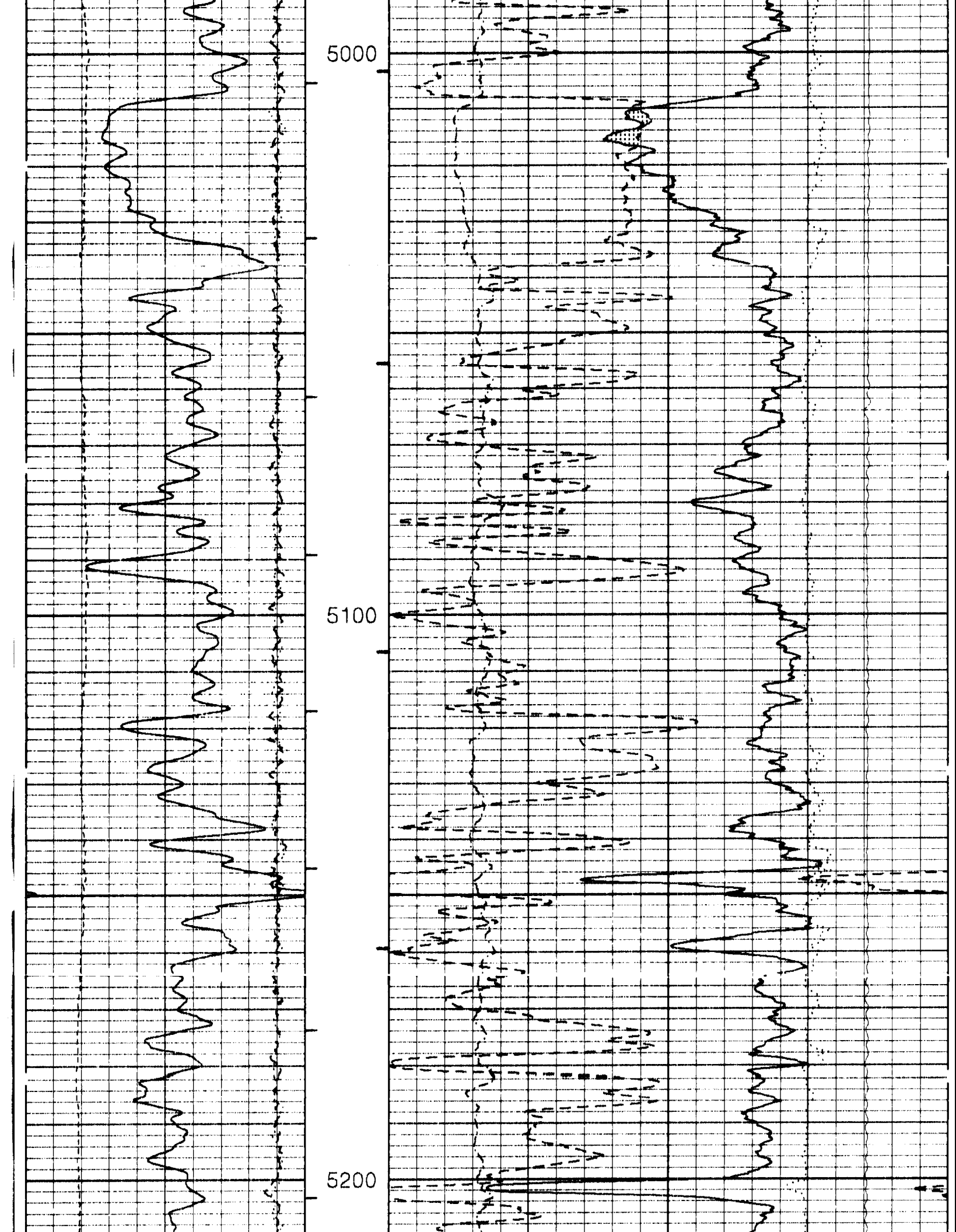

4800
4900
ANNULUS VOL
LONG QUAL
SHORT QUAL
CALIPER
GAMMA RAY
PE
BOREHOLE VOL
DEN POROSITY
NEU POROSITY
TENSION
DEN CORR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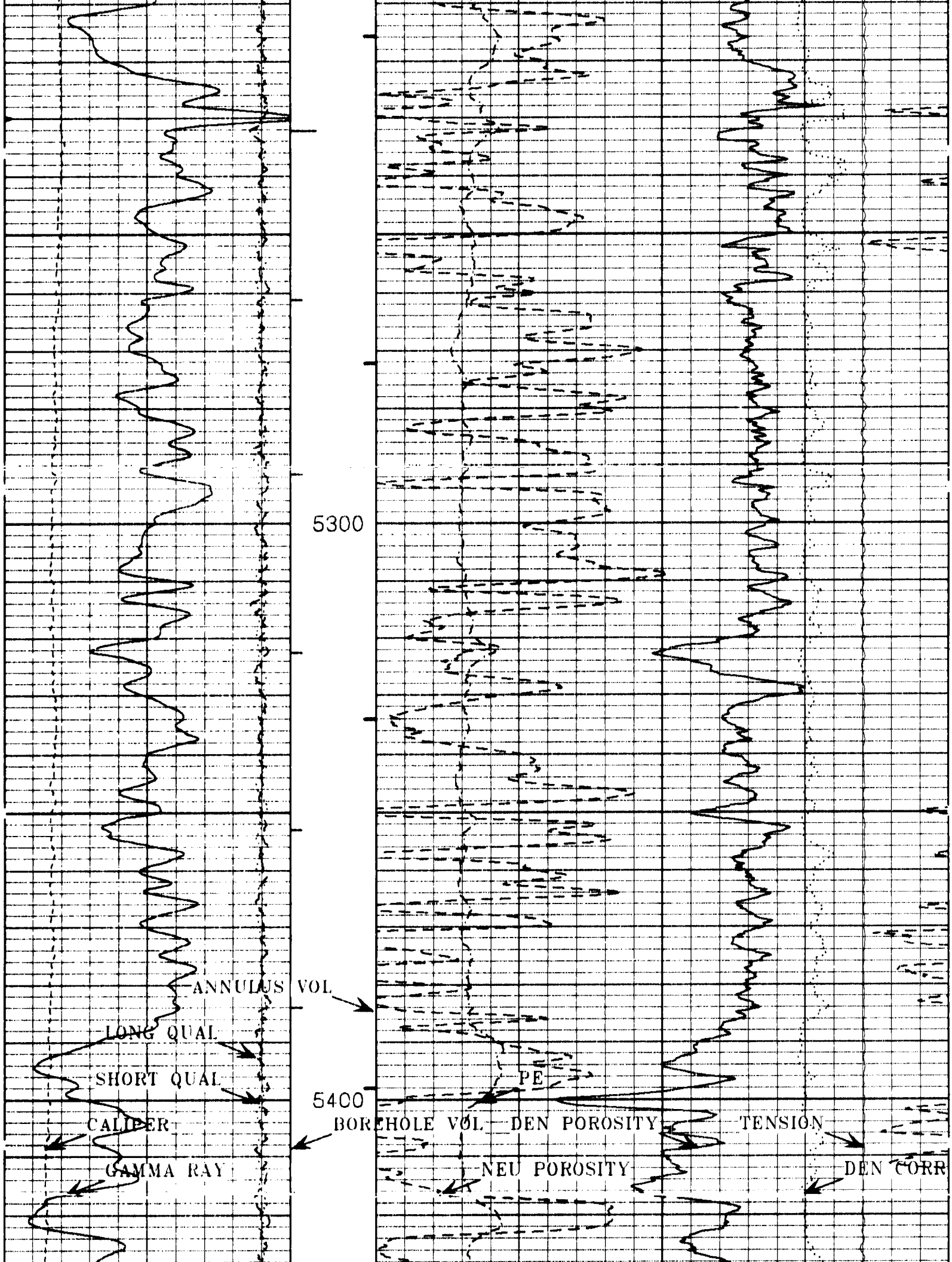
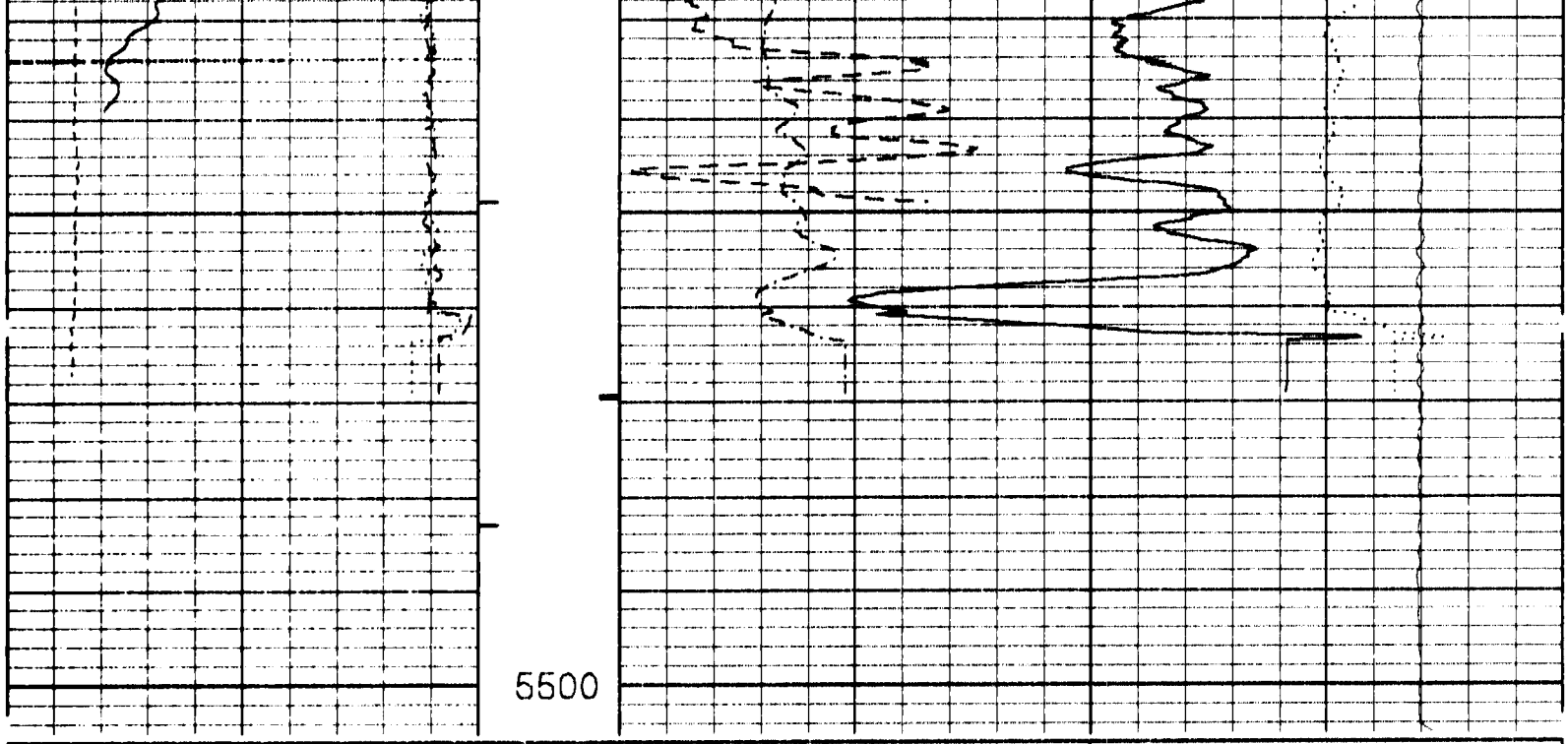

5300
5400
ANNULUS VOL
LONG QUAL
SHORT QUAL
CALIPER
GAMMA RAY
BOREHOLE VOL
PE
DEN POROSITY
NEU POROSITY
TENSION
DEN CORR



LONG QUAL 4.5 -.5	1:240 Ft.			TENSION POUNDS 10000 0
SHORT QUAL -4.5 .5		PE 0 10		DEN CORR GM/CC -.25 .25
CALIPER INCHES 6 16	BOREHOLE VOL >BHV>	DEN POROSITY % 30. -10		
GAMMA RAY API COUNTS 0 200	ANNULUS VOL <AHV<	NEU POROSITY % 30. -10		

HALLIBURTON EXCELL

Version No: 3.44 1 hc 3.0
Data File: 0322_2150_s2100.4 cls
Format File: plot_01_1.spc

Top Depth: ------
Bottom Depth: 5505.00

Plot Time: 03-22-98 23:47:23
Log Time: 03-22-98 23:46:15

MAIN PASS 5" = 100'

REPEAT SECTION

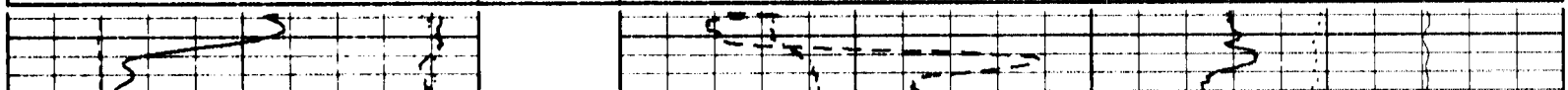
HALLIBURTON EXCELL

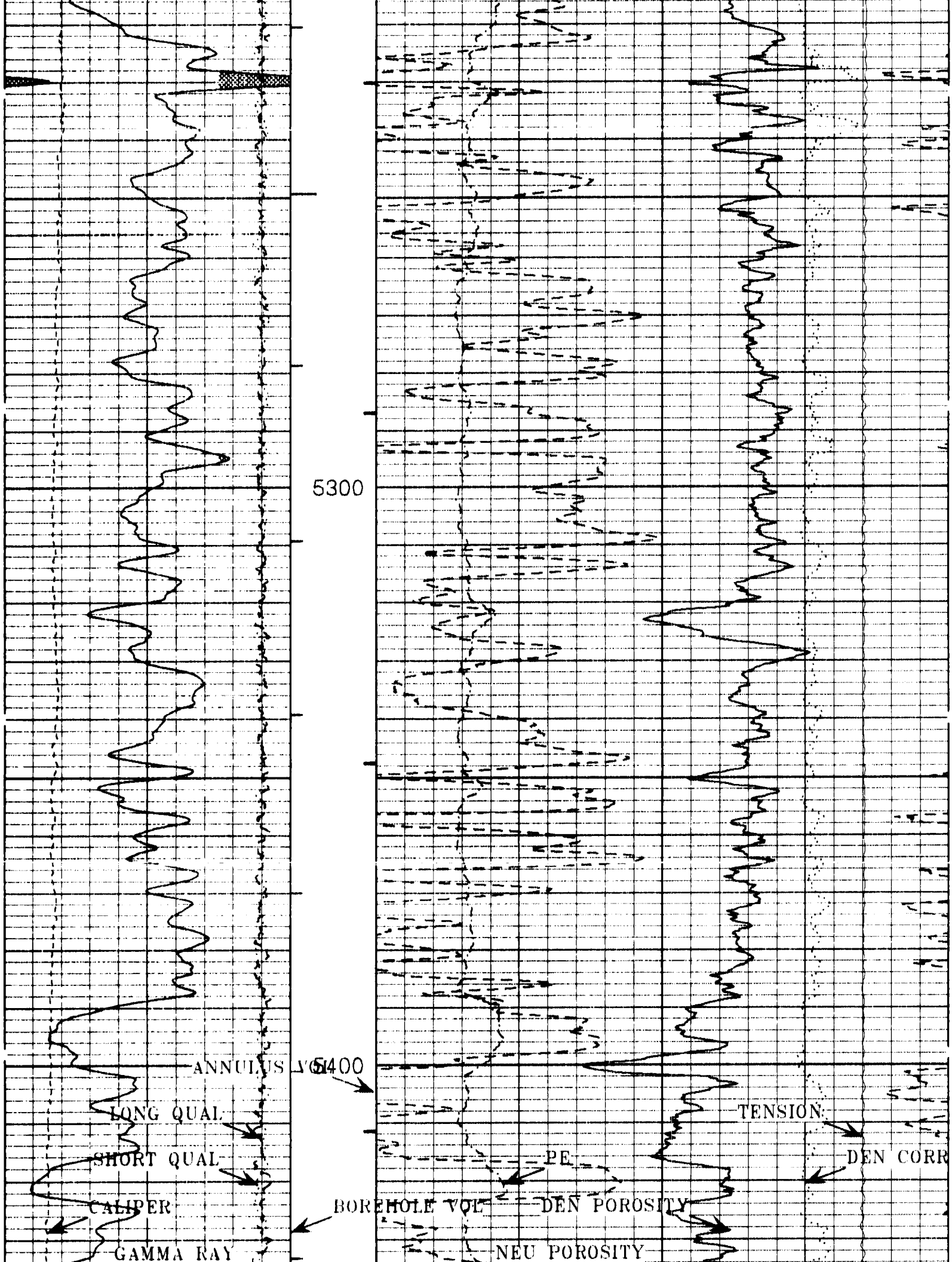
Version No: 3.44 1 hc 3.0
Data File: 0322_2150_s2100.9 cls
Format File: plot_01_1.spc

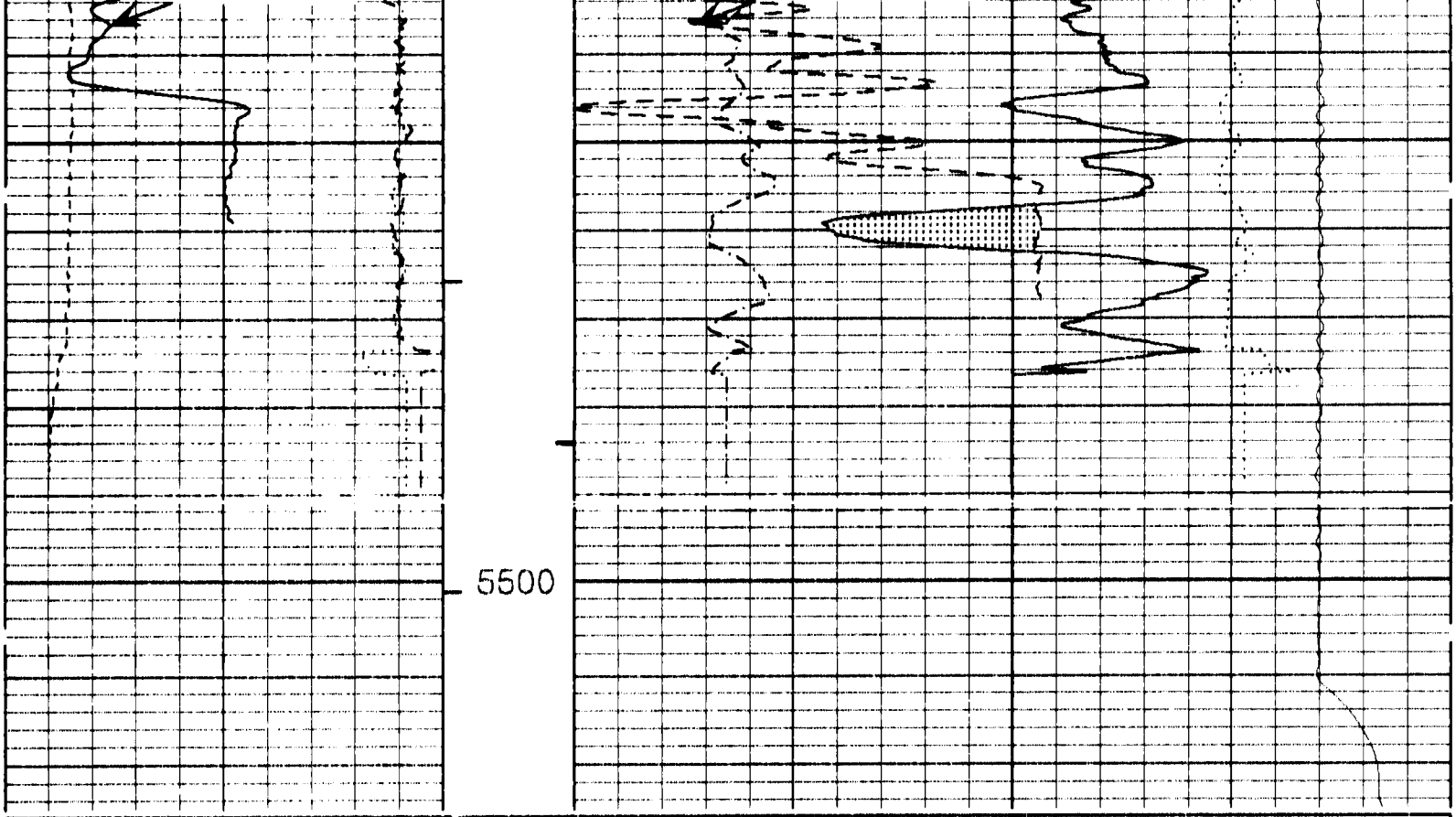
Top Depth: 5207.75
Bottom Depth: 5525.00

Plot Time: 03-22-98 23:42:06
Log Time: 03-22-98 23:35:25

GAMMA RAY API COUNTS 0 200	ANNULUS VOL <AHV<	NEU POROSITY % 30. -10		
CALIPER INCHES 6 16	BOREHOLE VOL >BHV>	DEN POROSITY % 30. -10		
SHORT QUAL -4.5 .5	1:240 Ft.	PE 0 10		DEN CORR GM/CC -.25 .25
LONG QUAL 4.5 -.5				TENSION POUNDS 10000 0




5300
5400
ANNULUS VOL
LONG QUAL
SHORT QUAL
CALIPER
GAMMA RAY
BOREHOLE VOL
PE
DEN POROSITY
NEU POROSITY
TENSION
DEN CORR



LONG QUAL 4.5 / -.5	1.240 Ft.	PE 0 / 10	TENSION 10000 POUNDS 0
SHORT QUAL -4.5 / .5			DEN CORR -.25 GM/CC .25
CALIPER 6 INCHES 16	BOREHOLE VOL >BHV>	DEN POROSITY 30. % -10	
GAMMA RAY 0 API COUNTS 200	ANNULUS VOL <AHV<	NEU POROSITY 30. % -10	

HALLIBURTON EXCELL

Version No: 3.44 : hc 3.0
Data File: 0322_2150_s2100 3.dls
Format File: plot_01_1.spc

Top Depth: ------
Bottom Depth: 5525.00

Plot Time: 03-22-98 23:36:38
Log Time: 03-22-98 23:36:25

REPEAT SECTION

MAIN PASS 5" = 100'

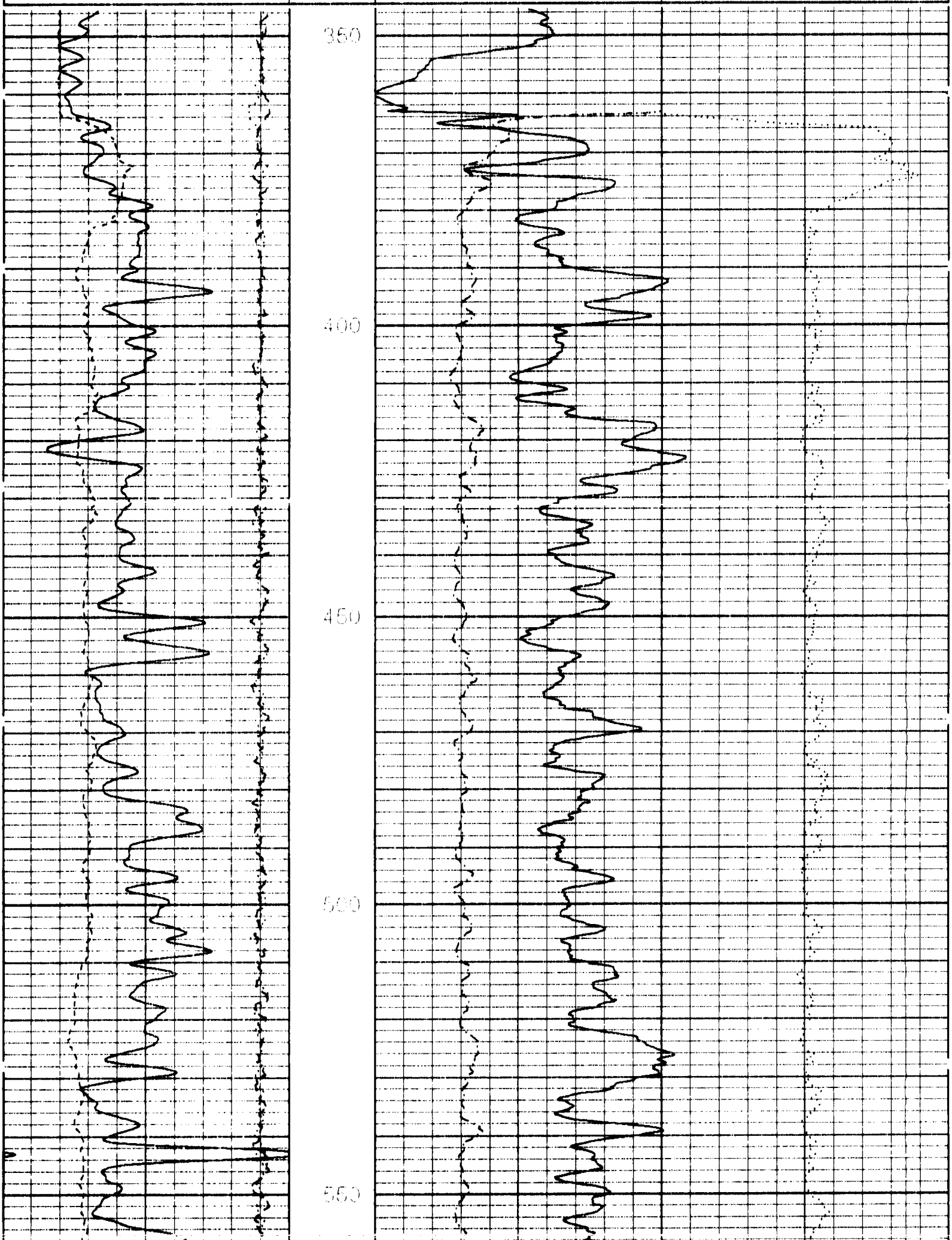
HALLIBURTON EXCELL

Version No: 3.44 : hc 3.0
Data File: 0322_2150_s2100 4.dls
Format File: /field_data/data2/VERNAL_SPC/RHOB.spc

