

7/28/99	8/12/99	BS	KN	SWD
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ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

ADMINISTRATIVE APPLICATION COVERSHEET

THIS COVERSHEET IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS

Application Acronyms:

[NSP-Non-Standard Proration Unit] [NSL-Non-Standard Location]
 [DD-Directional Drilling] [SD-Simultaneous Dedication]
 [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
 [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
 [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
 [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
 [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Directional Drilling

☐ NSL ☐ NSP ☐ DD ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement

☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery

☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

FORWARD, 9-2-99
 THEY WANT TO
 SET TO HEARING.
 MARK

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner - Legal Advertisement

[C] ☐ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO

U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached and/or, will be forwarded when received.

[F] ☐ Waivers are Attached

[3] INFORMATION / DATA SUBMITTED IS COMPLETE - Statement of Understanding

I hereby certify that I, or personnel under my supervision, have read and complied with all applicable Rules and Regulations of the Oil Conservation Division. Further, I assert that the attached application for administrative approval is accurate and complete to the best of my knowledge and where applicable, verify that all interest (WI, RI, ORRI) is common. I further verify that all applicable API Numbers are included. I understand that any omission of data, information or notification is cause to have the application package returned with no action taken.

Note: Statement must be completed by an individual with supervisory capacity.

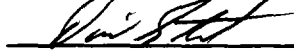
Richard E. Foppiano
 Print or Type Name

Richard E. Foppiano
 Signature

Senior Advisor
 Title

7/26/99
 Date

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: ☒ Secondary Recovery ☐ Pressure Maintenance ☐ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no
- II. Operator: OXY USA Inc. 16696
Address: P.O. Box 50250 Midland, TX 79710-0250
Contact party: David Stewart Phone: 915-685-5717
- III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? ☐ yes ☒ no
If yes, give the Division order number authorizing the project _____.
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- * VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
 2. Whether the system is open or closed;
 3. Proposed average and maximum injection pressure;
 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
 5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- *VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- * X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)
- * XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification
- I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- Name: David Stewart Title Regulatory Analyst
Signature:  Date: 7/26/99
- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. Logs were filed 6/24/94.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;
- (3) the formation name and depth with expected maximum injection rates and pressures; and
- (4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

INJECTION WELL DATA SHEET

OXY USA Inc. 16696		Government AB	
OPERATOR		LEASE	
9	SL - 330 FNL 230 FEL BHL - 772 FNL 660 FEL	10	20S 28E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP RANGE

Schematic

SEE OTHER SIDE

Tabular DataSurface Casing

Size 13-3/8" @ 400' " Cemented with 614 sx.
TOC Surface feet determined by Circulated
Hole size 17-1/2"

Intermediate Casing

Size 8-5/8" @ 3005' " Cemented with 1400 sx.
TOC Surface feet determined by Circulated
Hole size 11"

Long string

Size 5-1/2" @ 6718' " Cemented with 910 sx.
TOC Surface feet determined by Circulated
Hole size 7-7/8"
Total depth 6725'

Injection interval

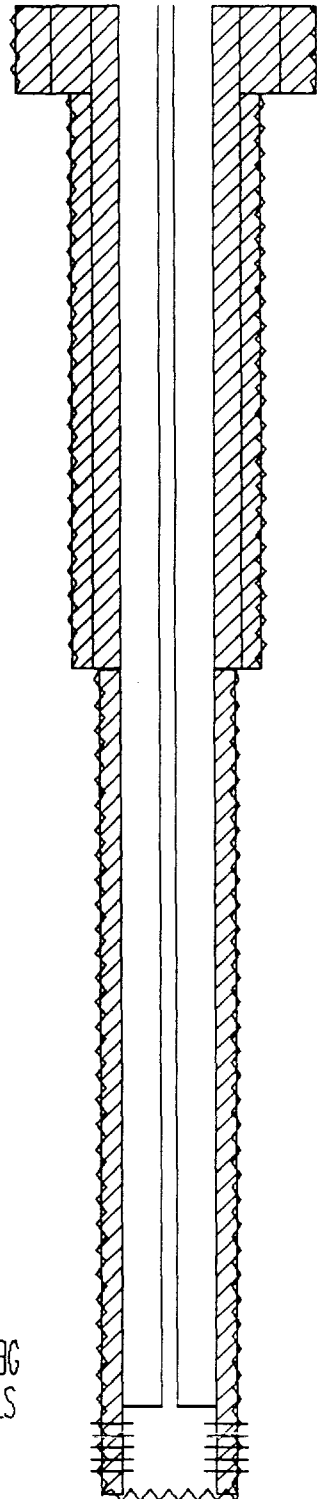
6378 feet to 6619 feet
(perforated or open-hole, indicate which)

Tubing size 2-7/8" N80 6.5# lined with N/A set in a
(material)
Baker Loc-Set packer at 6320 feet
(brand and model)
(or describe any other casing-tubing seal).

Other Data

- Name of the injection formation Bone Spring
- Name of Field or Pool (if applicable) Old Millman Ranch - Bone Spring Assoc. 48035
- Is this a new well drilled for injection? ☐ Yes ☒ No
If no, for what purpose was the well originally drilled? Oil Producer
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) No
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Yates-1024' Delaware-3266' Bone Spring-4579' 1st Bone Spring-6368'

OXY USA INC.
GOVERNMENT AB #9
SEC 10 T20S R28E EDDY CTY NM



0.0 - 400.0' 17 1/2" OD HOLE
0.0 - 400.0' CEMENT 614sx-CIRC
0.0 - 400.0' 13 3/8" OD SURF CSG

400.0 - 3005.0' 11" OD HOLE
0.0 - 3005.0' CEMENT 1400sx-CIRC
0.0 - 3005.0' 8 5/8" OD INT CSG

3005.0 - 6725.0' 7 7/8" OD HOLE
0.0 - 6718.0' CEMENT 910sx-CIRC
0.0 - 6718.0' 5 1/2" OD PROD CSG

0.0 - 6318.0' 2-7/8" OD 6.50#/ft N80 TBG
6318.0 - 6320.0' RETRV. PACKER BAKER LS

6378.0 - 6619.0' PERFS

PBTD: 6672'

ATTACHMENT C-108
OXY USA INC.
GOVERNMENT AB #9
SEC 10 T20S R28E

V. SEE ATTACHMENT A

VI. SEE ATTACHMENT B

VII. PROPOSED OPERATIONS

1. INJECTION RATE:
AVERAGE - 500 BPD MAXIMUM - 1000 BPD
2. CLOSED SYSTEM
3. INJECTION PRESSURE:
AVERAGE - 1000psi MAXIMUM - 1275psi
4. N/A
5. SEE ATTACHMENT C FOR COPY OF BONE SPRING WATER ANALYSIS.

VIII. GEOLOGICAL DATA:

SEE ATTACHMENT D FOR A COPY OF BONE SPRING LOG INTERVAL.
LITHOLOGY: SANDSTONE
INJECTION ZONE: BONE SPRING
THICKNESS: 259'
DEPTH: 6369-6628'
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE: 60'

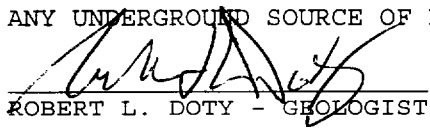
IX. NONE

X. WELL LOGS ON FILE:

NMOCD POTENTIAL TEST 6/23/94 - 278-BO 62-BW 221-MCFD
FTP-250# CHK-26/64
CURRENT TEST 5/14/98 - 4-BO 3-BW 50-MCFD - PUMPING

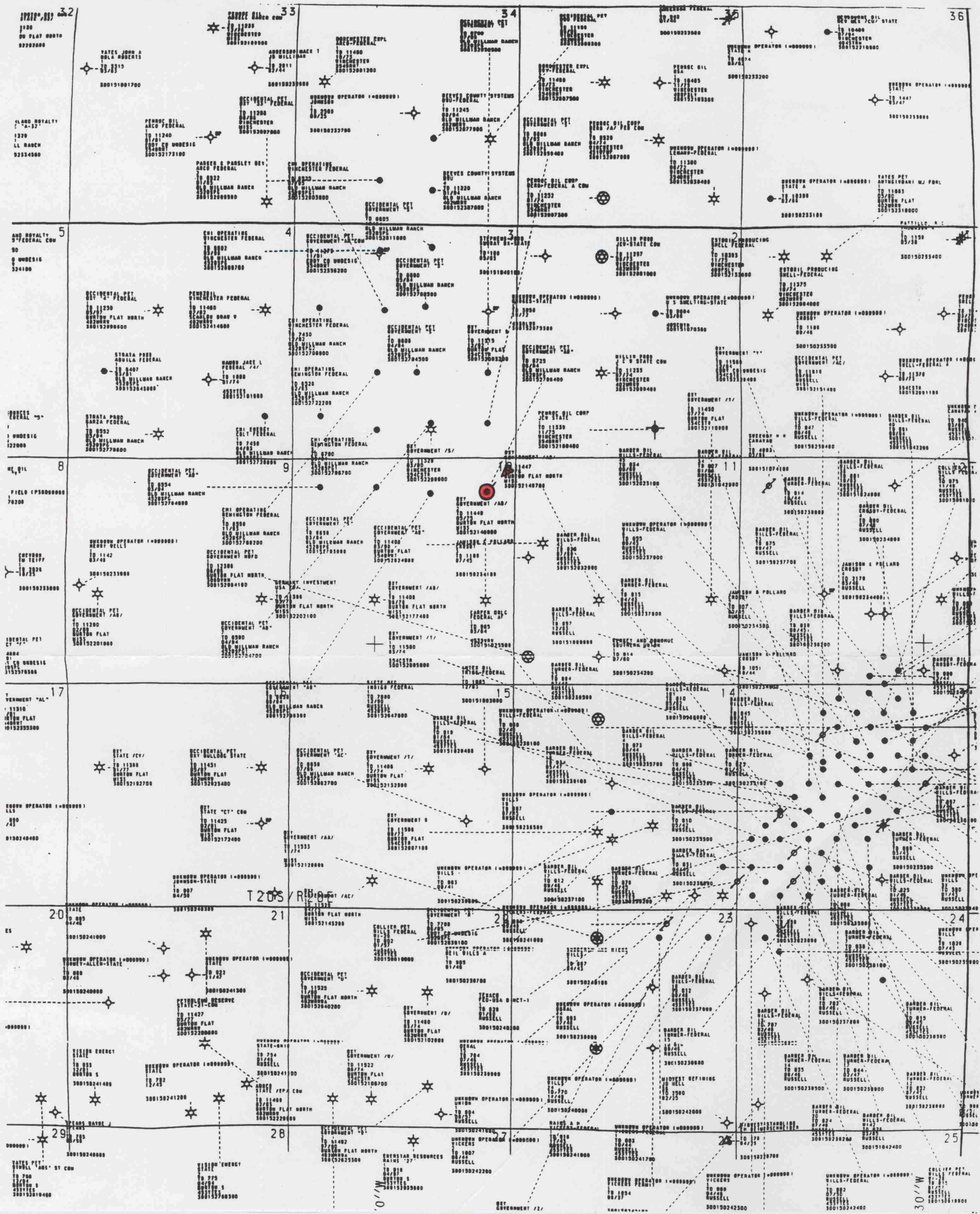
XI. WATER ANALYSIS - ATTACHMENT E

XII. I HAVE EXAMINED AVAILABLE GEOLOGIC AND ENGINEERING DATA AND FIND NO EVIDENCE OF OPEN FAULTS OR ANY OTHER HYDROLOGIC CONNECTION BETWEEN THE DISPOSAL ZONE AND ANY UNDERGROUND SOURCE OF DRINKING WATER.

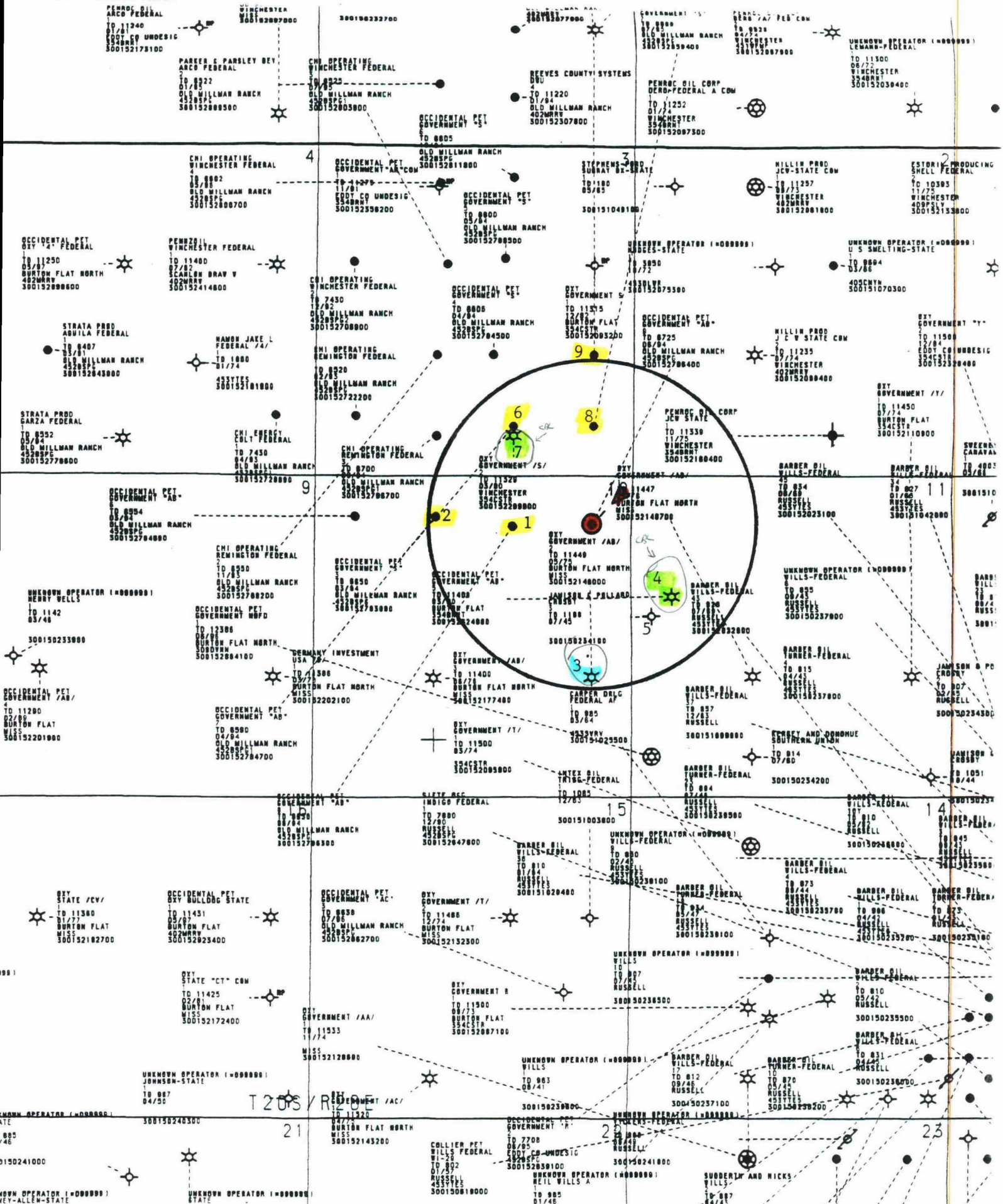

ROBERT L. DOTY - GEOLOGIST

XIII. SEE ATTACHED FOR SERVICE LIST. A COPY OF THIS APPLICATION HAS BEEN SENT CERTIFIED MAIL, RETURN RECEIPT REQUESTED, TO ALL PARTIES ON THE SERVICE LIST. THE LEGAL ADVERTISEMENT HAS BEEN REQUESTED AND PROOF OF PUBLICATION WILL BE FORWARDED AS SOON AS IT IS RECEIVED.

C-108 - ATTACHMENT A
OXY USA INC.
GOVERNMENT AB #9
SEC 10 T20S R28E
2 MILE MAP



C-108 - ATTACHMENT A
OXY USA INC.
GOVERNMENT AB #9
SEC 10 T20S R28E
1/2 MILE AOR



C-108 - ATTACHMENT B
GOVERNMENT AB #9
AREA OF REVIEW

WELL				DATE		CASING-CEMENT			STATUS		API NO.
OPERATOR	LEASE	PLAT	NO.	LOCATION	DRILLED	DEPTH	PERFS				
OXY USA INC.	GOVERNMENT AB		9	SL-330 FNL 230 FEL	5/16/94	6725	6378-6619	13-3/8" @ 400' W/ 614sx	ACTIVE		27964
				BHL-772 FNL 660 FEL				8-5/8" @ 3005' W/ 1400sx	OLD MILLMAN RH		
				SEC 10 T20S R28E				5-1/2" @ 6718' W/ 910sx	BONE SPRING		
OXY USA INC.	GOVERNMENT AB	1	8	810 FNL 1980 FEL	4/26/94	6630	6300-6516	13-3/8" @ 418' W/ 500sx	ACTIVE		27863
				SEC 10 T20S R28E				8-5/8" @ 3010' W/ 1400sx	OLD MILLMAN RH		
								5-1/2" @ 6630' W/ 525sx	BONE SPRING		
OXY USA INC.	GOVERNMENT AB	2	7	660 FNL 1980 FNL	3/30/94	6590	6284-6483	13-3/8" @ 400' W/ 451sx	ACTIVE		27847
				SEC 10 T20S R28E				8-5/8" @ 3006' W/ 1350sx	OLD MILLMAN RH		
								5-1/2" @ 6590' W/ 750sx	BONE SPRING		
OXY USA INC.	GOVERNMENT AB	3	2	1980 FSL 660 FEL	2/28/75	11449	9114-9140	13-3/8" @ 614' W/ 650sx	ACTIVE		21480
				SEC 10 T20S R28E				9-5/8" @ 2770' W/ 2200sx	BURTON FLAT, N.		
								5-1/2" @ 11449' W/ 1025sx	WOLFCAMP		
OXY USA INC.	GOVERNMENT AB	4	5	1980 FNL 660 FNL	1/1/90	11400	11016-11259	13-3/8" @ 595' W/ 650sx	ACTIVE		26248
				SEC 11 T20S R28E				8-5/8" @ 3020' W/ 2200sx	BURTON FLAT		
								5-1/2" @ 11400' W/ 975sx	MORROW		
* JAMISON & POLLARD	CROSBY	5	1	2310 FNL 330 FNL	Jul-45	1188	1178-1188	12-1/2" @ 250'	P&A		02341
				SEC 11 T20S R28E				10" @ 460' W/ 50sx			
OXY USA INC.	GOVERNMENT S	6	3	810 FSL 1980 FEL	2/9/94	6650	6254-6515	13-3/8" @ 413' W/ 415sx	ACTIVE		27839
				SEC 3 T20S R28E				8-5/8" @ 3015' W/ 1450sx	OLD MILLMAN RH		
								5-1/2" @ 6550' W/ 725sx	BONE SPRING		
OXY USA INC.	GOVERNMENT S	7	2	660 FSL 1980 FEL	1/22/80	11329	11214-11237	13-3/8" @ 400' W/ 700sx	ACTIVE		22999
				SEC 3 T20S R28E				8-5/8" @ 3030' W/ 1850sx	WINCHESTER		
								5-1/2" @ 11320' W/ 850sx	MORROW		
OXY USA INC.	GOVERNMENT S	8	7	810 FSL 660 FEL	6/7/95	6680	6306-6560	13-3/8" @ 405' W/ 570sx	ACTIVE		28504
				SEC 3 T20S R28E				8-5/8" @ 3000' W/ 1080sx	OLD MILLMAN RH		
								5-1/2" @ 6680' W/ 545sx	BONE SPRING		
OXY USA INC.	GOVERNMENT S	9	8	1980 FSL 660 FEL	6/23/95	6700	6337-6583	13-3/8" @ 425' W/ 500sx	ACTIVE		28505
				SEC 3 T20S R28E				8-5/8" @ 3000' W/ 1100sx	OLD MILLMAN RH		
								5-1/2" @ 6700' W/ 520sx	BONE SPRING		

* WELLBORE DOES NOT PENETRATE PROPOSED INJECTION INTERVAL

Petrolite Corporation
5624 Lovington Highway
Hobbs, NM 88240 9143

TRETOLITE DIVISION

(505) 392-5711
Fax (505) 392-3759

WATER ANALYSIS REPORT

Company : OXY USA INC
Address :
Lease : GOVERNMENT AB
Well : BONE SPRINGS
Sample Pt. :

Date : 12/16/94
Date Sampled : 12/15/94
Analysis No. : 1281

ANALYSIS		mg/L		* meq/L
1. pH	6.5			
2. H ₂ S	NR			
3. Specific Gravity	1.140			
4. Total Dissolved Solids		228000.6		
5. Suspended Solids		NR		
6. Dissolved Oxygen		NR		
7. Dissolved CO ₂		NR		
8. Oil In Water		NR		
9. Phenolphthalein Alkalinity (CaCO ₃)				
10. Methyl Orange Alkalinity (CaCO ₃)		434.0		
11. Bicarbonate	HCO ₃	529.5	HCO ₃	8.7
12. Chloride	Cl	137998.7	Cl	3892.8
13. Sulfate	SO ₄	600.0	SO ₄	12.5
14. Calcium	Ca	2637.3	Ca	131.6
15. Magnesium	Mg	836.3	Mg	68.8
16. Sodium (calculated)	Na	85374.4	Na	3713.5
17. Iron	Fe	24.5		
18. Barium	Ba	NR		
19. Strontium	Sr	NR		
20. Total Hardness (CaCO ₃)		10029.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter	Compound	Equiv wt	X meq/L	= mg/L
132 *Ca <----- *HCO ₃	Ca(HCO ₃) ₂	81.0	8.7	703
/----->	CaSO ₄	68.1	12.5	850
69 *Mg -----> *SO ₄	CaCl ₂	55.5	110.4	6128
<-----/	Mg(HCO ₃) ₂	73.2		
3714 *Na -----> *Cl	MgSO ₄	60.2		
	MgCl ₂	47.6	68.8	3275
	NaHCO ₃	84.0		
	Na ₂ SO ₄	71.0		
	NaCl	58.4	3713.5	217019

Saturation Values Dist. Water 20 C

CaCO₃ 13 mg/L
CaSO₄ * 2H₂O 2090 mg/L
BaSO₄ 2.4 mg/L

REMARKS:

G. ARCHER / FILE

Petrolite Oilfield Chemicals Group

Respectfully submitted,
TOM WILTON

SCALE TENDENCY REPORT

Company	: OXY USA INC	Date	: 12/16/94
Address	:	Date Sampled	: 12/15/94
Lease	: GOVERNMENT AB	Analysis No.	: 1281
Well	: BONE SPRINGS	Analyst	: TOM WILTON
Sample Pt.	:		

STABILITY INDEX CALCULATIONS
(Stiff-Davis Method)
CaCO3 Scaling Tendency

S.I. =	0.5	at	40 deg. F	or	4 deg. C
S.I. =	0.5	at	60 deg. F	or	16 deg. C
S.I. =	0.5	at	80 deg. F	or	27 deg. C
S.I. =	0.5	at	100 deg. F	or	38 deg. C
S.I. =	0.6	at	120 deg. F	or	49 deg. C

CALCIUM SULFATE SCALING TENDENCY CALCULATIONS
(Skillman-McDonald-Stiff Method)
Calcium Sulfate

S =	3782	at	40 deg. F	or	4 deg C
S =	4230	at	60 deg. F	or	16 deg C
S =	4578	at	80 deg. F	or	27 deg C
S =	4794	at	100 deg. F	or	38 deg C
S =	4890	at	120 deg. F	or	49 deg C

Petrolite Oilfield Chemicals Group

Respectfully submitted,
TOM WILTON

Petrolite Corporation
5624 Lovington Highway
Hobbs, NM 88240-9143

TRETOLITE DIVISION

(505) 382-5711
Fax (505) 382-3758

WATER ANALYSIS REPORT

Company : OXY USA INC
Address :
Lease : GOVERNMENT^S 3
Well : BONE SPRINGS
Sample Pt. :

Date : 12/16/94
Date Sampled : 12/15/94
Analysis No. : 1282

ANALYSIS	mg/L	* meq/L
1. pH	6.6	
2. H ₂ S	NR	
3. Specific Gravity	1.135	
4. Total Dissolved Solids	231316.1	
5. Suspended Solids	NR	
6. Dissolved Oxygen	NR	
7. Dissolved CO ₂	NR	
8. Oil In Water	NR	
9. Phenolphthalein Alkalinity (CaCO ₃)		
10. Methyl Orange Alkalinity (CaCO ₃)	389.0	
11. Bicarbonate	HCO ₃ 474.6	HCO ₃ 7.8
12. Chloride	Cl 140110.5	Cl 3952.3
13. Sulfate	SO ₄ 550.0	SO ₄ 11.5
14. Calcium	Ca 2685.4	Ca 134.0
15. Magnesium	Mg 846.0	Mg 69.6
16. Sodium (calculated)	Na 86625.7	Na 3768.0
17. Iron	Fe 24.0	
18. Barium	Ba NR	
19. Strontium	Sr NR	
20. Total Hardness (CaCO ₃)	10189.2	

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter	Compound	Equiv wt X meq/L	= mg/L
134 *Ca <----- *HCO ₃	Ca(HCO ₃) ₂	81.0 7.8	630
----- /----->	CaSO ₄	68.1 11.5	780
70 *Mg -----> *SO ₄	CaCl ₂	55.5 114.8	6368
----- <-----/	Mg(HCO ₃) ₂	73.2	
3768 *Na -----> *Cl	MgSO ₄	60.2	
	MgCl ₂	47.6 69.6	3313
Saturation Values Dist. Water 20 C	NaHCO ₃	84.0	
CaCO ₃ 13 mg/L	Na ₂ SO ₄	71.0	
CaSO ₄ * 2H ₂ O 2090 mg/L	NaCl	58.4 3768.0	220200
BaSO ₄ 2.4 mg/L			

REMARKS:

----- G. ARCHER / FILE

Petrolite Oilfield Chemicals Group

Respectfully submitted,
TOM WILTON



SCALE TENDENCY REPORT

Company	: OXY USA INC	Date	: 12/16/94
Address	:	Date Sampled	: 12/15/94
Lease	: GOVERNMENT ^S 3	Analysis No.	: 1282
Well	: BONE SPRINGS	Analyst	: TOM WILTON
Sample Pt.	:		

STABILITY INDEX CALCULATIONS
(Stiff-Davis Method)
CaCO₃ Scaling Tendency

S.I. =	0.5	at	40 deg.	F or	4 deg.	C
S.I. =	0.5	at	60 deg.	F or	16 deg.	C
S.I. =	0.5	at	80 deg.	F or	27 deg.	C
S.I. =	0.6	at	100 deg.	F or	38 deg.	C
S.I. =	0.6	at	120 deg.	F or	49 deg.	C

CALCIUM SULFATE SCALING TENDENCY CALCULATIONS
(Skillman-McDonald-Stiff Method)
Calcium Sulfate

S =	3710	at	40 deg.	F or	4 deg	C
S =	4153	at	60 deg.	F or	16 deg	C
S =	4498	at	80 deg.	F or	27 deg	C
S =	4712	at	100 deg.	F or	38 deg	C
S =	4807	at	120 deg.	F or	49 deg	C

Petrolite Oilfield Chemicals Group

Respectfully submitted,
TOM WILTON

COMPANY: OXY USA INC.