Top Depth: 345.00
Bottom Depth: 5505.00

Plot Time: 03-23-98 02:18:36
Log Time: 03-22-98 23:46:15

GAMMA RAY 0 GAMMAAPI 200	1:240 Ft	BULK DENSI 2 GM/CC 3	
CALIPER 6 INCHES 16		PE 0 / 10	DEN CORR -.25 GM/CC .25
QUALITY SHR -4.5 / 5			TENSION 10000 POUNDS 0
QUALITY LOD 4.5 / -.5			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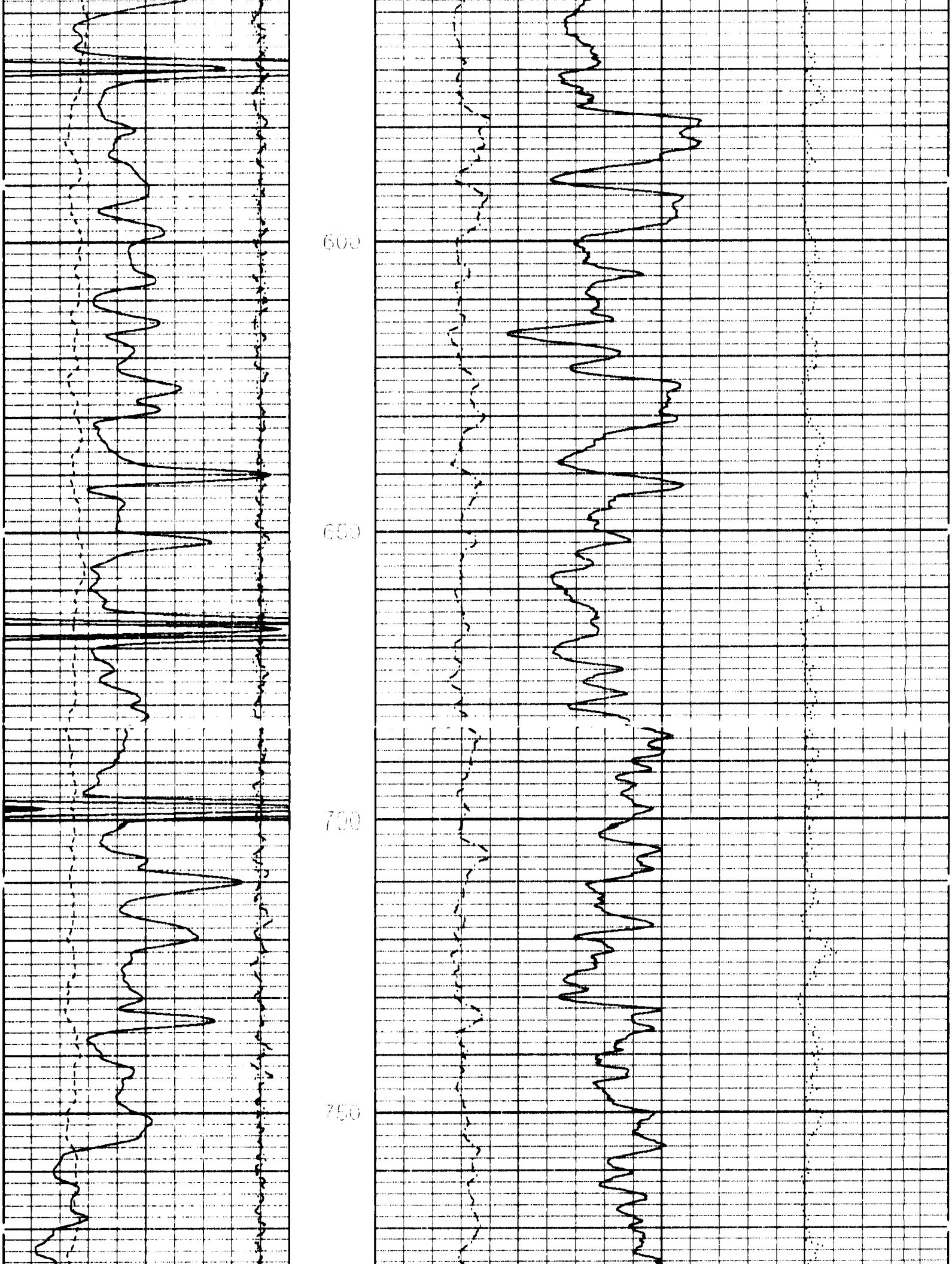
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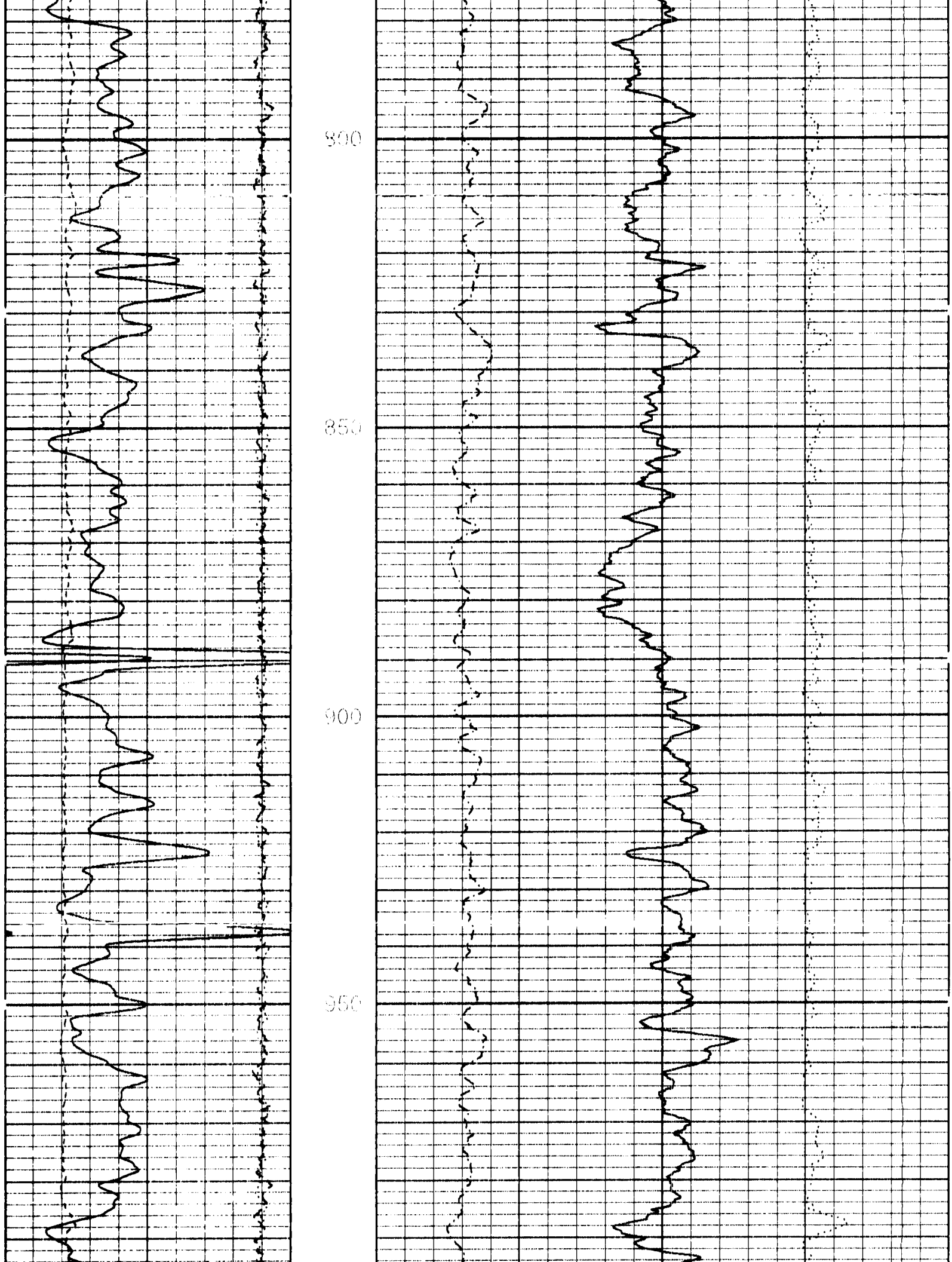
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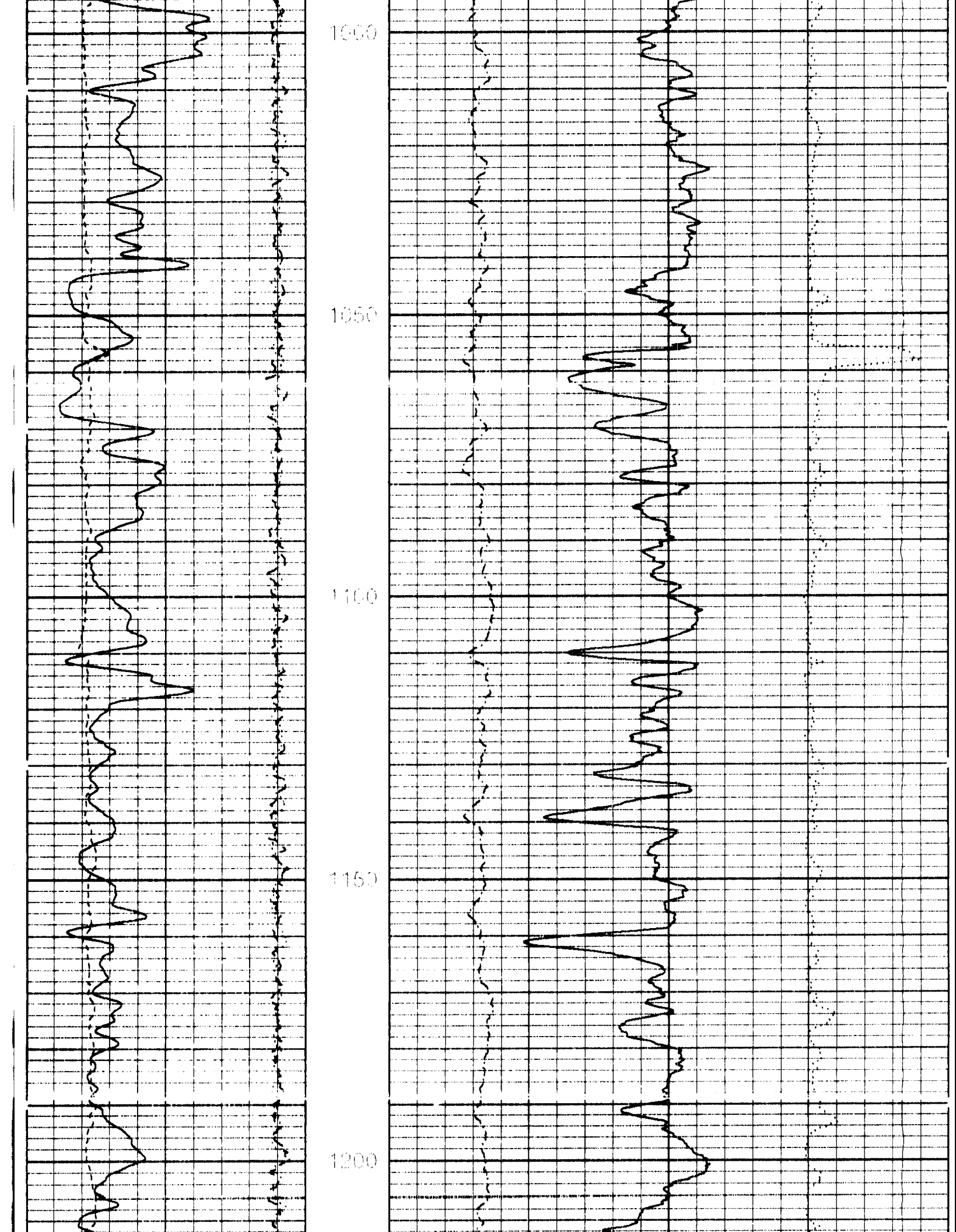
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1150
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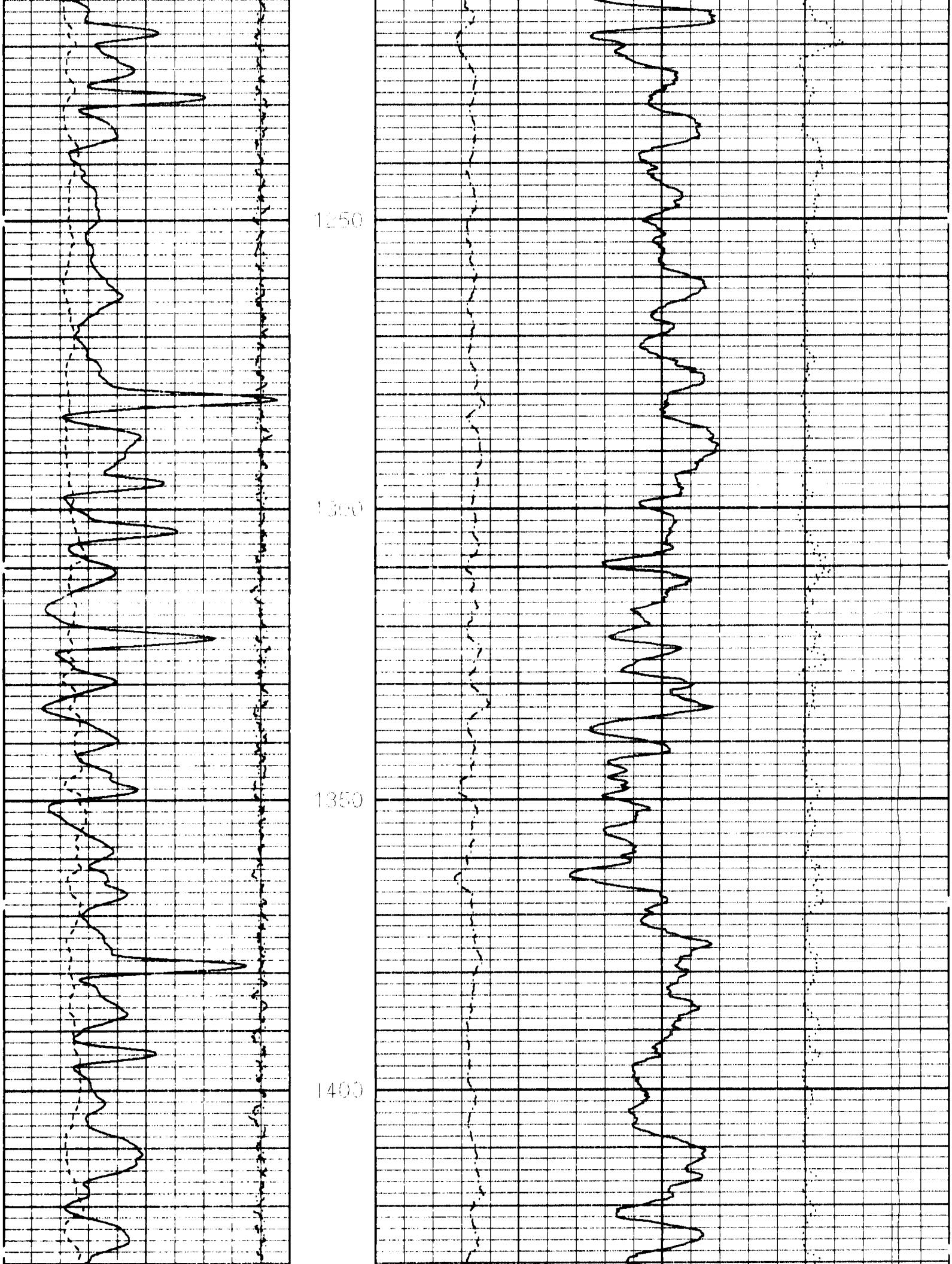
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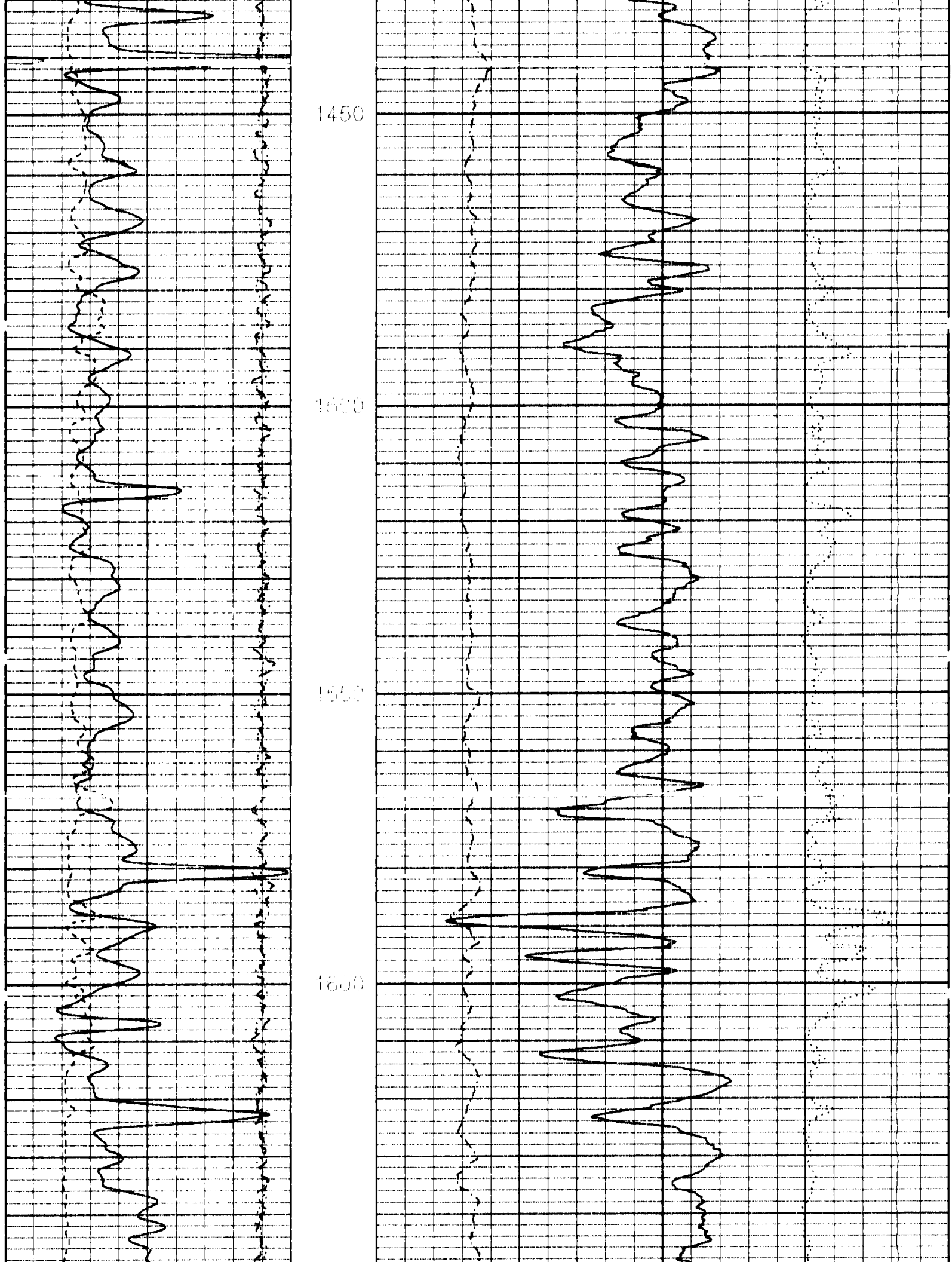
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1550
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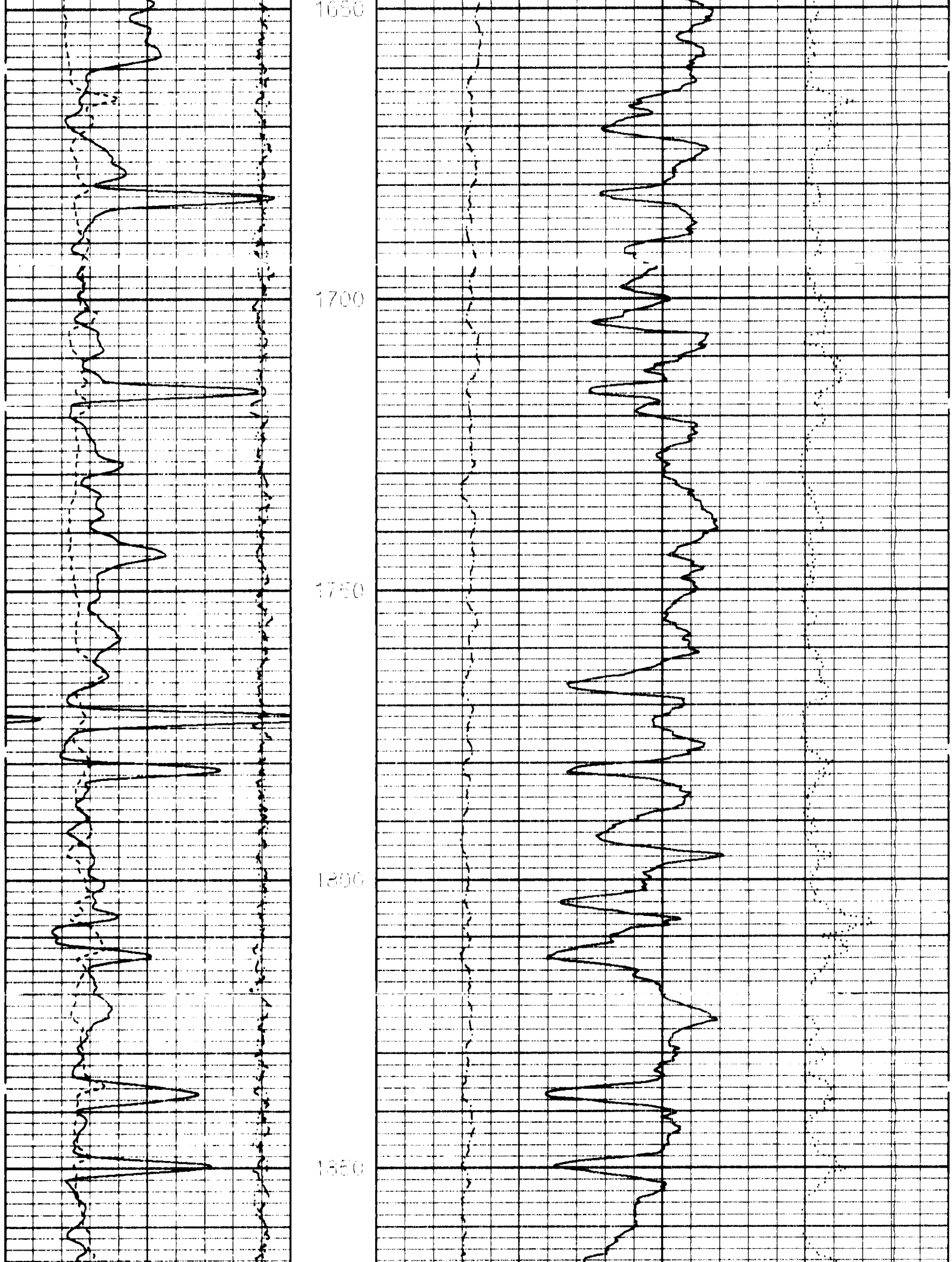
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1700
1750
1800
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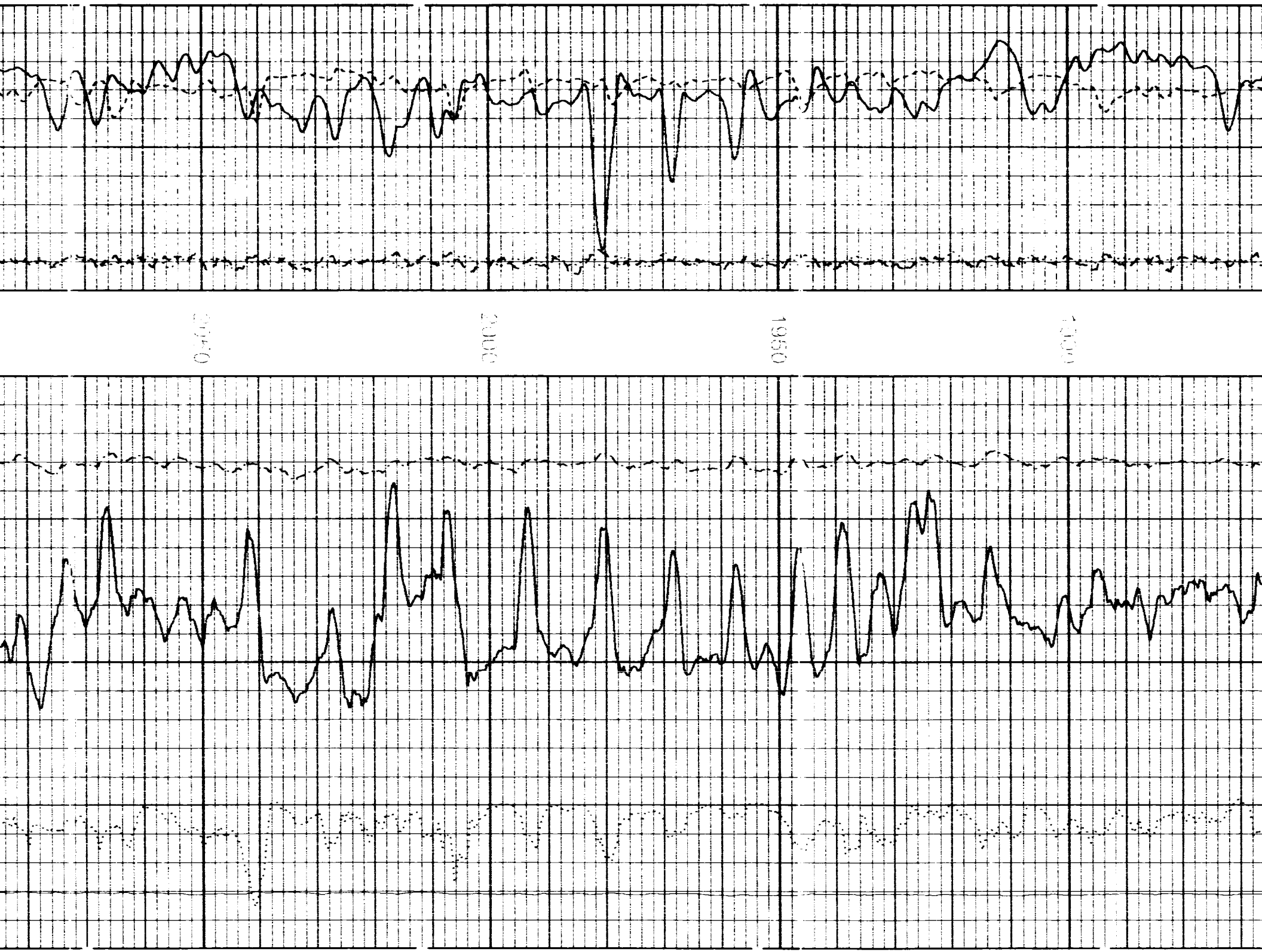
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2000
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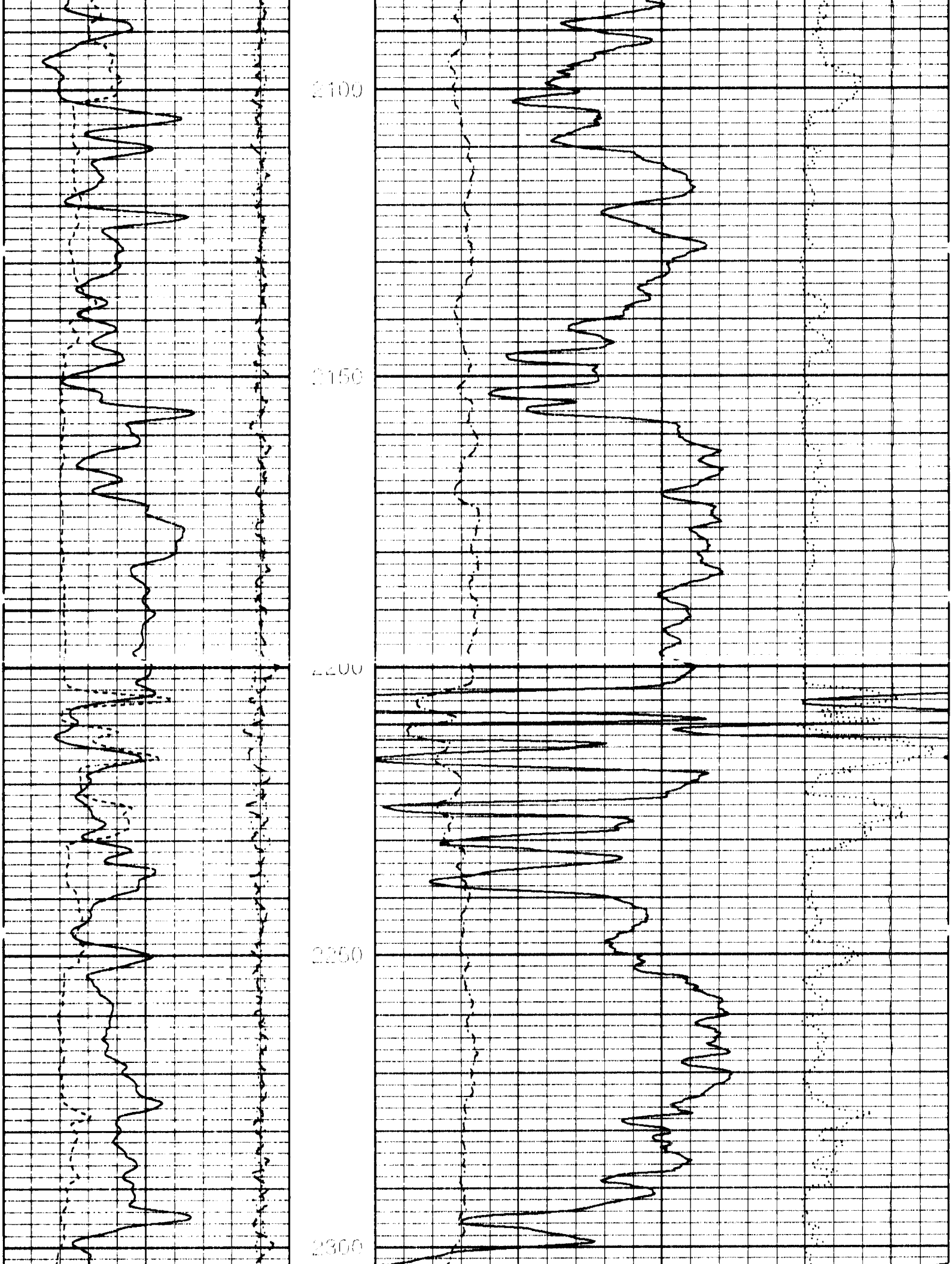
1700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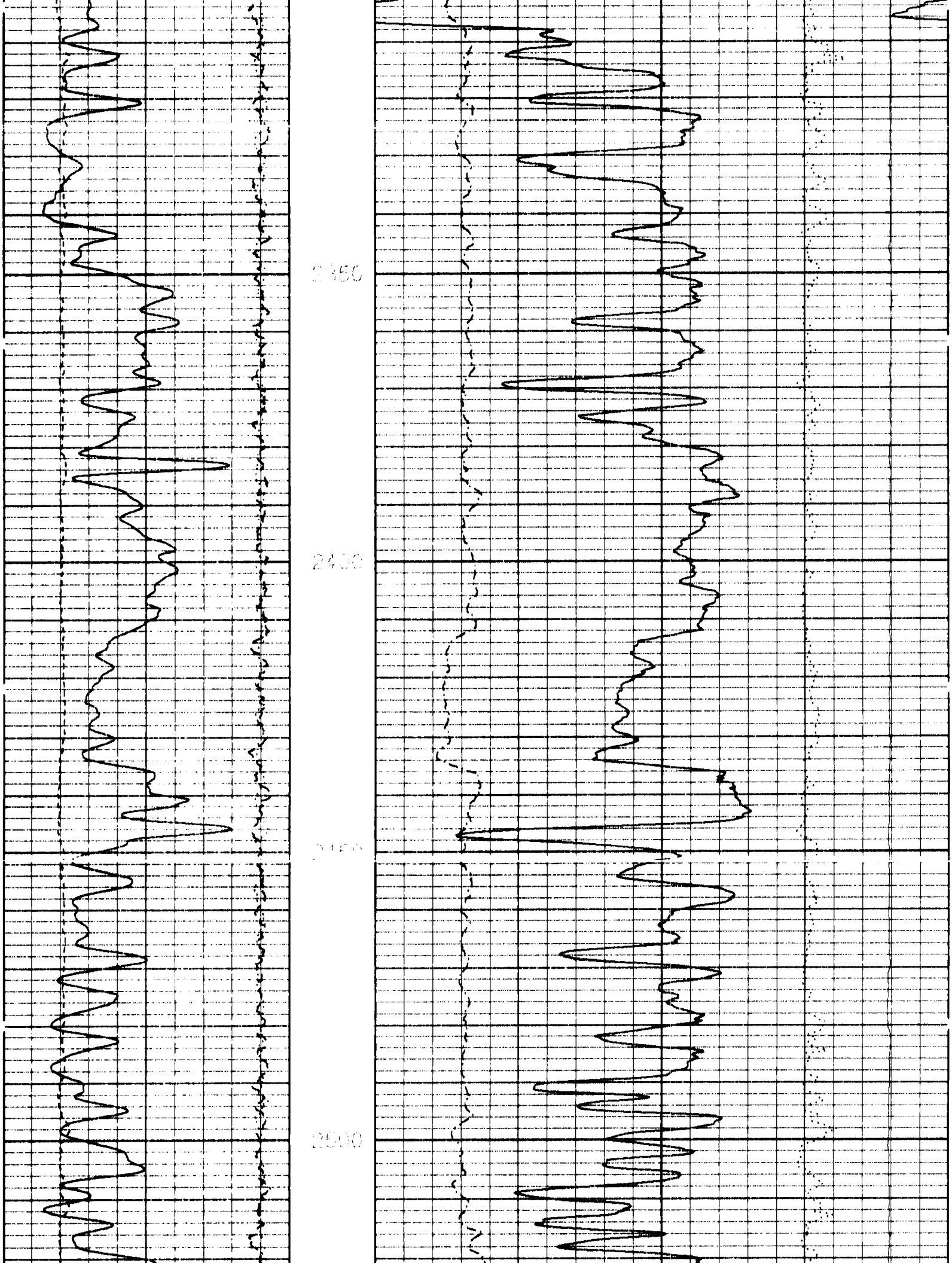
2200
2250
2300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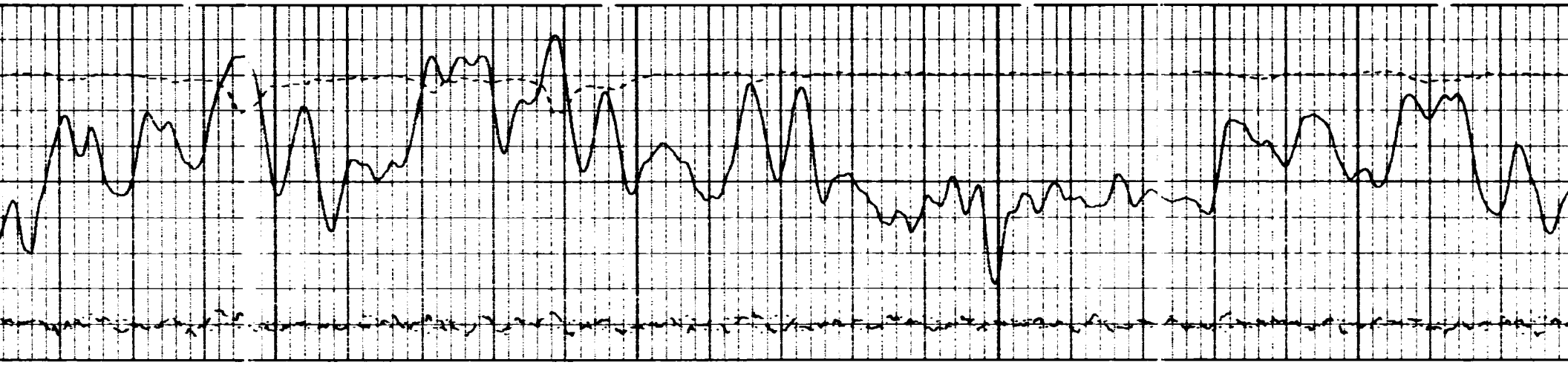

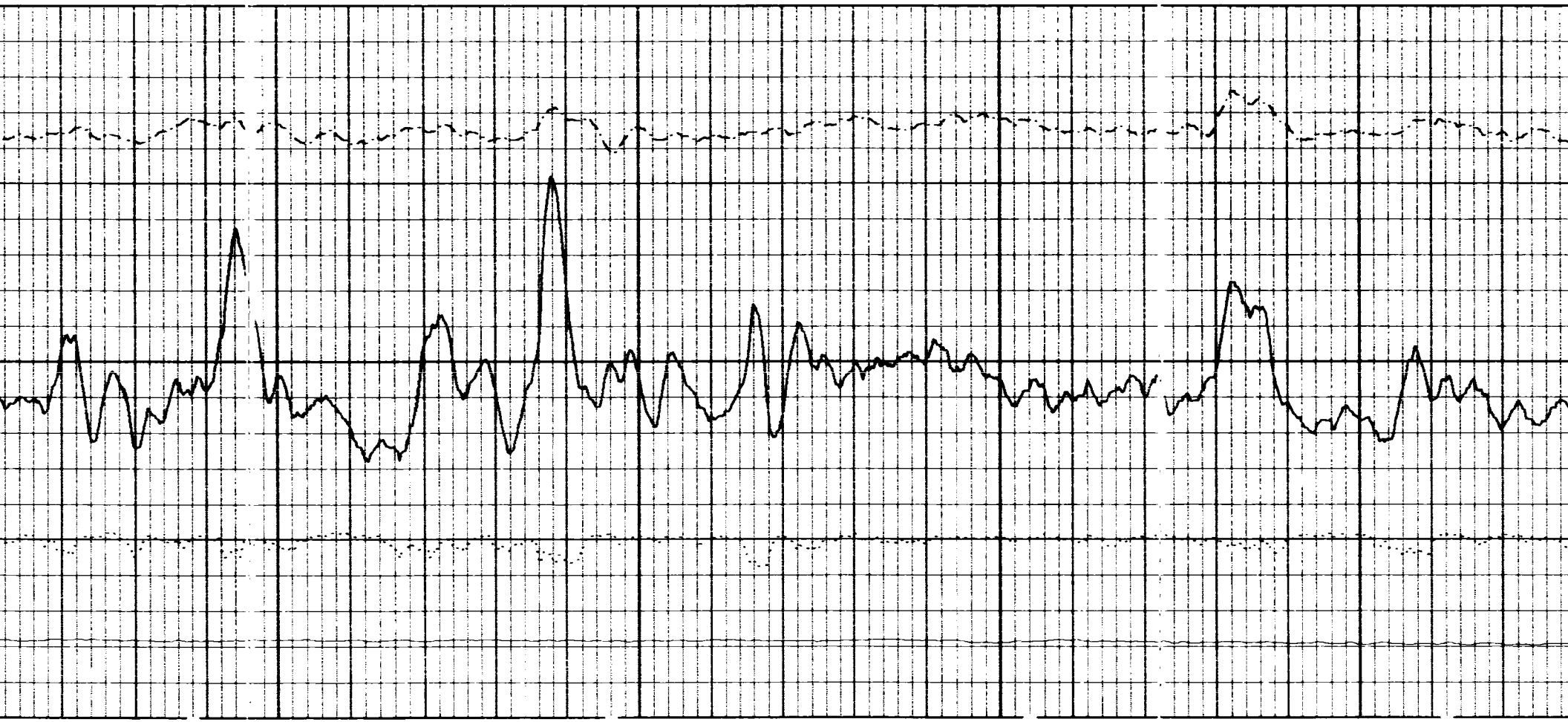

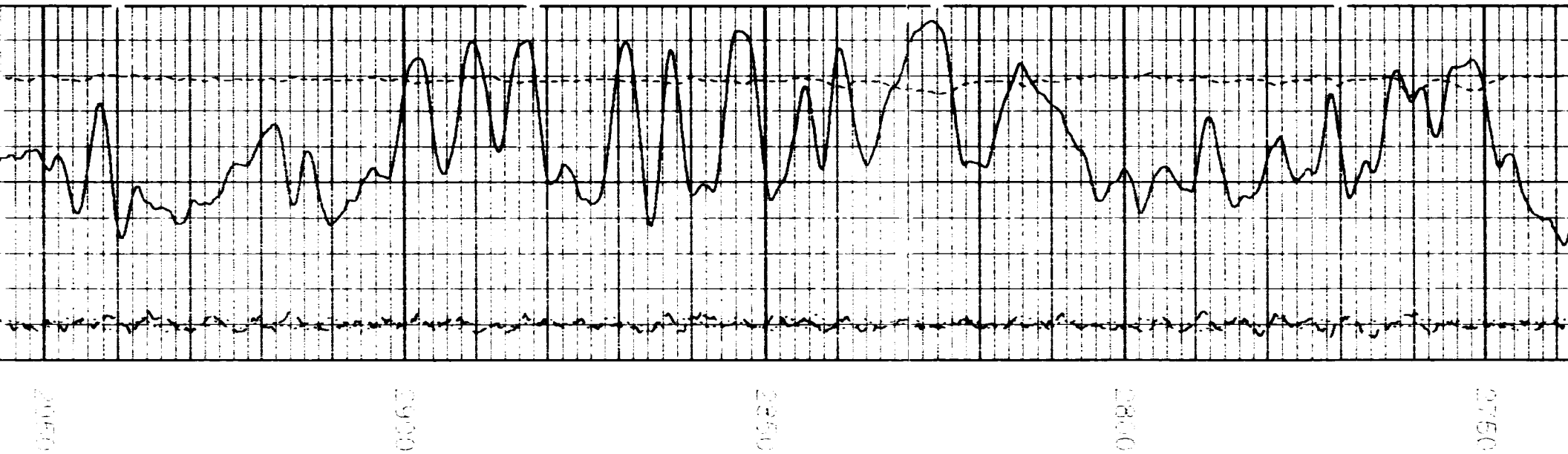
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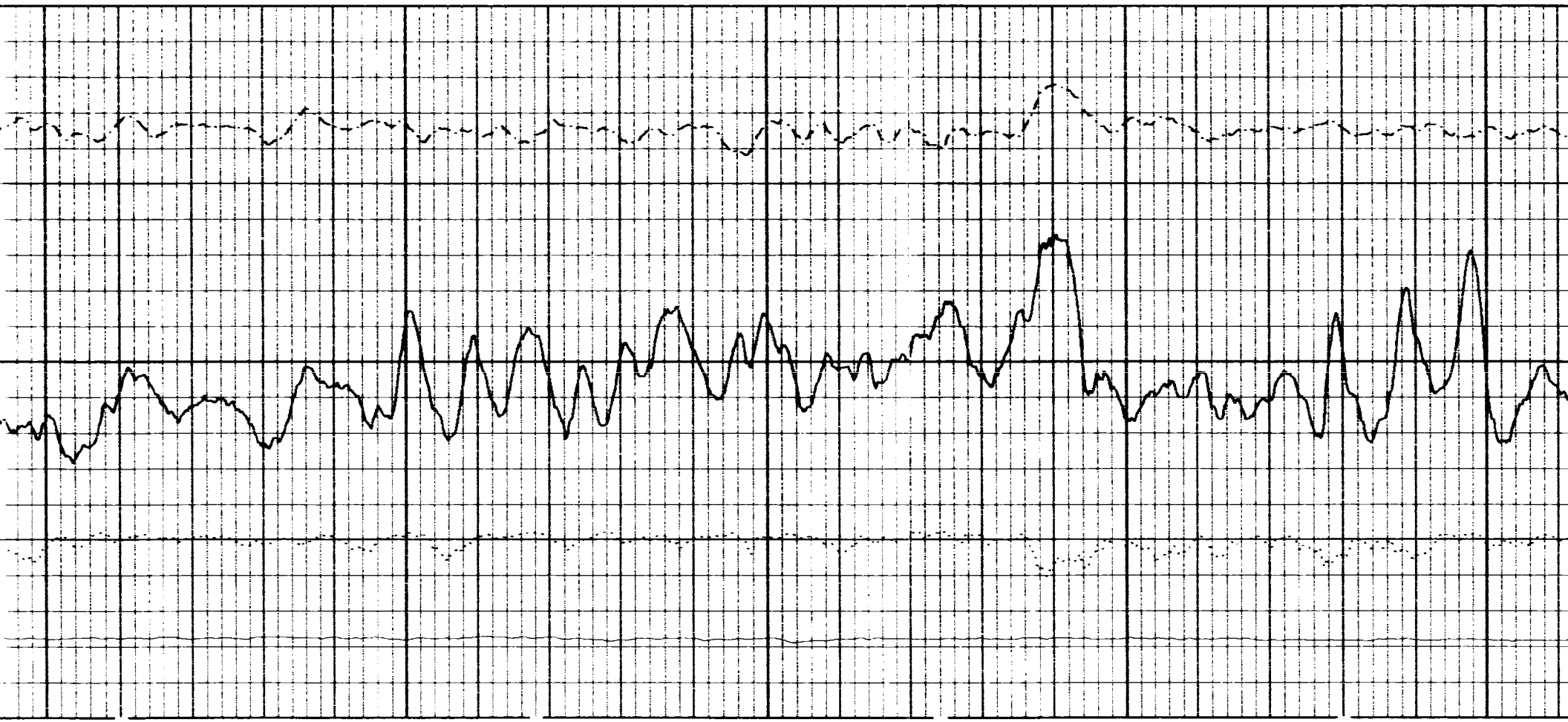
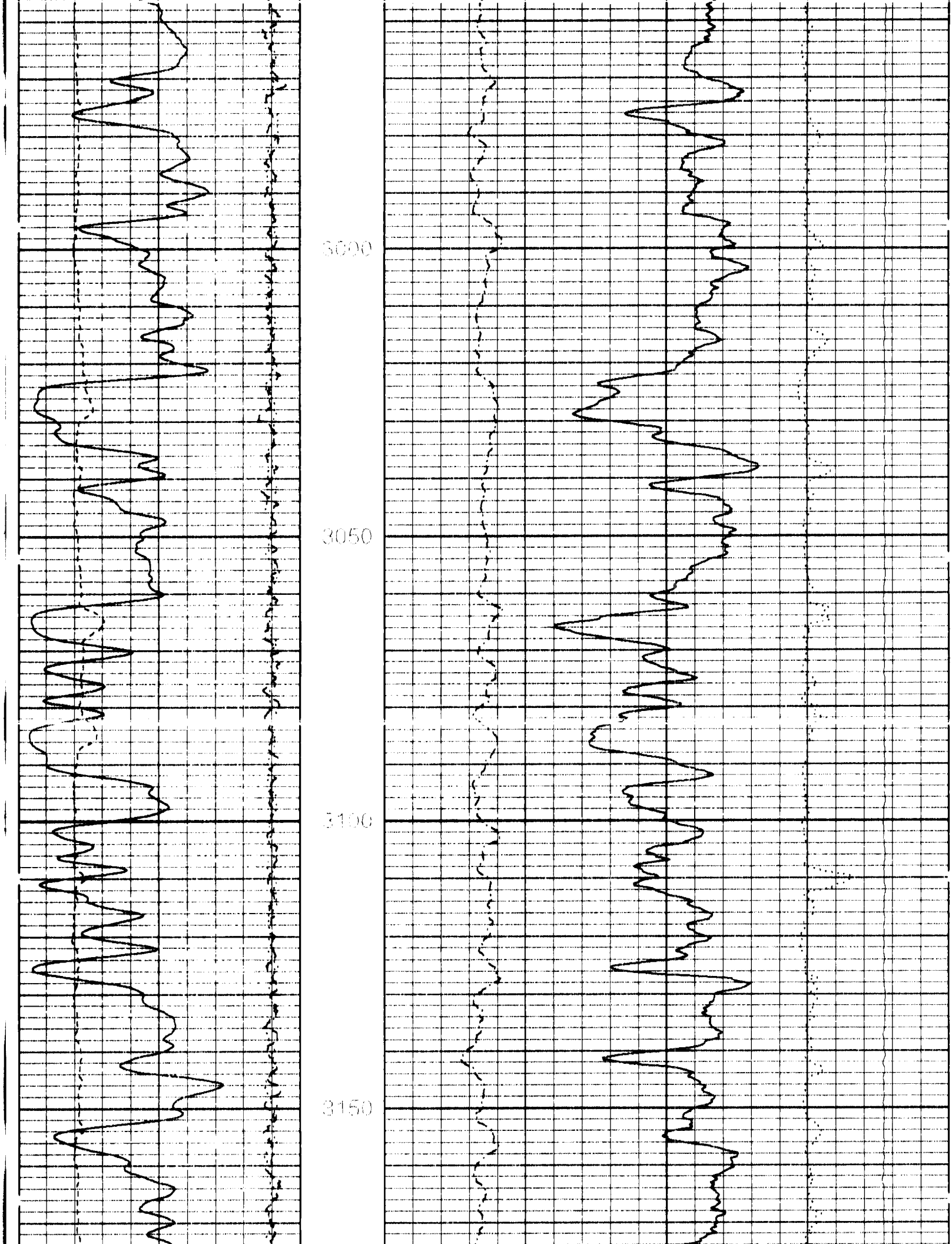
0600
0700
0800