WELL: GOVERNMENT "AB" #9

FIELD: OLD MILLMAN RANCH

COUNTY: EDDY STATE: NEW MEXICO

COUNTY: EDDY

Field: OLD MILLMAN RANCH

Location: 330' FNL & 230' FEL

Well: GOVERNMENT "AB" #9

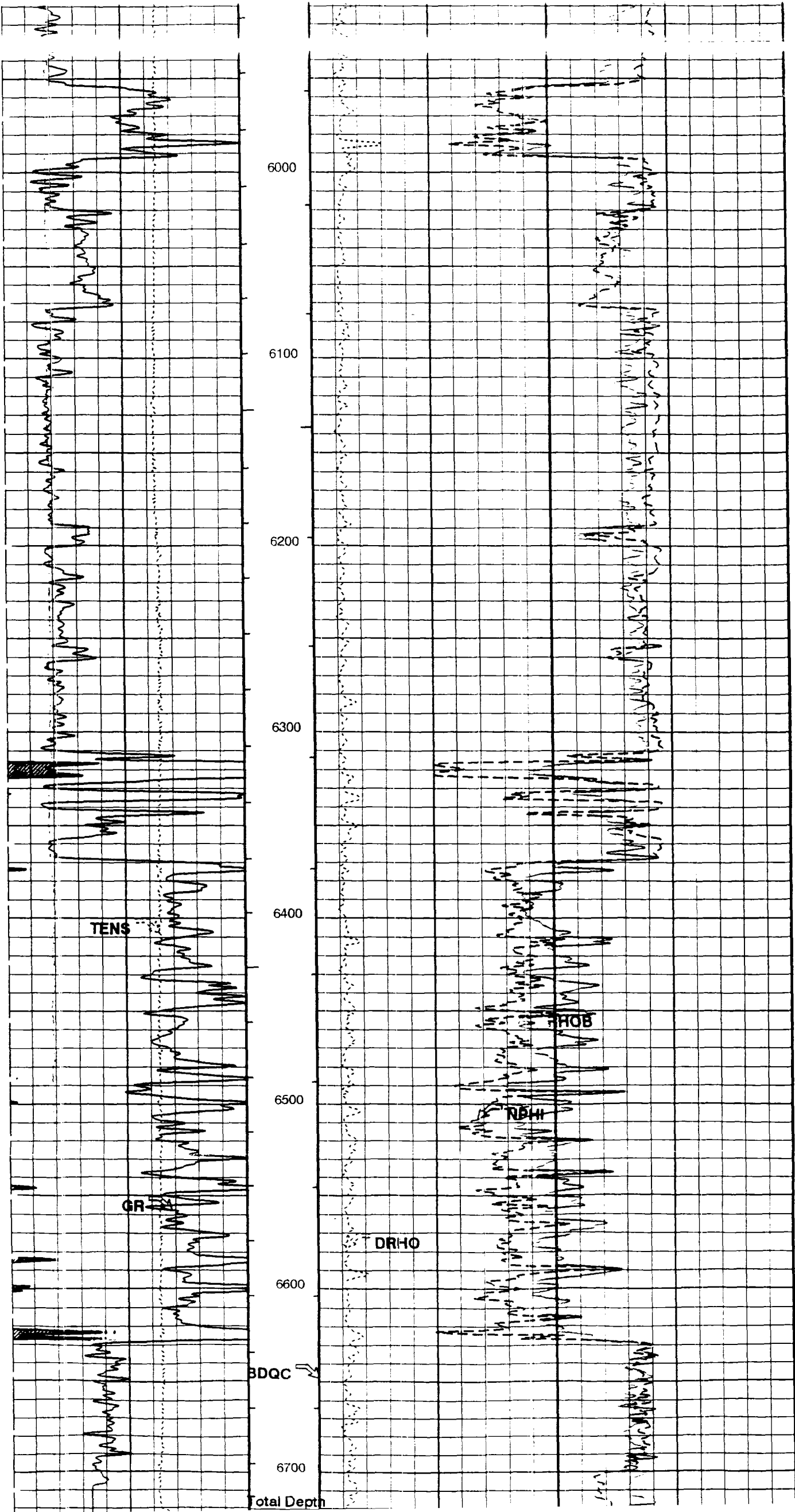
Company: OXY USA INC.

Schlumberger		COMPENSATED NEUTRON LITHO-DENSITY GAMMA RAY	
330' FNL & 230' FEL		Elev.: K.B. 3284.5 F G.L. 3288 F D.F. 3283.5 F	
Permanent Datum: GROUND LEVEL		Elev.: 3268 F	
Log Measured From: KELLY BUSHING		16.5 F above Perm. Datum	
Drilling Measured From: KELLY BUSHING			
API Serial No.	SECTION 10	TOWNSHIP 20S	RANGE 28E
Logging Date 4-JUN-1994			
Run Number 1			
Depth Driller 6725 F			
Schlumberger Depth 6720 F			
Bottom Log Interval 6717 F			
Top Log Interval 390 F			
Casing Driller Size @ Depth 8 625 IN @ 3005 F			
Casing Schlumberger 7.875 IN 3016 F			
Bit Size MY-LOGEL			
Type Fluid In Hole			
Density	Viscosity	28 S	
Fluid Loss	PH	8.5	
Source Of Sample SHAKER			
FM @ Measured Temperature 0.109 OHMM @ 78 DEGF			
RMF @ Measured Temperature 0.095 OHMM @ 78 DEGF			
FMC @ Measured Temperature @			
Source RMF FMC			
FM @ MRT 0.077 @ 113 0.067 @ 113			
Maximum Recorded Temperatures 113 DEGF			
Circulation Stopped 3-JUN-1994 20:30			
Logger On Bottom 4-JUN-1994			
Unit Number 3005 ROSWELL			
Recorded By MARK LIEBERENZ			
Witnessed By TOM TINNEY			

	Run 1	Run 2	Run 3	Run 4
Logging Date				
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Driller Size @ Depth				
Casing Schlumberger				
Bit Size				
Type Fluid In Hole				
Density				
Viscosity				
Fluid Loss				
PH				
Source Of Sample				
FM @ Measured Temperature				
RMF @ Measured Temperature				
FMC @ Measured Temperature				
Source RMF				
FMC				
FM @ MRT				
RMF @ MRT				
Maximum Recorded Temperatures				
Circulation Stopped				
Time				
Logger On Bottom				
Time				
Unit Number				
Location				
Recorded By				
Witnessed By				

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

OTHER SERVICES1	OTHER SERVICES2
OS1: DLL/MSFL	OS1:
OS2: LDT/CNL	OS2:
OS3: CORES	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
ALL SCALES AT CLIENT REQUEST.	
CEMENT VOLUME SHOWN RIGHT	
SIDE OF DEPTH TRACK.	
FIG: MDC #1	
OPERATORS: GOMEZ AND VASQUEZ	
THANK YOU FOR CALLING SCHLUMBERGER!	



Water Analysis Report by Baker Petrolite

OXY USA INCORPORATED

WINDMILL

+ 660 FSL 2380 FEL

SECTION 2 TOWNSHIP 20 SOUTH

Range 28 East, Eddy County New Mexico

Account Manager
WAYNE PETERSON

Summary			Analysis of Sample 106240 @ 75°F					
Sampling Date	02-02-99	Anions	mg/l	meq/l	Cations	mg/l	meq/l	
Analysis Date	03-02-99	Chloride	87.0	2.45	Sodium	125	5.42	
Analyst	JOANNA RAGAN	Bicarbonate	70.0	1.15	Magnesium	66.0	5.43	
		Carbonate	0.00	0.00	Calcium	479	23.5	
TDS (mg/l or g/m ³)	2320.48	Sulfate	1490	31.0	Strontium	6.00	0.14	
Density (g/cm ³ or tonne/m ³)	1.003	Phosphate	N/A	N/A	Barium	0.05	0.00	
Anion/Cation Ratio	1.00	Borate	N/A	N/A	Iron	0.80	0.03	
		Silicate	N/A	N/A	Potassium	6.00	0.15	
Carbon Dioxide					Aluminum	N/A	N/A	
Oxygen					Chromium	N/A	N/A	
					Copper	N/A	N/A	
					Lead	N/A	N/A	
		pH at time of sampling			Manganese	N/A	N/A	
		pH at time of analysis		7.75	Nickel	N/A	N/A	
		pH used in Calculations		7.75				

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000bbl										
Temp.	Gauge Press.	Calcite CaCO3		Gypsum CaSO4.2H2O		Anhydrite CaSO4		Celestite SrSO4		Barite BaSO4		CO2 Press.
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0.	0.40	1.88	-0.14		-0.21		-0.38		0.70	0.02	0.02
100	0.	0.48	2.57	-0.11		-0.14		-0.37		0.55	0.02	0.02
120	0.	0.58	3.44	0.13		-0.06		-0.35		0.43	0.02	0.03
140	0.	0.68	4.49	-0.11		0.05	56.2	-0.32		0.33	0.02	0.04

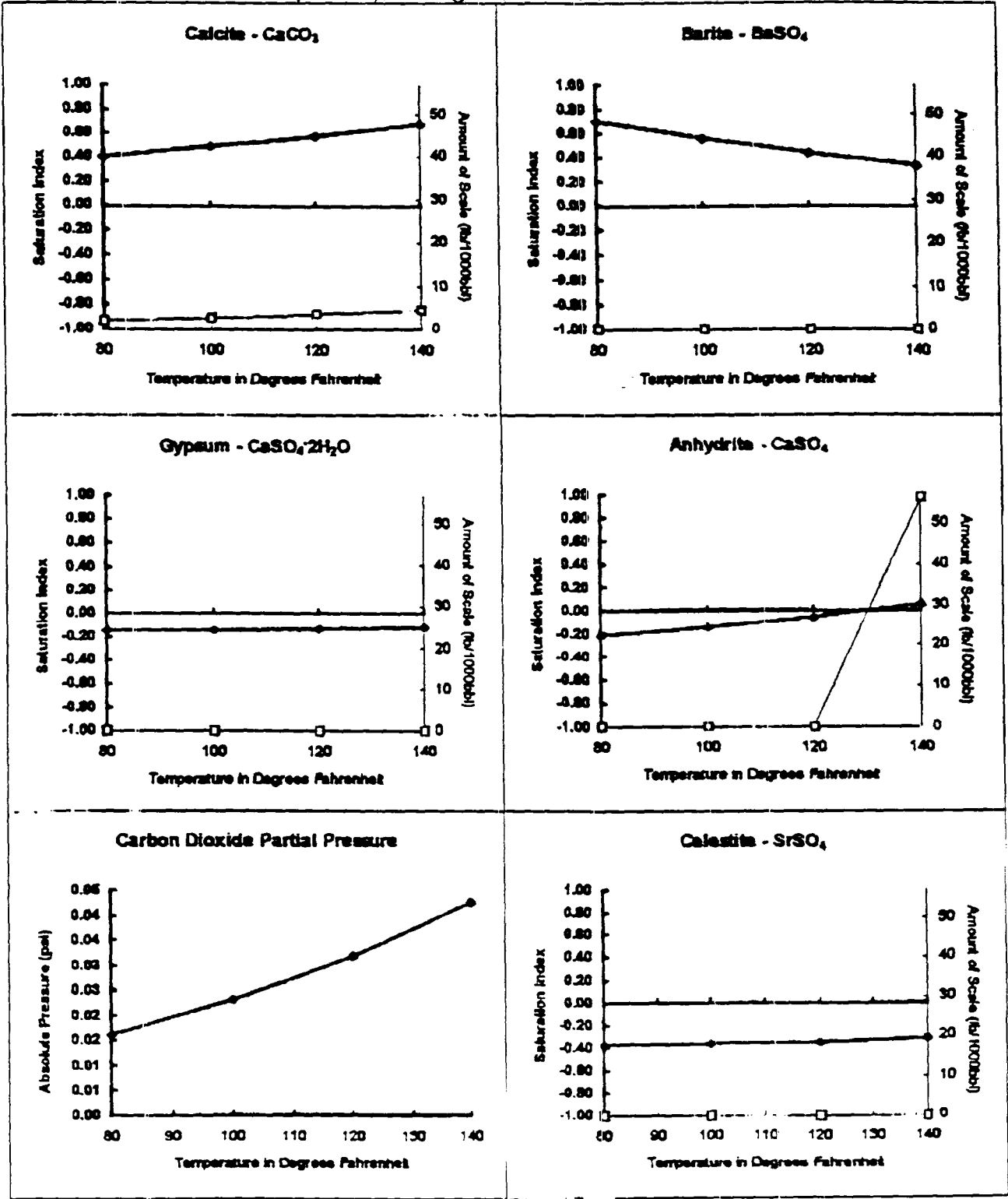
Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

Scale Predictions from Baker Petrolite

Analysis of Sample 108240 @ 75°F for OXY USA INCORPORATED, Feb/3/99



SERVICE LIST - C-108 APPLICATION
OXY USA INC.
GOVERNMENT AB #9
SEC 10 T20S R28E

STATE OF NEW MEXICO
ENERGY & MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
2040 SOUTH PACHECO
SANTA FE, NM 87505

STATE OF NEW MEXICO
ENERGY & MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
811 S. 1ST STREET
ARTESIA, NM 88210-2834

SURFACE OWNER:

UNITED STATES DEPT OF INTERIOR
BUREAU OF LAND MANGEMENT
2909 WEST SECOND STREET
ROSWELL, NM 88201

PARDUE LTD.
P.O. BOX 2018
CARLSBAD, NM 8821-2018

OFFSET OPERATORS:

CHI OPERATING INC.
P.O. BOX 1799
MIDLAND, TX 79702

HILLIN PRODUCTION CO.
P.O. BOX 152
ODESSA, TX 79760

OXY USA INC.
P.O. BOX 50250
MIDLAND, TX 79710-0250

Affidavit of Publication

No 19980

State of New Mexico,
County of Eddy, ss.

Amy McKay,
being first duly sworn, on oath says:

That she is Business Manager
of the Carlsbad Current-Argus, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the state wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

July 22, 19 99
_____, 19____
_____, 19____
_____, 19____
_____, 19____
_____, 19____

That the cost of publication is \$ 28.03,
and that payment thereof has been made and will
be assessed as court costs.

Amy McKay

Subscribed and sworn to before me this
22 day of July, 19 99
Lorraine Deporte

My commission expires 5/25/03
Notary Public

July 22, 1999

NOTICE OF APPLICATION FOR FLUID DISPOSAL

APPLICANT:
OXY USA INC.
P.O. BOX 50250
MIDLAND, TX 79710-0250
ATTN: DAVID STEWART
915-685-5717

PURPOSE - WELL:
DISPOSAL OF PRODUCED
SALT WATER
INTO A ZONE PRODUCTIVE
OF OIL & GAS
GOVERNMENT AB #9
SURFACE LOCATION - 330
FNL 230 FEL (A)
SEC 10 T20S R28E

FORMATION:
BONE SPRINGS -
6378-6619'
MAXIMUM INJECTION
RATE - 1000 BHPD
MAXIMUM SURFACE IN-
JECTION PRESSURE - 1275
PSI

INTERESTED PARTIES
MUST FILE OBJECTIONS
OR REQUEST FOR HEARING
WITH THE NEW MEXICO OIL
CONSERVATION DIVISION,
2040 S. PACHECO,
SANTA FE, NM 87505,
WITHIN 15 DAYS OF THIS
APPLICATION.

Re: Gov't AB-9
SWD-Application

OXY USA Inc.