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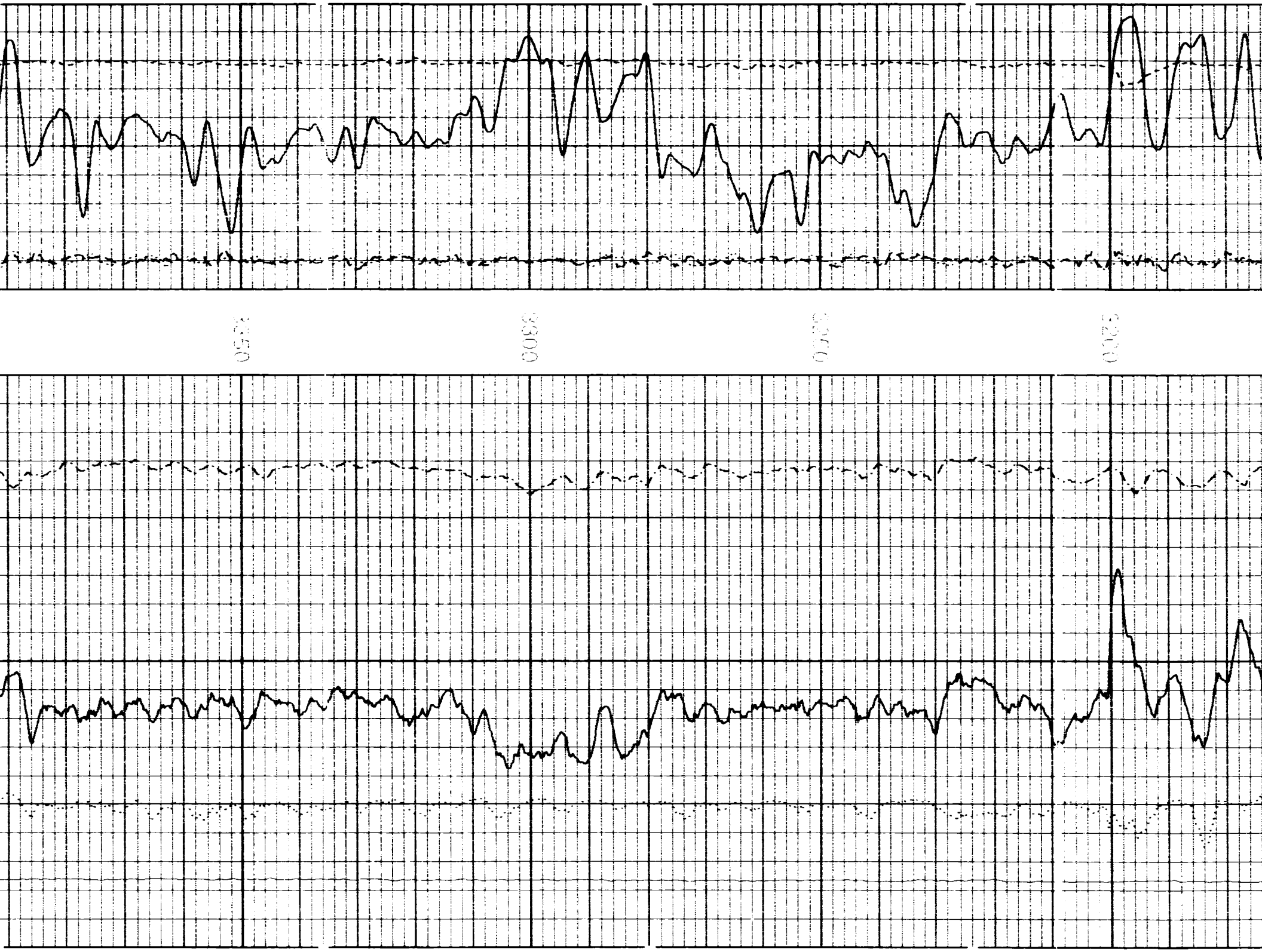
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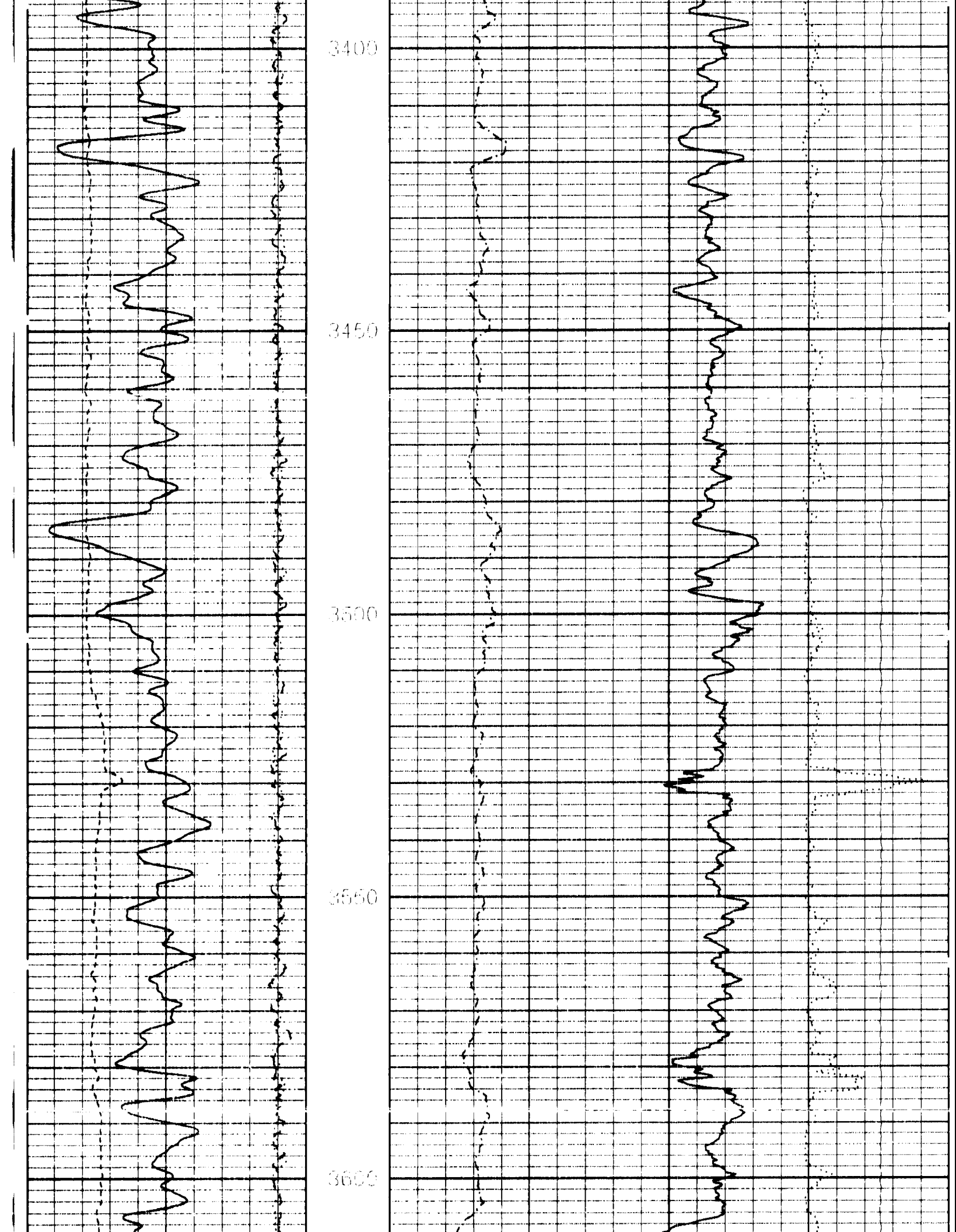
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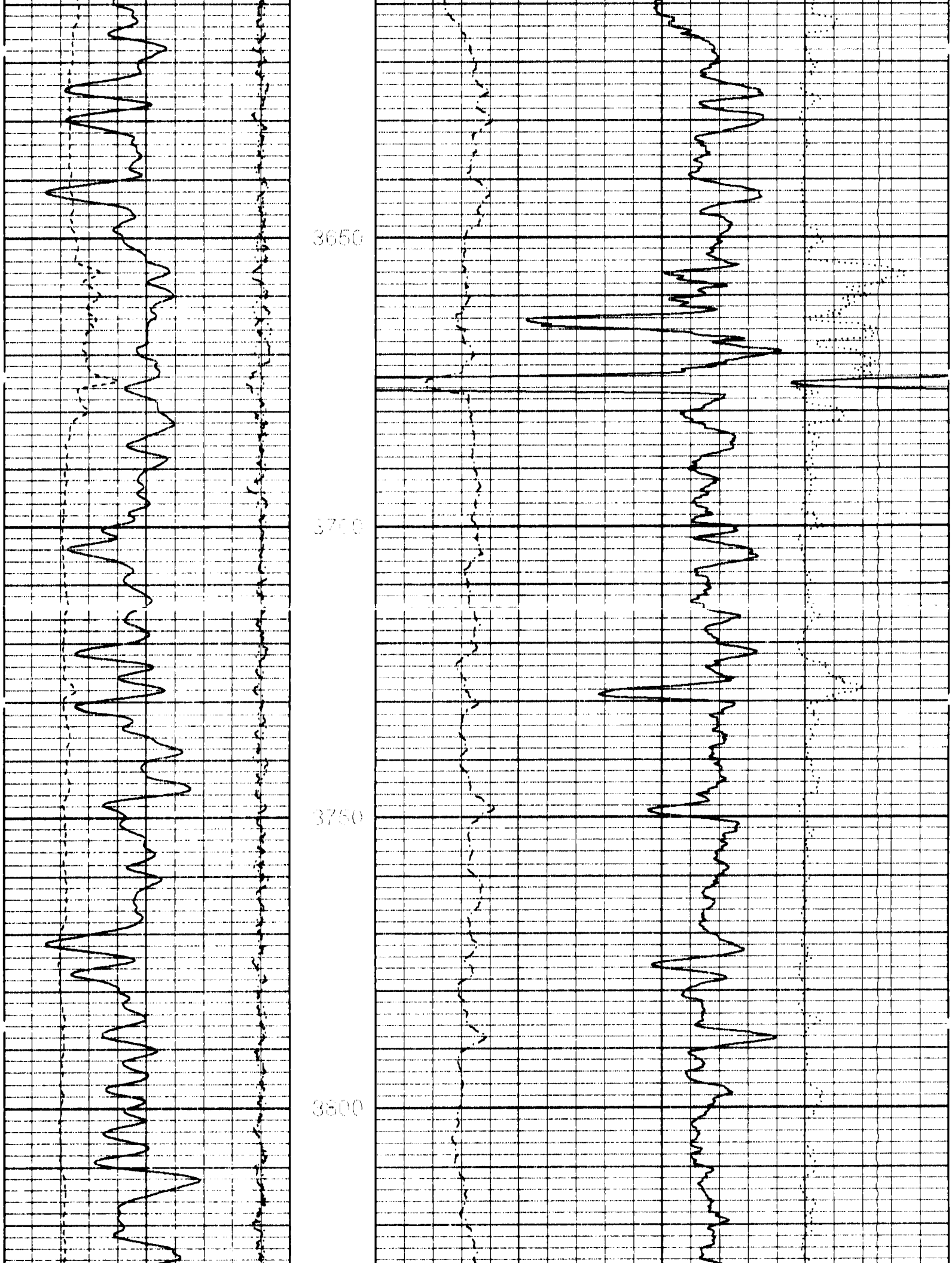
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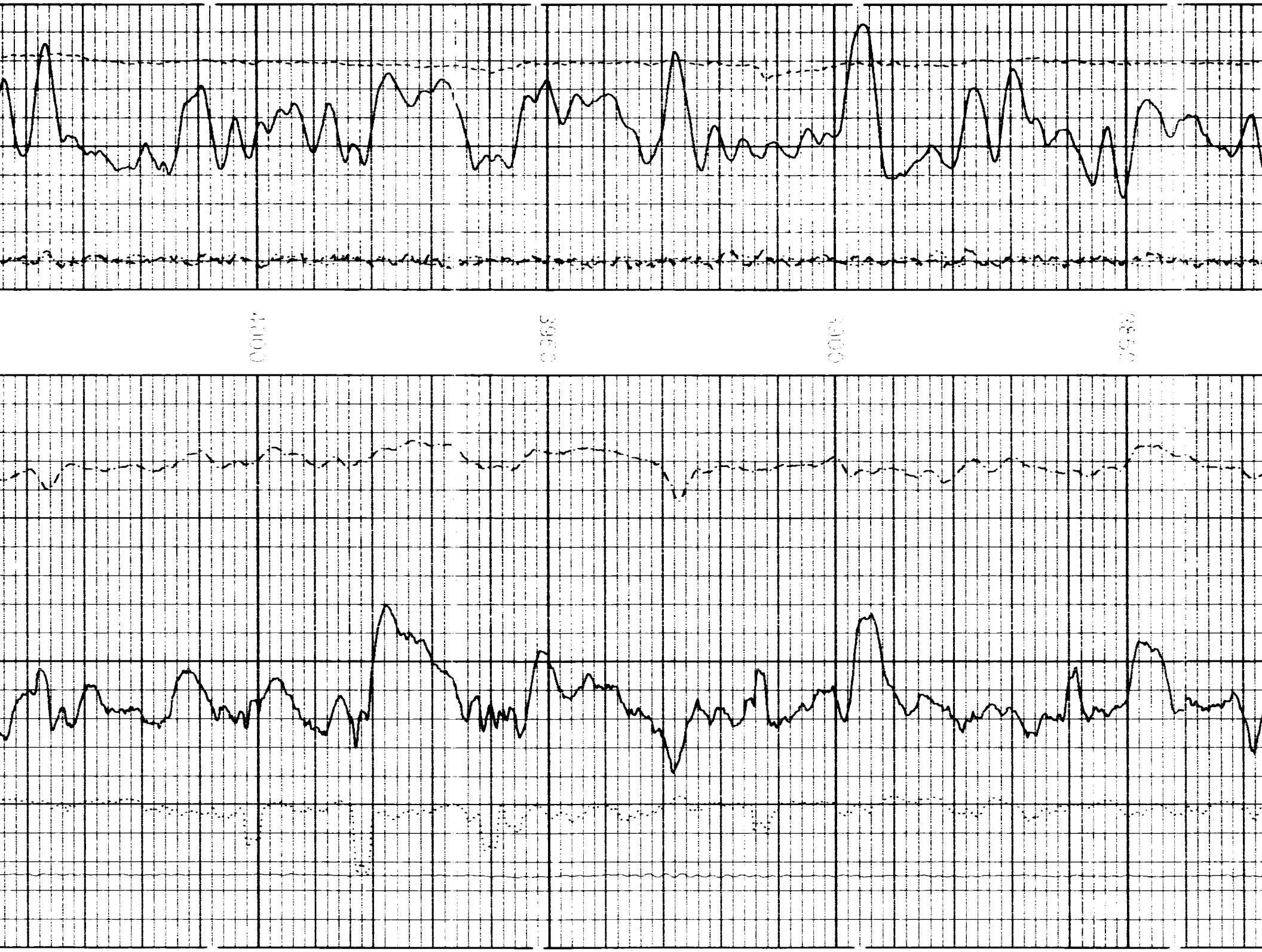

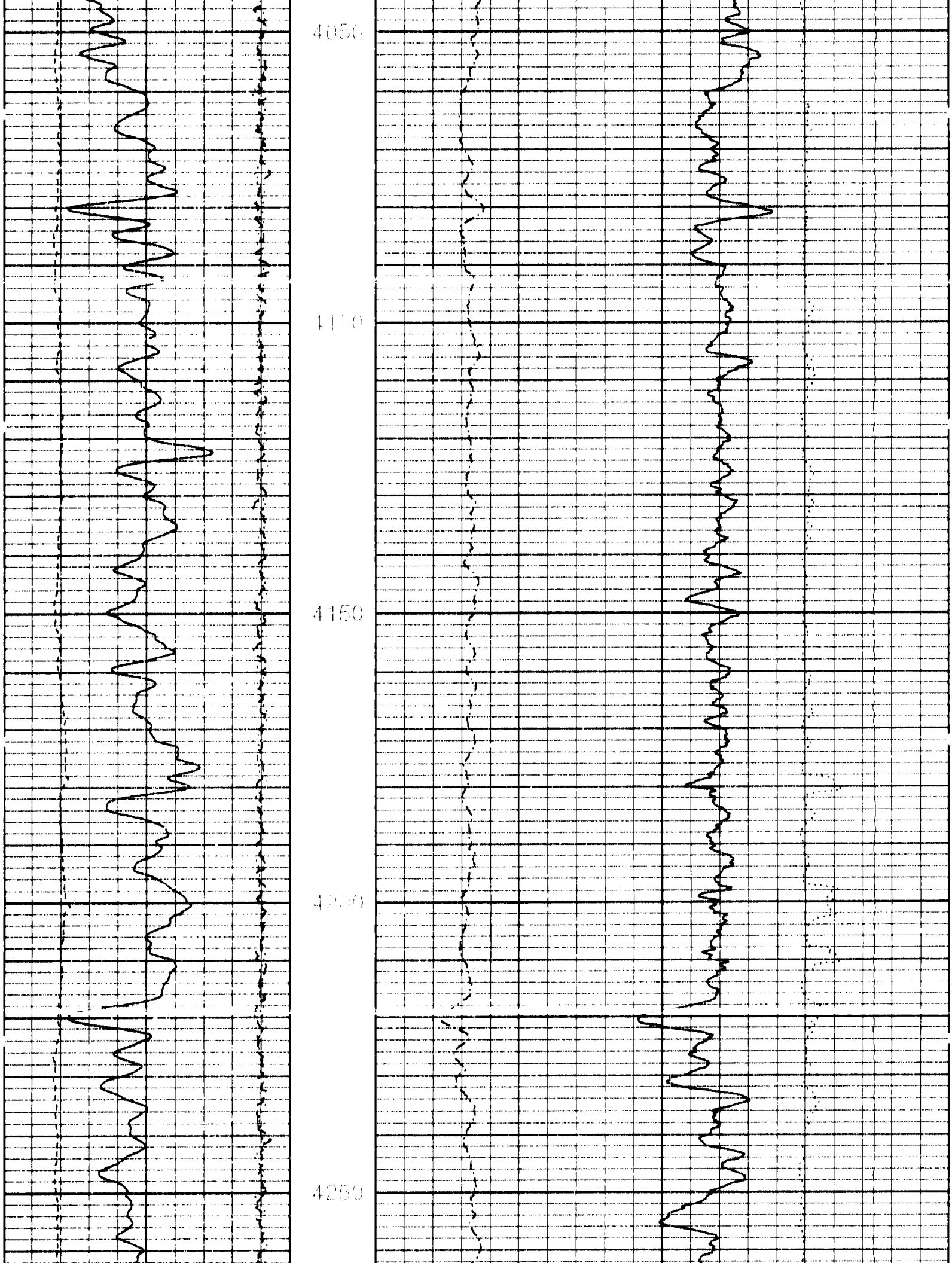
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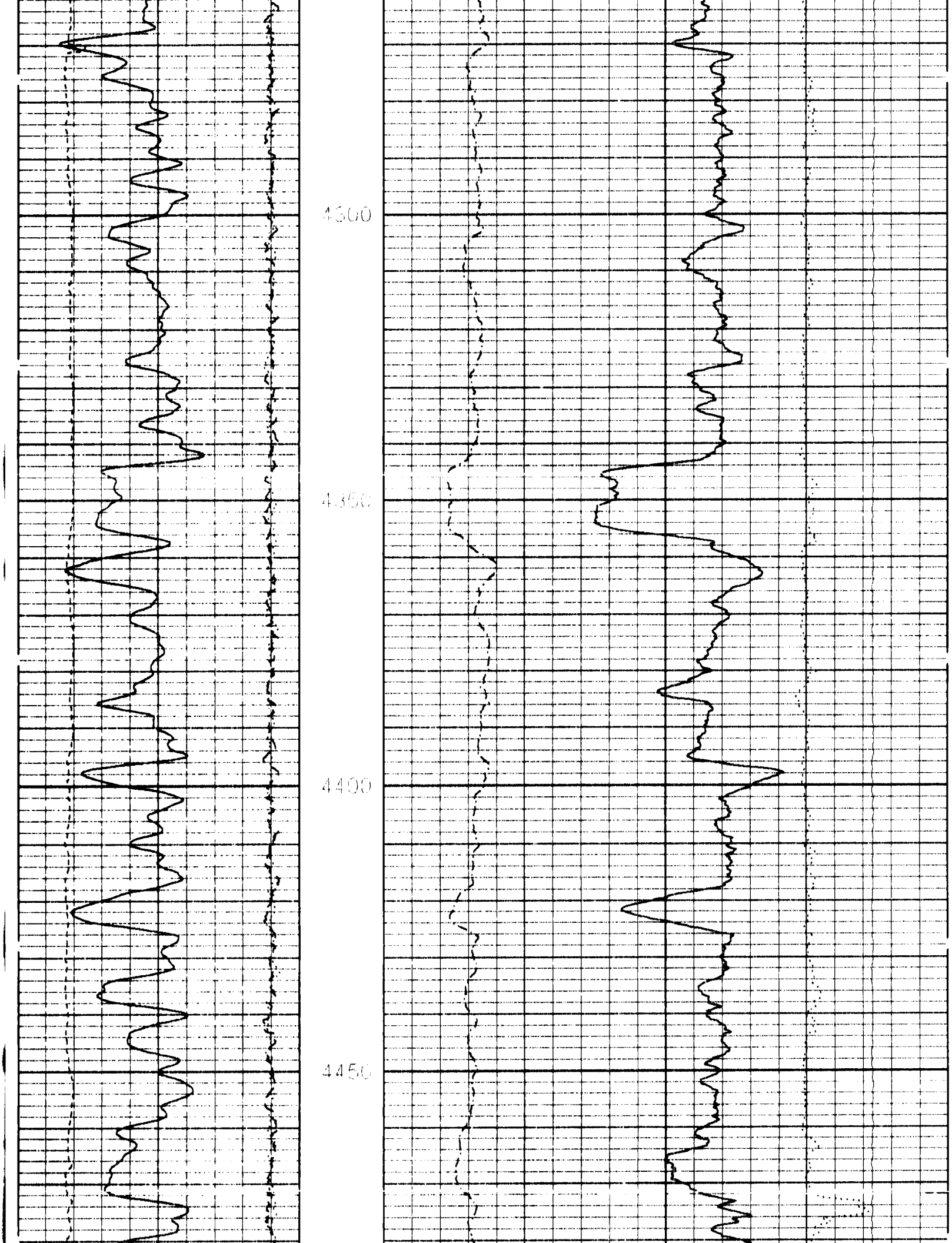
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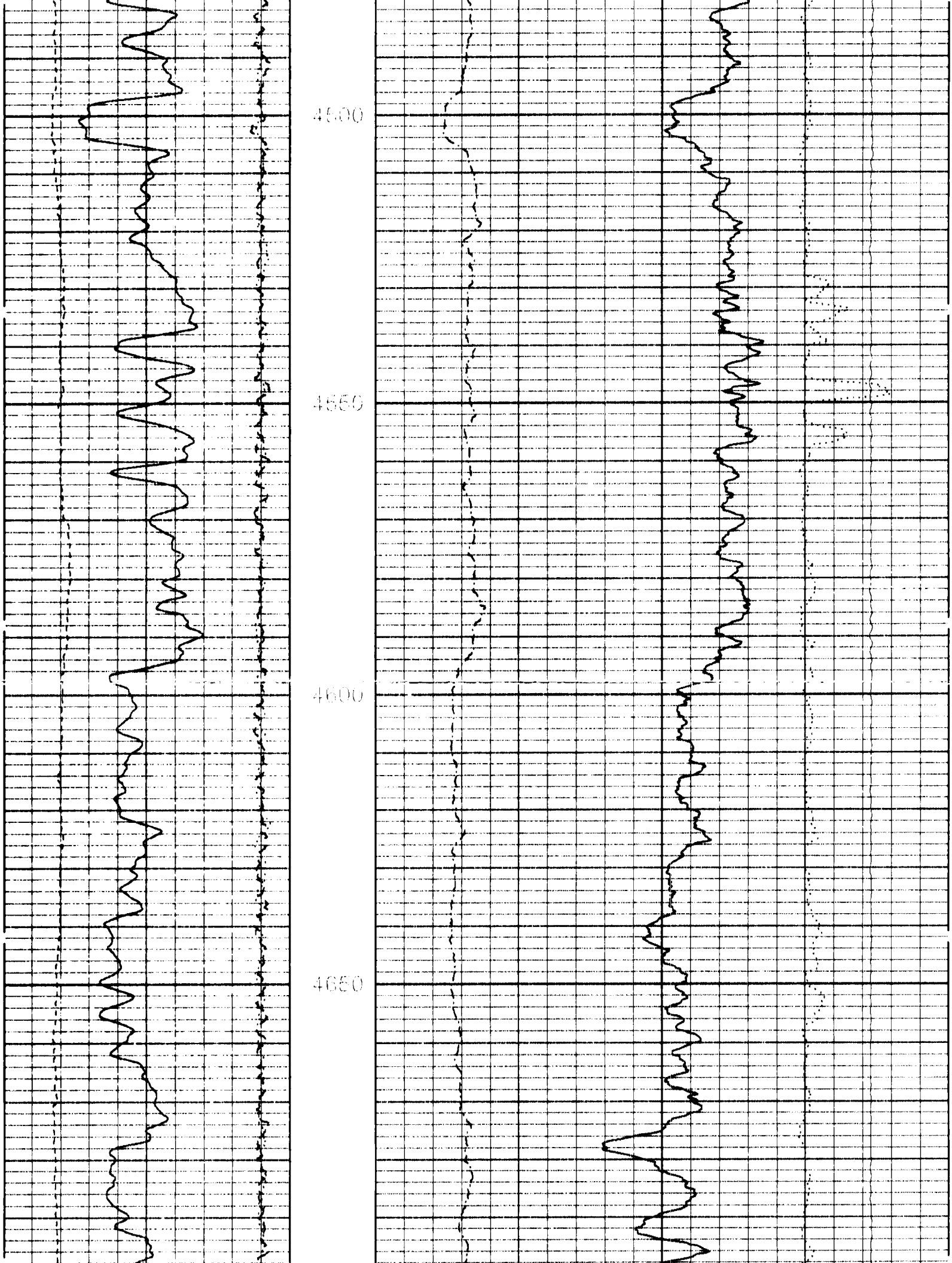
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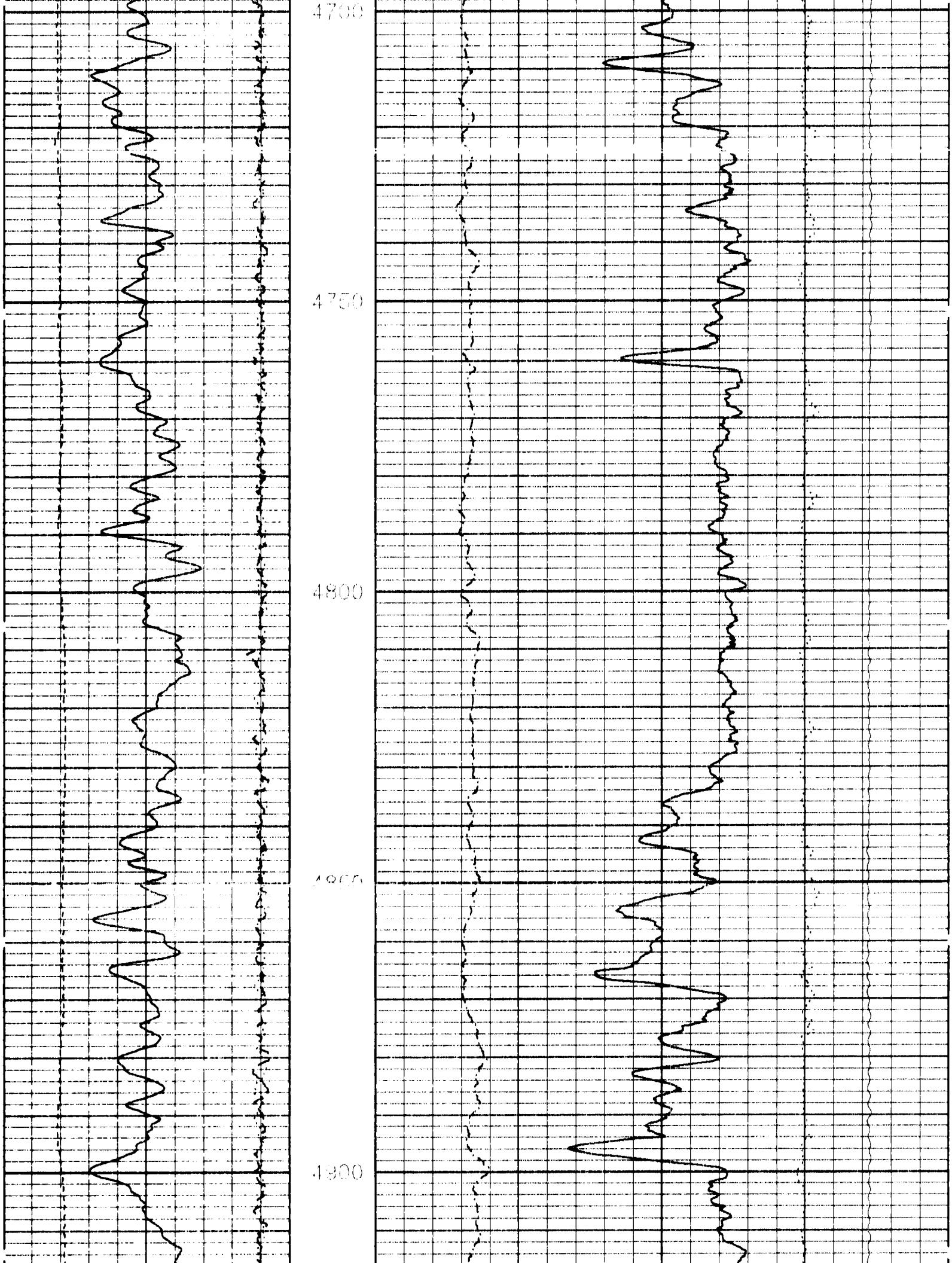
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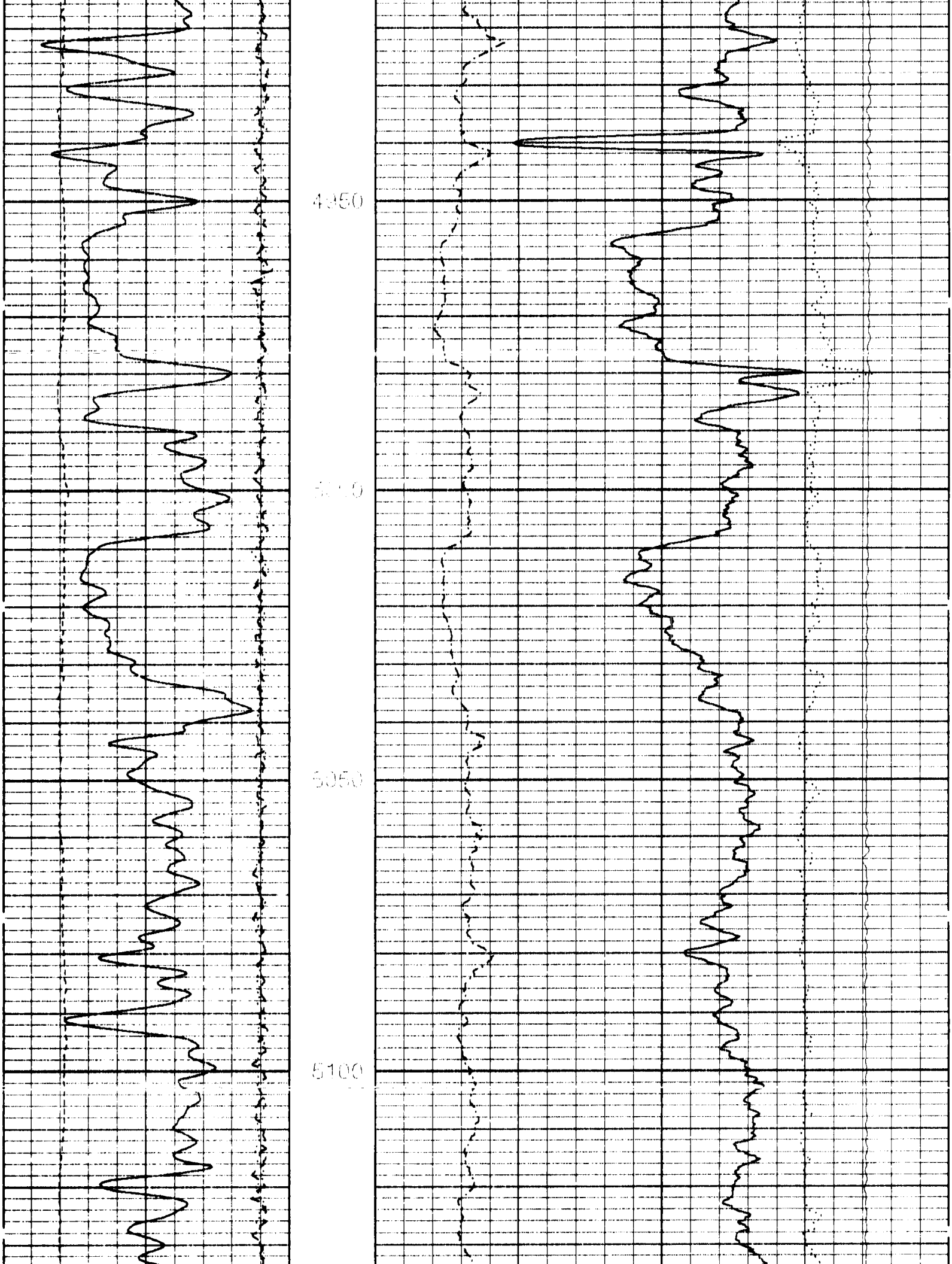

4950
5000
5050
5100

QUALITY LON 4.5 — -5			
QUALITY SHR -4.5 — 5			TENSION POUNDS 10000 — 0
CALIPER INCHES 6 — 16	1:240 Ft	PE 0 — 10	DEN CORR GM/CC -.25 — .25
GAMMA RAY GAMMAAPI 0 — 200		BULK DENSI GM/CC 2 — 3	

HALLIBURTON EXCELL

Version No: 3.44 | hc.3.0
Data File: 0322_2150_s2100.4.cis
Format File: /field_data/data2/VERNAL_SPC/RHOB.spc

Top Depth: 345.00
Bottom Depth: 5505.00

Plot Time: 03-23-98 02:08:59
Log Time: 03-22-98 23:46:15

MAIN PASS 5" = 100'

REPEAT SECTION

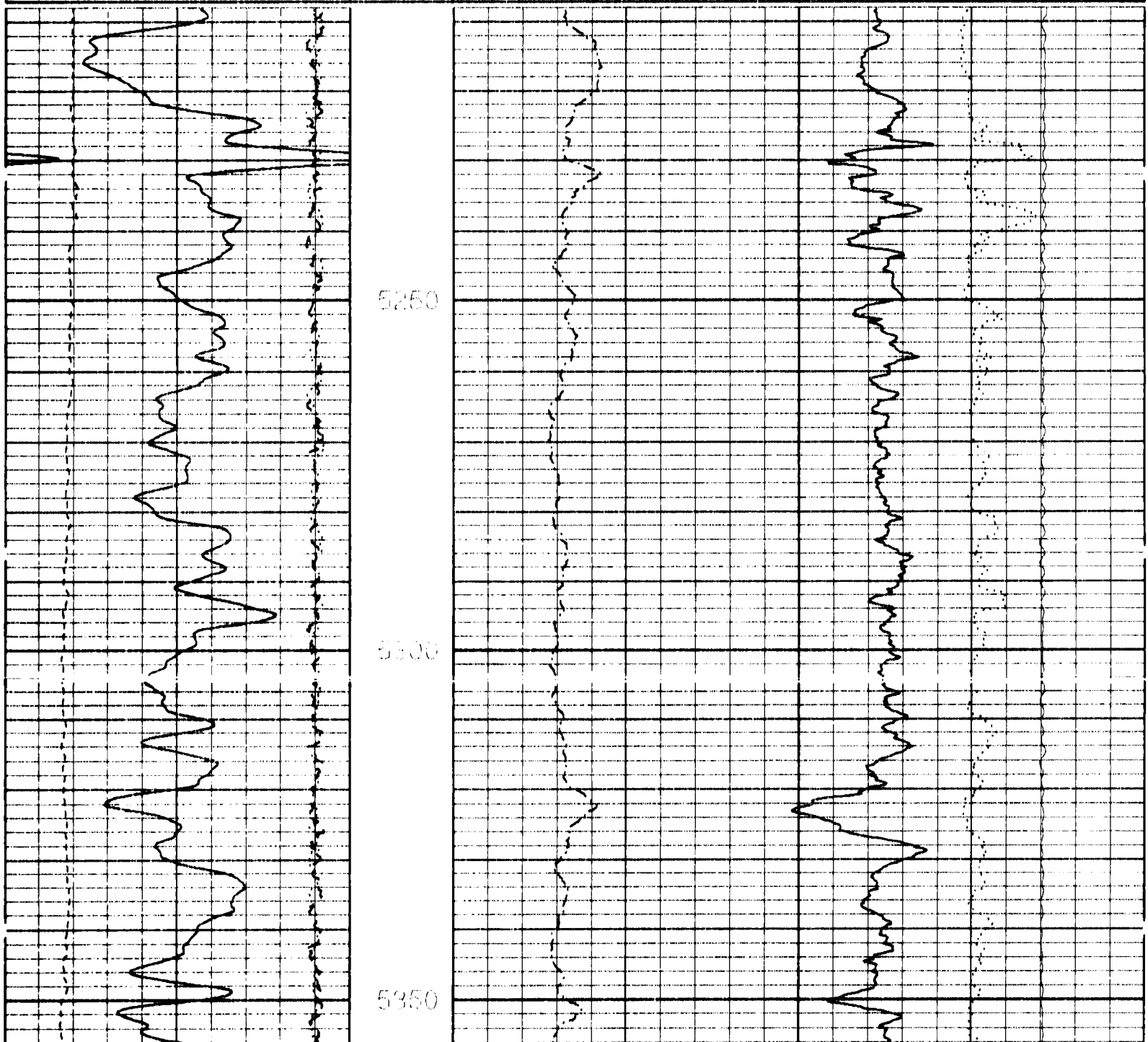
HALLIBURTON
EXCELL

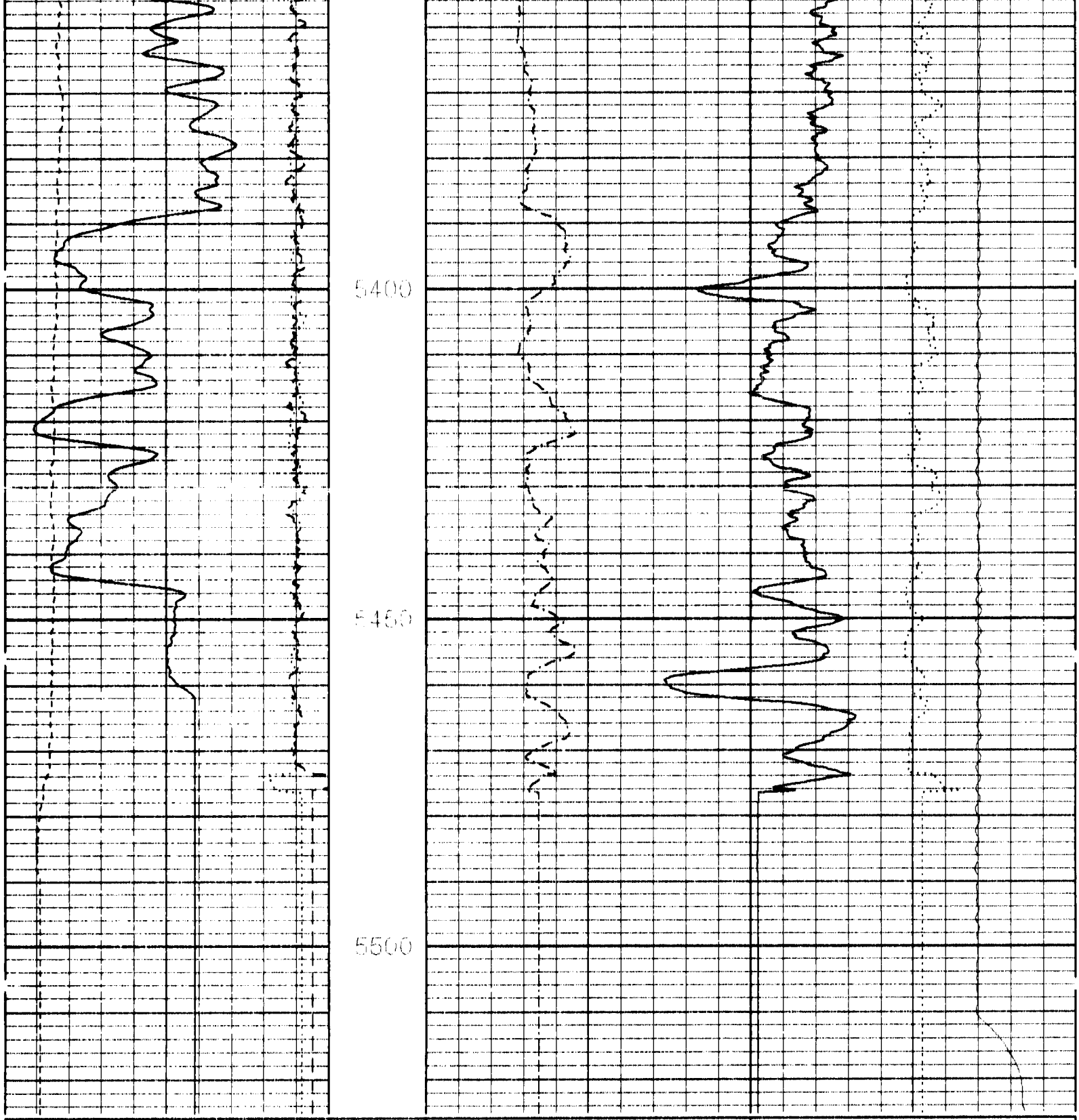
Version No: 5.44.1 hc 3.0
Data File: 0322_2150_s2100.3.cls
Format File: /field_data/data2/VERNAL_SPC/RHOB.spc

Top Depth: 5207.58
Bottom Depth: 5625.00

Plot Time: 03-23-98 06:25:23
Log Time: 03-22-98 23:35:25

GAMMA RAY		BULK DENSITY	
0 GAMMAAPI 200	1:240 Ft.	2 GM/CC 3	
CALIPER 6 INCHES 16		PE 0 10	DEN CORR -.25 GM/CC .25
QUALITY SHR -4.5 5			TENSION 10000 POUNDS 0
QUALITY LON 4.5 -5			





QUALITY LON 4.5 -.5			
QUALITY SHR -4.5 5			TENSION 10000 POUNDS 0
CALIPER 6 INCHES 16	1:240 ft	PE 0 10	DEN CORR -.25 GM/CC .25
GAMMA RAY 0 GAMMAAPI 200		BULK DENSI 2 GM/CC 3	

HALLIBURTON
EXCELL

Version No. 3.44 | hc:3.0
Data File. 0322_2150_s2100.3.cls
Format File. /field_data/data2/VERNAL_SPC/RHOB.spc

Top Depth 5207.58
Bottom Depth 5525.00

Plot Time 03-23-98 06:24:45

REPEAT SECTION

EXCELL-2000 Calibration Report
Date: 23-Mar-1998 05:26

GAMMA RAY TOOL SHOP CALIBRATION SUMMARY

PERFORMED: 20-Mar-1998 08:33 LAST SHOP CALIBRATION: 07-Mar-1998 15:14
SERIAL NUMBER: R108646 MODEL: NGRT-A
TRUCK UNIT NUMBER: 52546 PROGRAM VERSION: 3.44
PERFORMED BY: MELANCON

	MEASURED	CALIBRATED	UNITS
BACKGROUND	32	32	GAPI
BACKGROUND+CALIBRATOR	246	246	GAPI
CALIBRATOR	214	214	GAPI
GAPI CONVERSION FACTOR	0.535		GAPI/CPS

GAMMA RAY TOOL BEFORE SURVEY FIELD CHECK SUMMARY

PERFORMED: 22-Mar-1998 21:59 LAST SHOP CALIBRATION: 20-Mar-1998 08:33

	SHOP	FIELD	UNITS
BACKGROUND	32	29	GAPI
BACKGROUND+CALIBRATOR	246	238	GAPI
CALIBRATOR	214	210	GAPI

DUAL SPACED NEUTRON II SHOP CALIBRATION SUMMARY

PERFORMED: 18-Feb-1998 20:18 LAST SHOP CALIBRATION: 05-Nov-1997 10:09
SERIAL NUMBER: A132 MODEL: DSNT-A
SOURCE NUM:
TRUCK UNIT NUMBER: 52546 PROGRAM VERSION: 3.44
PERFORMED BY: MB

PRIMARY CALIBRATOR

	MEASURED	CALIBRATED	UNITS
RATIO:	6.401	6.435	
POROSITY:	24.099	24.259	%

FIELD CHECK BLOCK

CHECK RATIO:	6.174	6.208	
CHECK POROSITY:	23.045	23.199	%
SENSITIVITY:	1.0393		

DUAL SPACED NEUTRON II BEFORE SURVEY FIELD CHECK SUMMARY

PERFORMED: 22-Mar-1998 22:09 LAST SHOP CALIBRATION: 18-Feb-1998 20:18

	SHOP	FIELD	UNITS

CHECK RATIO	6.208	6.377	
CHECK POROSITY	23.199	23.989	%

DUAL SPACED NEUTRON II AFTER SURVEY FIELD CHECK SUMMARY

PERFORMED: 23-Mar-1998 04:49 LAST SHOP CALIBRATION: 18-Feb-1998 20:18

	BEFORE	AFTER	UNITS
CHECK RATIO	6.377	6.392	
CHECK POROSITY	23.989	24.055	%

SDL (B) WITH (C) MANDREL SHOP CALIBRATION SUMMARY

PERFORMED: 26-Feb-1998 18:57 LAST SHOP CALIBRATION: 18-Feb-1998 23:33
SERIAL NUMBER: WA031 MODEL: SDLT-B
SOURCE NUM: SDL-186 CALIBR NUM: 52546
TRUCK UNIT NUMBER: 52546 PROGRAM VERSION: 3.44
PERFORMED BY: L

PRIMARY CALIBRATOR

MAGNESIUM BLOCK

	MEASURED	CALIBRATED	UNITS
DENSITY	1.684	1.688	GM/CC
CORRECTION	0.020	0.020	GM/CC
Pe SHORT	3.259	3.205	
Pe LONG	2.985	2.909	

ALUMINUM BLOCK

	MEASURED	CALIBRATED	UNITS
DENSITY	2.601	2.602	GM/CC
CORRECTION	0.058	0.054	GM/CC
Pe SHORT	3.234	3.180	
Pe LONG	3.248	3.170	

ALUMINUM BLOCK W/SLEEVE

	MEASURED	CALIBRATED	UNITS
DENSITY	2.583	2.585	GM/CC
CORRECTION	-0.050	0.060	GM/CC
Pe SHORT	6.235	6.200	
Pe LONG	6.254	6.150	

CALIBRATION COEFFICIENTS

	EXPECTED RANGE	CALIBRATED	UNITS
SHORT SPACE			
DENSITY SLOPE	-6.40 -> -7.60	-7.018	GM/CC
DENSITY INTERCEPT	27.00 -> 37.00	31.842	GM/CC
PE SLOPE	1.20 -> 2.30	1.532	
PE INTERCEPT	-2.20 -> -4.00	-2.508	
LONG SPACE			
DENSITY SLOPE	-1.29 -> -1.39	-1.332	GM/CC
DENSITY INTERCEPT	7.00 -> 8.10	7.490	GM/CC
PE SLOPE	1.30 -> 2.50	1.791	
PE INTERCEPT	-0.70 -> -2.10	-1.259	

PRIMARY BLOCK BACKGROUND
CESIUM - LITHOLOGY - BARITE - DENSITY

	SS VALUE	STD DEV	LS VALUE	STD DEV	UNITS
HI CESIUM WINDOW	56	7	55	7	CPS

LO CESIUM WINDOW	56	8	55	8	CPS
BARITE WINDOW	264	16	222	14	CPS
DENSITY WINDOW	295	17	237	16	CPS
LITHOLOGY WINDOW	73	9	54	8	CPS

FIELD CHECK BLOCK

ALUMINUM SLIDE IN

	MEASURED	CALIBRATED	UNITS
DENSITY	2.161	2.164	GM/CC
CORRECTION	0.055	0.053	GM/CC
Pe SHORT	5.004	4.961	
Pe LONG	4.147	4.062	

SDL (B) WITH (C) MANDREL BEFORE SURVEY FIELD CHECK SUMMARY

PERFORMED: 22-Mar-1998 22:07 LAST SHOP CALIBRATION: 26-Feb-1998 18:57

ALUMINUM SLIDE IN	SHOP	FIELD	UNITS
ALUMINUM DENSITY	2.164	2.183	GM/CC
ALUMINUM CORRECTION	0.053	0.047	GM/CC
ALUMINUM PE SHORT	4.961	4.907	
ALUMINUM PE LONG	4.062	4.114	

SDL (B) WITH (C) MANDREL AFTER SURVEY FIELD CHECK SUMMARY

PERFORMED: 23-Mar-1998 04:46 LAST SHOP CALIBRATION: 26-Feb-1998 18:57

ALUMINUM SLIDE IN	BEFORE	AFTER	UNITS
ALUMINUM DENSITY	2.183	2.167	GM/CC
ALUMINUM CORRECTION	0.047	0.040	GM/CC
ALUMINUM PE SHORT	4.907	4.857	
ALUMINUM PE LONG	4.114	4.131	

SDL CALIPER SHOP CALIBRATION SUMMARY

PERFORMED: 07-Mar-1998 15:37 LAST SHOP CALIBRATION: 18-Feb-1998 22:39
SERIAL NUMBER: WA031 MODEL: SDLT-A
TRUCK UNIT NUMBER: 52546 PROGRAM VERSION: 3.44
PERFORMED BY: JM

	MEASURED	CALIBRATED	UNITS
VALUE 1	8.719	7.875	INCH
VALUE 2	13.232	12.250	INCH
GAIN	0.00865		
OFFSET	5.845		

SDL CALIPER BEFORE SURVEY FIELD CHECK SUMMARY

PERFORMED: 22-Mar-1998 21:58 LAST SHOP CALIBRATION: 07-Mar-1998 15:37

	SHOP	FIELD	UNITS
VALUE 1	7.875	7.442	INCH

EXCELL-2000 Calibration Summary Table
Date: 23-Mar-1998 05:26

Service or Signal	Shop	Before	After	Change	Tolerance

GAMMA	214	210		4	+/- 9.0
DSN POROSITY	23.199	23.989	24.055	-0.066	+/-0.9
BULK DENSITY	2.164	2.183	2.167	0.015	+/-.015
DENSITY CORRECTION	0.053	0.047	0.040	0.007	+/-.015
DENSITY PE SHORT	4.961	4.907	4.857	0.050	+/-.3
DENSITY PE LONG	4.062	4.114	4.131	-0.017	+/-.3
CALIPER VALUE 1	7.875	7.442		0.433	+/-0.5

EXCELL-2000 CUSTOMER EVENT LOG
Date: 23-Mar-1998 01:33

Event	Time	Section	Depth	Event Description	Data	Repeat
0001	21:48:20	0	0.00	Engineer is: MELANCON		
0002	22:04:20	0	0.00	MUDWT PARAM CHANGE 9.5 -->FP	8.4000	
0003	22:04:20	0	0.00	NLITH PARAM CHANGE LIME -->AP	SAND	
0004	22:04:20	0	0.00	RHOMAT PARAM CHANGE 2.71 -->FP	2.6800	
0005	22:10:18	0	0.00	Exiting EXCELL-2000 tool calibrations.	FIELD	
0006	22:43:23	0	397.33	TPU W2 POWER ON COMMAND ERROR		
0007	22:44:34	1	501.00	Begining new Uplog section.	1	
0008	22:49:18	1	274.33	End logging section	1	
0009	23:28:35	2	5265.75	Begining new Uplog section.	2	
0010	23:34:04	2	5166.75	End logging section	2	
0011	23:35:27	3	5573.25	Begining new Uplog section.	3	
0012	23:42:02	3	5198.66	End logging section	3	
0013	23:46:16	4	5504.91	Begining new Uplog section.	4	
0014	23:58:20	4	4954.75	SCALE CHANGE.	SP	
0015	23:58:20	4	4954.75	19 SP 0 100 N		
0016	00:00:54	4	4816.16	SP PARAM CHANGE FALSE -->LP	TRUE	
0017	01:22:34	4	335.00	DSN_OK PARAM CHANGE TRUE -->LP	FALSE	
0018	01:22:34	4	335.00	HRI_OK PARAM CHANGE TRUE -->LP	FALSE	
0019	01:22:34	4	335.00	DFL_OK PARAM CHANGE TRUE -->LP	FALSE	
0020	01:22:34	4	335.00	SDL_OK PARAM CHANGE TRUE -->LP	FALSE	
0021	01:22:34	4	335.00	CAL_OK PARAM CHANGE TRUE -->LP	FALSE	
0022	01:22:34	4	335.00	AHVOK PARAM CHANGE TRUE -->LP	FALSE	
0023	01:32:50	4	80.16	End logging section	4	

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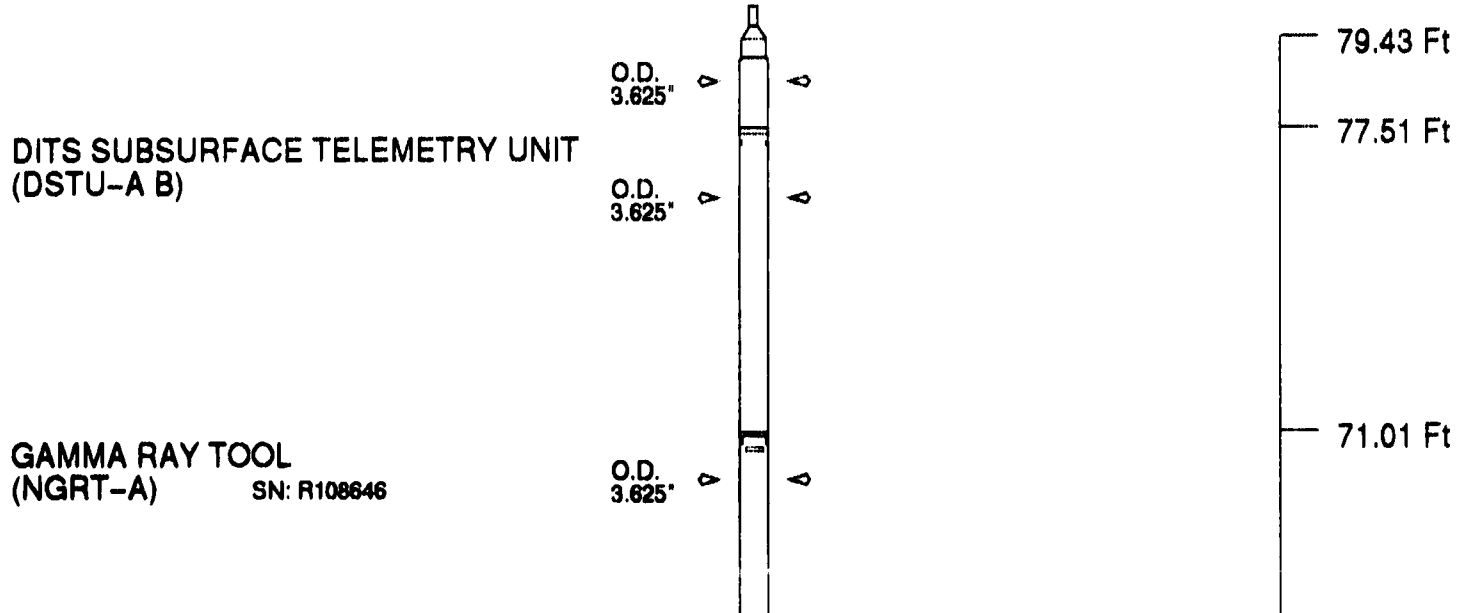
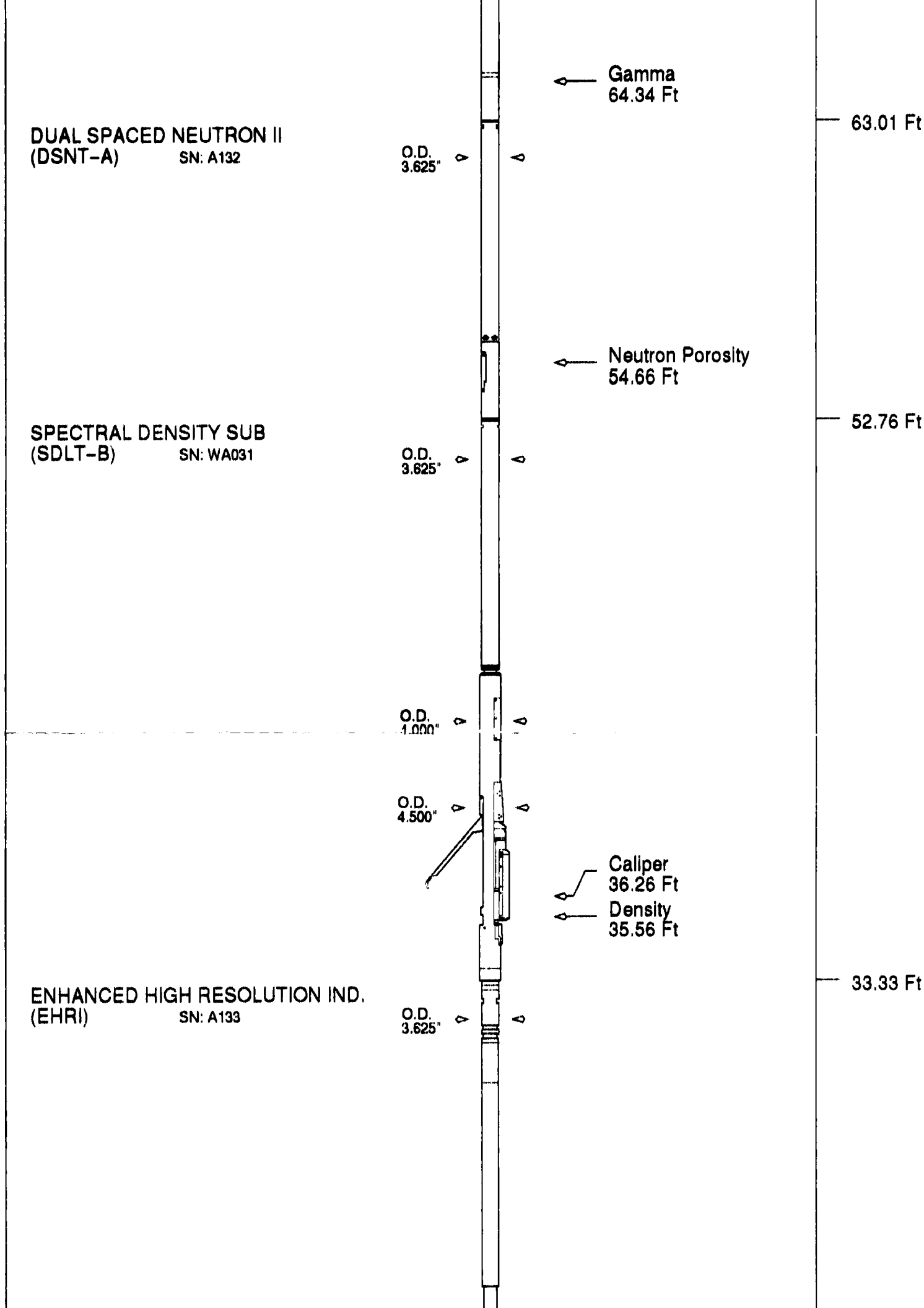
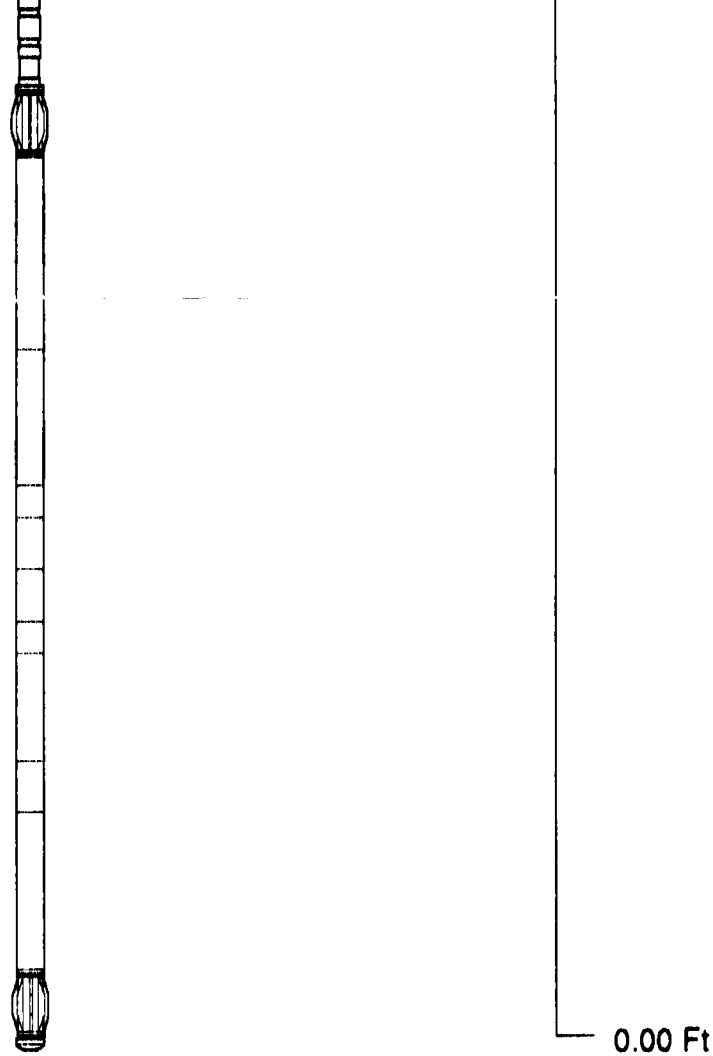
Excell 2000 Tool String Diagram

HIGH RESOLUTION IND
SPECTRAL DENSITY
DUAL SPACED NEUTRON




Gamma
64.34 Ft
63.01 Ft
DUAL SPACED NEUTRON II
(DSNT-A) SN: A132
O.D.
3.625"
Neutron Porosity
54.66 Ft
52.76 Ft
SPECTRAL DENSITY SUB
(SDLT-B) SN: WA031
O.D.
3.625"
O.D.
4.000"
O.D.
4.500"
Caliper
36.26 Ft
Density
35.56 Ft
33.33 Ft
ENHANCED HIGH RESOLUTION IND.
(EHRI) SN: A133
O.D.
3.625"



Tool Mnemonic	Length (Ft)	Weight In Air (lbs)	Logging Speed (Ft/min)
DSTU-A B	6.50	116.50	N/A
NGRT-A	8.00	151.80	120.00
DSNT-A	10.25	195.80	45.00
SDLT-B	19.43	358.50	30.00
EHRI	33.33	445.00	N/A
Tool String	77.51	1267.60	30.00

DOGM

HALLIBURTON

EXCELL 2000

HIGH RESOLUTION INDUCTION

COMPANY PETROGLYPH OPERATING COMPANY

WELL UTE TRIBAL 31-05

FIELD ANTELOPE CREEK

COUNTY DUCHESNE STATE UTAH

COMPANY PETROGLYPH OPERATING COMPANY

WELL UTE TRIBAL 31-05

FIELD ANTELOPE CREEK

COUNTY DUCHESNE STATE UTAH

API No. 43-013-32035

Location SW/NW 1980' FNL 660' FWL

POW

Sect 31 Twp 5S Rge 3W

Other Services

GR
SDL
DSN

Permanent Datum GROUND LEVEL Elev 6274'

Log measured from K.B. 10 ft. above perm. datum

Drilling measured from KELLY BUSHING

Elev.: K.B. 6284'
D.F. 6283'
G.L. 6274'

Date	3-23-98			
Run No.	ONE			
Depth - Driller	5529'			
Depth - Logger	5511'			
Bottom - Logged Interval	5496'			
Top - Logged Interval	CASING			
Casing - Driller	8.625 @ 365'	@	@	@
Casing - Logger	363'			
Bit Size	7.875"			
Type Fluid in Hole	KCL			
Dens. | Visc	8.3 | 27	|	|	|
Ph | Fluid Loss	10 | N/A	|	|	|
Source of Sample	FLOWLINE			
Rm @ Meas. Temp.	1.37 @ 62	@	@	@
Rmf @ Meas. Temp.	N/A @ N/A	@	@	@
Rmc @ Meas. Temp.	N/A @ N/A	@	@	@
Source Rmf | Rmc	N/A | N/A	|	|	|
Rm @ BHT	.62 @ 145	@	@	@
Time Since Circ.	7 HRS			
Time on Bottom	23:30			
Max. Rec. Temp.	145 @ T.D.	@	@	@
Equip. | Location	52546 | VERN	|	|	|
Recorded By	J. MELANCON			
Witnessed By	C. WHITE			

Fold Here

Service Ticket No. 376137 API Serial No. 43-013-32035 PGM Version XL v3.44

CHANGE 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.															
Rmf @ Meas. Temp.															
Rmc @ Meas. Temp.															
Source Rmf | Rmc															
Rm @ BHT															
Rmf @ BHT															
Rmc @ BHT															

RESISTIVITY SCALE CHANGES

Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

Run No.	Tool Type & No.	Pad Type	Tool Pos	Other
ONE	HRIT A133	N/A	5" SO	

EQUIPMENT DATA

GAMMA			ACOUSTIC			DENSITY			NEUTRON		
Run No.	ONE		Run No.			Run No.	ONE		Run No.	ONE	
Serial No.	R108646		Serial No.			Serial No.	WA031		Serial No.	A132	
Model No.	NGRT		Model No.			Model No.	SDL_BC		Model No.	DSN-II	
Diameter	3.625"		No. of Cent.			Diameter	4"		Diameter	3.625"	

Detector Model No.	102A	Spacing		Log Type	GR-GR	Log Type	THERMAL
Type	SCINT			Source Type	Cs 137	Source Type	Am241 Be
Length	4"	LSA [Y / N]		Serial No.	SDL-186	Serial No.	DSN-083
Distance to Source	11'	FWDA [Y / N]		Strength	1.5 Ci	Strength	8.5 Ci

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No.	From	To	Ft / Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	5511	SURF	REC	0	200				30%	-10%	2.68	30%	-10%	SAND

Remarks:

GR-DSN-SDL-HRI RAN IN COMBINATION.
ANNULAR HOLE VOLUME BASED ON 5.5" CASING.
CHLORIDES: 1500 PPM

RIG: UNION 16
CREW: R. PLUMHOF, D.SMUIN
THANK YOU FOR USING HALLIBURTON ENERGY SERVICES (435)789-2550 VERNAL, UTAH

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Current EXCELL-2000 Parameter Values
Depth: 80.167
Date: 23-Mar-1998 01:37

Mnemonic	Tool	Parameter Description	Value	Units
PERF	DITSHD	PERFORATED INTERVAL	NO	
TD	DITSHD	TOTAL DEPTH	0.	FT
GR_OK	GAMMA	DO GAMMA CALCULATIONS?	YES	
CASED	SHARED	CASED HOLE?	NO	
CASEOD	SHARED	CASING DIAMETER (OD)	5.5	Inches
MUDWT	SHARED	BOREHOLE FLUID WEIGHT	8.399999	Pounds/Gal.
GRSO	GAMMA	GAMMA RAY STANDOFF	0.	Inches
BS	SHARED	BIT SIZE	7.875	Inches
DSN_OK	DSN_II	DO DSN II CALCULATIONS?	NO	
HRI_OK	HRIDE	DO HRI INDUCTION CALCULATION?	NO	
DFL_OK	HRIDE	DO DFL CALCULATIONS?	NO	
PYRITE	HRIDE	PYRITE SWITCH	NO	OHMM
CTEM	HRIDE	CONST TEMPERATURE	75.	
BHT	HRIDE	BOTTOM HOLE TEMPERATURE	175.	Degrees F.
TSURF	HRIDE	SURFACE TEMPERATURE	60.	Degrees F.
BHD	HRIDE	BOTTOM HOLE DEPTH	10000.	Feet
RHOFLU	SHARED	FLUID DENSITY	1.	Grams/CC
XPHLOC	XP_RWA	CROSSPLOT SELECTION FOR XPHI	XPLT	
ARCHA	XP_RWA	ARCHIE A	0.62	
ARCHM	XP_RWA	ARCHIE M	2.15	
FSEL	XP_RWA	POROSITY SELECTION FOR F	DEN	
SDL_OK	SDL_BC	DO SDL CALCULATIONS?	NO	
RHOMAT	SDL_BC	MATRIX DENSITY	2.68	Grams/CC
CAL_OK	CAL_BC	DO CALIPER CALCULATIONS?	NO	
AHVOK	CAL_BC	DO ANNULAR VOLUME CALCULATION?	NO	

MAIN PASS 2" = 100'

HALLIBURTON

EXCELL

Data File: 0322_2160_s2100.4 dls

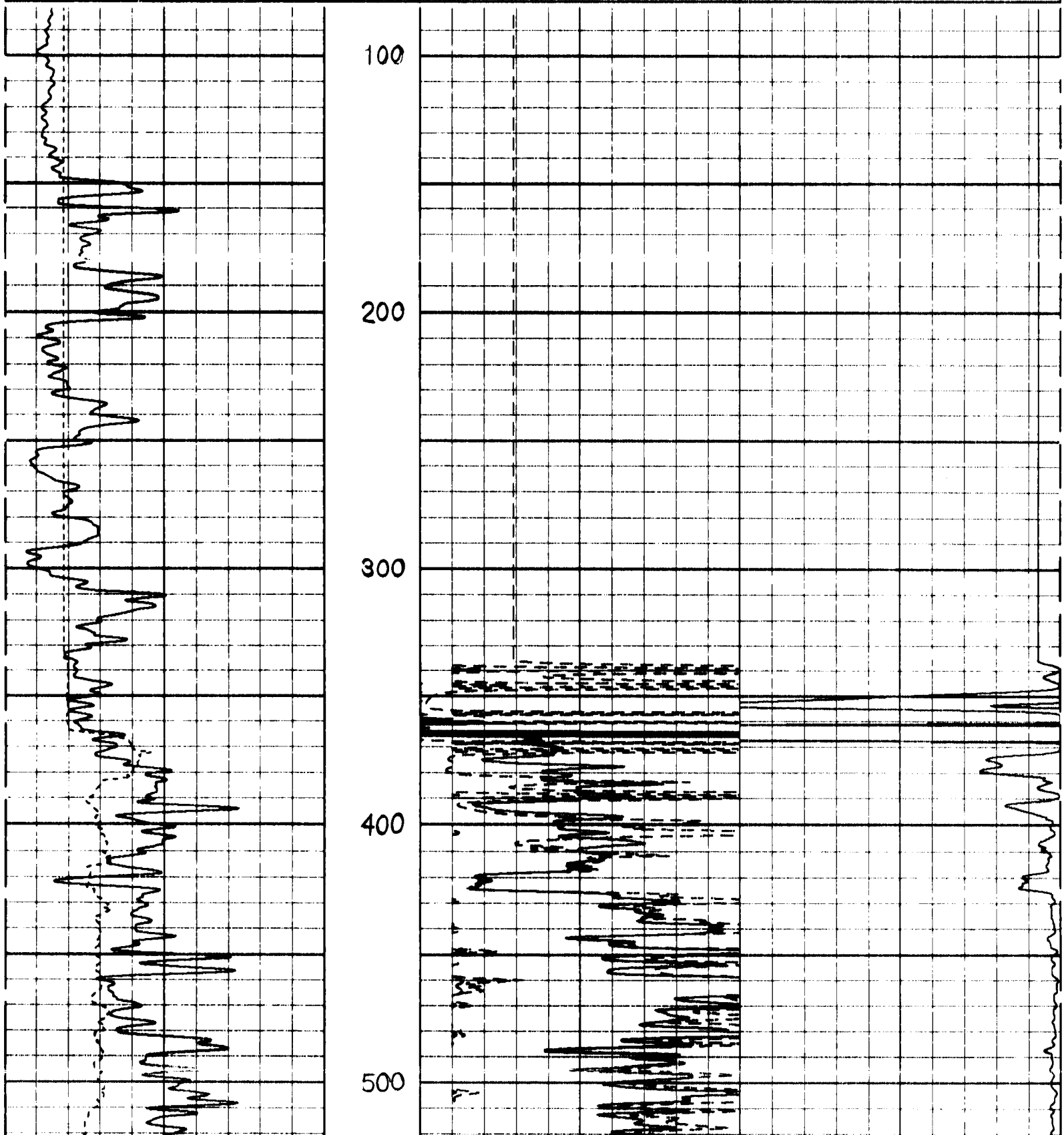
Format File: /field_data/data2/VERNAL_SPC/HRI2INCH.spc

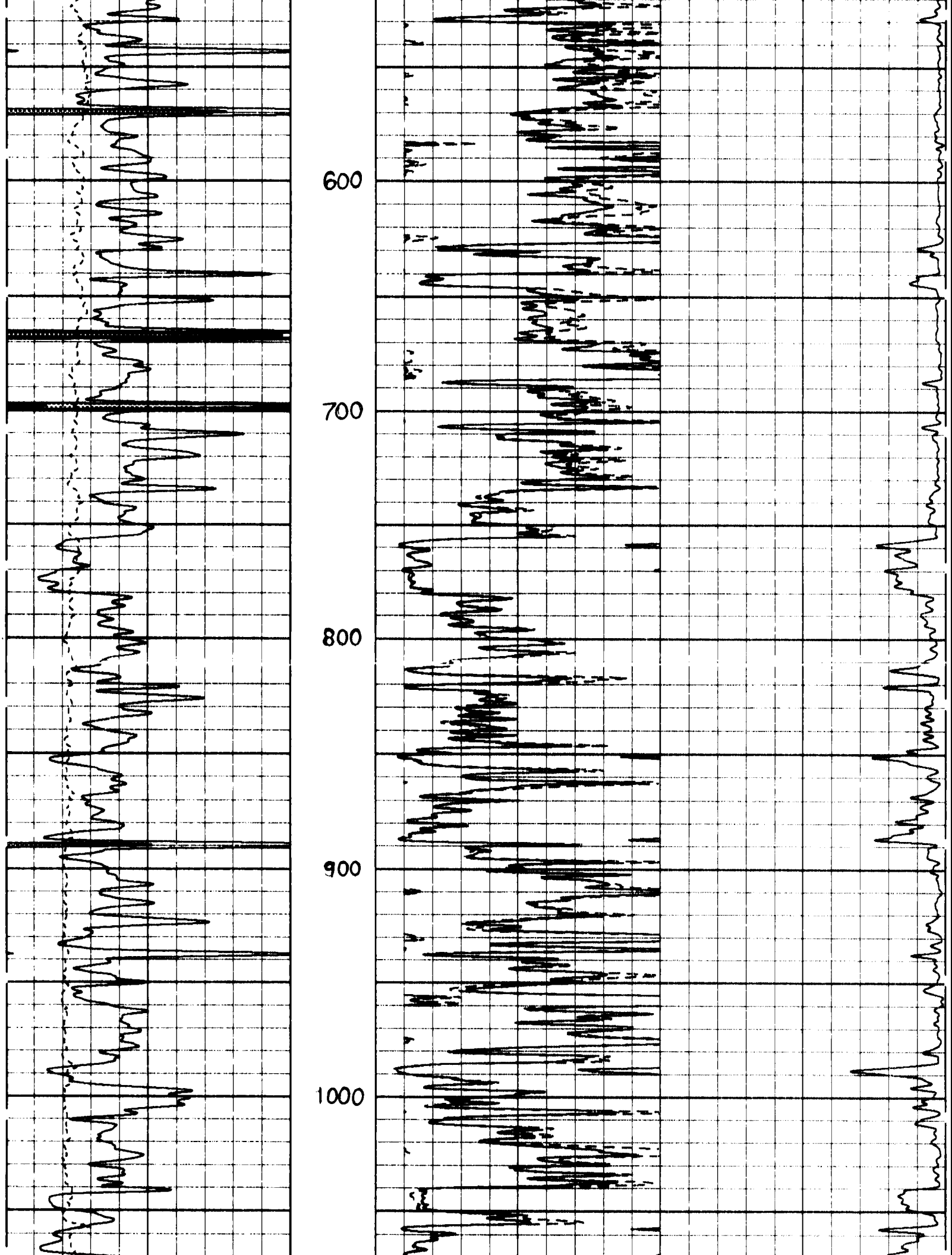
Bottom Depth: 6505.00

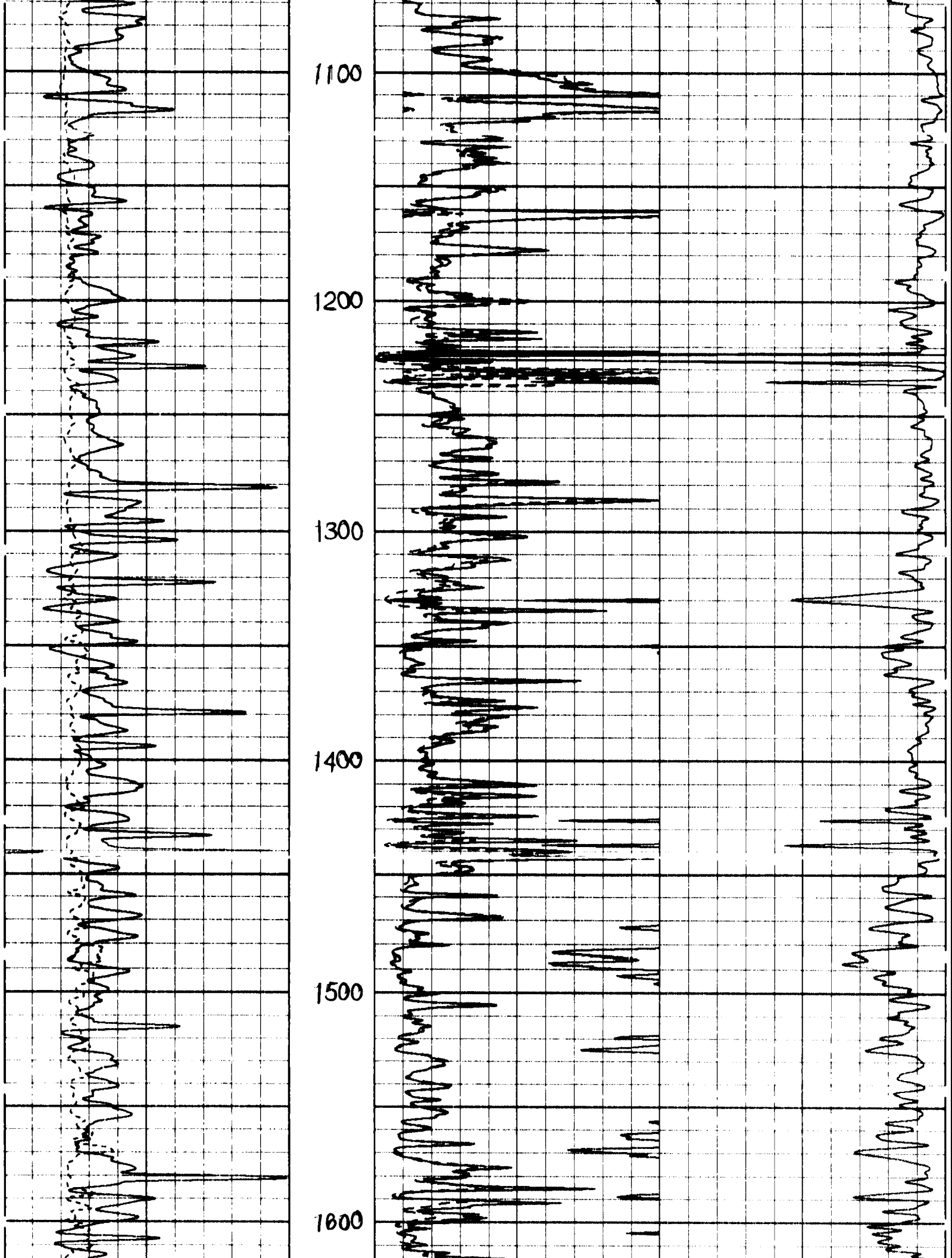
Plot Time: 03-23-96 01:46:58

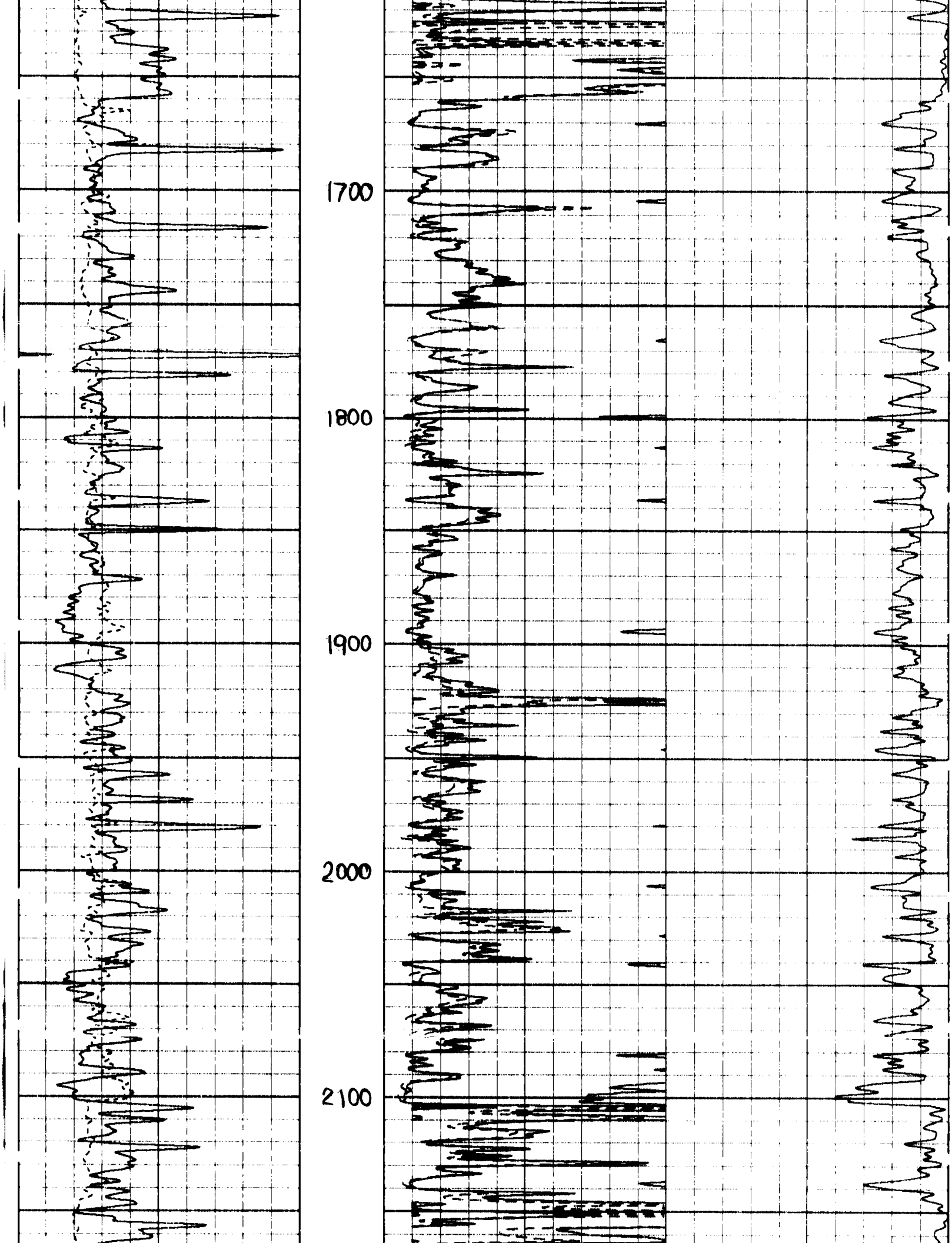
Log Time: 03-22-96 23:42:15

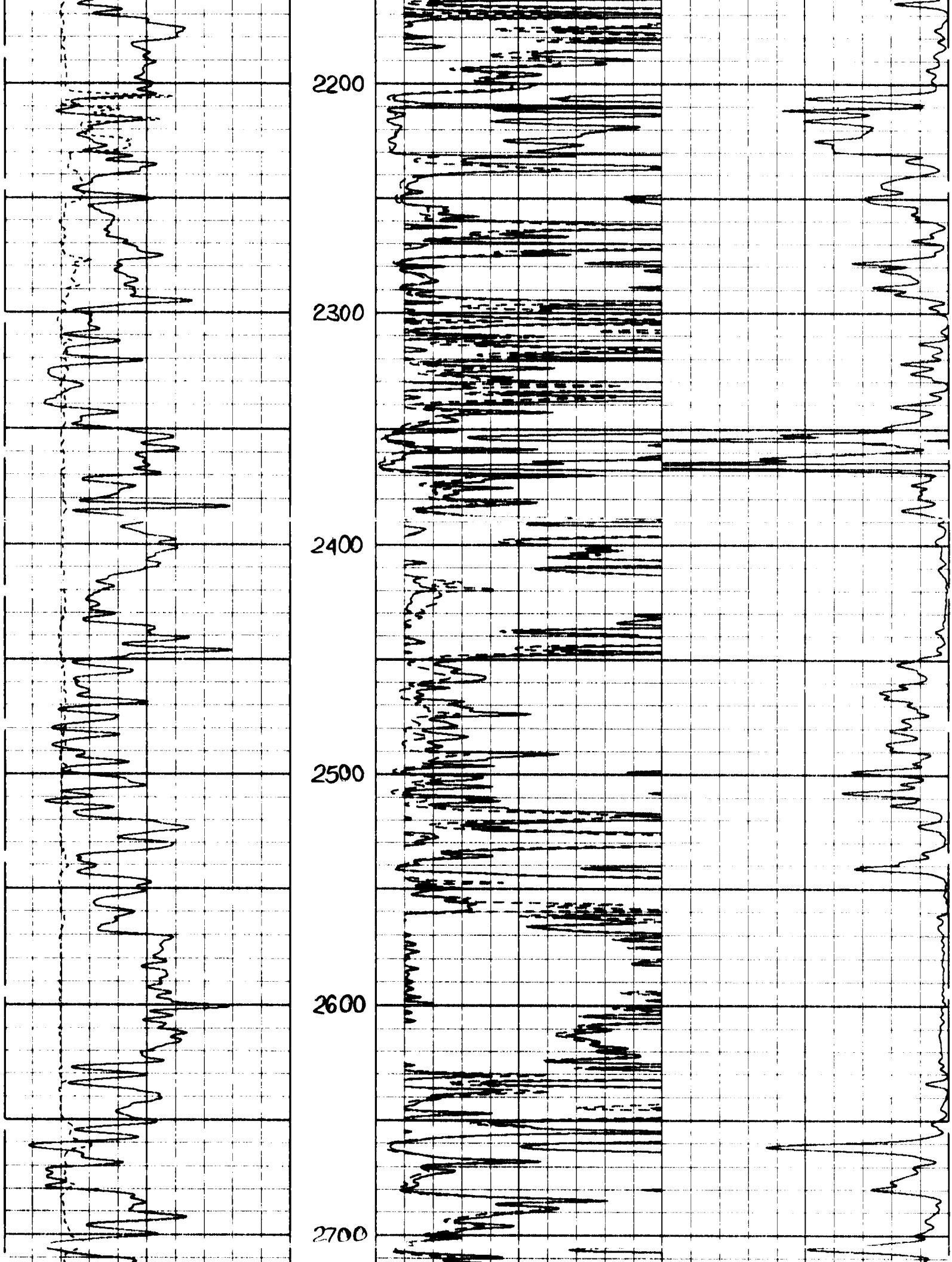
GAMMA RAY		DEEP	DEEP COND
0 API COUNTS 200	1 600 Ft	0 OHM-M 100	500 MMHO 0
CALIPER		AMP DFL	
6 INCHES 16		0 OHM-M 10	
		DFL	
		0 OHM-M 100	