Date: 8-16-99

To: Mark Ashley

- ☐ For your approval
- ☐ For your comments
- ☒ For your information
- ☐ For your signature
- ☐ Please handle
- ☐ Please review and discuss with me
- ☐ Please note and file
- ☐ Please note and return to me
- ☐ Please prepare for execution
- ☐ Please notarize/attest
- ☐ Please record

REMARKS: CBL's -
Gov't S#2, Gov't AB #5

From: David Stewart

Please Xerox _____ copies

Schlumberger

CEMENT BOND LOG
VARIABLE DENSITYCOUNTY EDDY
Field or LOCATION BURTON FLATS NO.
WELL GOVERNMENT "S"
#2
COMPANY CITIES SER. CO.COMPANY CITIES SERVICE COMPANY
ENERGY RESOURCES GROUP E & P
WELL GOVERNMENT "S" #2
FIELD BURTON FLATS NORTH
COUNTY EDDY STATE NEW MEXICO
LOCATION 660' FSL & 1980' FEL,
Sec. 3 Twp. 20-S Rge. 28-E
Other Services:
CCL-P.S.
CCLPermanent Datum: G.L. Elev. 3285
Log Measured From K.B. 14 Ft. Above Perm. Datum
Drilling Measured From K.B.Elev.: K.B. 3285
D.F. 3284
G.L. 3271

Date	3-18-80	Casing Fluid	10% A.A./2% KCL			
Run No.	ONE	Fluid Level	1175			
Depth — Driller	11240	Max. Rec. Temp.	165 °F OH			
Depth — Logger	11229	Est. Cement Top	7400			
3rd Log Interval	11218	Unit District	7709 HOBBBS			
Top Log Interval	7250	Recorded By	SIMPSON			
Open Hole Size	7 7/8	Witnessed By	RANSON			
CASING REC.	Size	Wt/Ft	Grade	Type Joint	Top	Bottom
Surface String	13 3/8				SURF	400
Prod. String	8 5/8				SURF	3030
Prod. String	5 1/2	17/20			SURF	11320
Liner						
PRIMARY CEMENTING DATA						
STRING	Surface	Protection	Production	Liner		
Vol. of cement			850 SX			
Type of cement			CLASS H			
Additive			2% CACL			
Retarder						
Wt. of slurry						
Water loss						
Type fluid in csg.						

The well name, location and borehole reference data were furnished by the customer.

PRIMARY CEMENTING DATA

REMARKS:

☐ Actual ☐ Estimated Hour - Date

Started pumping cement

Release pressure

Start Cement Bond Log

Finish Cement Bond Log

Service Order Number 109914

Casing Collar Memory Distance 26.5 ft.

Radiation Log Memory Distance 22 ft.

Preceding fluid Volume bbls.

Cement pumped bbls./minute

Pipe reciprocated during Pumping: Yes No

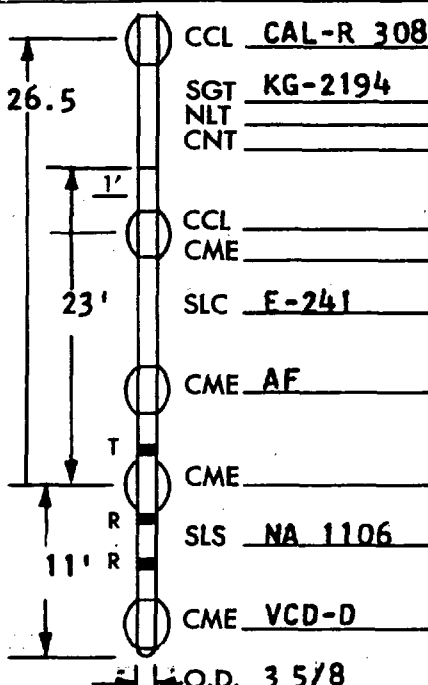
Pipe reciprocated after plug down: Yes min, No

SQUEEZE JOB DETAIL

DOWNHOLE EQUIPMENT

SURFACE EQUIPMENT

Squeeze number	1	2
Date		
Depth interval		
Type cement		
Volume of cement		
Additive		
Retarder		
Weight of slurry		
Preceding fluid		
Breakdown pressure		
Max. pressure-stage 1		
" " " 2		
" " " 3		
Final maximum pressure		
Started pumping cement		
Released pressure		
Start CBL		
Finish CBL		
AVERAGE WELL DRIFT:		
from to from to		



	TYPE	MOD.	S.N.
Sonic Panel	SLP	JH	304
Memorizer	MDU	ABB	872
GNP	CNP	AB	396
CRP	CRP	BA	246
OWE			

CRP Intensity	.8 MA
R9G Intensity	8 1/2 V
Logging Speed	60 FPM
Time Constant	1
Sweep Time μ -sec	1000
Amplitude mv/cm	5

Casing Centralizer Pattern	
/Joint from	to
/Joint from	to
/Joint from	to
Casing Scratcher Pattern	
/Joint from	to
/Joint from	to
/Joint from	to

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

TRANSIT TIME

MICROSECONDS 3' SPACING
400 200

GAMMA RAY

API UNITS

0 100
100 200

DEPTH

CASING BOND

MILLIVOLTS

50

VARIABLE DENSITY

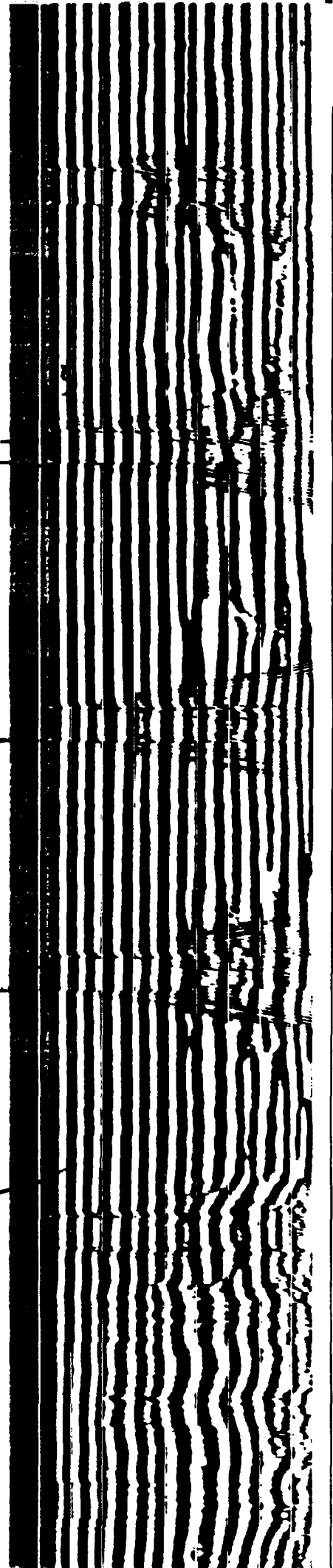
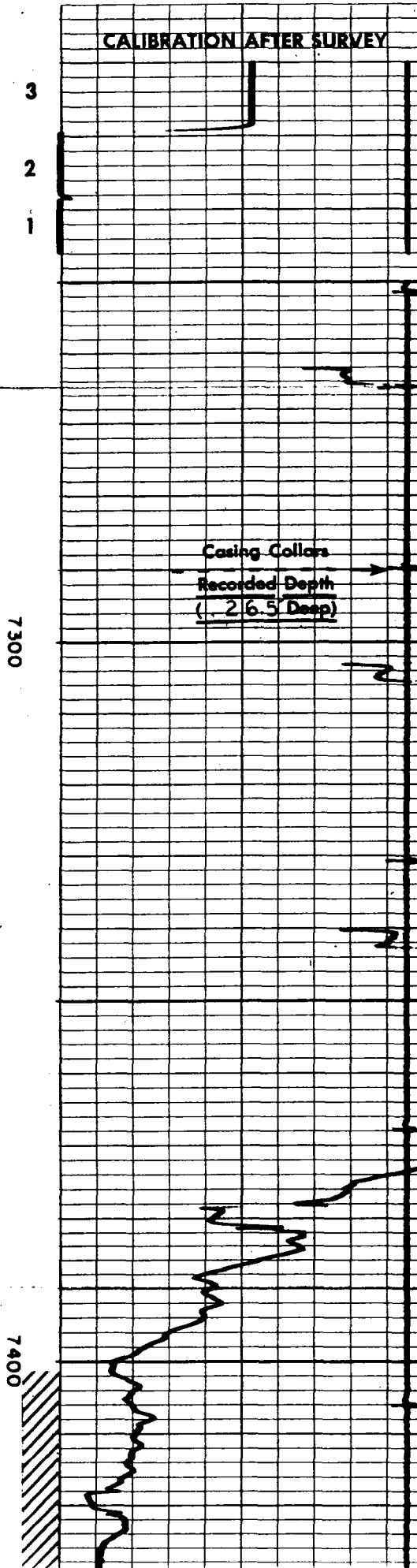
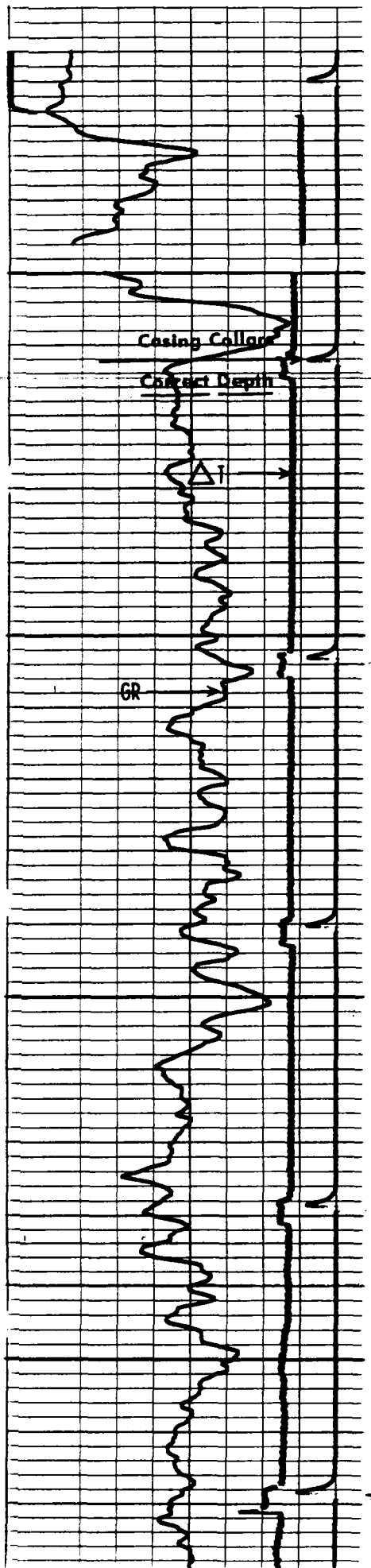
MICROSECONDS 5' SPACING
200 1200

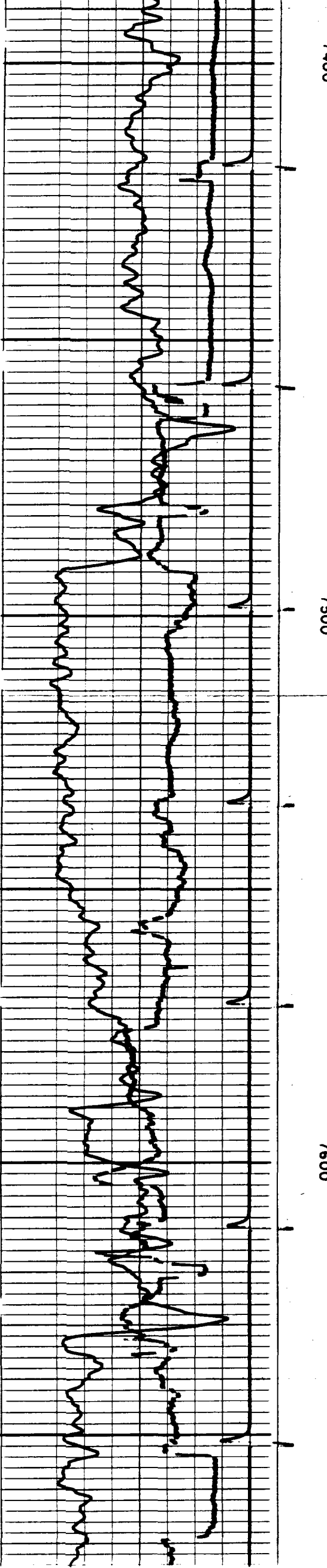
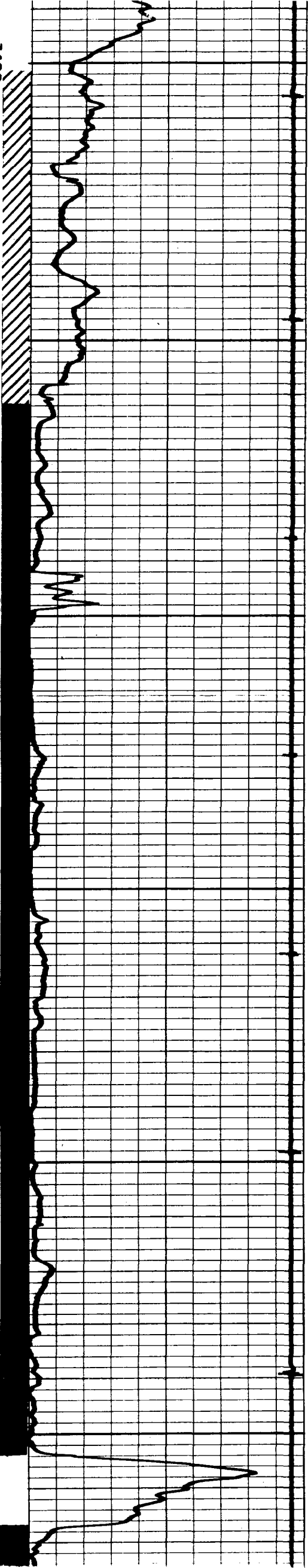
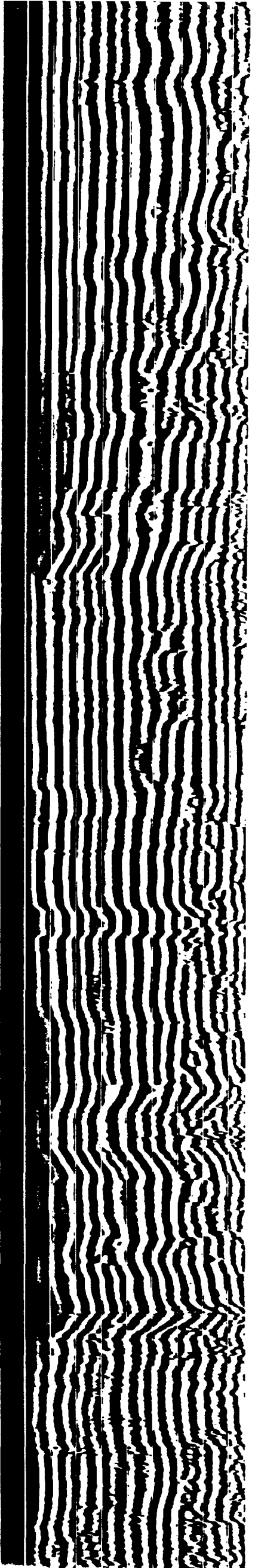
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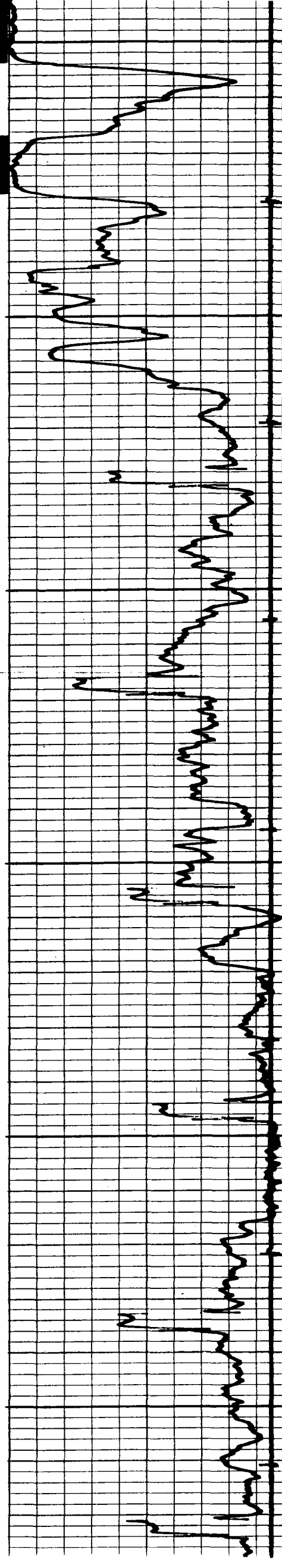
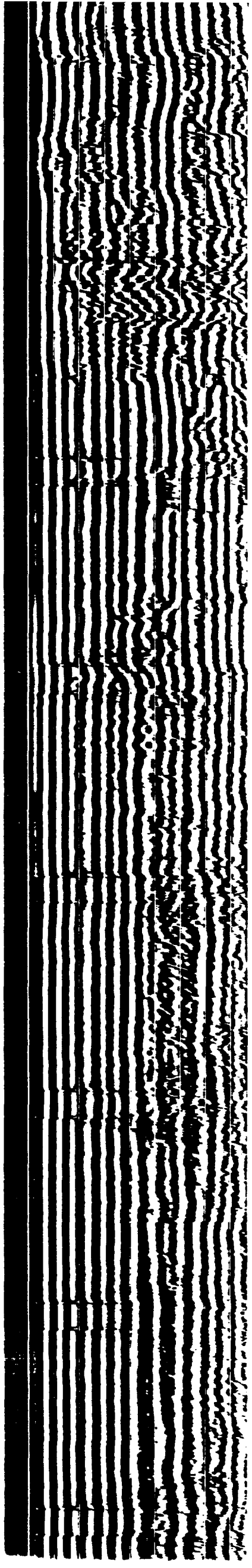
GOOD
FAIR
POOR