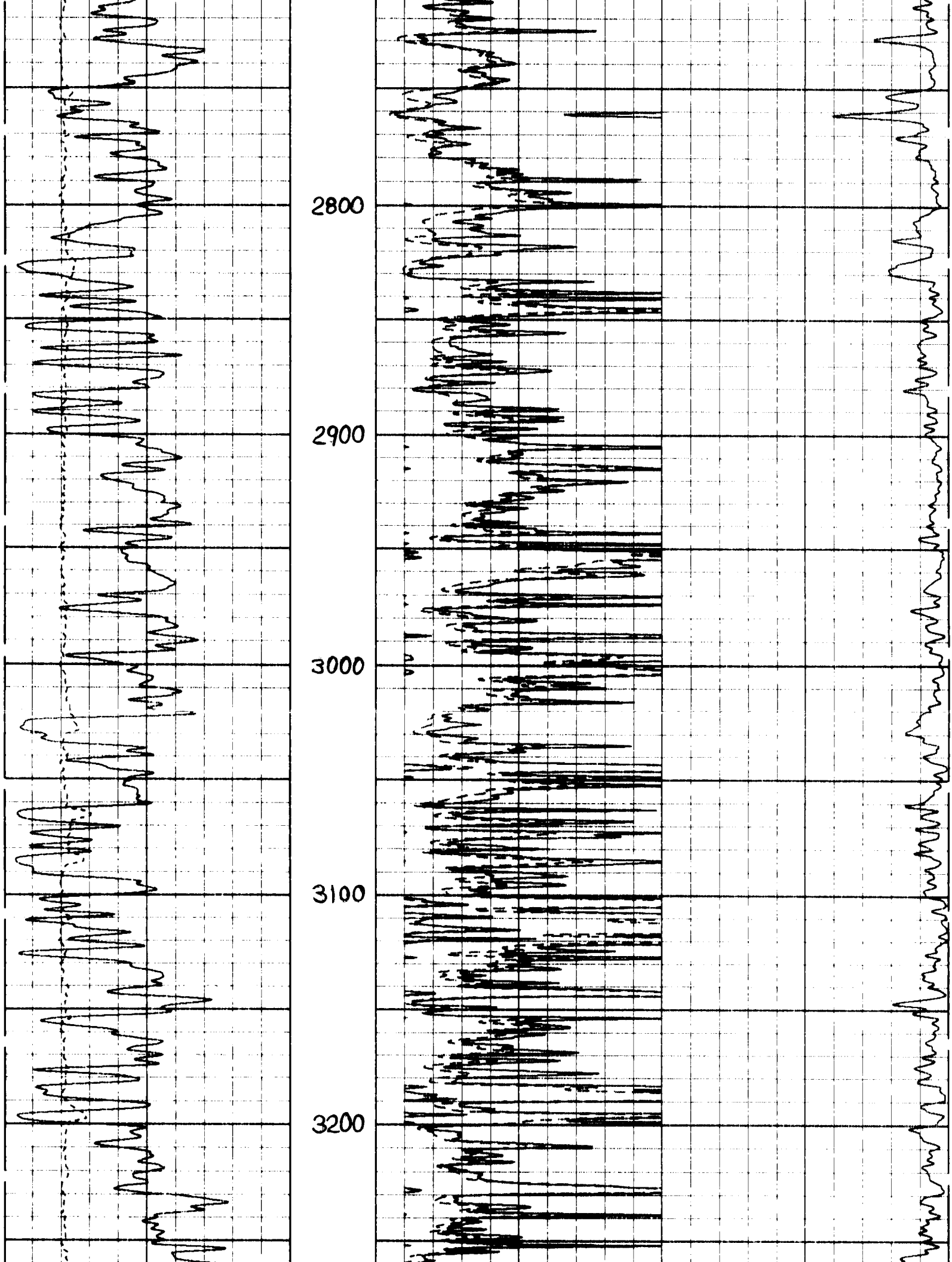


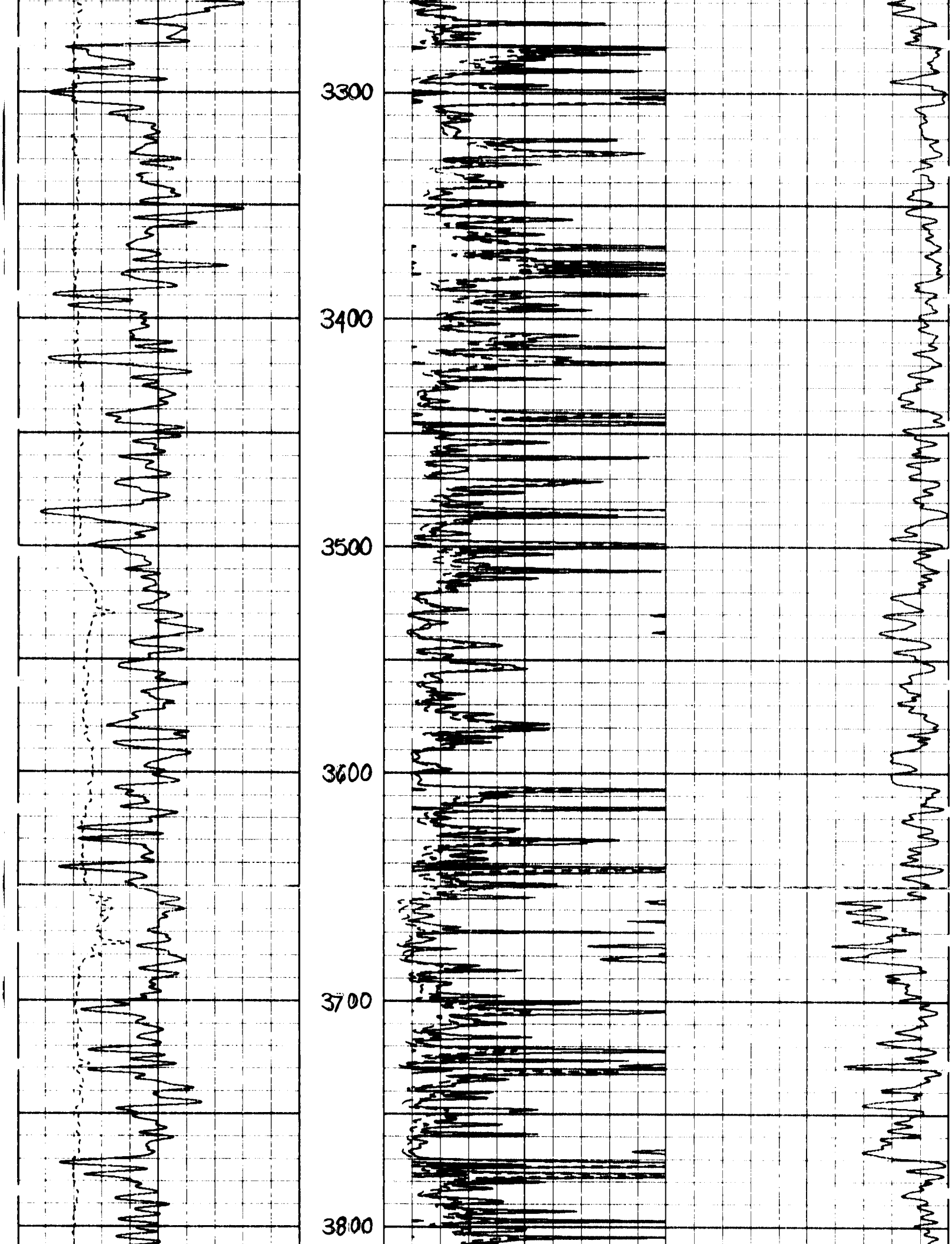

600
700
800
900
1000

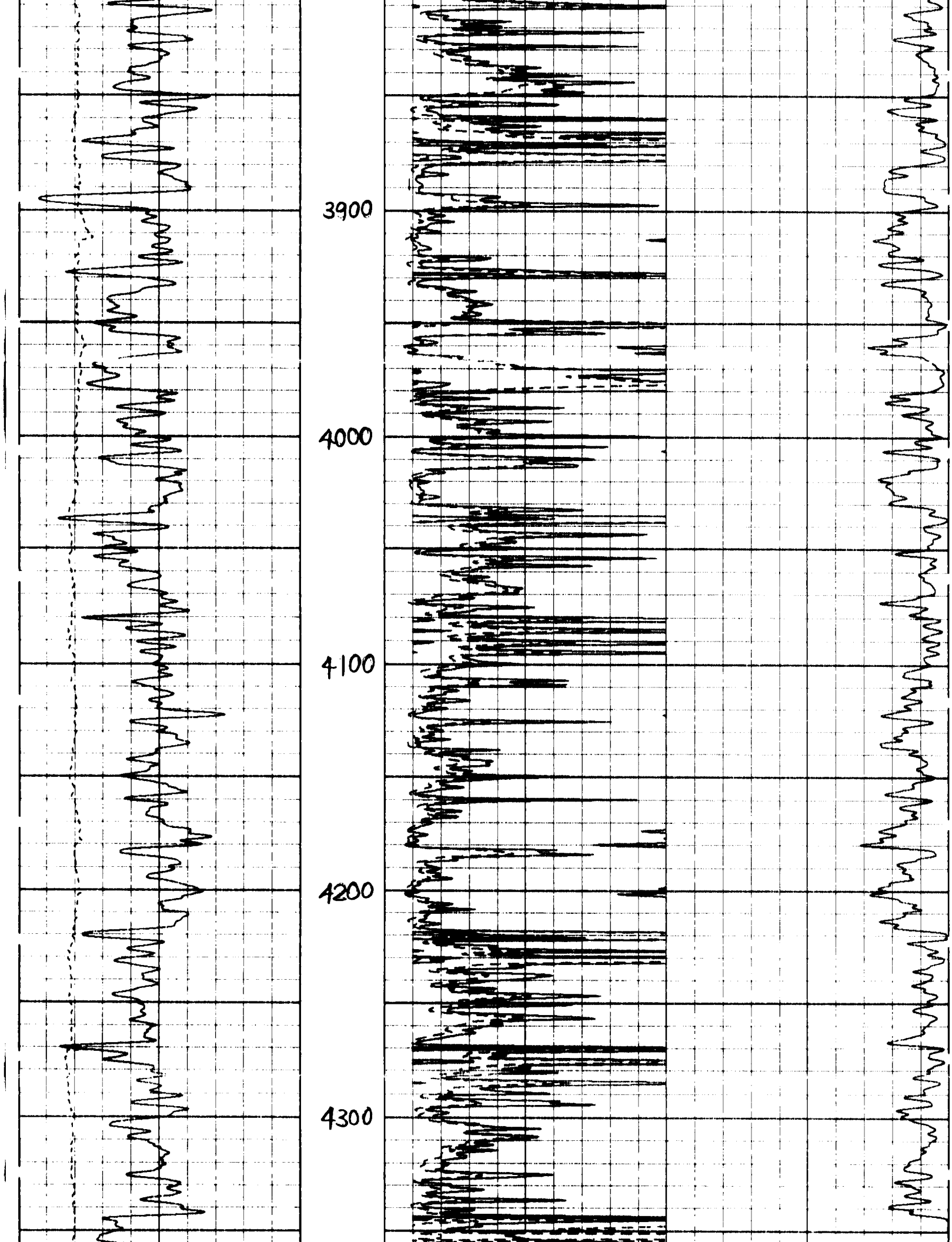

1100
1200
1300
1400
1500
1600

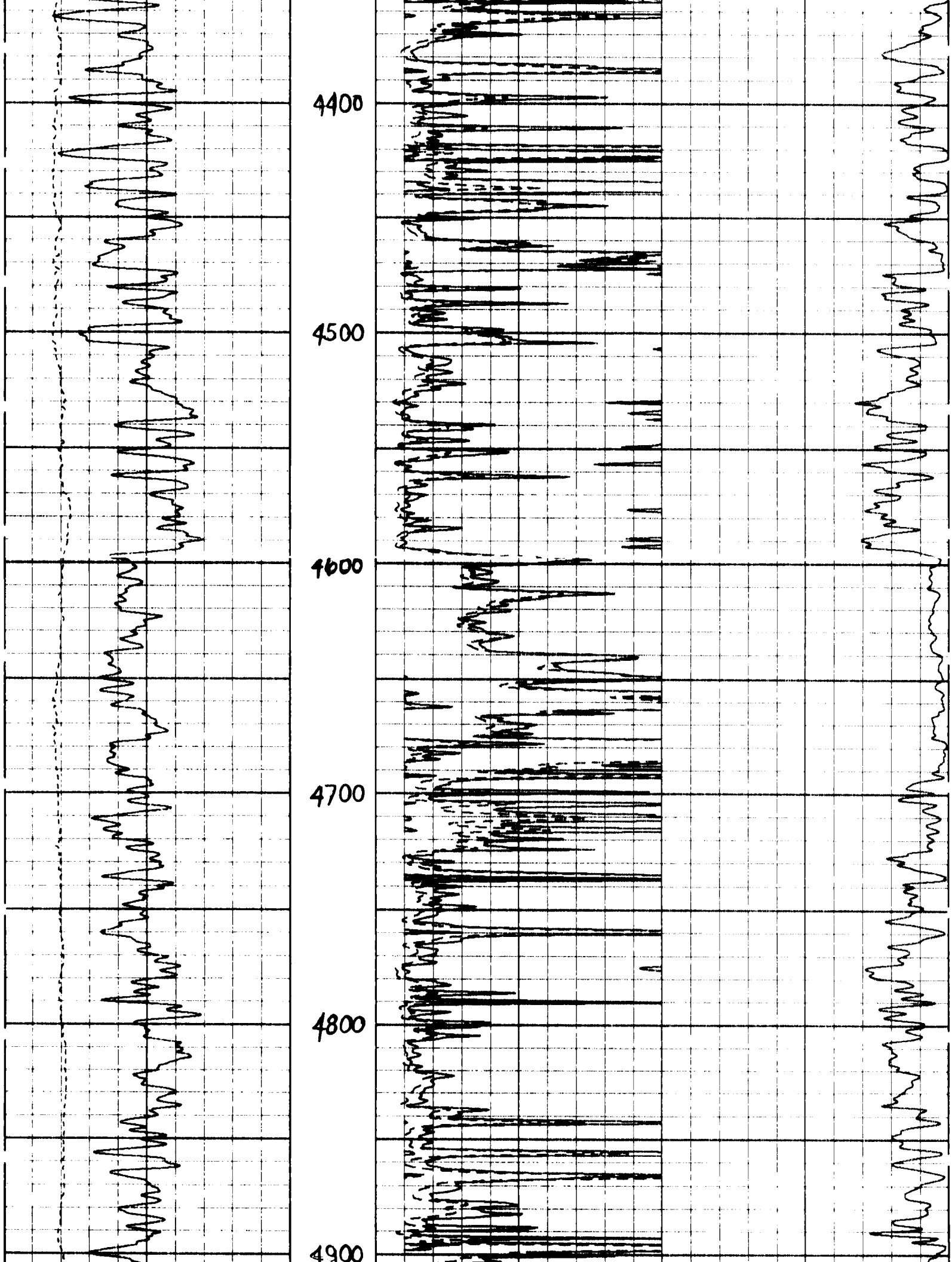

1700
1800
1900
2000
2100

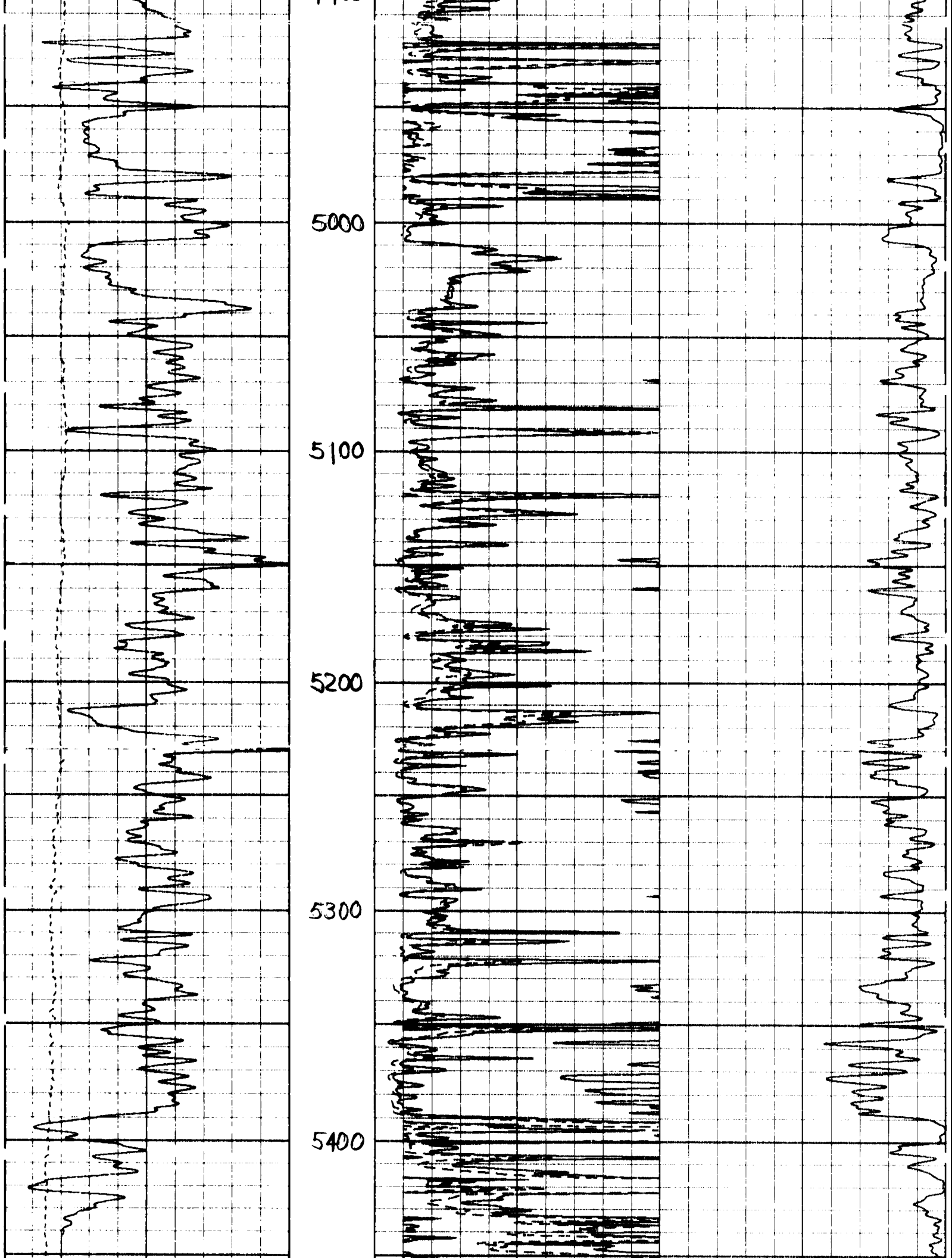

2200
2300
2400
2500
2600
2700

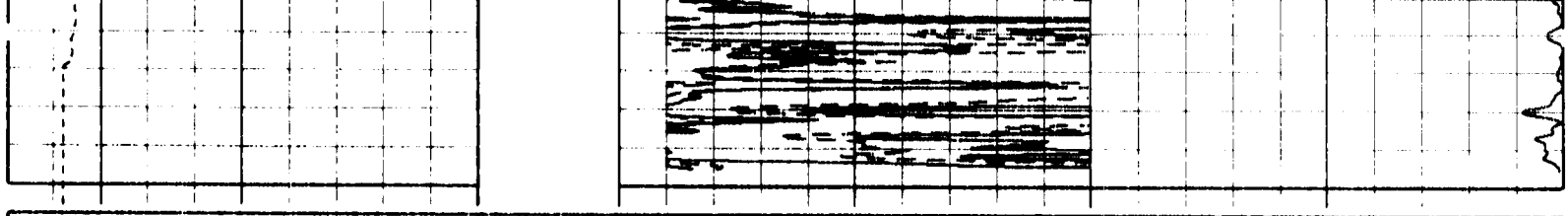

2800
2900
3000
3100
3200


3300
3400
3500
3600
3700
3800


3900
4000
4100
4200
4300


4400
4500
4600
4700
4800
4900


5000
5100
5200
5300
5400



CALIPER 0 INCHES 10 GAMMA RAY 0 API COUNTS 200	1,000 Ft	DFL 0 OHM-M 100 AMP DFL 0 OHM-M 10 DEEP 0 OHM-M 100	DEEP CONE 500 MMHO 0

HALLIBURTON
EXCELL

Version No 3.44 / hc 3.0
Data File 0322_2150_s2100.4.cls
Format File /field_data/data2/VERNAL_SPC/HRI2INCH.spc

Top Depth 50.08
Bottom Depth [illegible]
Plot Time [illegible]
Log Time [illegible]

MAIN PASS 2" = 100'

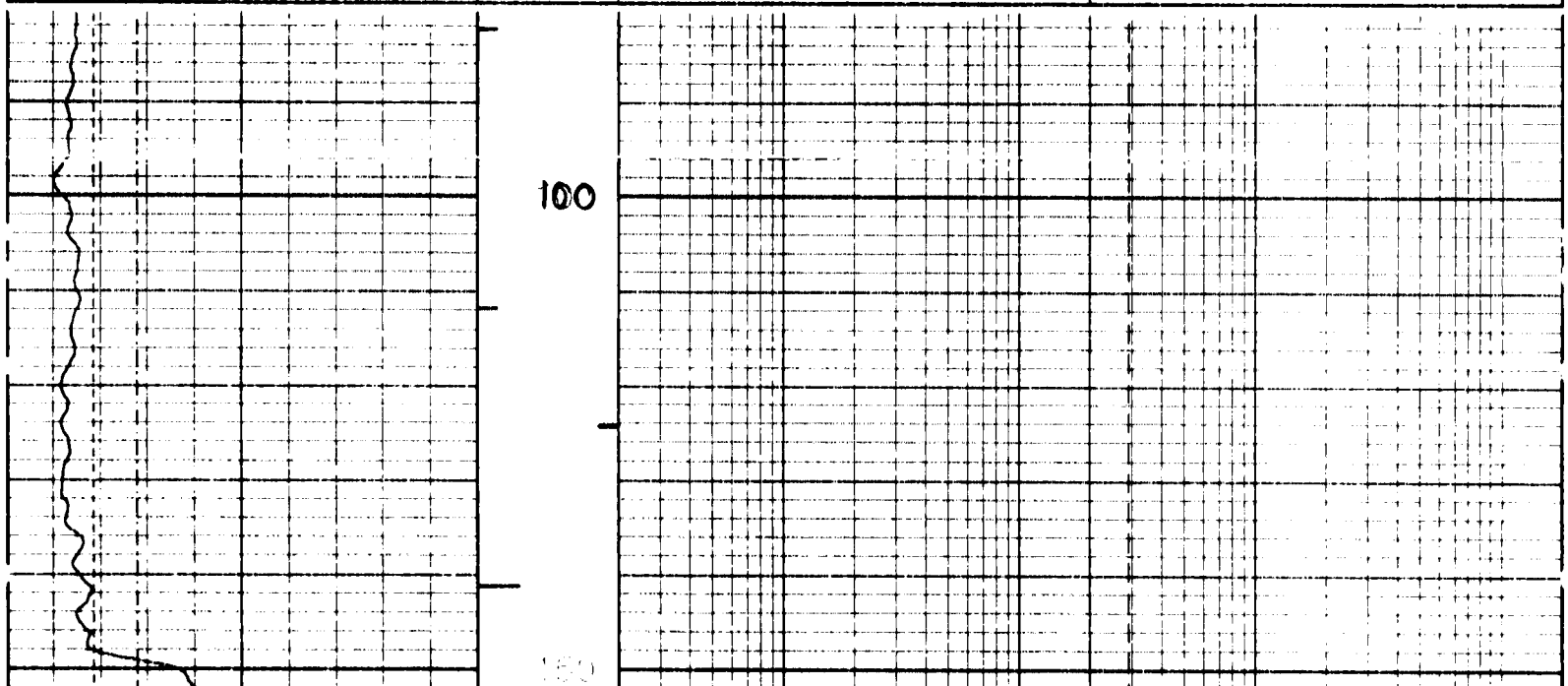
MAIN PASS 5" = 100'

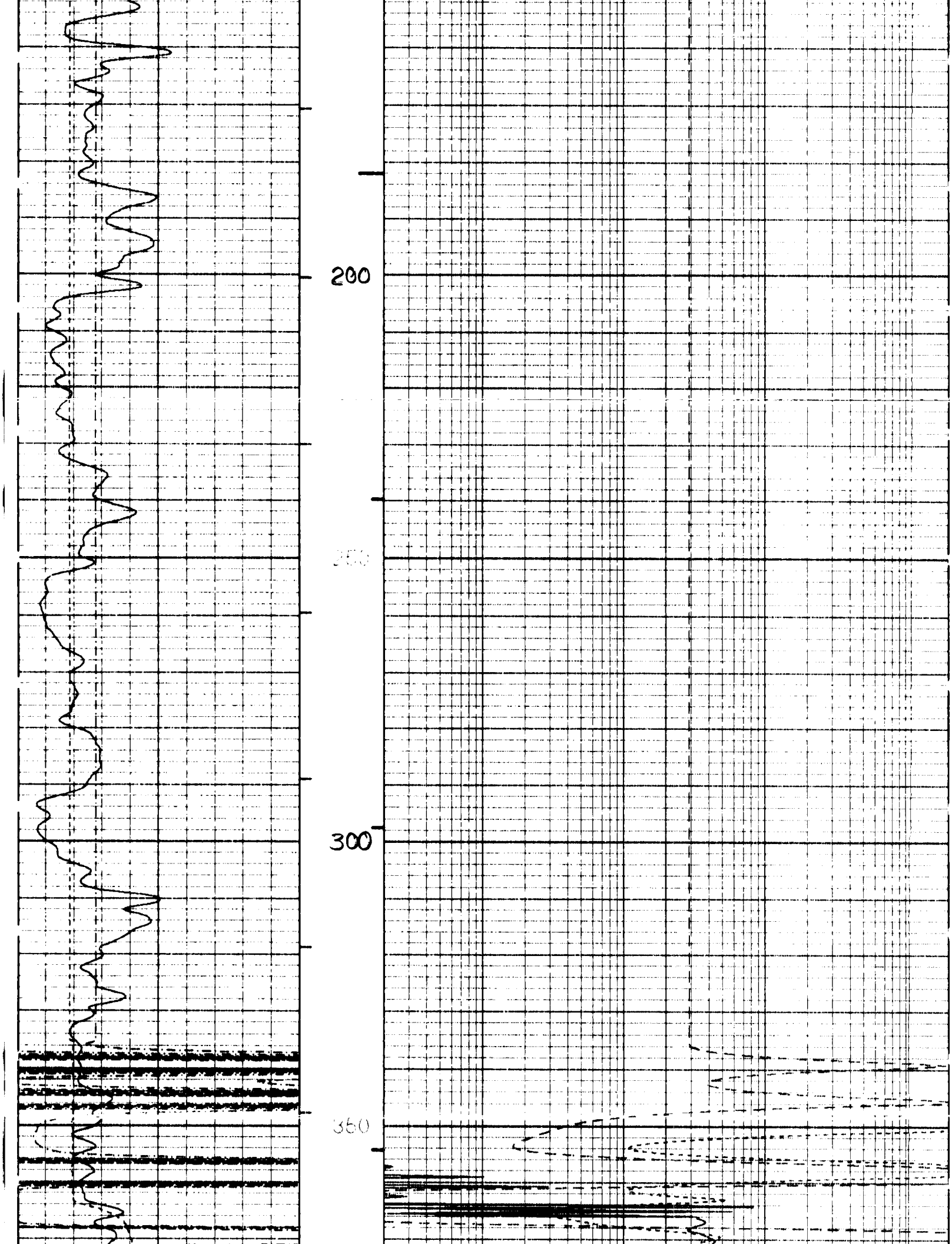
HALLIBURTON
EXCELL

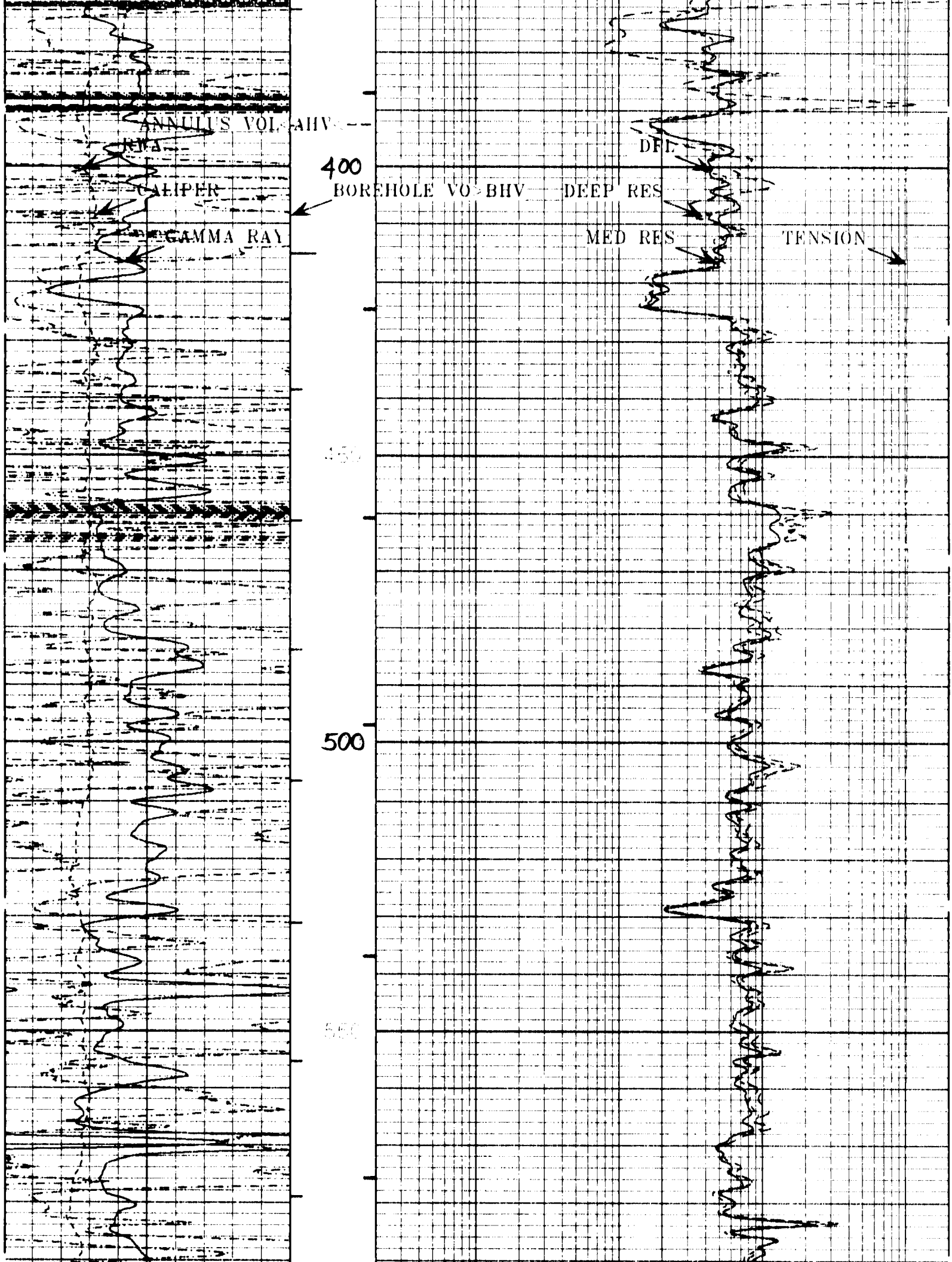
Version No 3.44 / hc 3.0
Data File 0322_2150_s2100.4.cls
Format File /field_data/data2/0322_2150_s2100/plot_2.4.spc

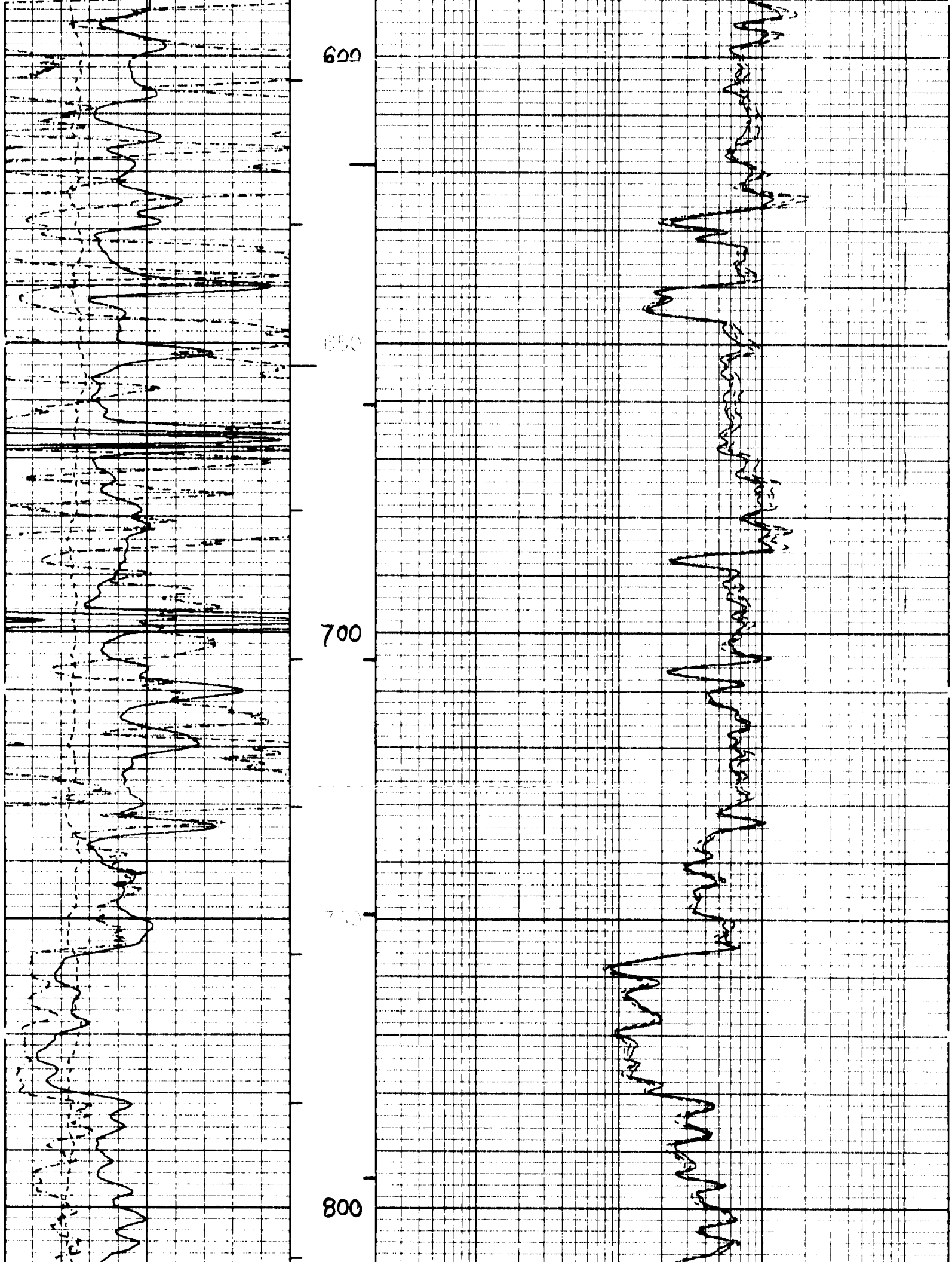
Top Depth 50.08
Bottom Depth [illegible]
Plot Time 03-23-98 03:51:51
Log Time 03-22-98 23:46:15

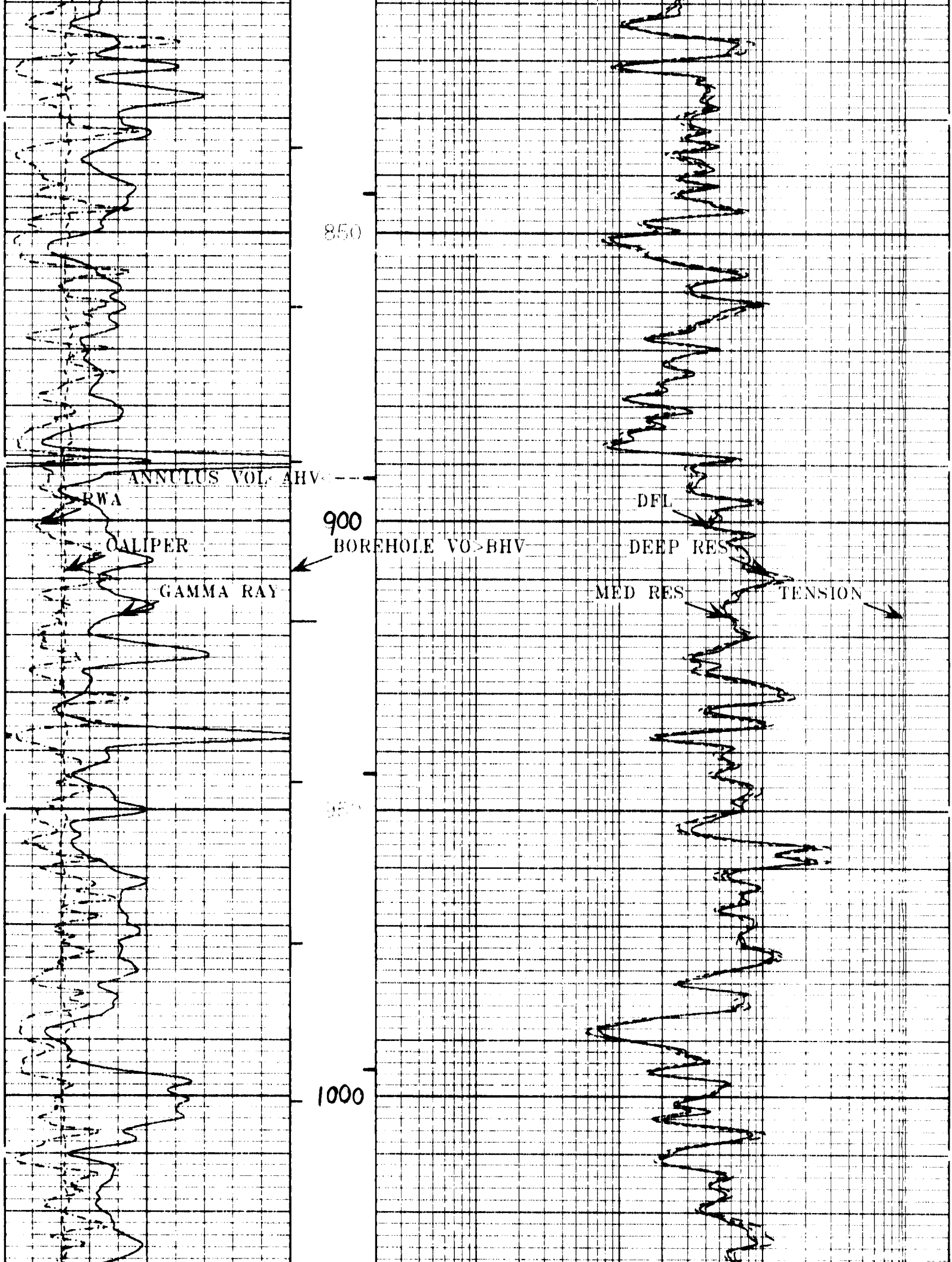
GAMMA RAY 0 API COUNTS 200 CALIPER 6 INCHES 16 RWA 0 OHMM 3	ANNULUS VOLUME <AHV> BOREHOLE VOLUME >BHV 1,240 Ft	MED RES 2 OHMM 2000 DEEP RES 2 OHMM 2000 DFL 2 OHMM 2000	TEL SIGN 10000 POSITIVE 0