pretations, and we shall not, except in the case of gross or willful negligence on our part, be liable for any loss or damage sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

TRANSIT TIME MICROSECONDS <u>3'</u> SPACING 400 200	DEPTH 7200 7300 7400	CASING BOND MILLIVOLTS 0 50	VARIABLE DENSITY MICROSECONDS <u>5'</u> SPACING 200 1200
GAMMA RAY API UNITS 0 100 200		BONDING CODE GOOD FAIR POOR	
		Casing Collars Corrected Depth	



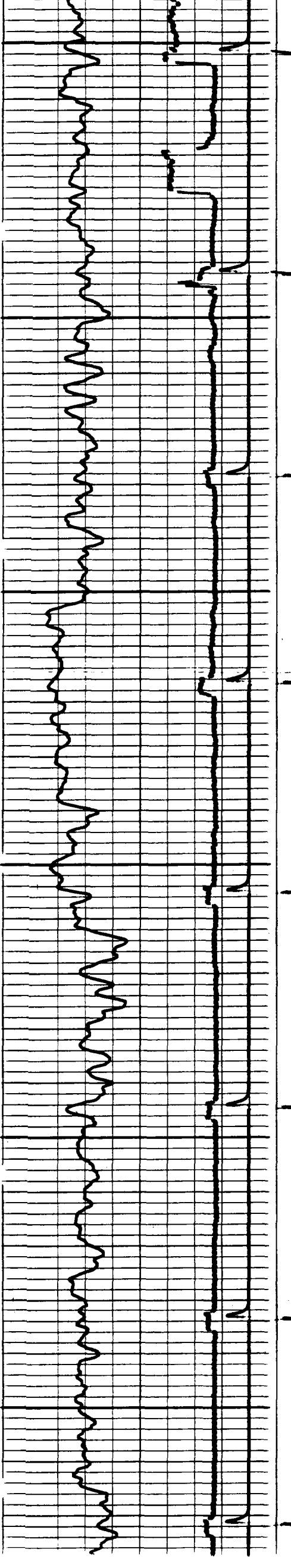


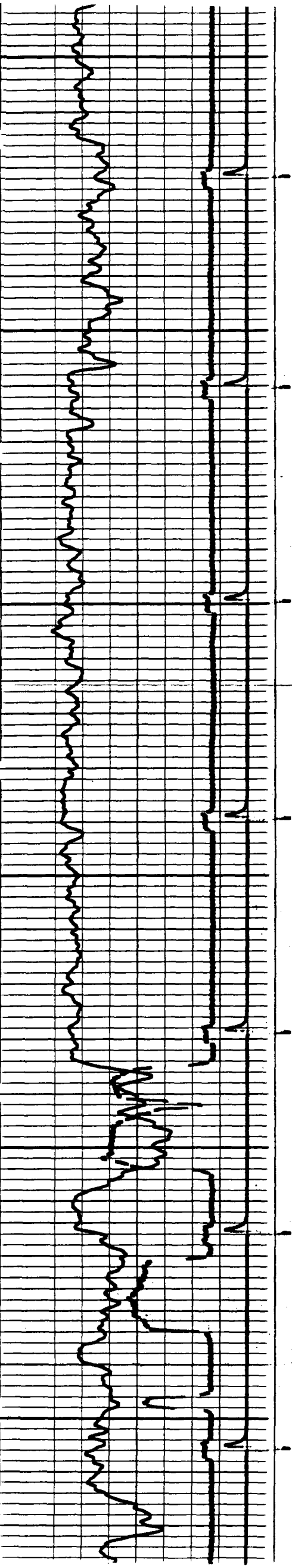


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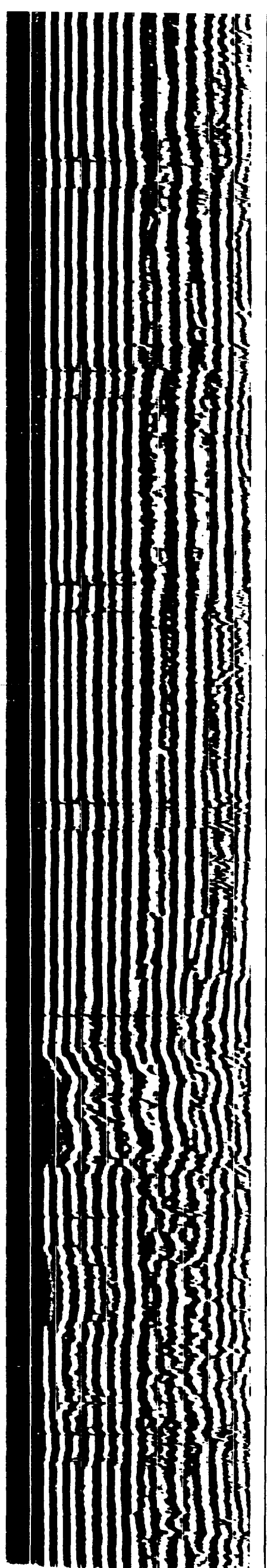
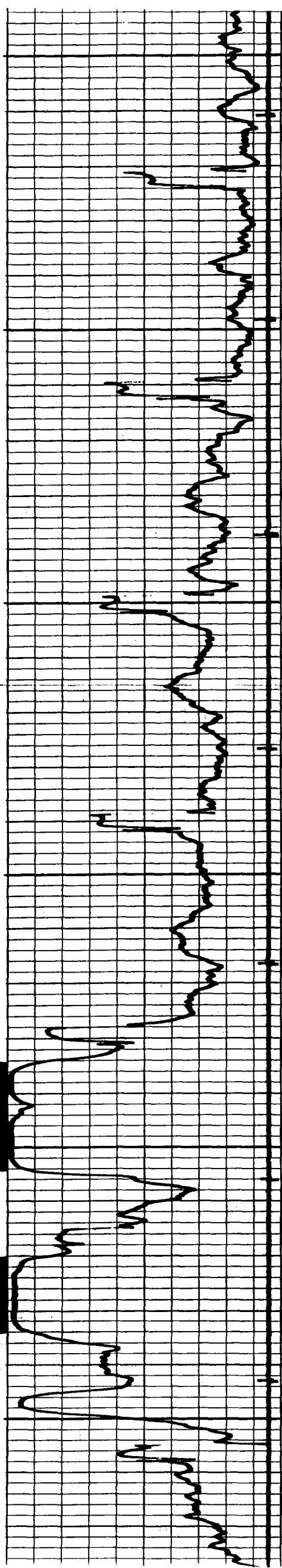


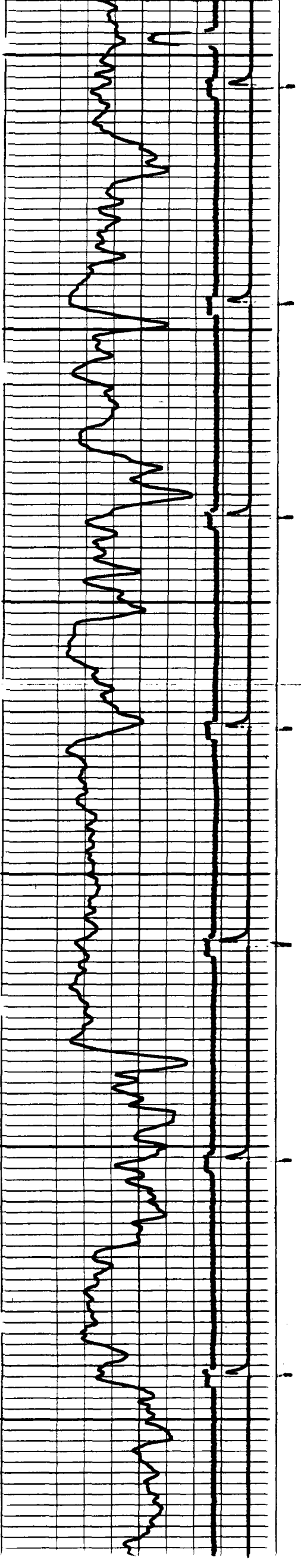
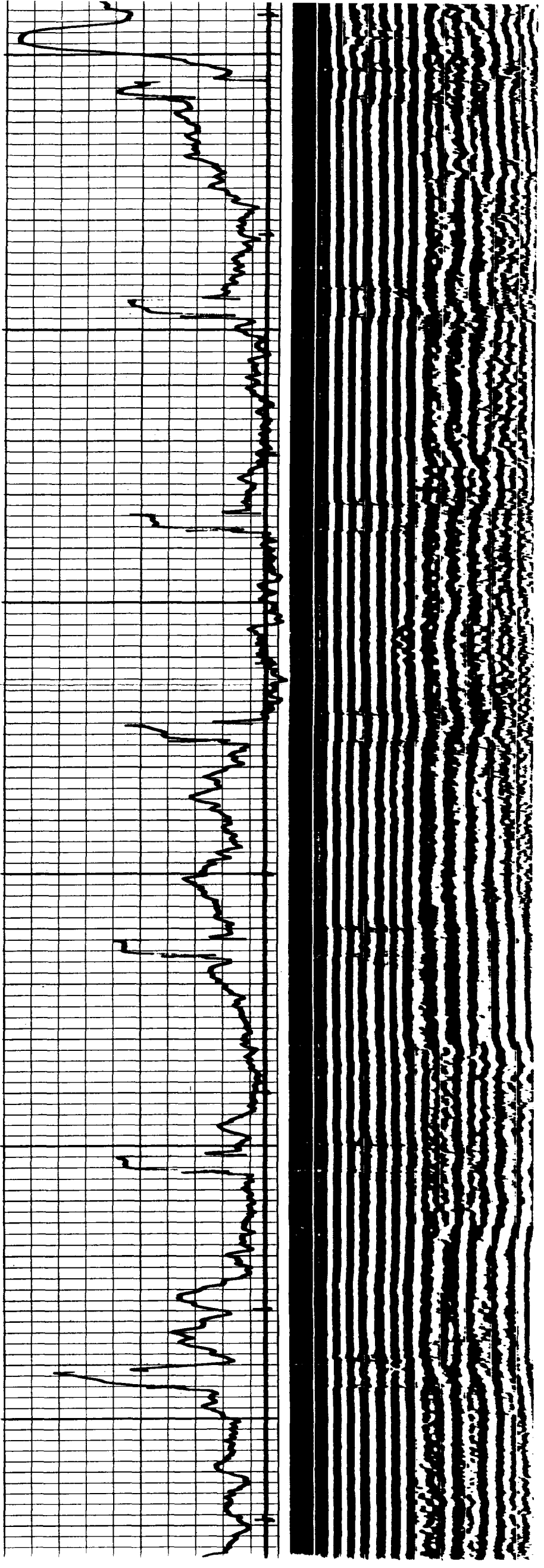


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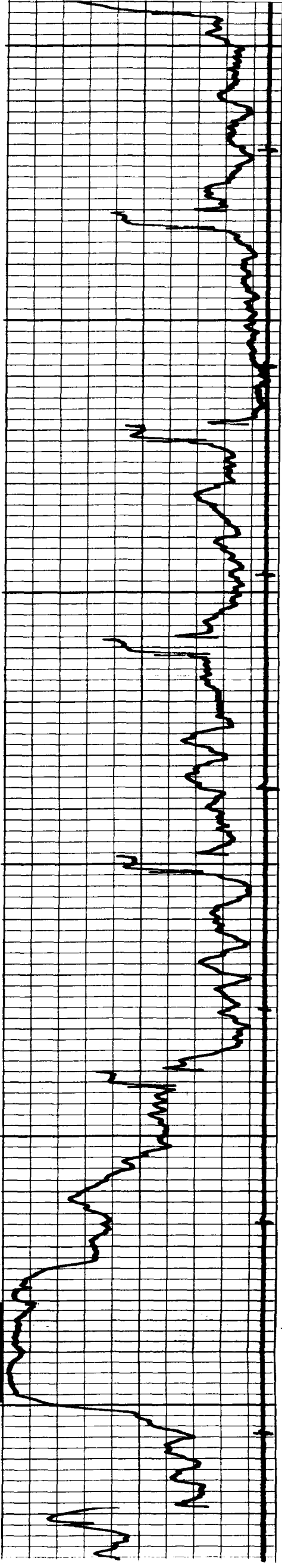
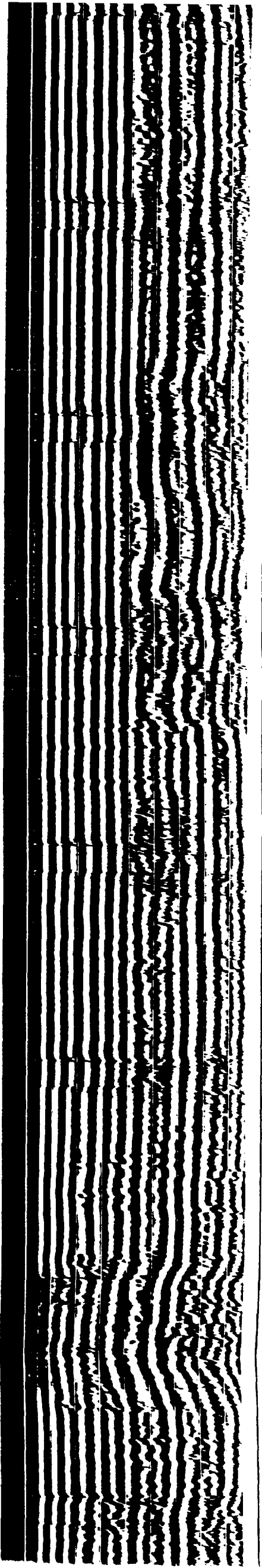