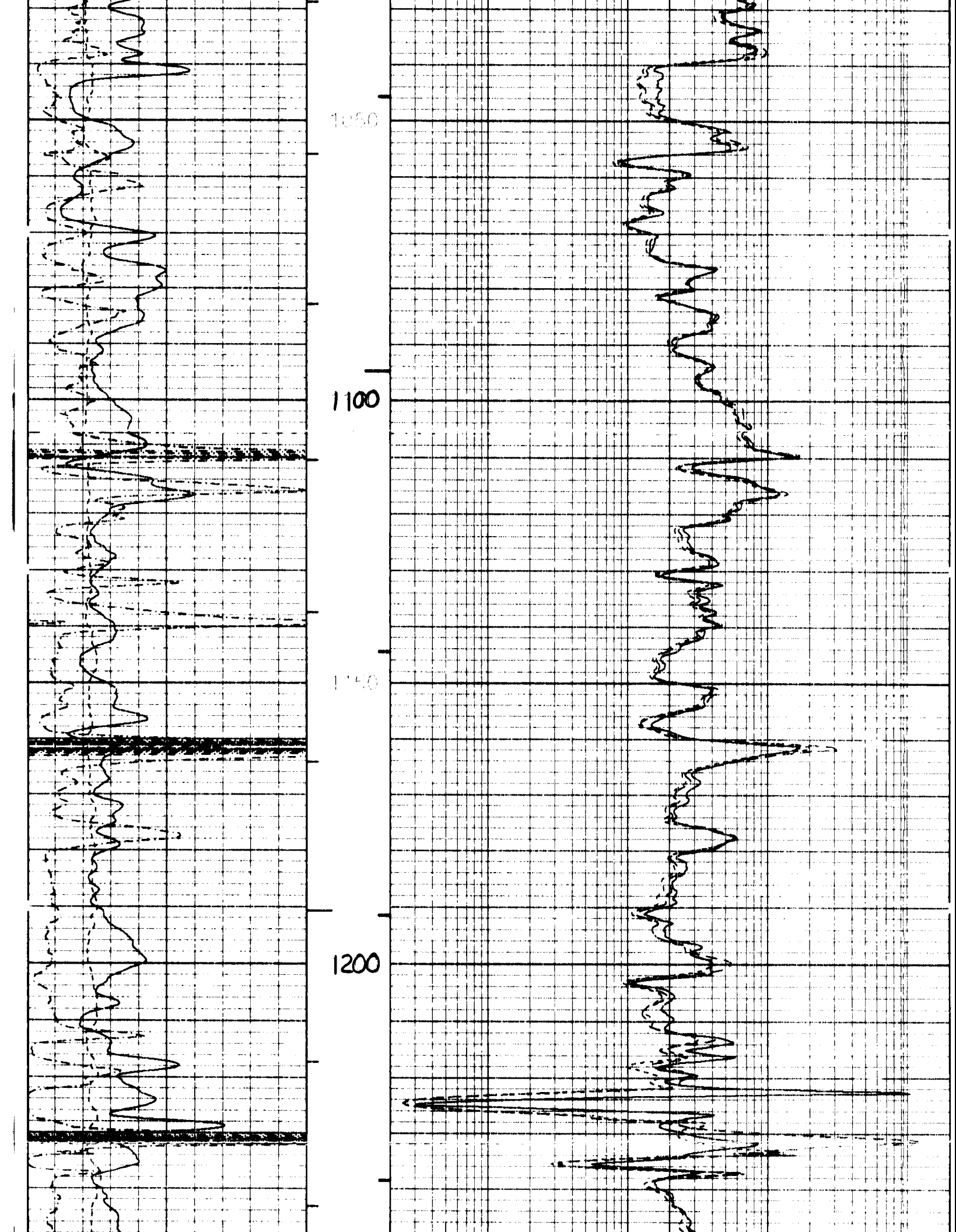


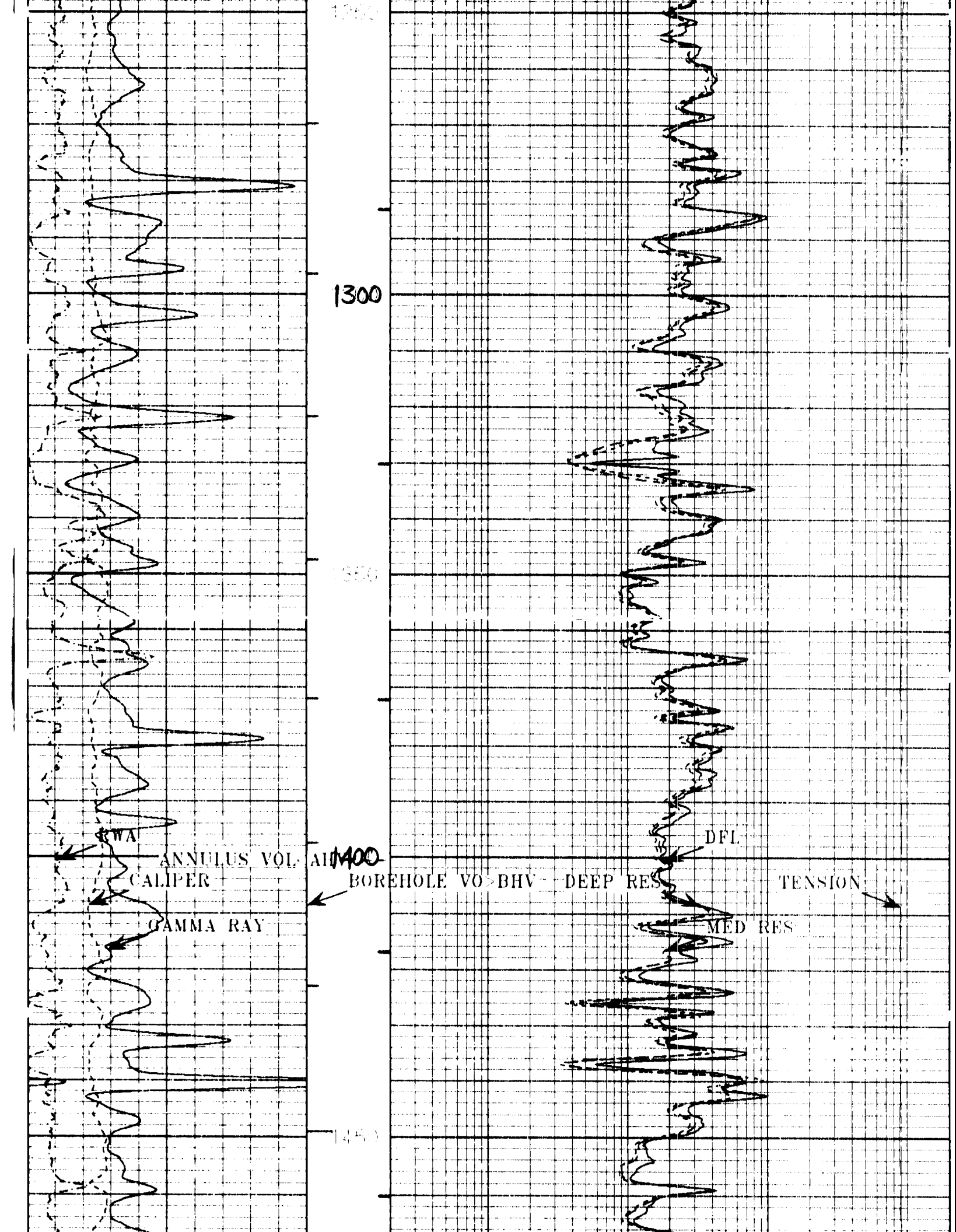

200
300
350

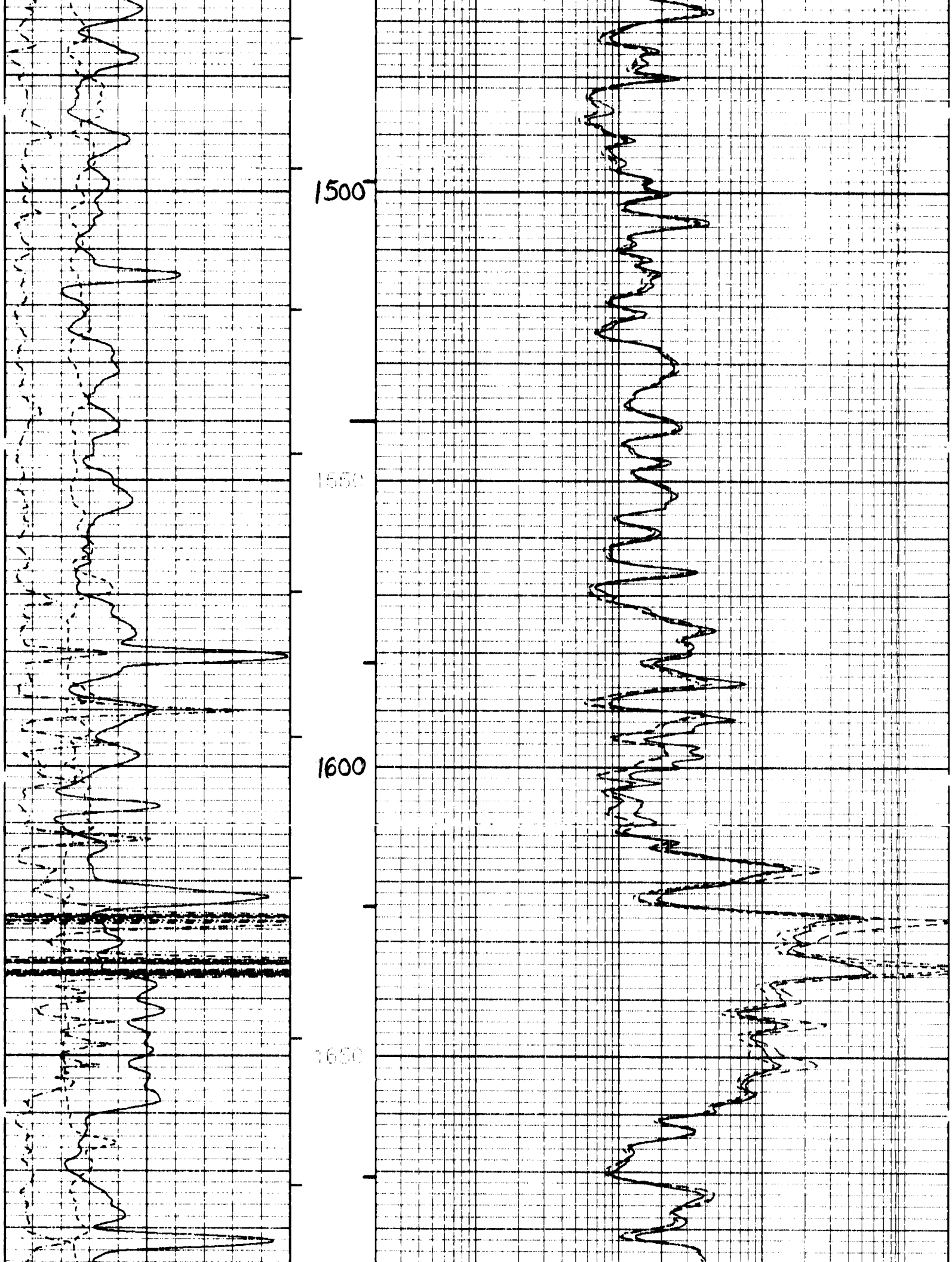

ANNULUS VOL-AHV
RMA
CALIPER
GAMMA RAY
400
BOREHOLE VO-BHV
DEEP RES
MED RES
TENSION
500

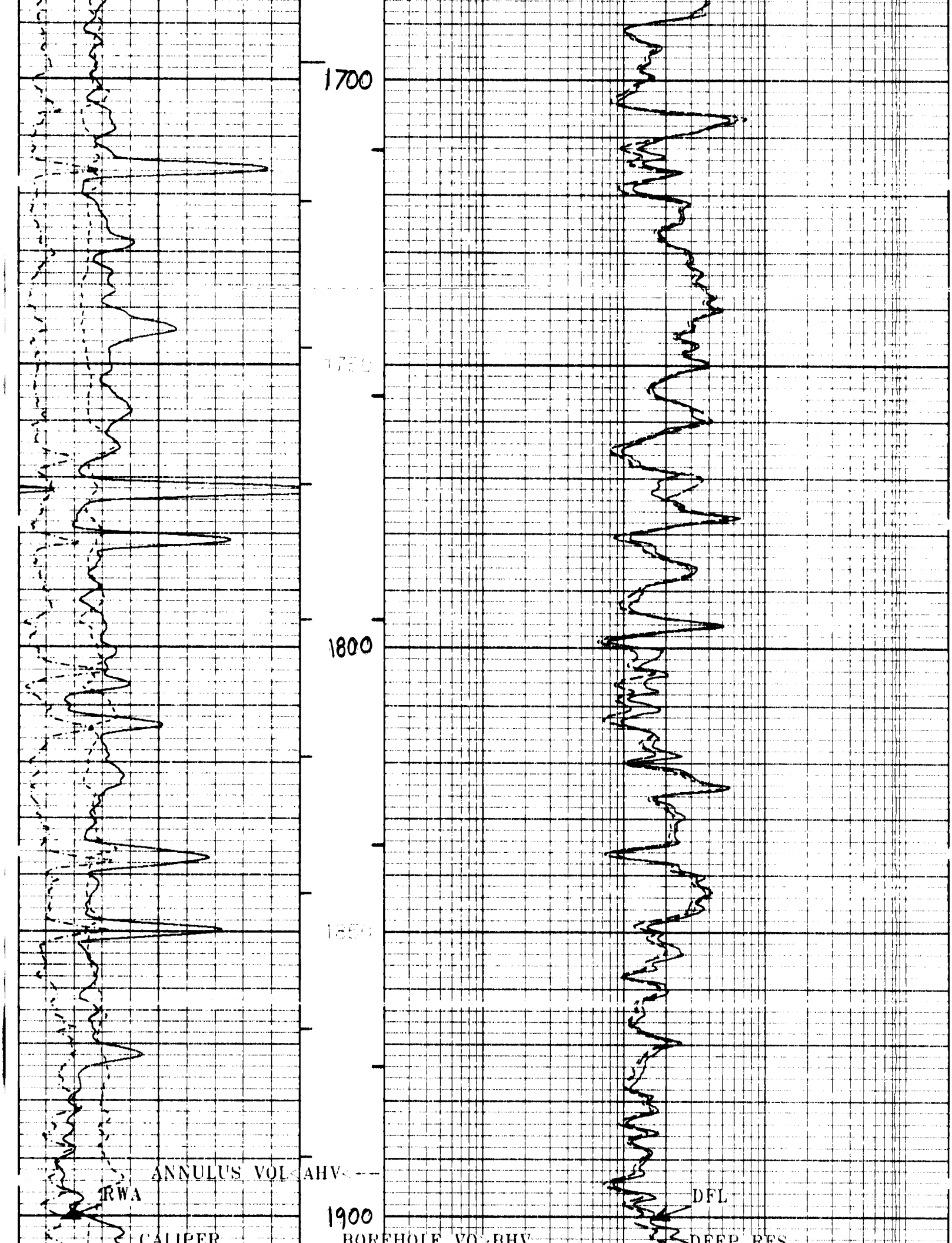

600
650
700
750
800

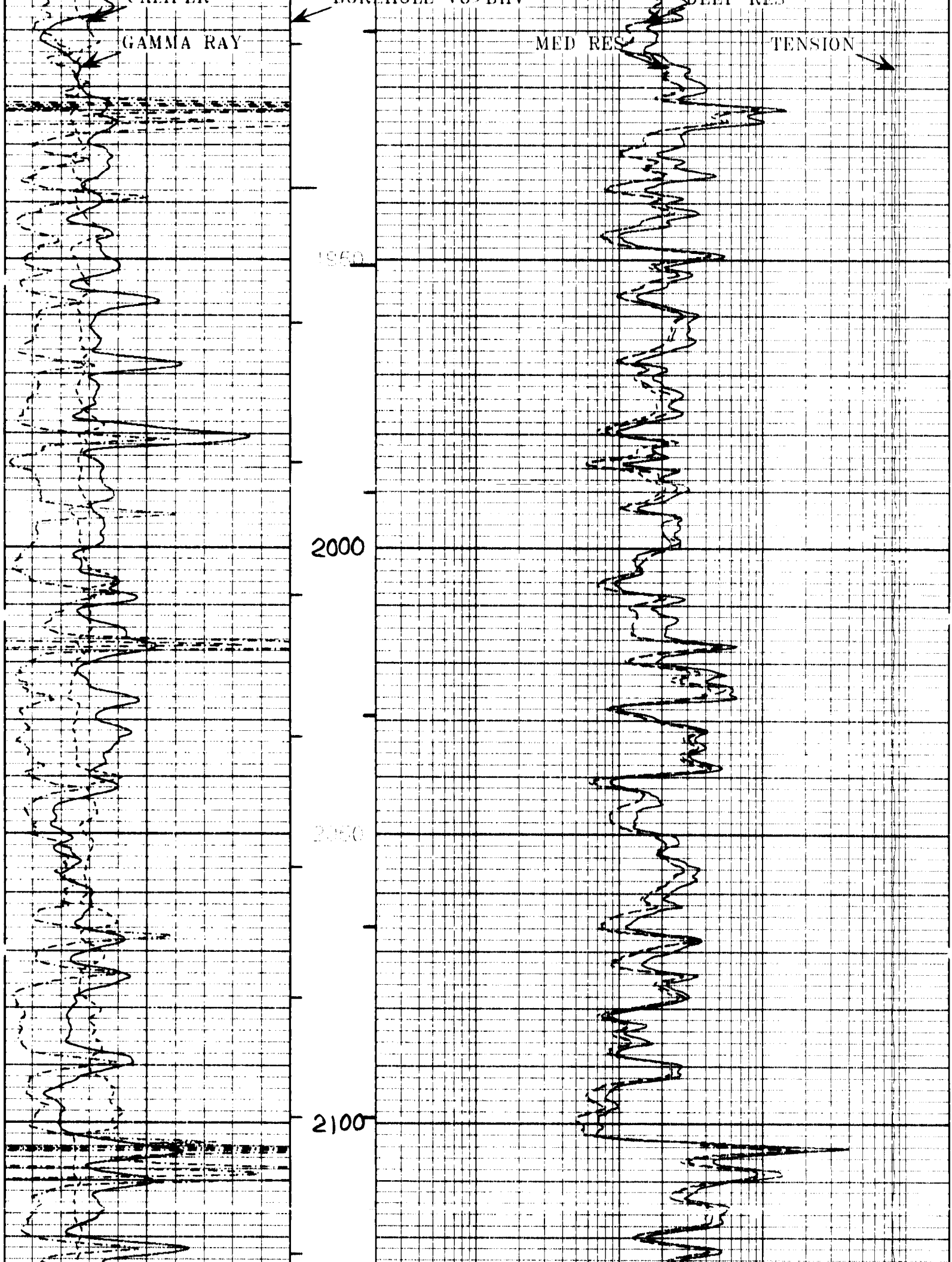

850
ANNULUS VOL AHV
RWA
900
CALIPER
BOREHOLE VOL BHV
GAMMA RAY
DFL
DEEP RES
MED RES
TENSION
1000

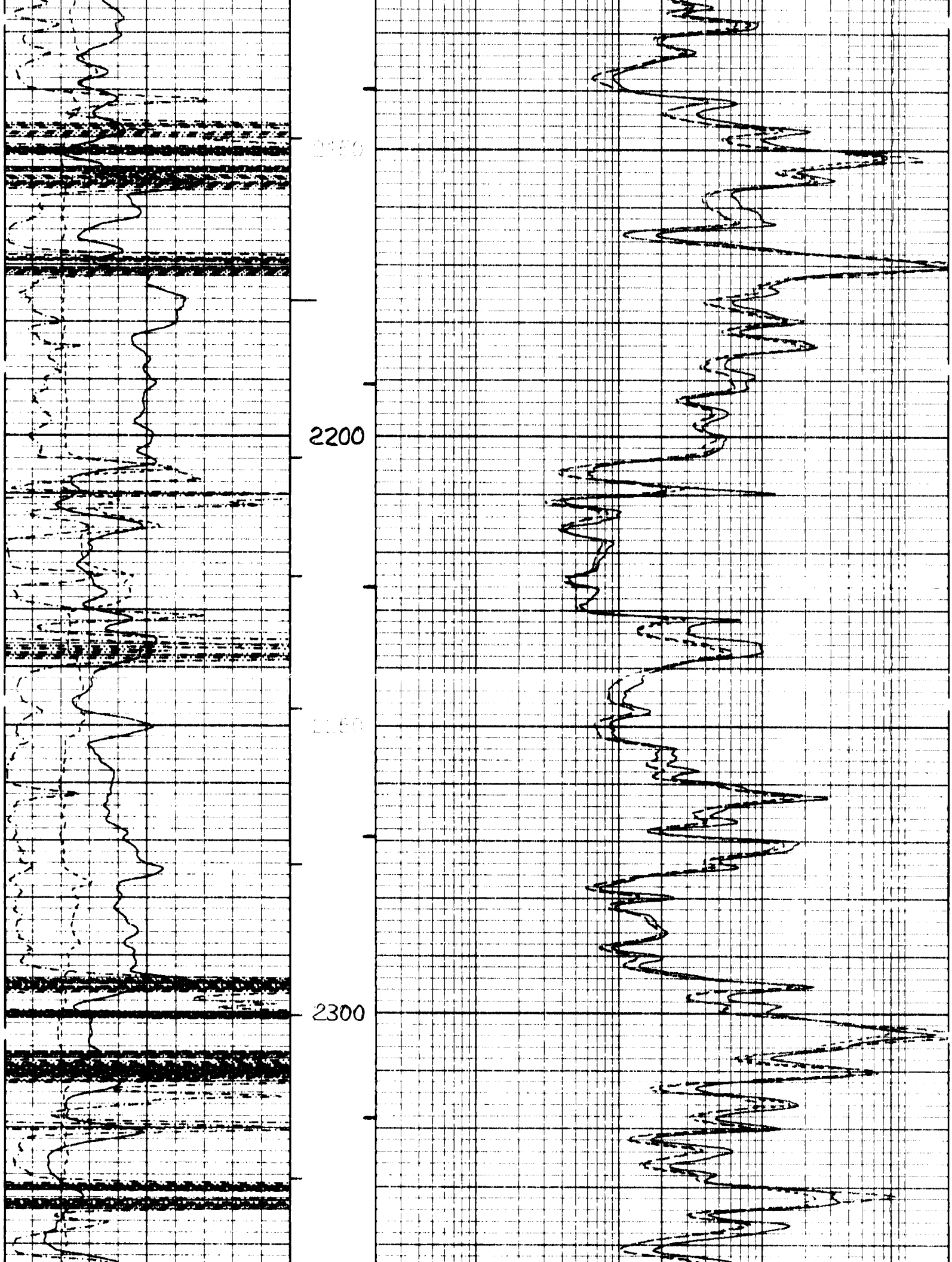

1050
1100
1150
1200

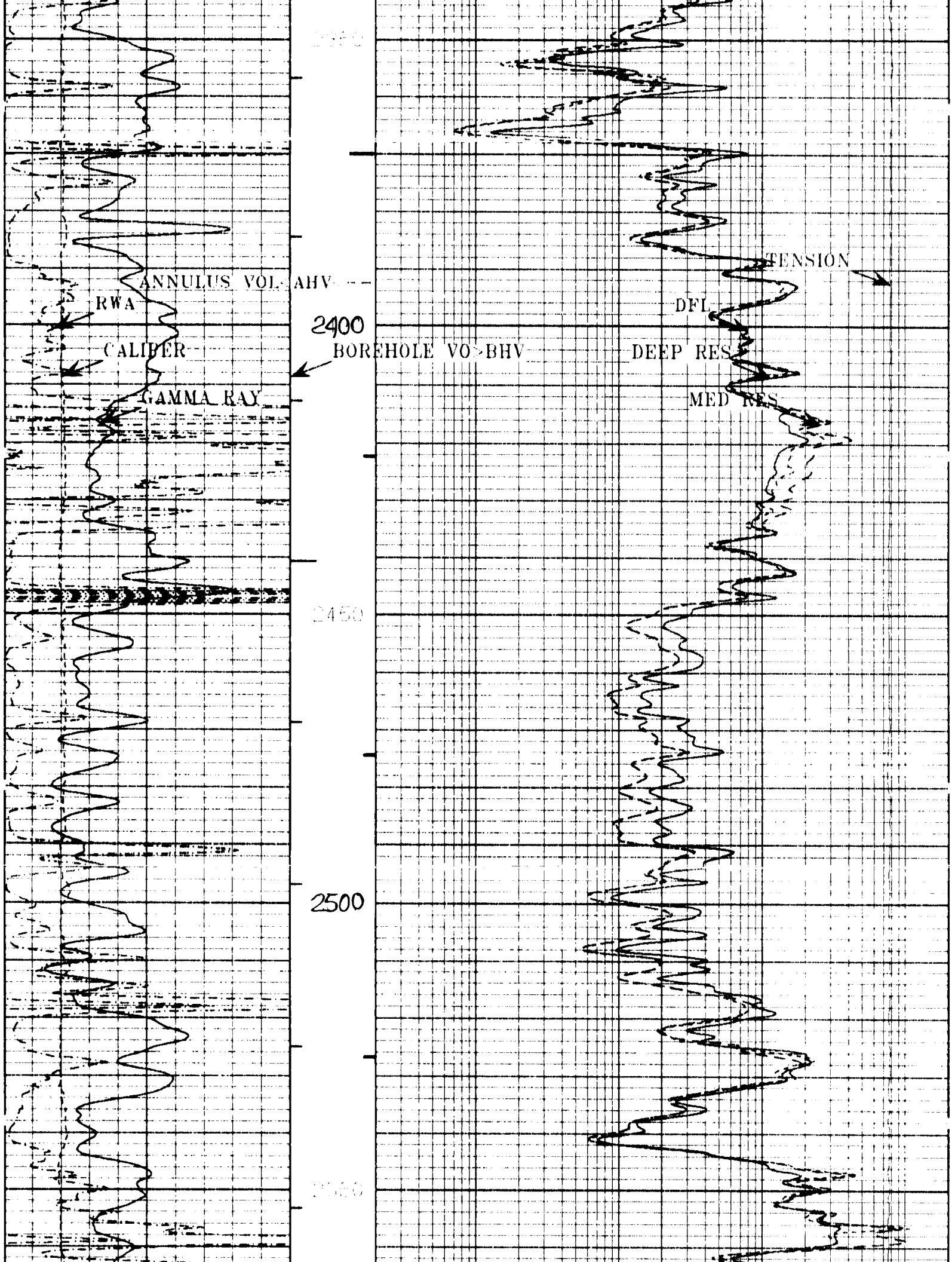

1300
1400
WA
ANNULUS VOL AI
CALIPER
GAMMA RAY
DFL
BOREHOLE VO BHV
DEEP RES
TENSION
MED RES

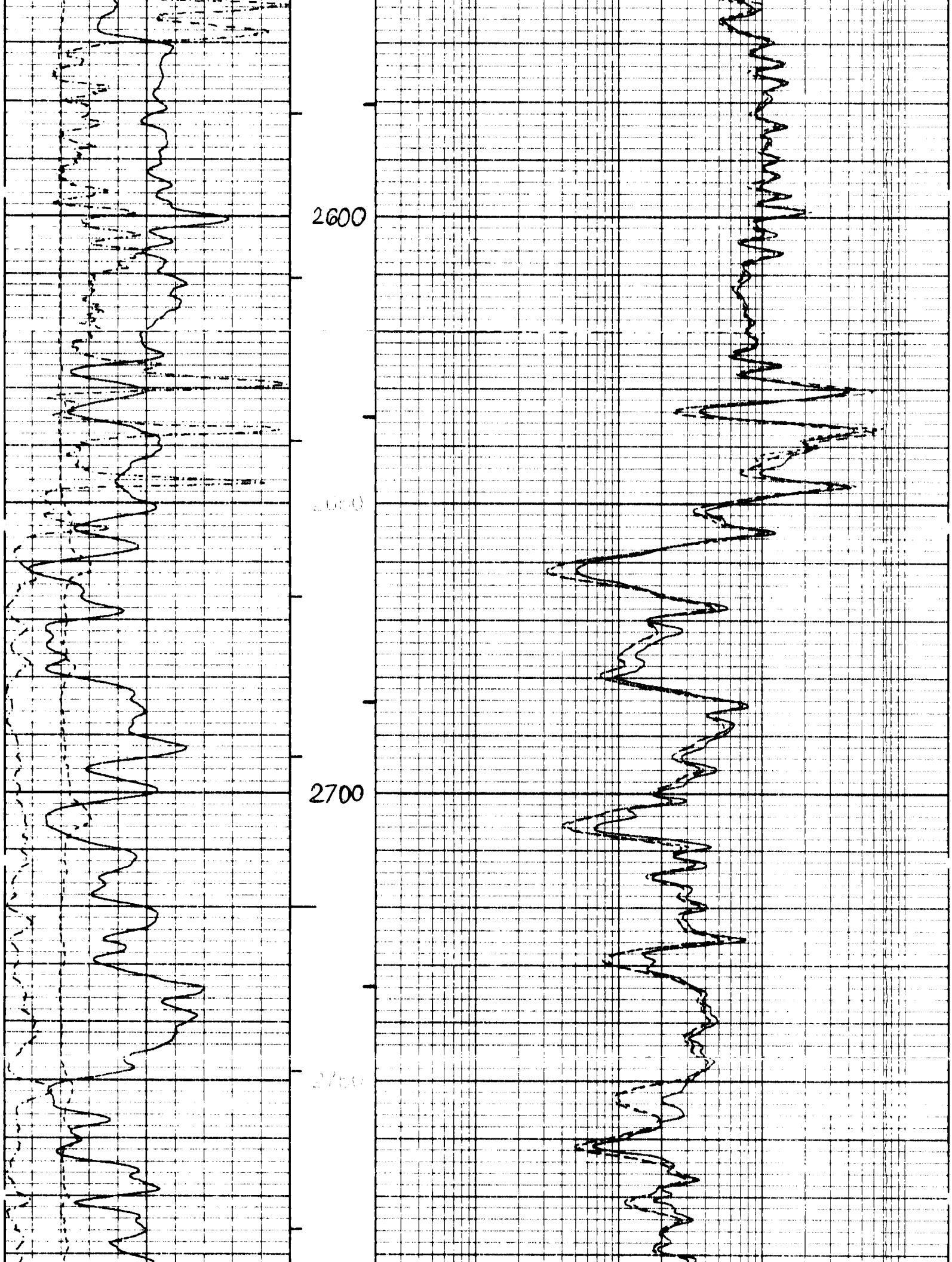

1500
1550
1600
1650

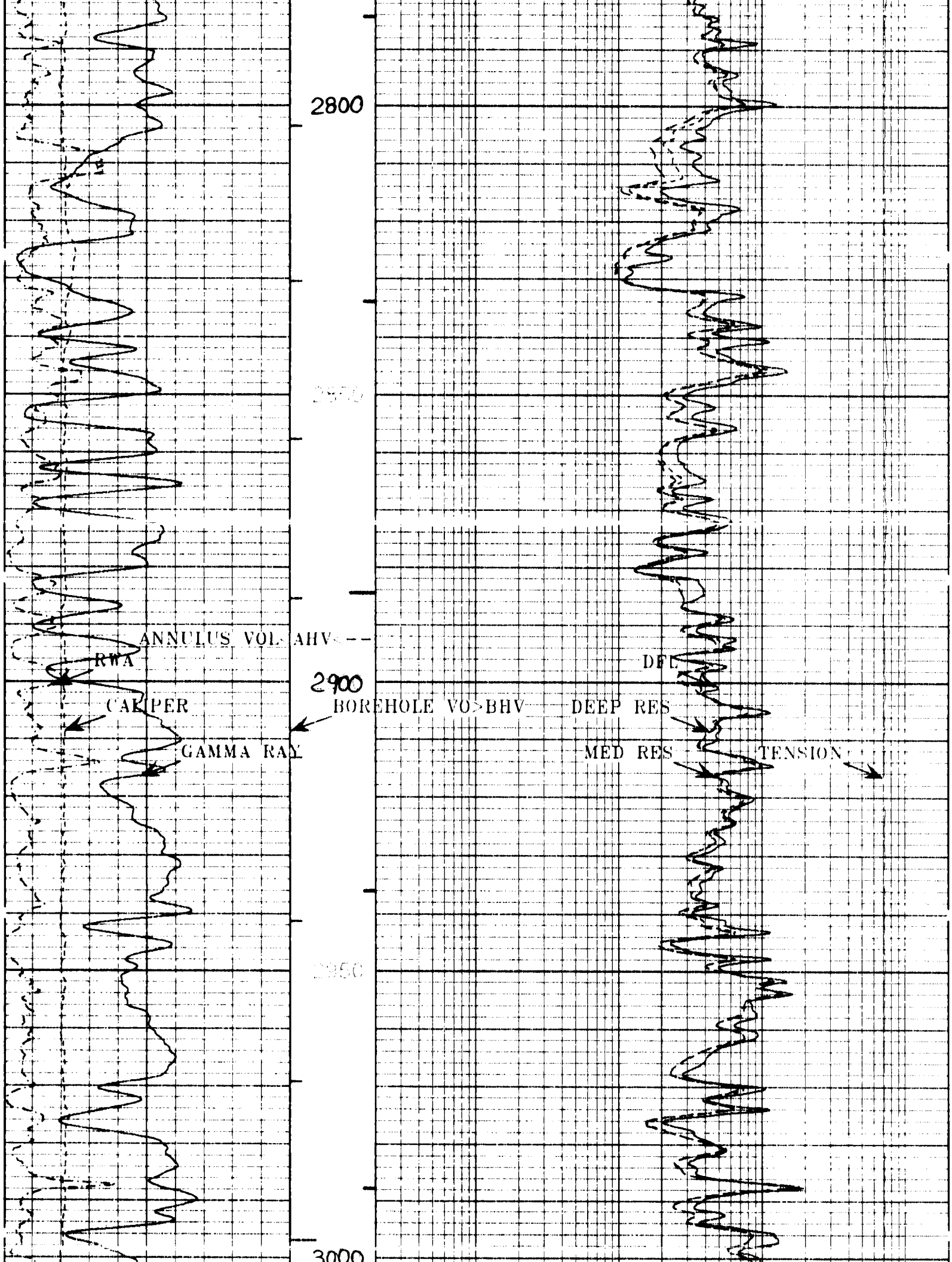

1700
1750
1800
1850
1900
ANNULUS VOL AHV
RWA
CALIPER
BOREHOLE VOL BHV
DFL
DEEP RES

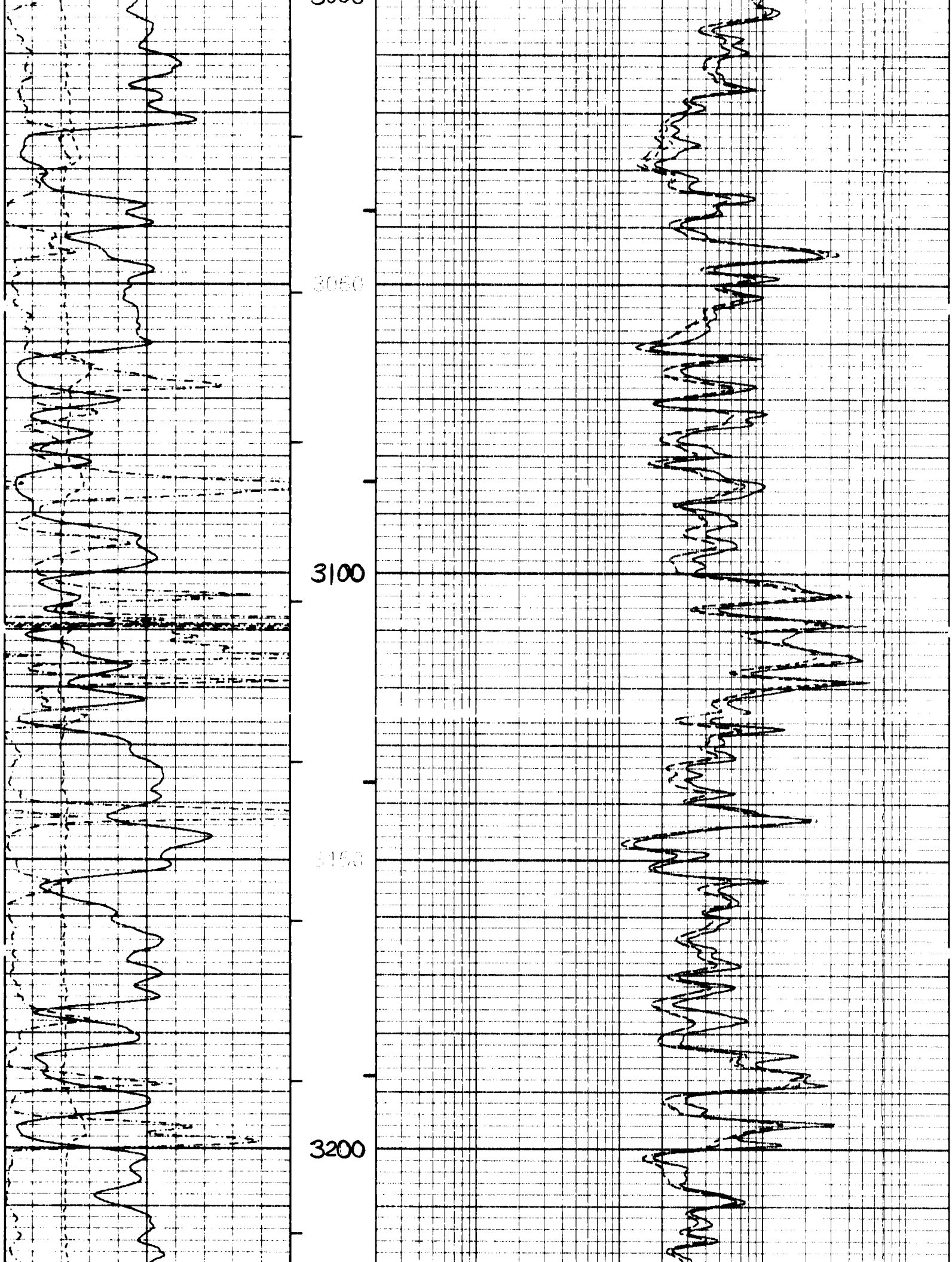

GAMMA RAY
MED RES
TENSION
2000
2100

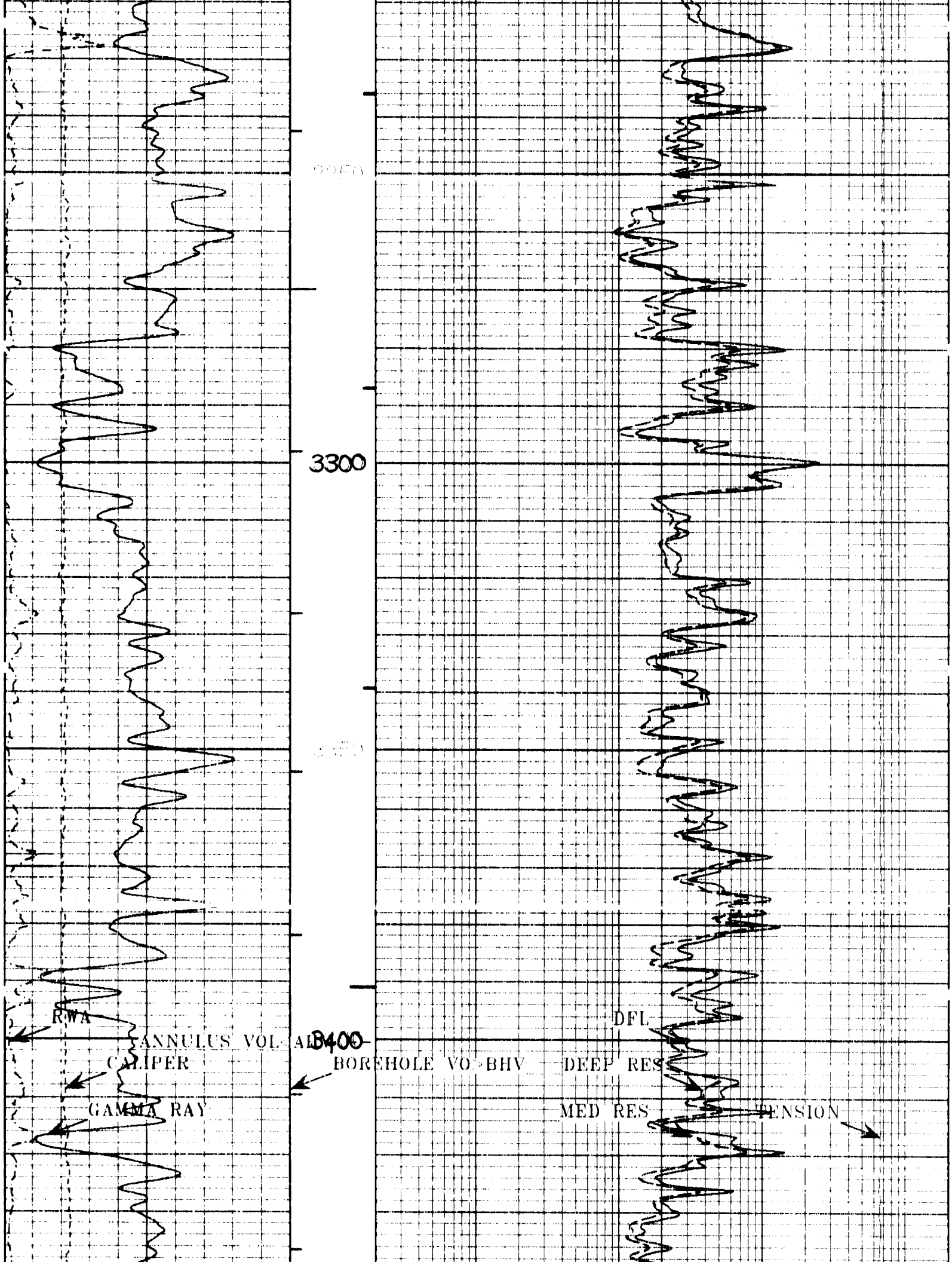

2200
2300

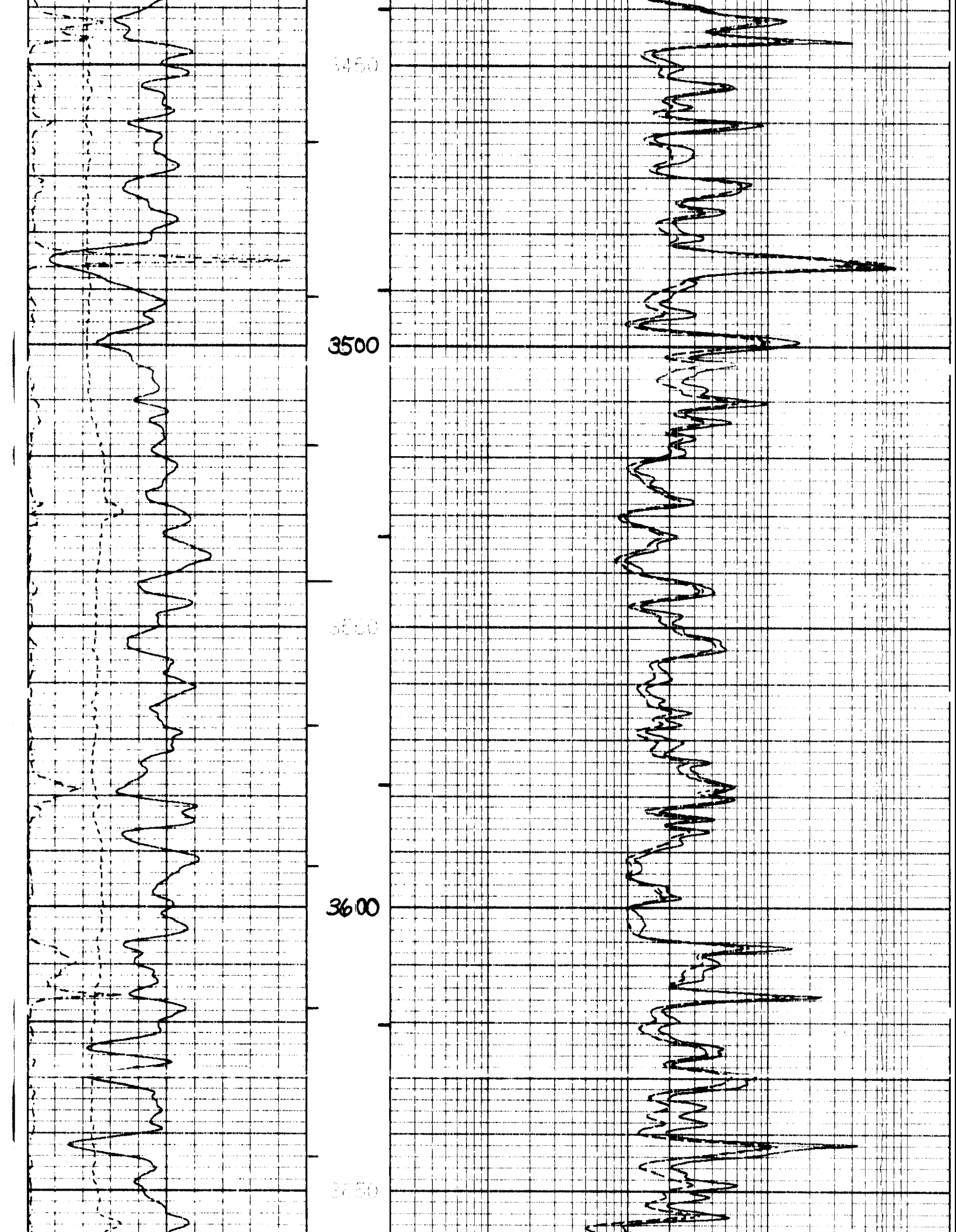

ANNULUS VOL AHV
RWA
CALIPER
GAMMA RAY
2400
BOREHOLE VO BHV
2450
2500
TENSION
DFL
DEEP RES
MED RES

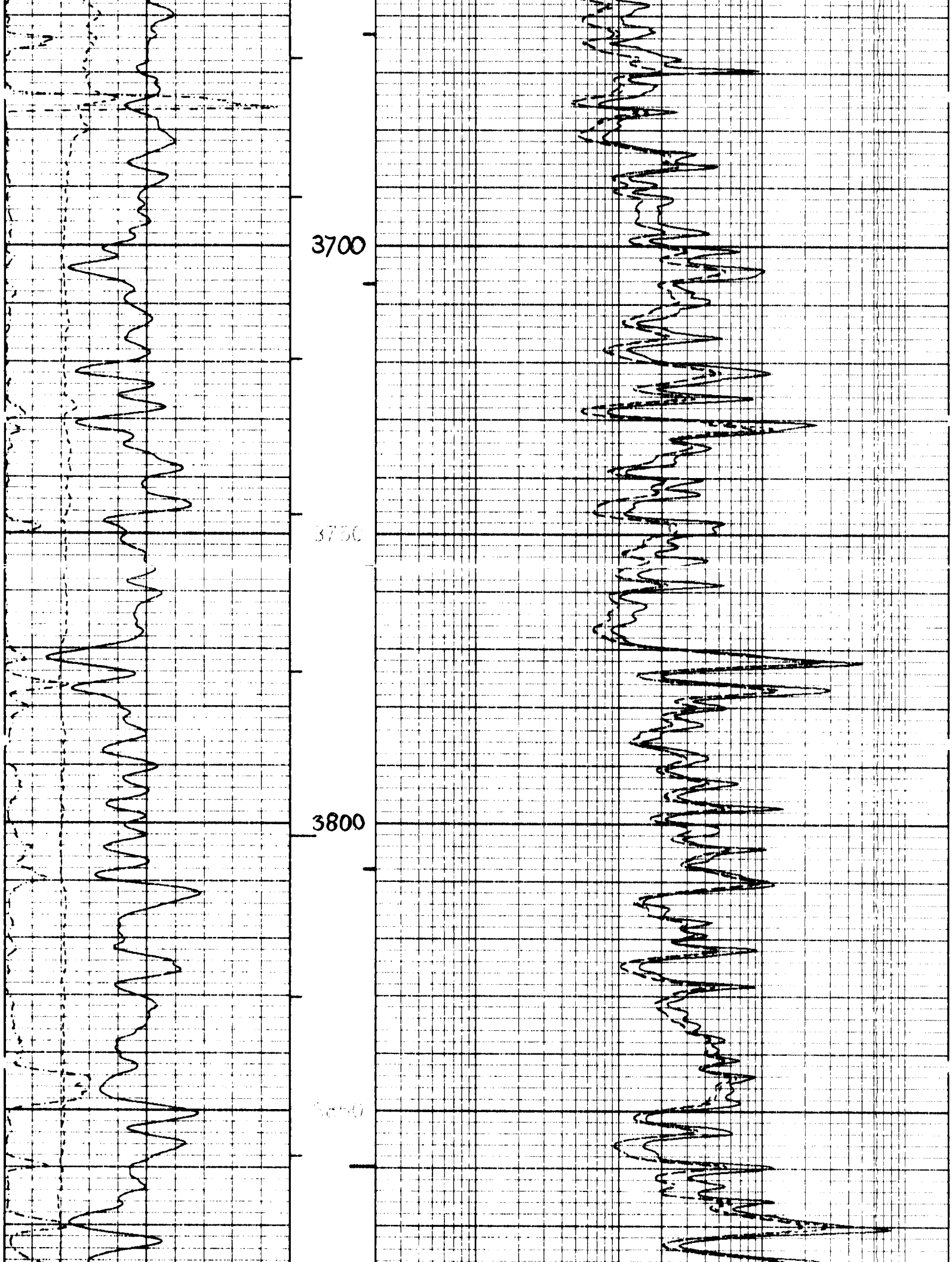

2600
2700

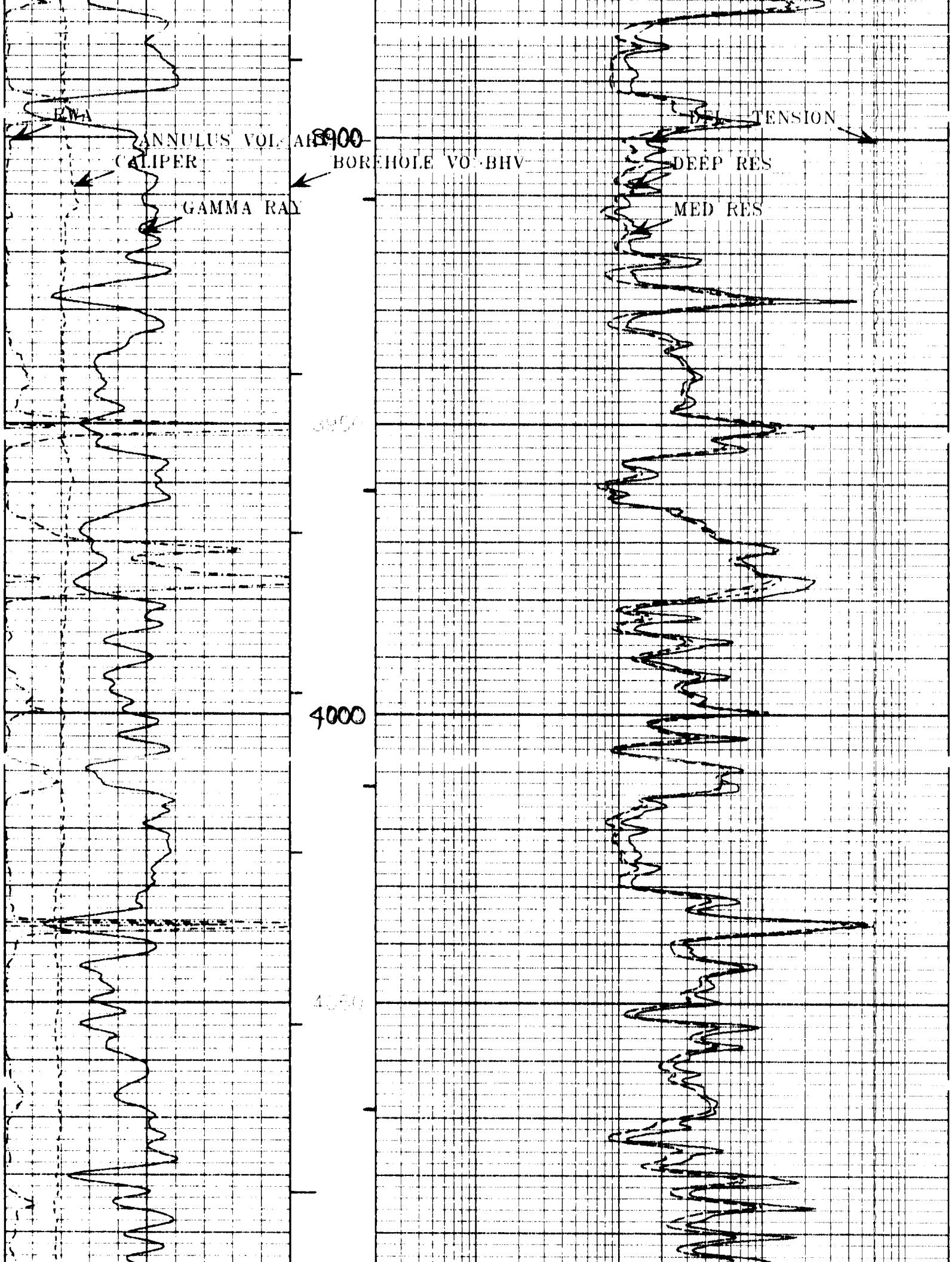

2800
2850
ANNULUS VOL AHV
RWA
2900
CALIPER
BOREHOLE VOL BHV
DEEP RES
GAMMA RAY
MED RES
TENSION
2950
3000

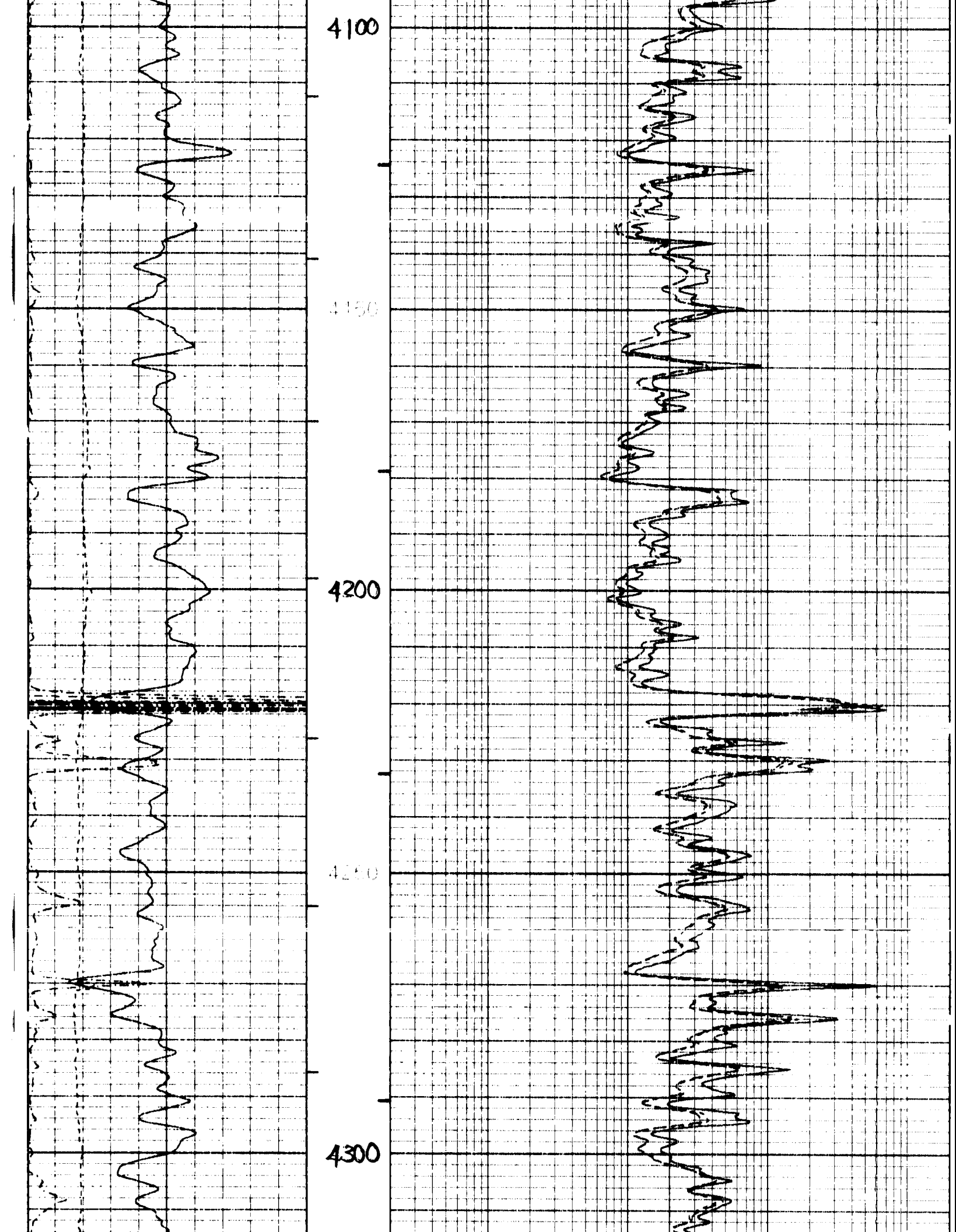

3050
3100
3150
3200

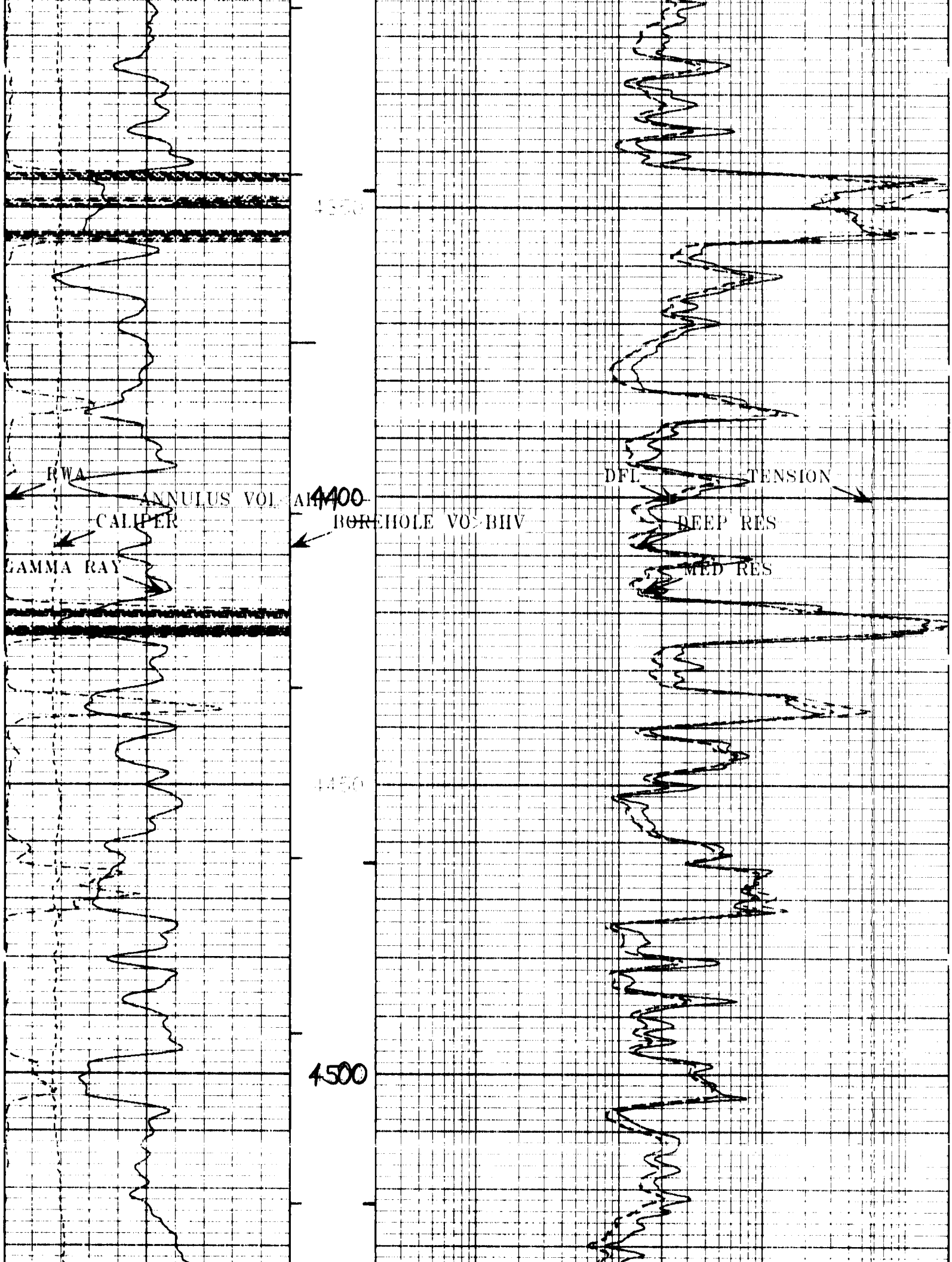

3300
3400
RWA
ANNULUS VOL AL
CALIPER
GAMMA RAY
BOREHOLE VO BHV
DFL
DEEP RES
MED RES
TENSION

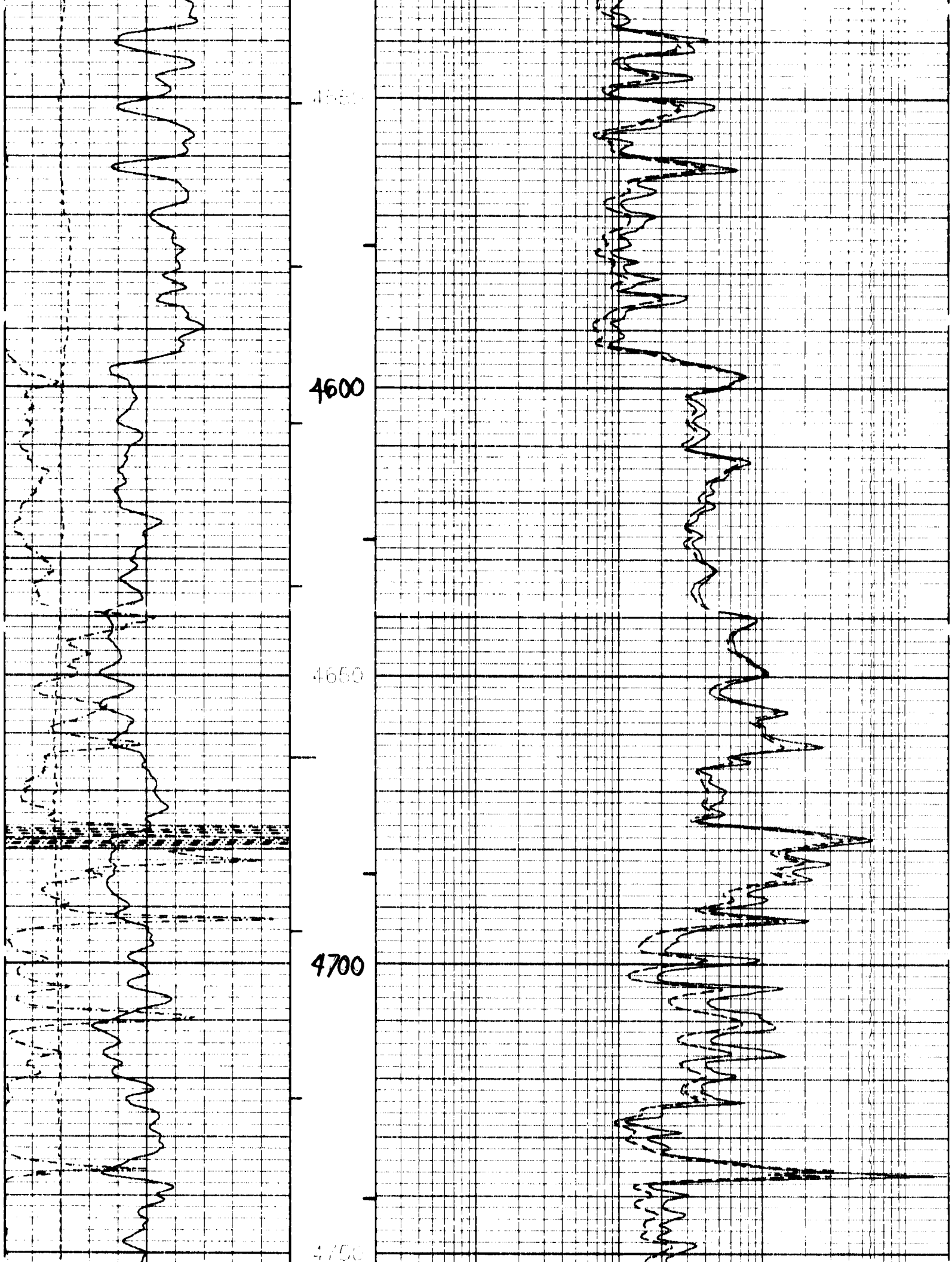

3450
3500
3550
3600
3650

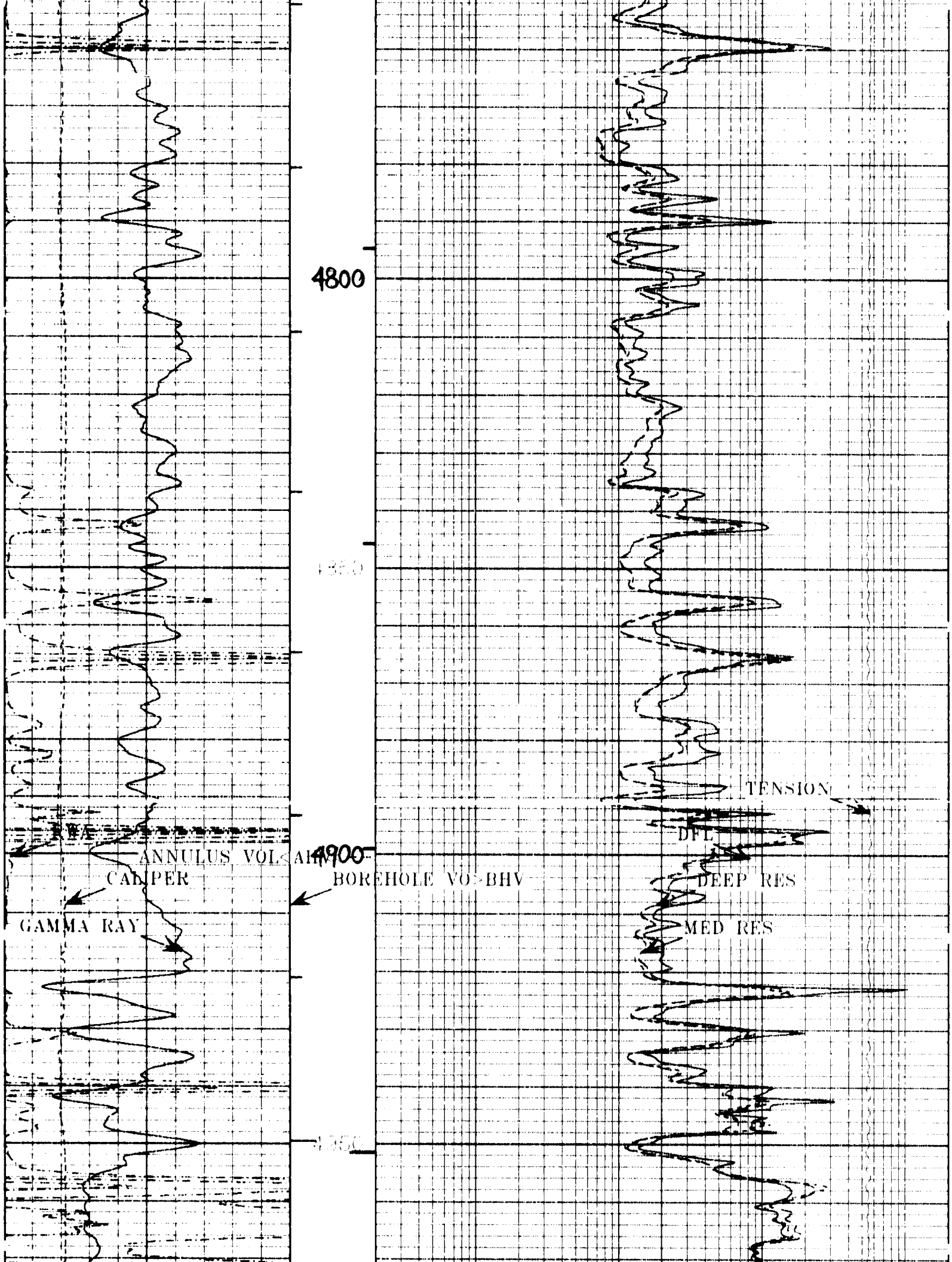

3700
3750
3800
3850

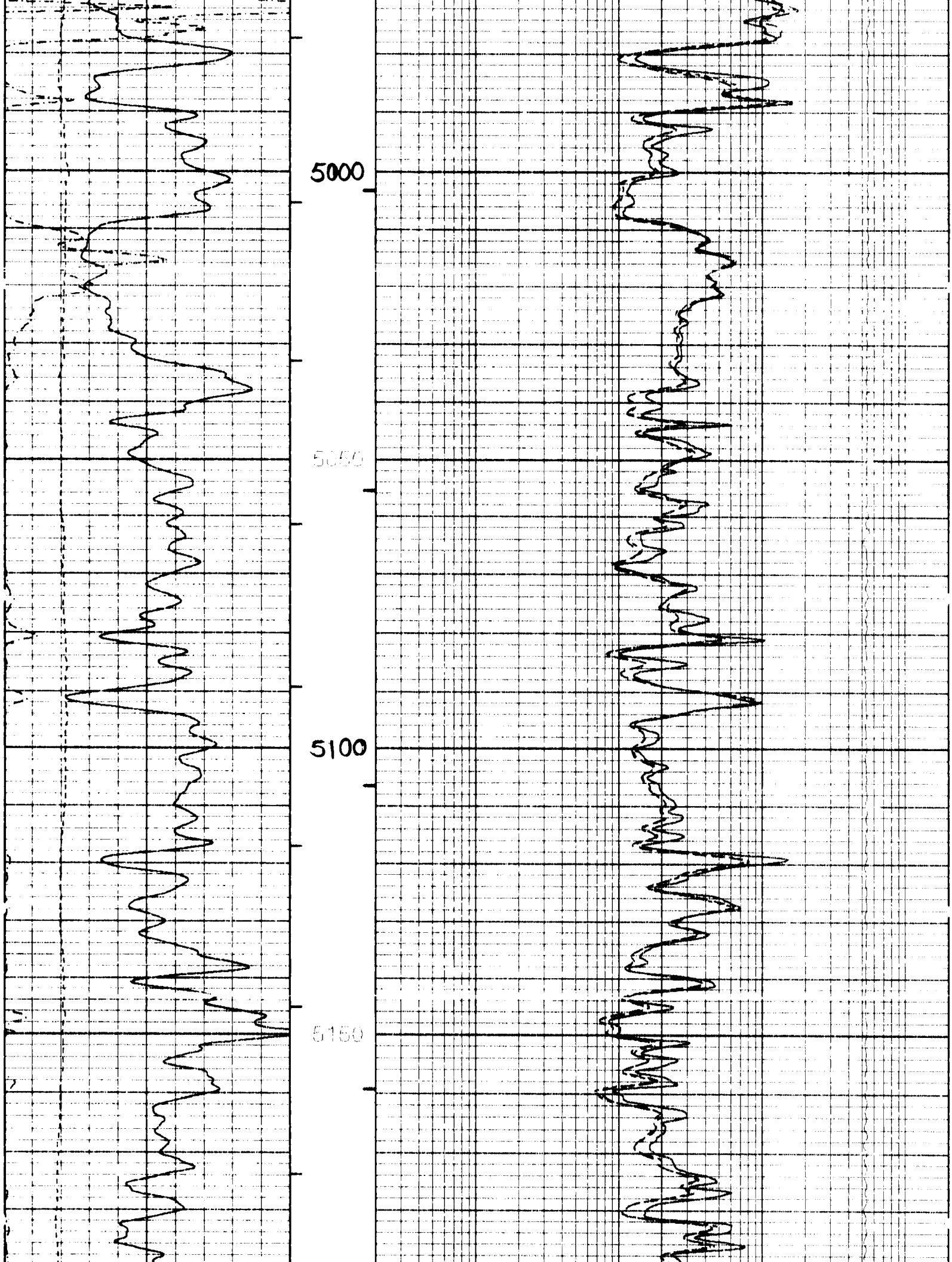

RWA
ANNULUS VOL AHV
CALIPER
BOREHOLE VO BHV
GAMMA RAY
8900
4000
DEL TENSION
DEEP RES
MED RES

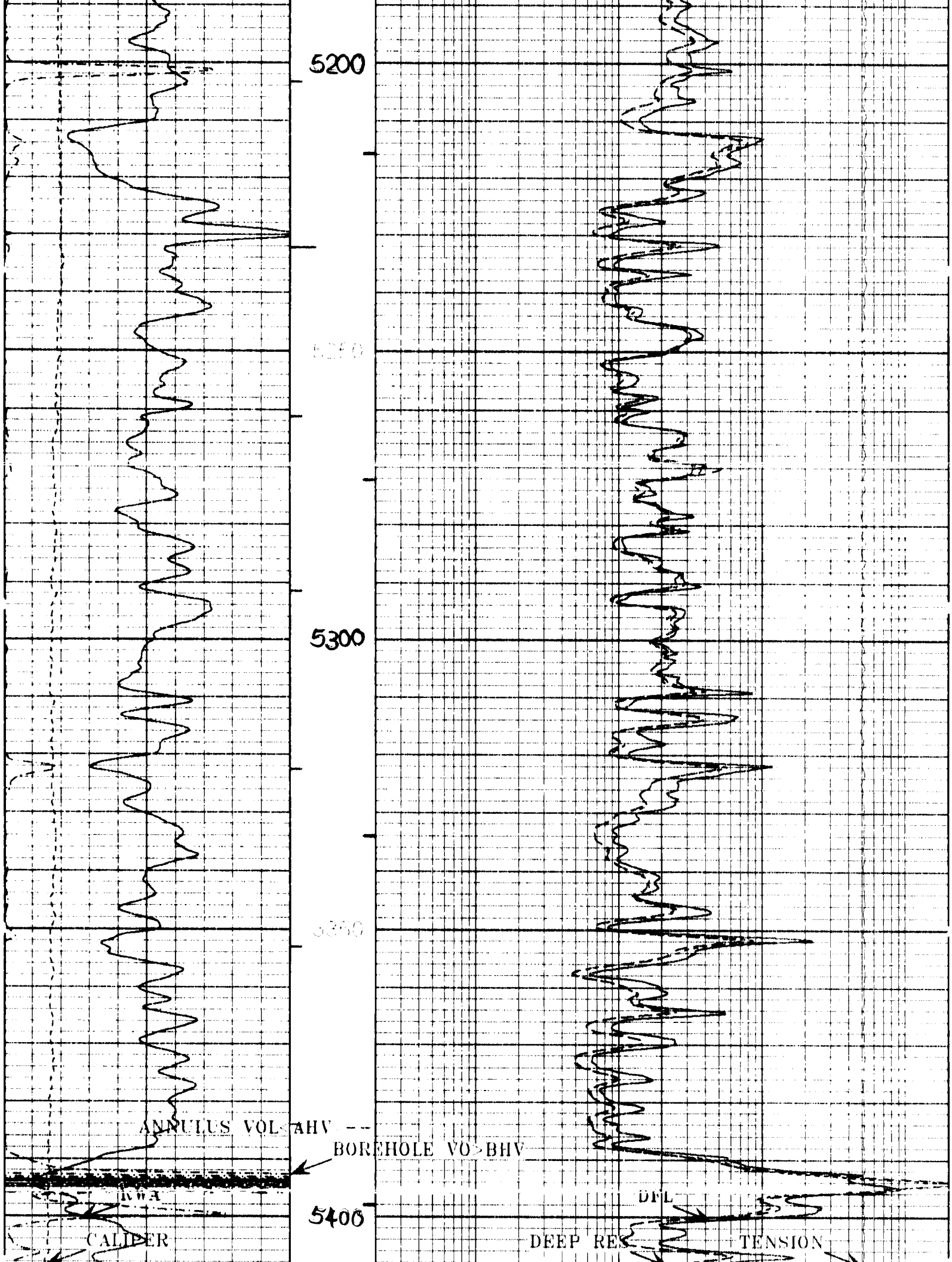

4100
4150
4200
4250
4300

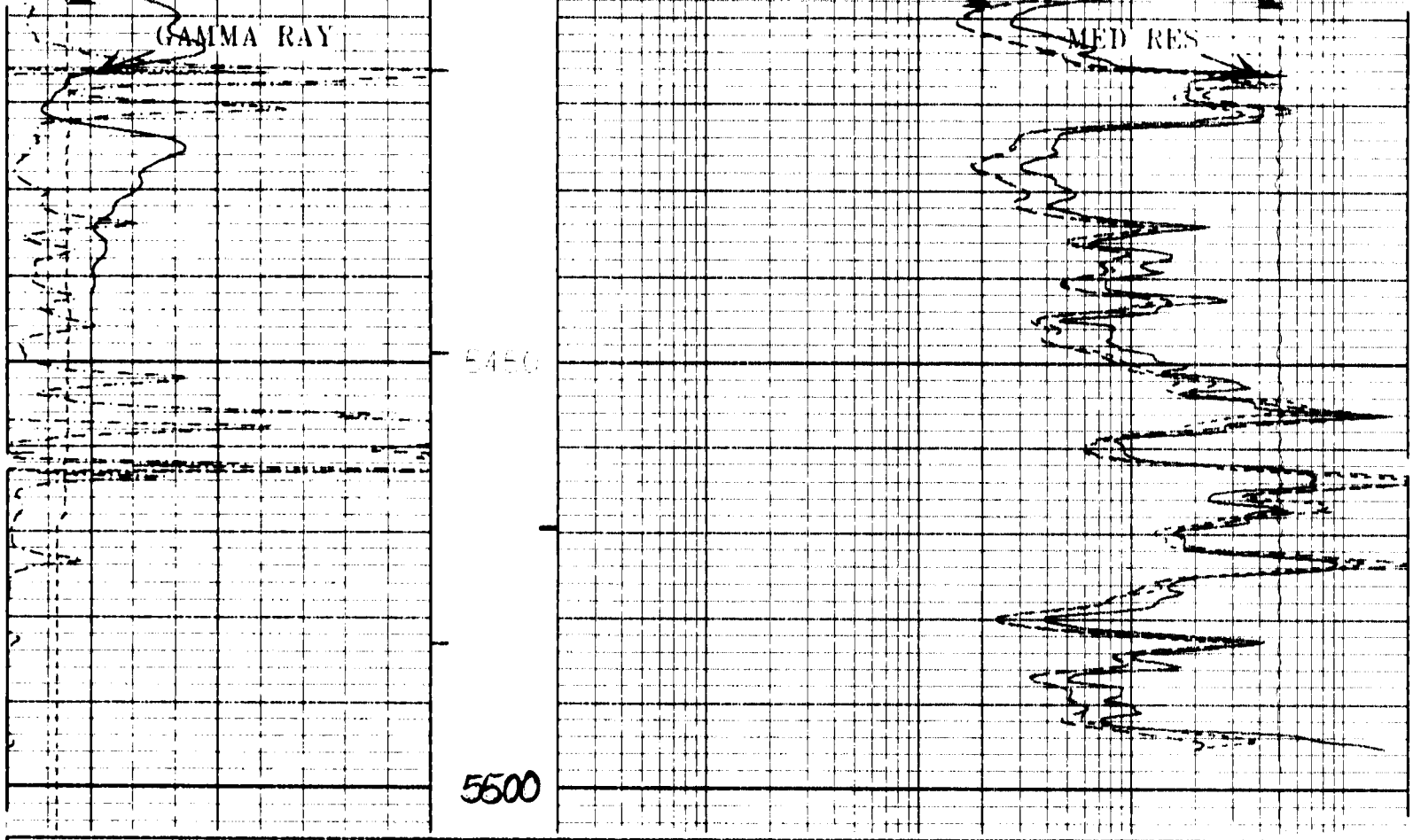

RWA
ANNULUS VOL AIR
CALIPER
GAMMA RAY
4400
BOREHOLE VOL BHV
DFL
TENSION
DEEP RES
MED RES
4500


4600
4650
4700


4800
4900
TENSION
DFL
ANNULUS VOL
CALIPER
BOREHOLE VOL
DEEP RES
GAMMA RAY
MED RES


5000
5050
5100
5150


5200
5300
5400
ANNULUS VOL AHV --
BOREHOLE VOL BHV
RWA
CALIPER
DFL
DEEP RES
TENSION



		1 240 Ft.	10000 TENSION POUNDS	0
RWA 0 OHMM 0			DFL 2 OHMM	2000
CALIPER 0 INCHES 16		>BHV>	DEEP RES 2 OHMM	2000
GAMMA RAY 0 API COUNTS 200		<AHV<	MED RES 2 OHMM	2000