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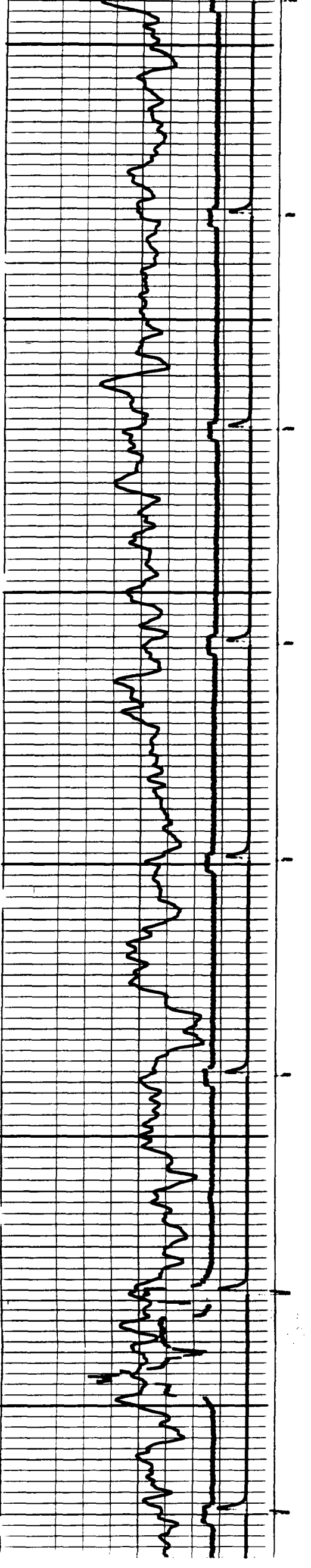
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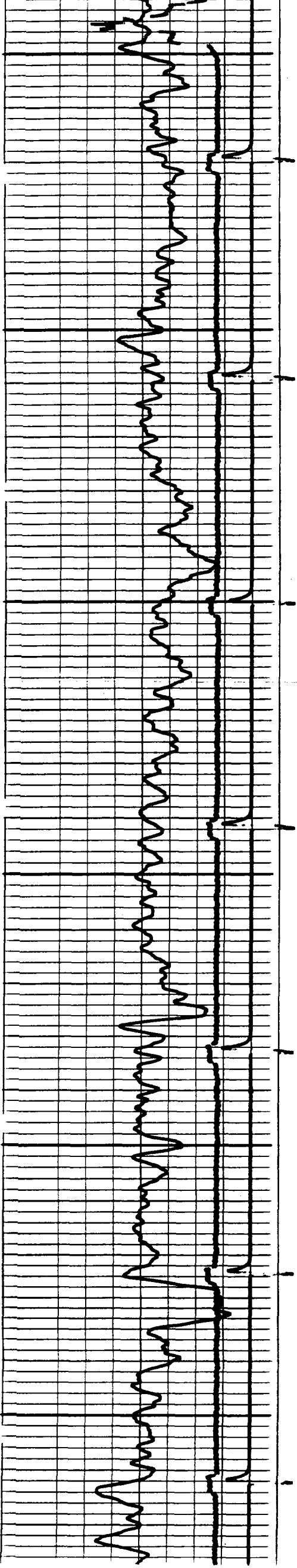


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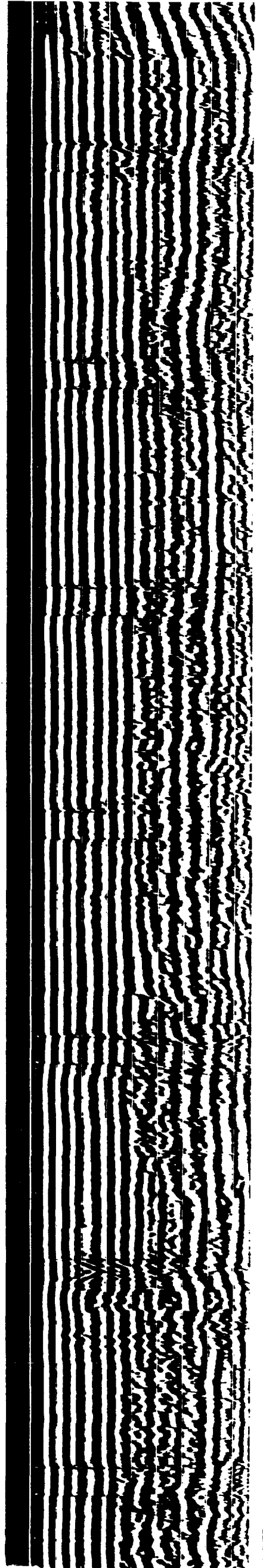
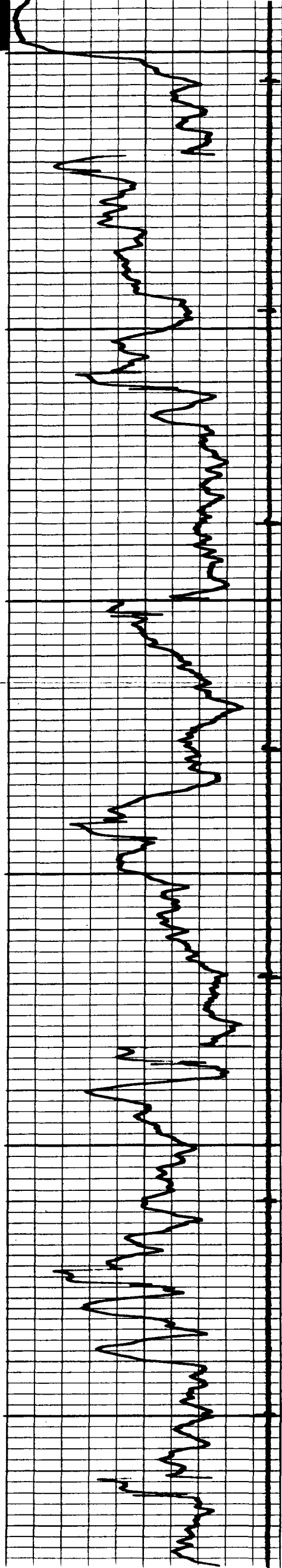


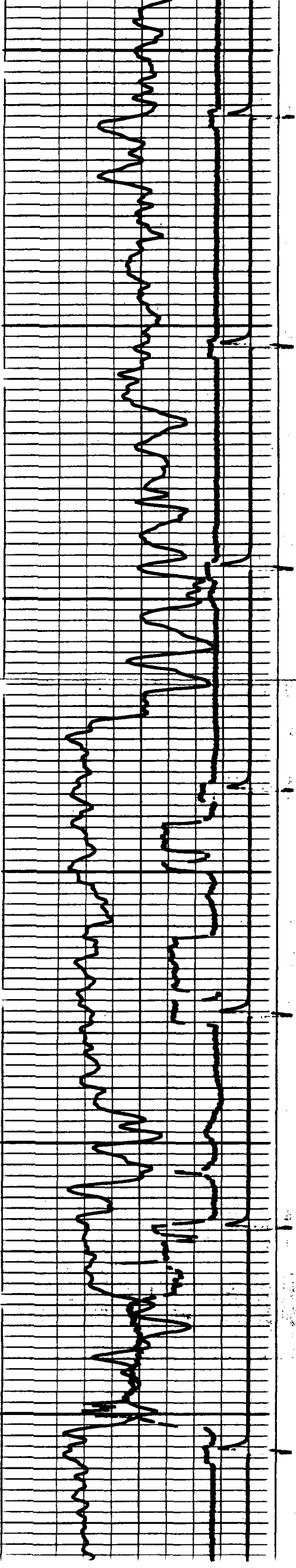


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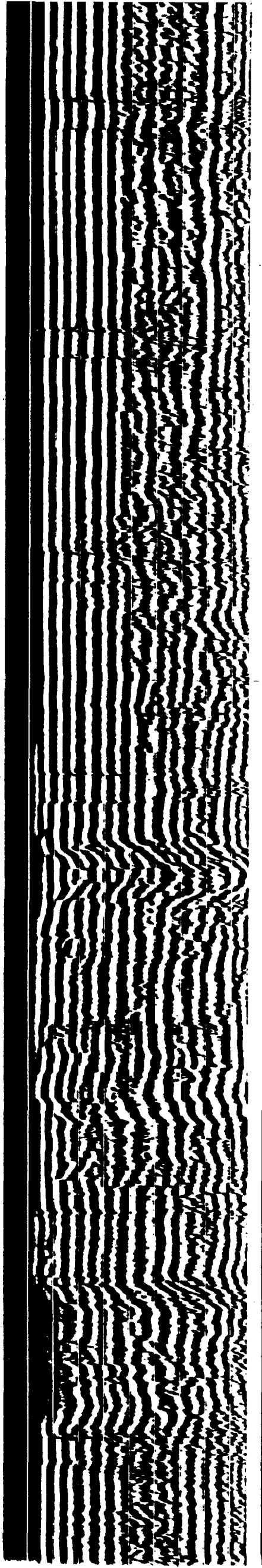
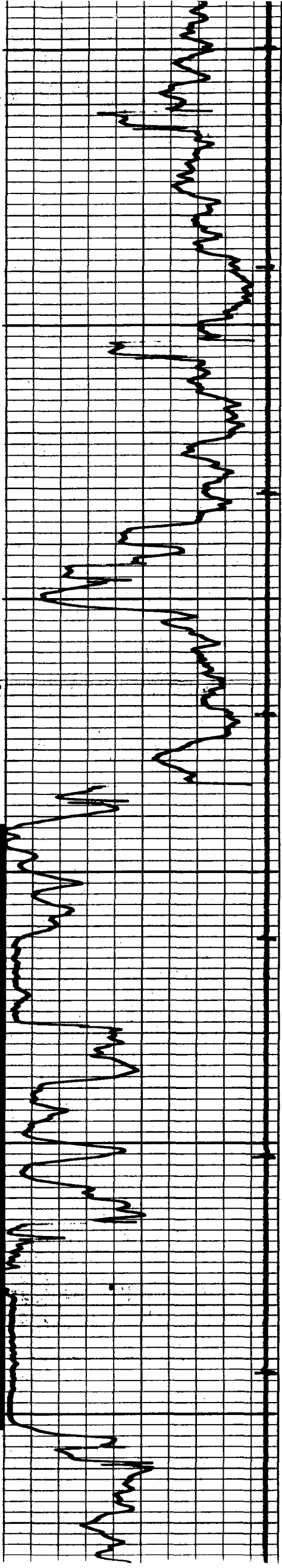
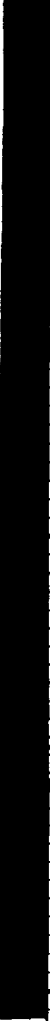


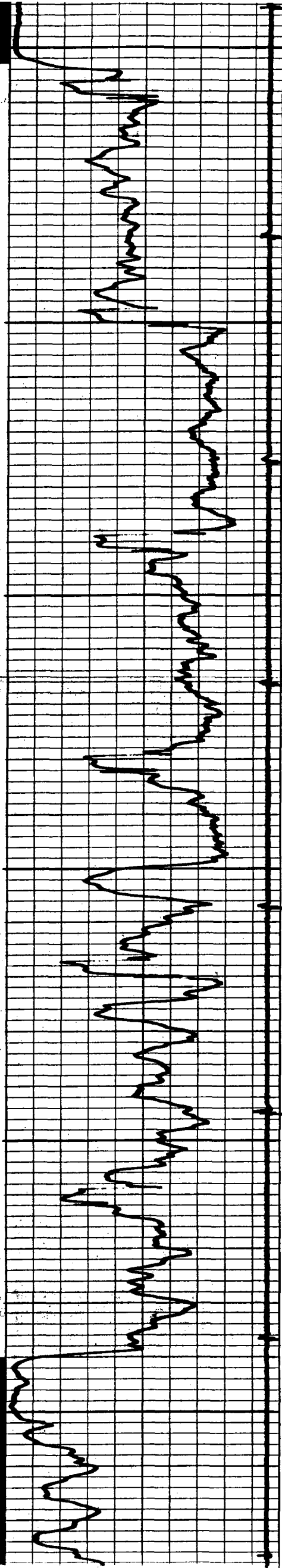
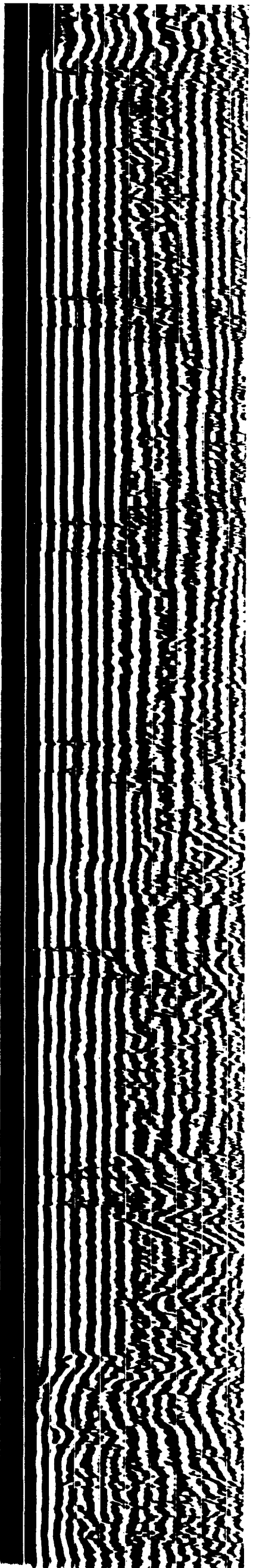