HALLIBURTON
EXCELL

Version No. 3.44 : hc 3.0
Data File 0322_2150_s2100.4.cls
Format File /field_data/data2/0322_2150_s2100/plot_2.4.spc

Top Depth 60.0
Bottom Depth 5505.00
Plot Time 03-23-98 03:42:45
Log Time 03-22-98 23:46:15

MAIN PASS 5" = 100'

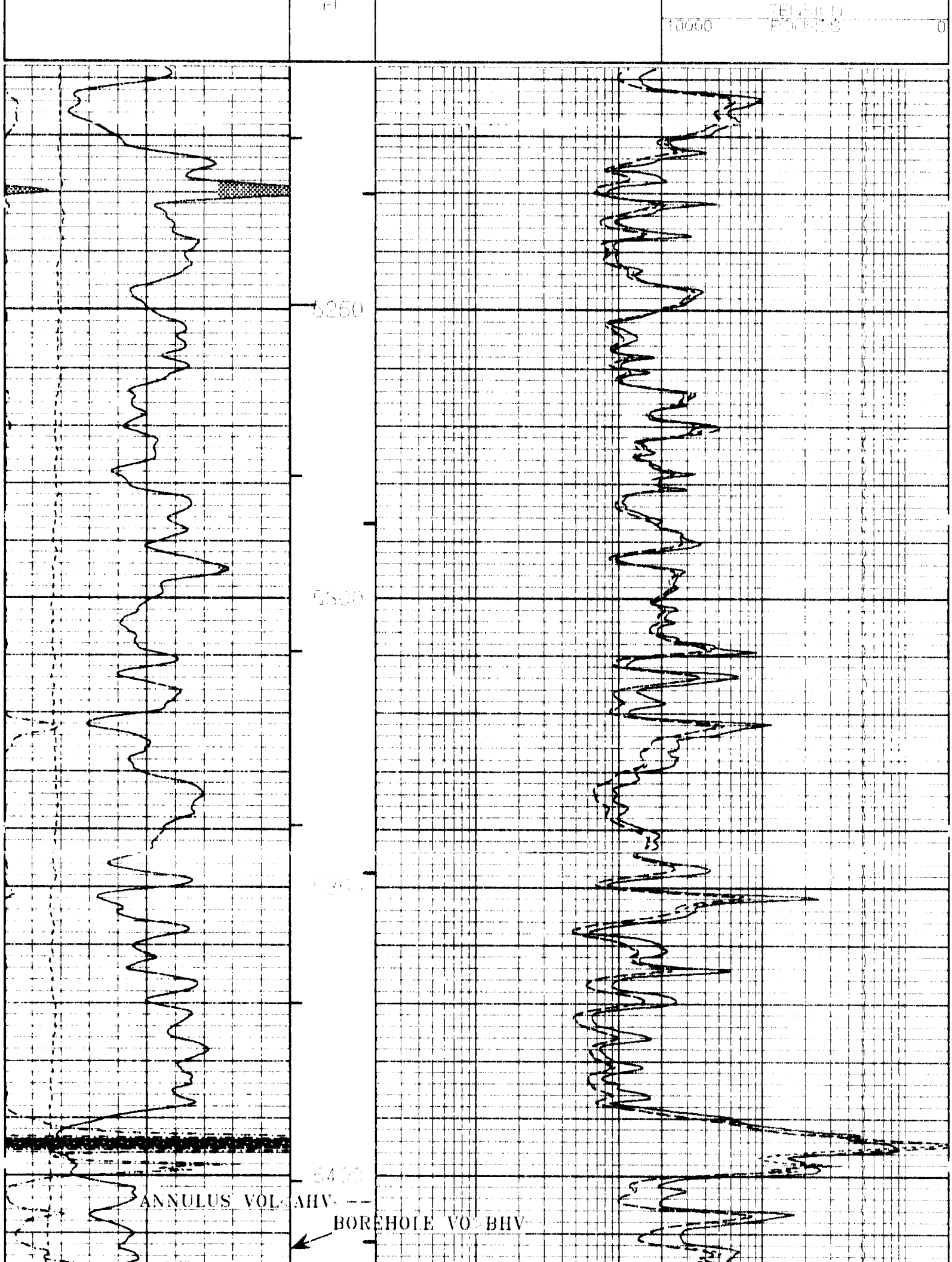
REPEAT SECTION

HALLIBURTON
EXCELL

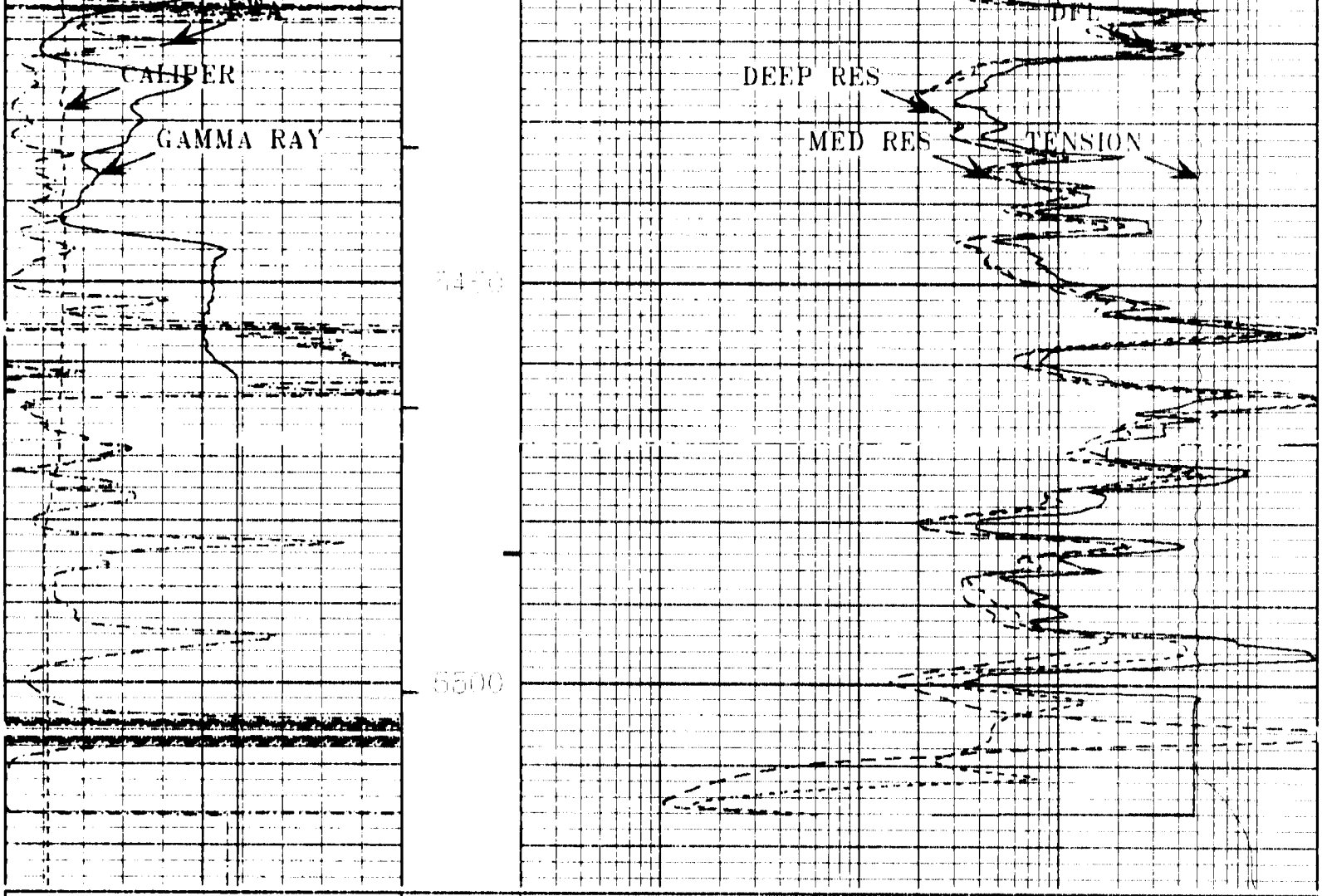
Version No. 3.44 : hc 3.0
Data File 0322_2150_s2100.3.cls
Format File /field_data/data2/0322_2150_s2100/plot_2.3.spc

Top Depth 5207.58
Bottom Depth 5525.00
Plot Time 03-23-98 01:50:27
Log Time 03-22-98 23:35:25

GAMMA RAY 0 API COUNTS 200		<AHV<	MED RES 2 OHMM	2000
CALIPER 6 INCHES 16		>BHV>	DEEP RES 2 OHMM	2000
RWA 0 OHMM 3		1 240	DFL 2 OHMM	2000



10000
0
5250
5300
5400
ANNULUS VOL<AHV
BOREHOLE VO BHV



				TENSION	
		1240 Ft		10000 POUNDS	0
BWA			DFL		
0 OHMM 3			2 OHMM 2000		
CALIPER		BOREHOLE VOLUME	DEEP RES		
6 INCHES 16		>BHV>	2 OHMM 2000		
GAMMA RAY		ALTERNATE VOLUME	MED RES		
0 API COUNTS 200		<AHV<	2 OHMM 2000		

HALLIBURTON

EXCELL

Version No. 3.44 , hc 3.0

Data File: 0322_2150_s2100.3.cls

Format File: /field/data/data2/0322_2150_s2100/plot_2.3.spc

Top Depth: 5207.58

Bottom Depth: 5525.00

Plot Time: 05-23-98 01:49:41

Log Time: [illegible]

REPEAT SECTION

EXCELL-2000 Calibration Report
Date: 23-Mar-1998 01:34

GAMMA RAY TOOL SHOP CALIBRATION SUMMARY

PERFORMED: 20-Mar-1998 08:33
SERIAL NUMBER: R108646
TRUCK UNIT NUMBER: 52546
PERFORMED BY: MELANCON

LAST SHOP CALIBRATION: 07-Mar-1998 15:14
MODEL: NGRT-A
PROGRAM VERSION: 3.44

MEASURED CALIBRATED UNITS

	MEASURED	CALIBRATED	UNITS
BACKGROUND	32	32	GAPI
BACKGROUND+CALIBRATOR	246	246	GAPI
CALIBRATOR	214	214	GAPI
GAPI CONVERSION FACTOR	0.535		GAPI/CPS

GAMMA RAY TOOL BEFORE SURVEY FIELD CHECK SUMMARY

PERFORMED: 22-Mar-1998 21:59 LAST SHOP CALIBRATION: 20-Mar-1998 08:33

	SHOP	FIELD	UNITS
BACKGROUND	32	29	GAPI
BACKGROUND+CALIBRATOR	246	238	GAPI
CALIBRATOR	214	210	GAPI

SDL CALIPER SHOP CALIBRATION SUMMARY

PERFORMED: 07-Mar-1998 15:37 LAST SHOP CALIBRATION: 18-Feb-1998 22:39
SERIAL NUMBER: WA031 MODEL: SDLT-A
TRUCK UNIT NUMBER: 52546 PROGRAM VERSION: 3.44
PERFORMED BY: JM

	MEASURED	CALIBRATED	UNITS
VALUE 1	8.719	7.875	INCH
VALUE 2	13.232	12.250	INCH
GAIN	0.00865		
OFFSET	5.845		

SDL CALIPER BEFORE SURVEY FIELD CHECK SUMMARY

PERFORMED: 22-Mar-1998 21:58 LAST SHOP CALIBRATION: 07-Mar-1998 15:37

	SHOP	FIELD	UNITS
VALUE 1	7.875	7.442	INCH

ENHANCED HIGH RESOLUTION IND. SHOP CALIBRATION SUMMARY

PERFORMED: 10-Mar-1998 10:53 LAST SHOP CALIBRATION: 26-Feb-1998 09:28
SERIAL NUMBER: A133 MODEL: EHRI
TRUCK UNIT NUMBER: 52546 PROGRAM VERSION: 3.44
PERFORMED BY: MLF

HRI MASTER CALIBRATION SUMMARY

TEST LOOP RESPONSE:

1 - TEST LOOP CLOSED

	MEASURED SIGNAL		NOMINAL		
	R	X	R	X	
HRD	1977	1972	1977	1972	MMHOS
HRM	2839	2832	2839	2832	MMHOS

2 - TEST LOOP OFF(SONDE ERROR)

	MEASURED SIGNAL		NOMINAL		
	R	X	R	X	
HRD	-3	27	+/-15	+/-100	MMHOS
HRM	-7	-25	+/-15	+/-100	MMHOS

ELECTRONICS RELATIVE GAIN:

	SET MAGNITUDE	SET PHASE	NOMINAL MAGNITUDE	NOMINAL PHASE
HRD	1.01	-1.70	1. +/-0.1	0. +/-5
HRM	1.01	-1.62	1. +/-0.1	0. +/-5

Temperature at time of calibration was 68.2 DEG F

EXCELL-2000 Calibration Summary Table
Date: 23-Mar-1998 01:34

Service or Signal	Shop	Before	After	Change	Tolerance
GAMMA	214	210		4	+/- 9.0
CALIPER VALUE 1	7.875	7.442		0.433	+/-0.5

EXCELL-2000 CUSTOMER EVENT LOG
Date: 23-Mar-1998 01:33

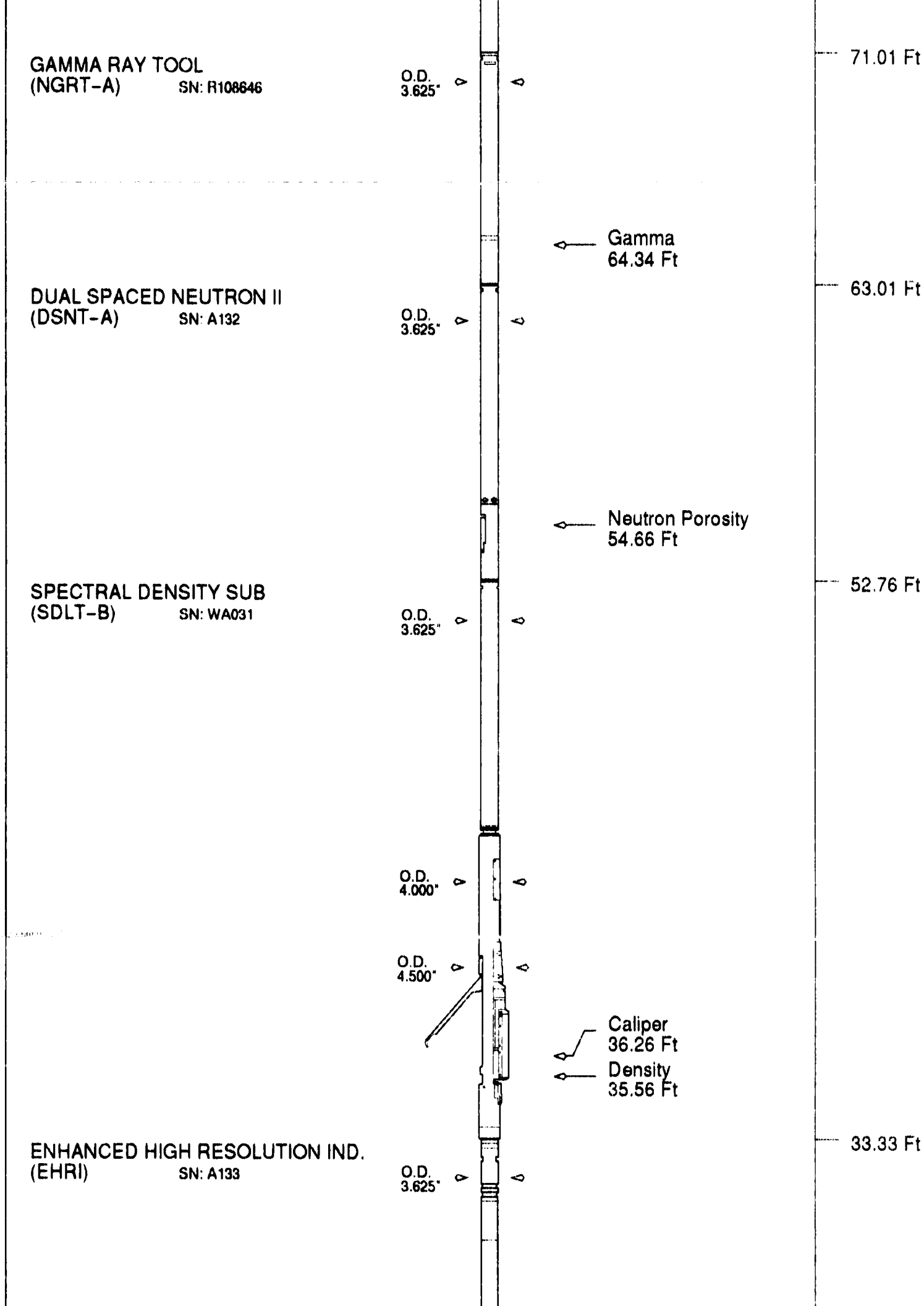
Event	Time	Section	Depth	Event Description	Data	Repeat
0001	21:48:20	0	0.00	Engineer is: MELANCON		
0002	22:04:20	0	0.00	MUDWT PARAM CHANGE 9.5 -->FP	8.4000	
0003	22:04:20	0	0.00	NLITH PARAM CHANGE LIME -->AP	SAND	
0004	22:04:20	0	0.00	RHOMAT PARAM CHANGE 2.71 -->FP	2.6800	
0005	22:10:18	0	0.00	Exiting EXCELL-2000 tool calibrations.	FIELD	
0006	22:43:23	0	397.33	TPU W2 POWER ON COMMAND ERROR		
0007	22:44:34	1	501.00	Begining new Uplog section.	1	
0008	22:49:18	1	274.33	End logging section	1	
0009	23:28:35	2	5265.75	Begining new Uplog section.	2	
0010	23:34:04	2	5166.75	End logging section	2	
0011	23:35:27	3	5573.25	Begining new Uplog section.	3	
0012	23:42:02	3	5198.66	End logging section	3	
0013	23:46:16	4	5504.91	Begining new Uplog section.	4	
0014	23:58:20	4	4954.75	SCALE CHANGE:	SP	
0015	23:58:20	4	4954.75	19 SP 0 100 N		
0016	00:00:54	4	4816.16	SP PARAM CHANGE FALSE -->LP	TRUE	
0017	01:22:34	4	335.00	DSN_OK PARAM CHANGE TRUE -->LP	FALSE	
0018	01:22:34	4	335.00	HRI_OK PARAM CHANGE TRUE -->LP	FALSE	
0019	01:22:34	4	335.00	DFL_OK PARAM CHANGE TRUE -->LP	FALSE	
0020	01:22:34	4	335.00	SDL_OK PARAM CHANGE TRUE -->LP	FALSE	
0021	01:22:34	4	335.00	CAL_OK PARAM CHANGE TRUE -->LP	FALSE	
0022	01:22:34	4	335.00	AHVOK PARAM CHANGE TRUE -->LP	FALSE	
0023	01:32:50	4	80.16	End logging section	4	

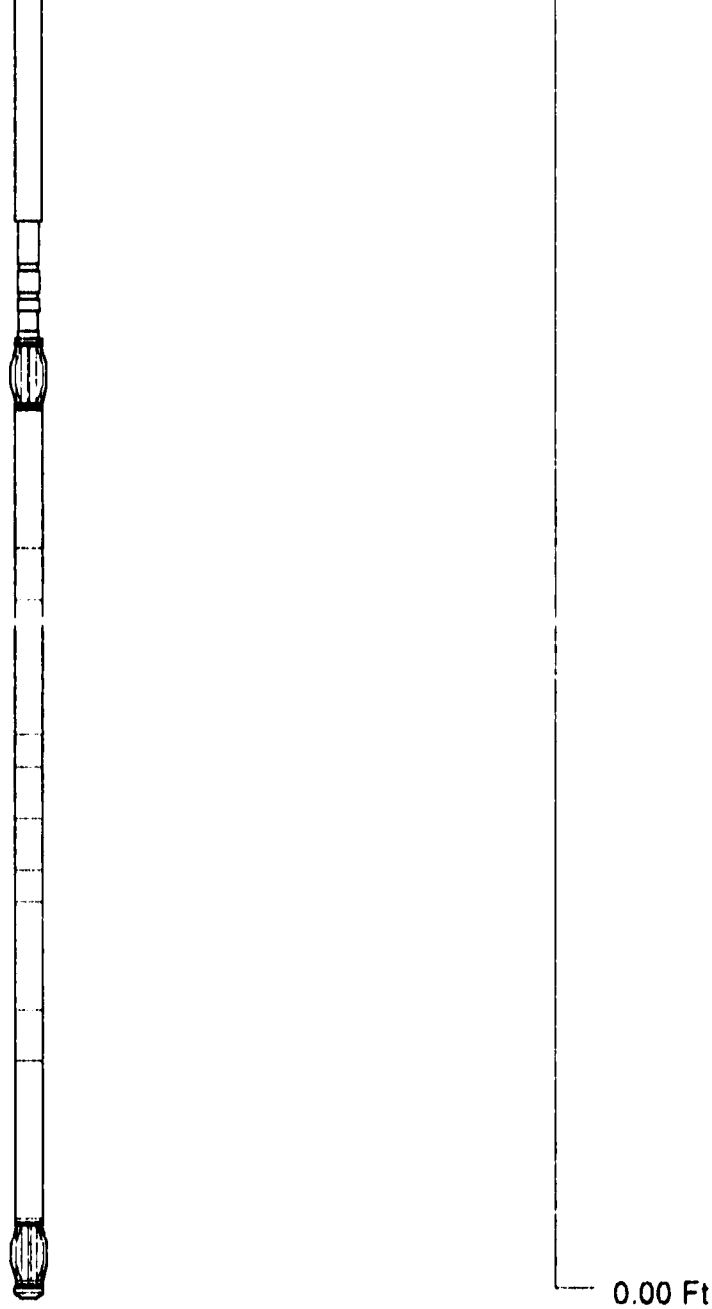
HALLIBURTON

Excell 2000 Tool String Diagram

HIGH RESOLUTION IND
SPECTRAL DENSITY
DUAL SPACED NEUTRON

DITS SUBSURFACE TELEMETRY UNIT
(DSTU-A B)


GAMMA RAY TOOL
(NGRT-A) SN: R108646
O.D. 3.625"
71.01 Ft
Gamma
64.34 Ft
DUAL SPACED NEUTRON II
(DSNT-A) SN: A132
O.D. 3.625"
63.01 Ft
Neutron Porosity
54.66 Ft
SPECTRAL DENSITY SUB
(SDLT-B) SN: WA031
O.D. 3.625"
52.76 Ft
O.D. 4.000"
O.D. 4.500"
Caliper
36.26 Ft
Density
35.56 Ft
ENHANCED HIGH RESOLUTION IND.
(EHRI) SN: A133
O.D. 3.625"
33.33 Ft



Tool Mnemonic	Length (Ft)	Weight In Air (lbs)	Logging Speed (Ft/min)
DSTU-A B	6.50	116.50	N/A
NGRT-A	8.00	151.80	120.00
DSNT-A	10.25	195.80	45.00
SDLT-B	19.43	358.50	30.00
EHRI	33.33	445.00	N/A
Tool String	77.51	1267.60	30.00

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

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- [ ] Yes
- [x] No

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- [ ] Federal
- [ ] Other

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- [x] Operator

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

C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

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

United States Environmental Protection Agency

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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:
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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)
II	R		1 well, type R

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

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

XII. Indian Lands (Mark 'x')

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	07/27/2015

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United States Environmental Protection Agency

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U			

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Phone Number: (208) 685-7600

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

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

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- [ ] Federal
- [ ] Other

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111	1	Antelope Creek Ute Tribal 08-12

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

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C. Signature: Kevin Dickey

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- [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)*

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						9	5S	3W	NE				

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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

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U			

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V. Ownership

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- [ ] Federal
- [ ] Other

VI. Legal Contact

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VII. SIC Codes

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

- [x] A. Operating — Date Started mo day year:
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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 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)

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

XIV. Certification

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

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

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

C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

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

United States Environmental Protection Agency

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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B. Phone No. *(Area Code and No.)*: (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 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

(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

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

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

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

C. Signature:

D. Date Signed: 07/27/2015

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

EPA

United States Environmental Protection Agency

Underground Injection Control Permit Application

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

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

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

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

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

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

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

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

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

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

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

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

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

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

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

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

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

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

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

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

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

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

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

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

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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 20-06

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

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

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

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

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

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

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

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

C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

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 20-07

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

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EPA

Underground Injection Control Permit Application

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

I. EPA ID Number

		T/A	C
U			

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For Official Use Only

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

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

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

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

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

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

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

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

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

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

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

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

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

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

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

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

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

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

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

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

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

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

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

C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

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United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

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

I. EPA ID Number

	T/A	C
U		

Read Attached Instructions Before Starting

For Official Use Only

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

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

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

Phone Number: (208) 685-7600

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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C. Signature: Kevin Dickey

D. Date Signed: 07/27/2015

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

United States Environmental Protection Agency

EPA

Underground Injection Control Permit Application

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

I. EPA ID Number

	T/A	C
U		

Read Attached Instructions Before Starting

For Official Use Only

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

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

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

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

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

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

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

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

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

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

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

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

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

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

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

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

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

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

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

XII. Indian Lands (Mark 'x')

- [x] Yes
- [ ] No

XIII. Attachments

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

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

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

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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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

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

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

EPA

United States Environmental Protection Agency

Underground Injection Control Permit Application

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

I. EPA ID Number

		T/A	C
U			

Read Attached Instructions Before Starting

For Official Use Only

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

II. Owner Name and Address

Owner Name: Petroglyph Energy, Inc.

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

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

III. Operator Name and Address

Owner Name: Petroglyph Energy, Inc.

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

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

IV. Commercial Facility

- [ ] Yes
- [x] No

V. Ownership

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

VI. Legal Contact

- [ ] Owner
- [x] Operator

VII. SIC Codes

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

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

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

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

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

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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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 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)

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

ATTACHMENT NO. 10

WELL BORE DIAGRAMS FOR THE UIC WELL

Ute Tribal 31-05 Well History

Well History:

Spud Well: 3/14/1998

Completed: 4/30/1998

First Production: 5/6/1998

Tops (KB):

BMSW* Found at 1284'

Green River 954'

A Marker 3420'

X Marker 3895'

Douglas Creek 4034'

B Limestone 4400'

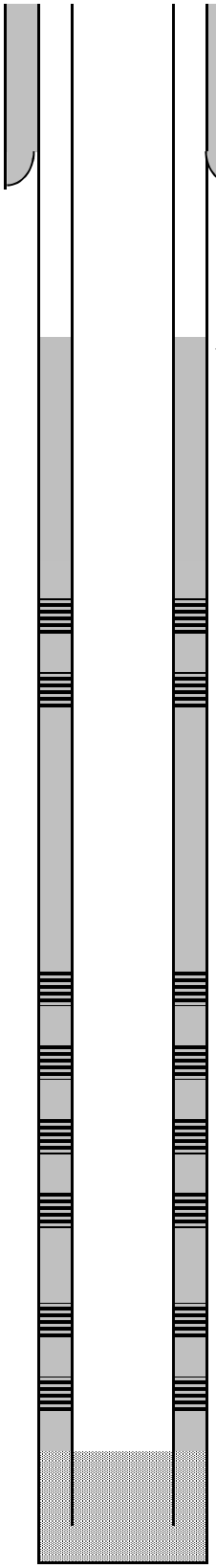
Castle Peak 4897'

Basal Carbonate 5388'

Perf History

4/25/1998

B11.1	3844' to 3848'
C02	3971' to 3975'
C06	4218' to 4221'
C09.2	4346' to 4352'
D01	4420' to 4424'
D3	4465' to 4468'
D3	4499' to 4502'
D7	4639' to 4643'
E01.1	4960' to 4966'
E01.2	5010' to 5016'



GL: 6274'

KB: 6284'

8 5/8" 24# Surface CSG @ 368' KB

cmt'd w/300 sx

Surface Hole size 12 1/4"

Cement top @ 1656'

5 1/2" 15.5# J-55 CSG @ 5483'

cmt'd w/430 sx

Hole Size 7 7/8" bit

Perf's:

B11.1 3844' to 3848'

C02 3971' to 3975'

C06 4218' to 4221'

C09.2 4346' to 4352'

D01 4420' to 4424'

D3 4465' to 4468'

D3 4499' to 4502'

D7 4639' to 4643'

E01.1 4960' to 4966'

E01.2 5010' to 5016'

PBTD @ 5421' KB

TD @ 5582' KB

(Not to Scale)

Petroglyph Operating Co., Inc.

Ute Tribal #31-05

(1980' FNL & 660' FWL)

SW NW Section 31, 5S- 3W

Antelope Creek Field

Duchesne Co. Utah

API#: 43013320350000

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

Ute Tribal 31-05 Injection

Well History:

Spud Well: 3/14/1998

Completed: 4/30/1998

First Production: 5/6/1998

Tops (KB):

BMSW* Found at 1284'

Green River 954'

A Marker 3420'

X Marker 3895'

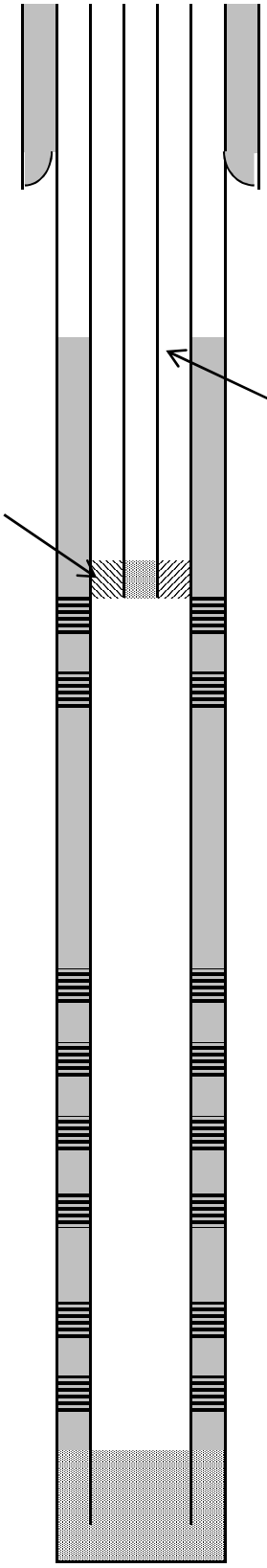
Douglas Creek 4034'

B Limestone 4400'

Castle Peak 4897'

Basal Carbonate 5388'

Injection packer @ 3754'



(Not to Scale)

GL: 6274'

KB: 6284'

8 5/8" 24# Surface CSG @ 368' KB

cmt'd w/300 sx

Surface Hole size 12 1/4"

Cement top @ 1656'

5 1/2" 15.5# J-55 CSG @ 5483'

cmt'd w/430 sx

Tubing 2 7/8" 6.5# J55

Hole Size 7 7/8" bit

Perf's:

B11.1 3844' to 3848'

Add C01 3948' to 3954'

Add C02 3966' to 3971'

C02 3971' to 3975'

Add C02 3975' to 3980'

Add C03.1 3996' to 3998' and 4010' to 4013'

C06 4218' to 4221'

Add C06 4230' to 4232'

Add C09.2 4343' to 4346'

C09.2 4346' to 4352'

Add C09.2 4352' to 4356'

D01 4420' to 4424'

D3 4465' to 4468'

Add D3 4468' to 4472'

D3 4499' to 4502'

Add D3 4502' to 4505'

Add D7 4598' to 4639'

D7 4639' to 4643'

Add D7 4643' to 4663'

Add E00.2 4930' to 4932'

Add E01.1 4955' to 4960'

E01.1 4960' to 4966'

Add E01.1 4966' to 4978'

E01.2 5010' to 5016'

Add E01.2 5016' to 5028'

PBTD @ 5421' KB

TD @ 5582' KB

Petroglyph Operating Co., Inc.

Ute Tribal #31-05

(1980' FNL & 660' FWL)

SW NW Section 31, 5S- 3W

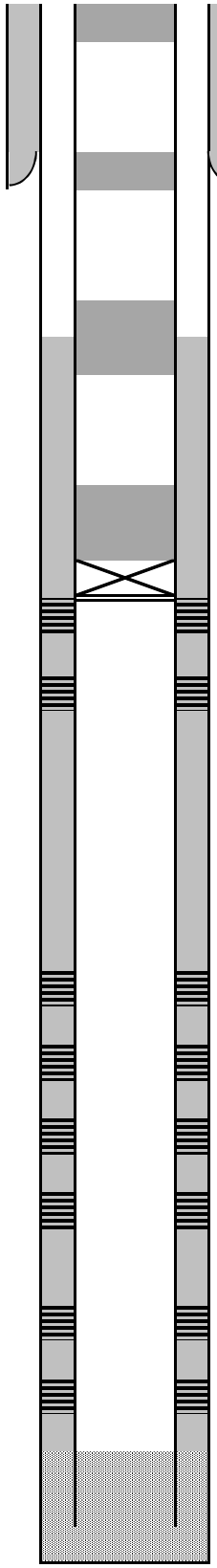
Antelope Creek Field

Duchesne Co. Utah

API#: 43013320350000

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

Ute Tribal 31-05 Plug and Abandonment



GL: 6274'
KB: 6284'

8sx Class G Cement-50' plug

8 5/8" 24# Surface CSG @ 368' KB
cmt'd w/300 sx

15sx Class G Cement-100' plug

Surface Hole size 12 1/4"

Cement top @ 1656'
5 1/2" 15.5# J-55 CSG @ 5483'
cmt'd w/430 sx

30sx Class G Cement-200' plug

Hole Size 7 7/8" bit

30sx Class G Cement-200' plug
CIBP @ 3754'

Perf's:
B11.1 3844' to 3848'
C02 3971' to 3975'
C06 4218' to 4221'
C09.2 4346' to 4352'
D01 4420' to 4424'
D3 4465' to 4468'
D3 4499' to 4502'
D7 4639' to 4643'
E01.1 4960' to 4966'
E01.2 5010' to 5016'

PBTD @ 5421' KB
TD @ 5582' KB

Petroglyph Operating Co., Inc.
Ute Tribal #31-05
(1980' FNL & 660' FWL)
SW NW Section 31, 5S- 3W
Antelope Creek Field
Duchesne Co. Utah
API#: 43013320350000

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

(Not to Scale)

ATTACHMENT NO. 11

P&A PROCEDURE

Plug and Abandonment Procedure

Ute Tribal 31-05

43-013-32035

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 @ 3754‘.

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 1656’ and set balanced 200’ cement plug using 30sxs of Class G cement.

6. Raise the tubing to 368’ and set balanced 100’ cement plug using 15sxs of Class G cement.

7. Set balanced 50’ cement plug (8sxs 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 31-05

43-013-32035

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. RU Wireline. Add new perfs: C01 3948' to 3954', C02 3966' to 3971', C02 3975' to 3980', C03.1 3996' to 3998', 4010' to 4013', C06 4230' to 4232', C09.2 4343' to 4346', C09.2 4352' to 4356', D3 4468' to 4472', D3 4502' to 4505', D7 4598' to 4639', 4643' to 4663', E00.2 4930' to 4932', E01.1 4955' to 4960', 4966' to 4978', and E01.2 5016' to 5028'.
7. RD Wireline.
8. PU plug and packer and new tubing. RIH and breakdown perfs.
9. POOH. RIH with injection packer to 3754'.
10. Reverse circulate in packer fluid.
11. Set packer and ND BOPs and NU wellhead.
12. Pressure test casing-tubing annulus to 1500psi for 15 minutes.
13. RDMO.
14. Notify EPA of test, wait for approval.
15. 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.