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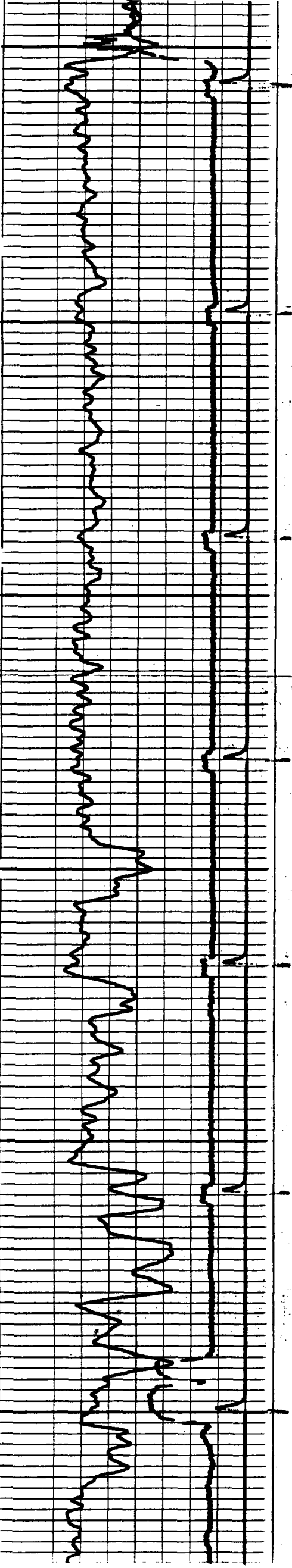


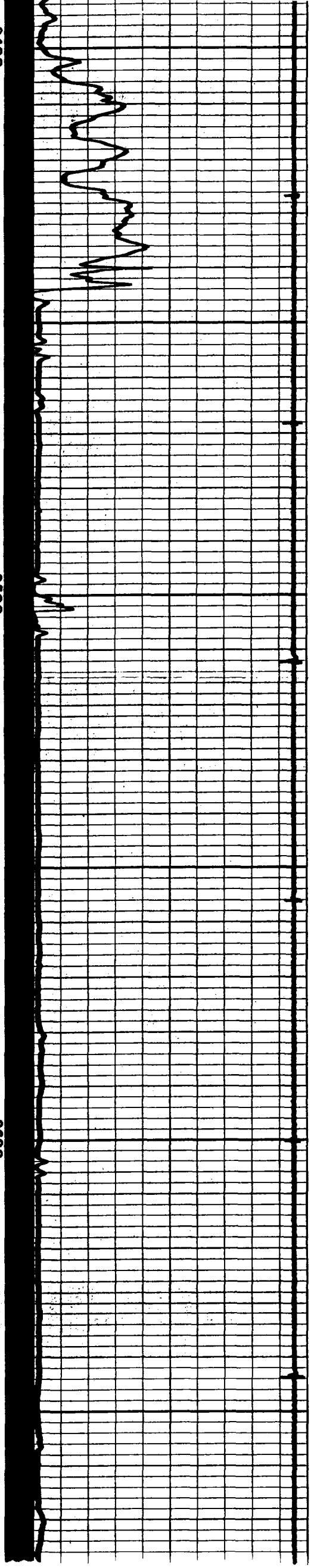
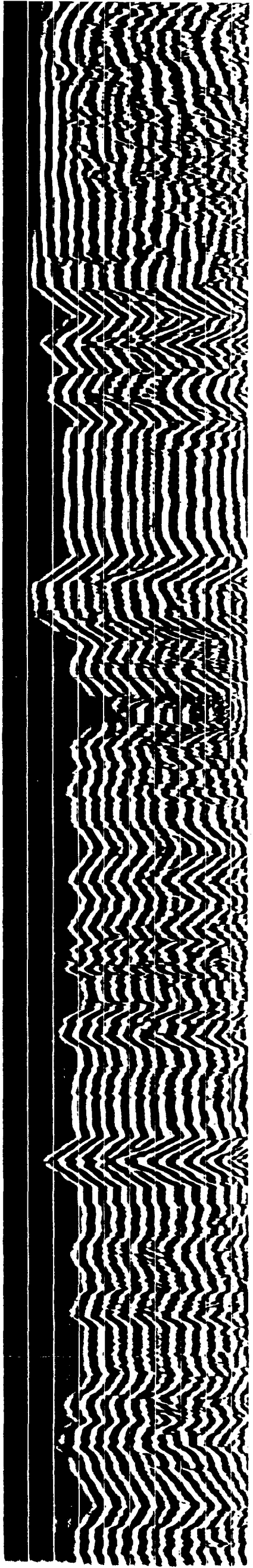


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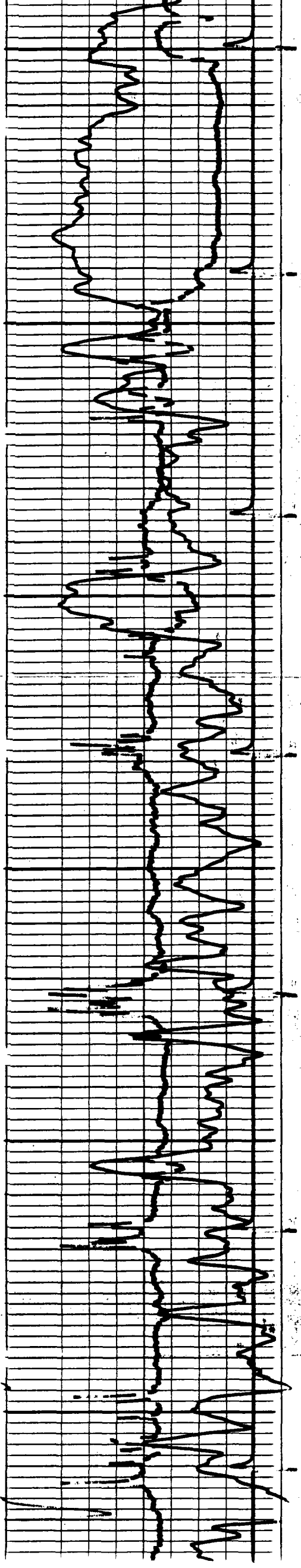


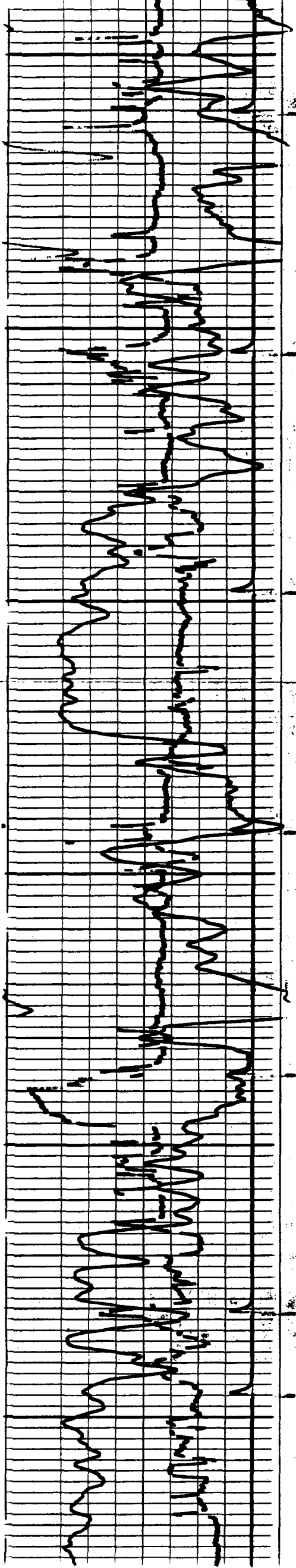


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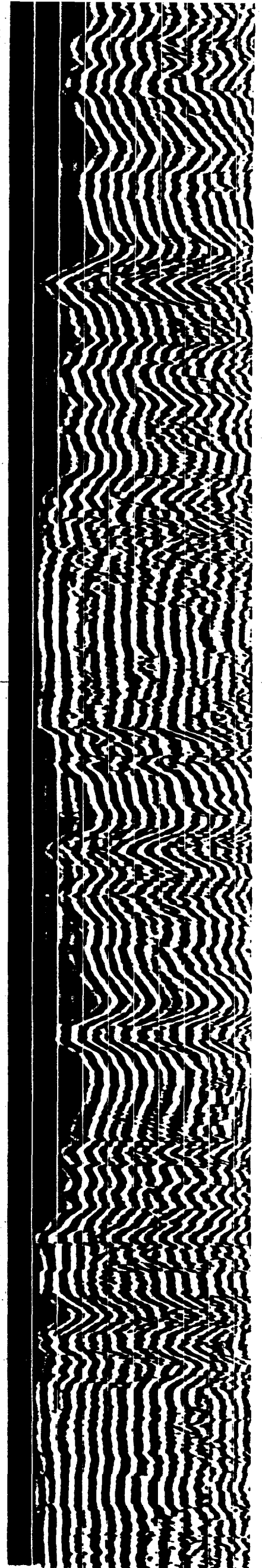
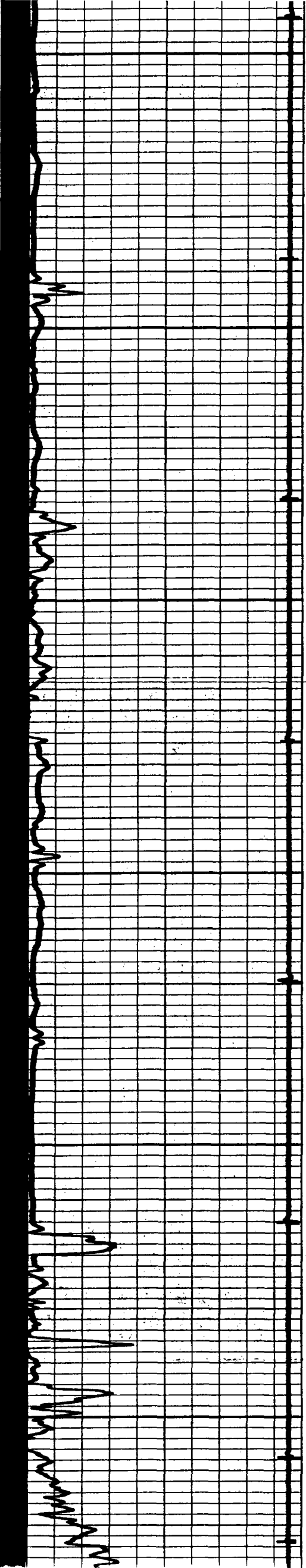


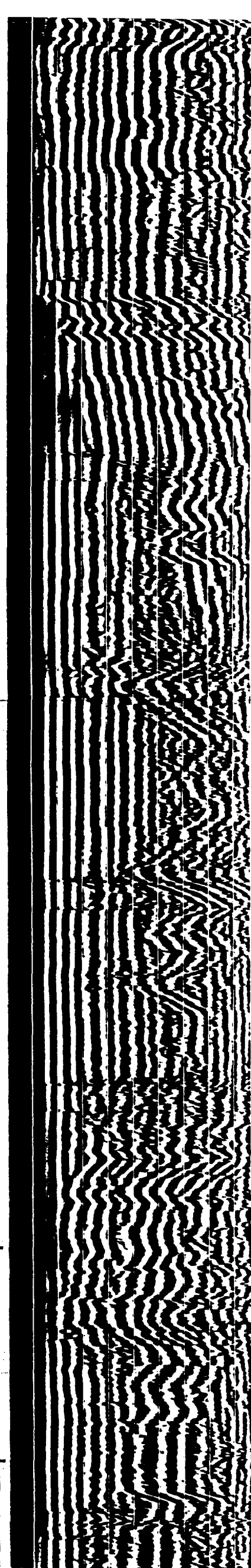
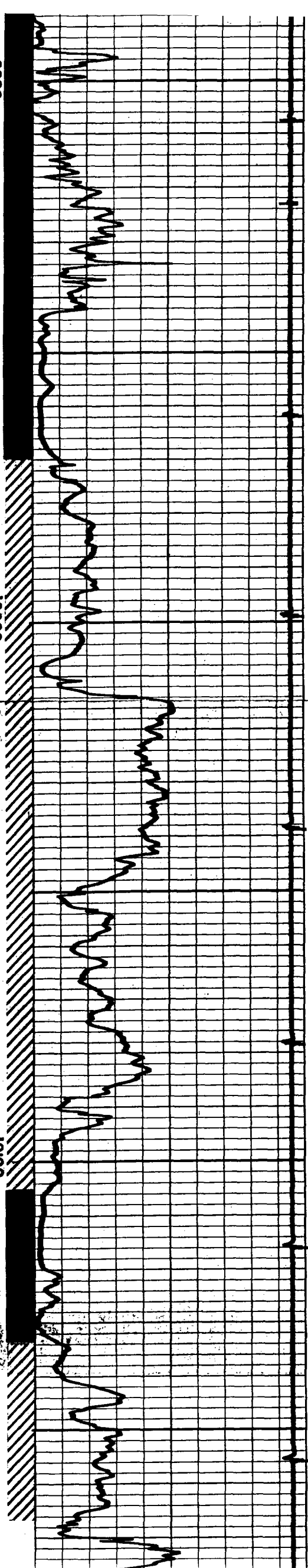
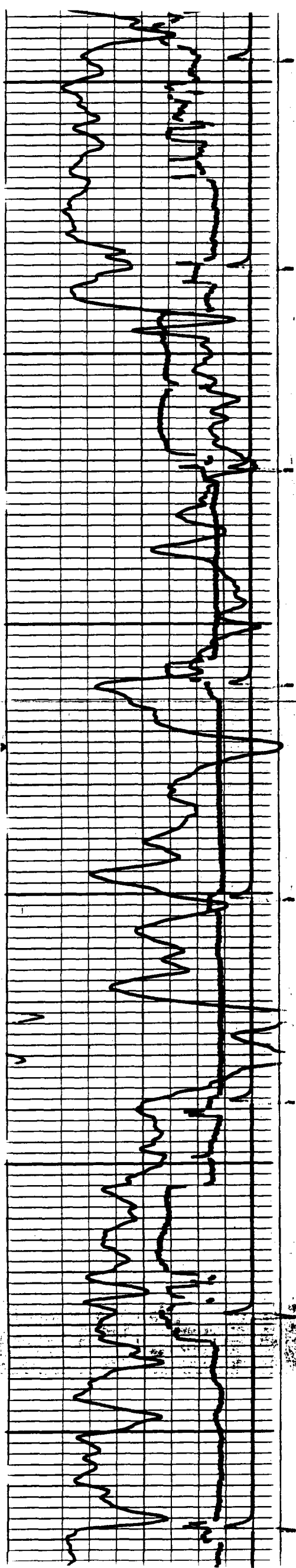


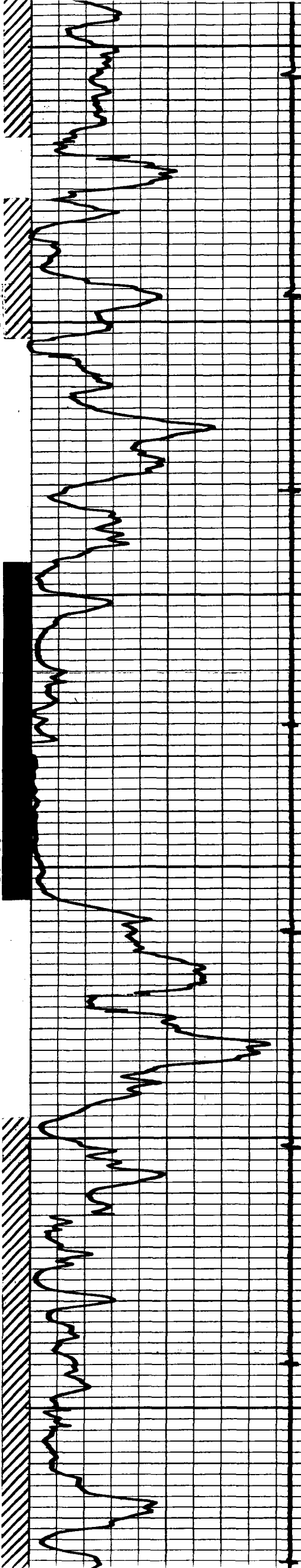
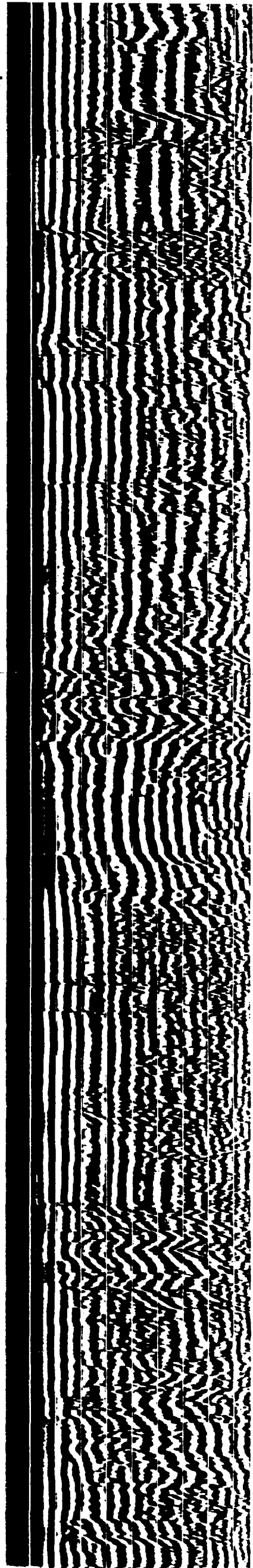
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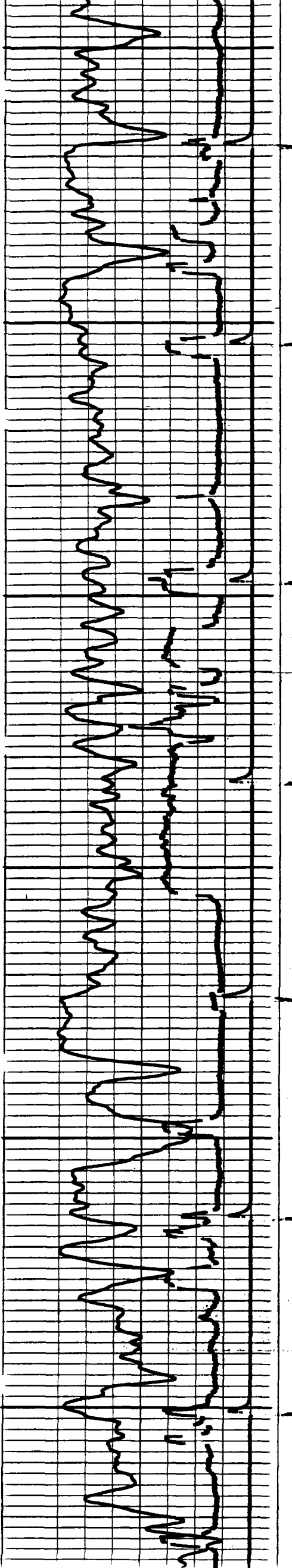


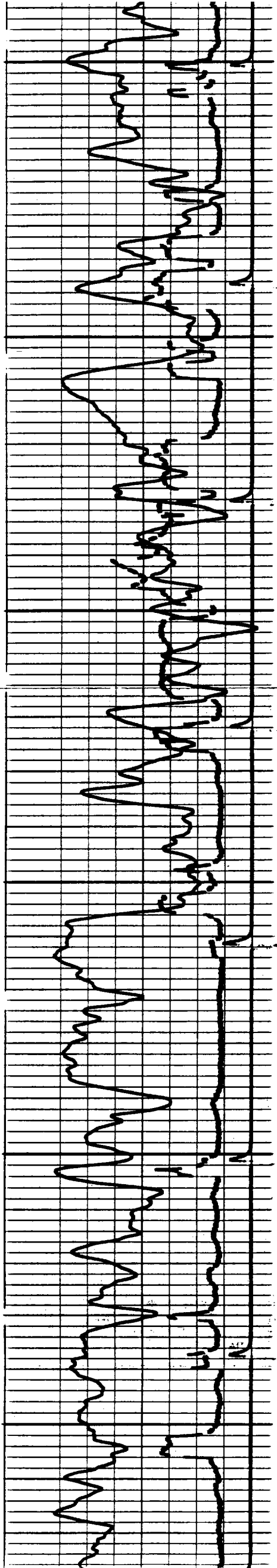


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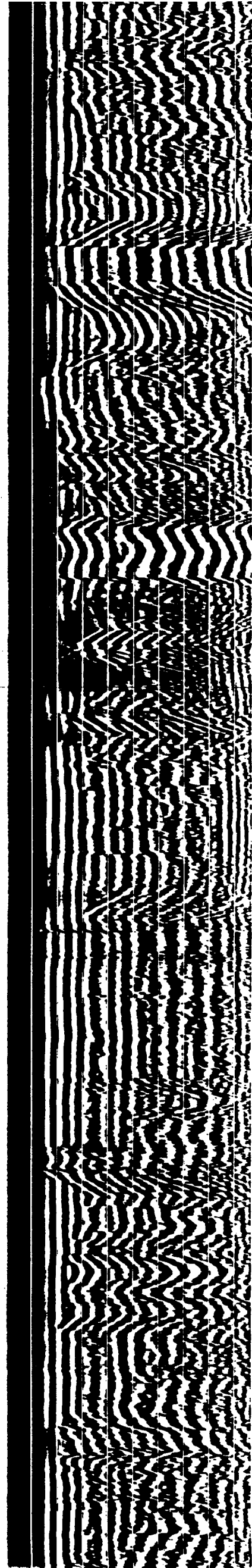
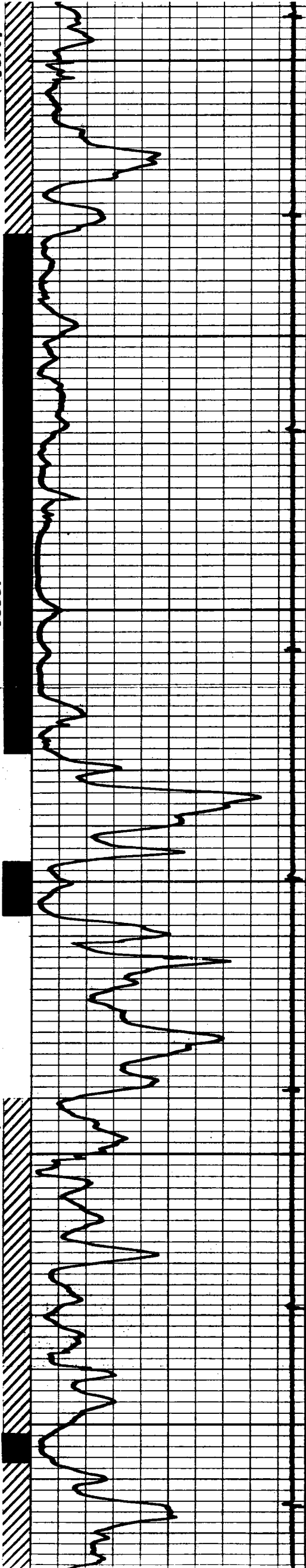


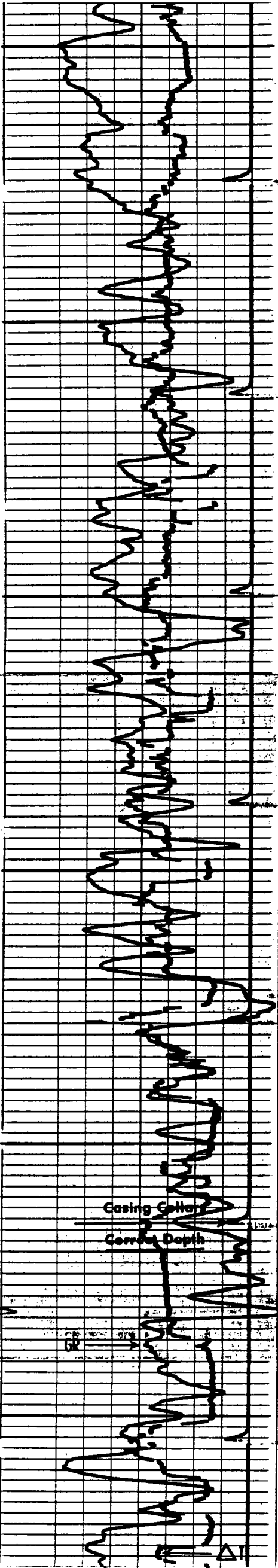


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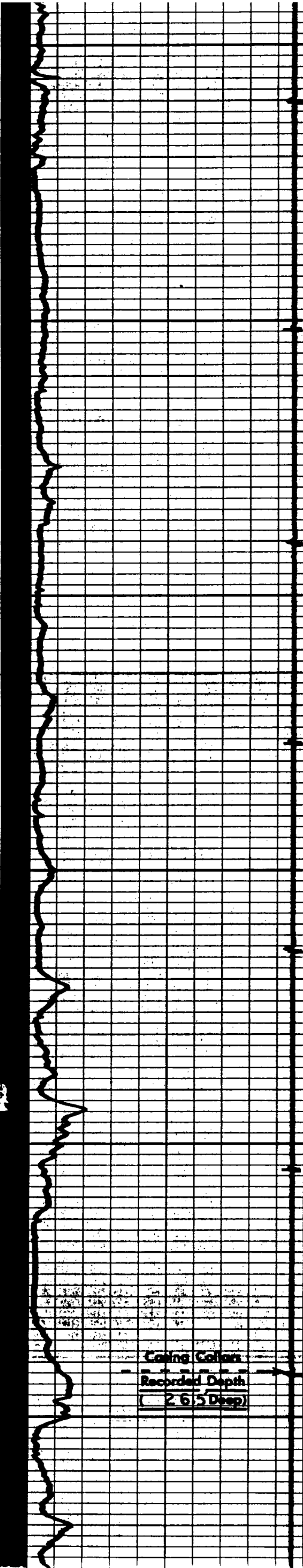


Coring Collar
Recorded Depth

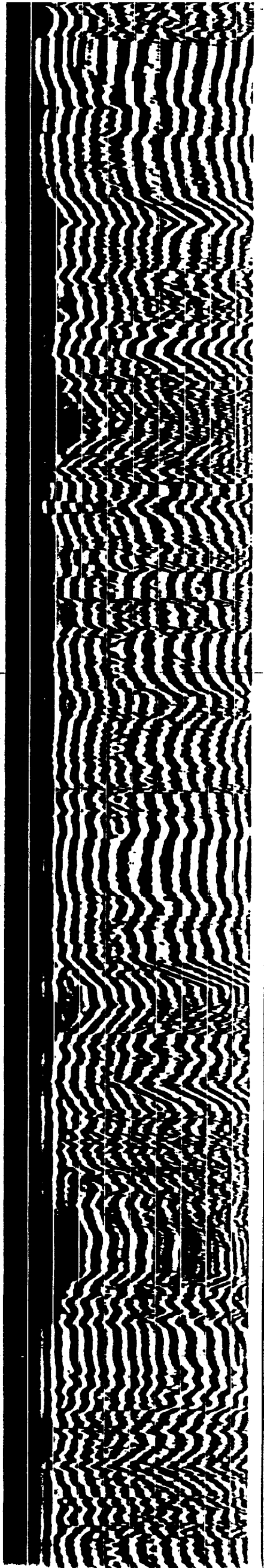
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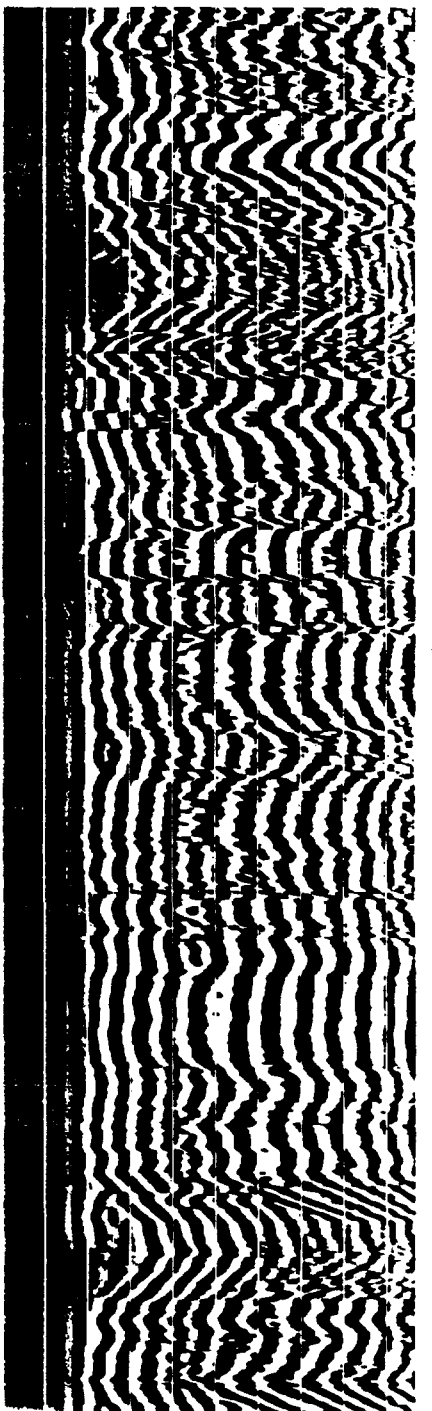
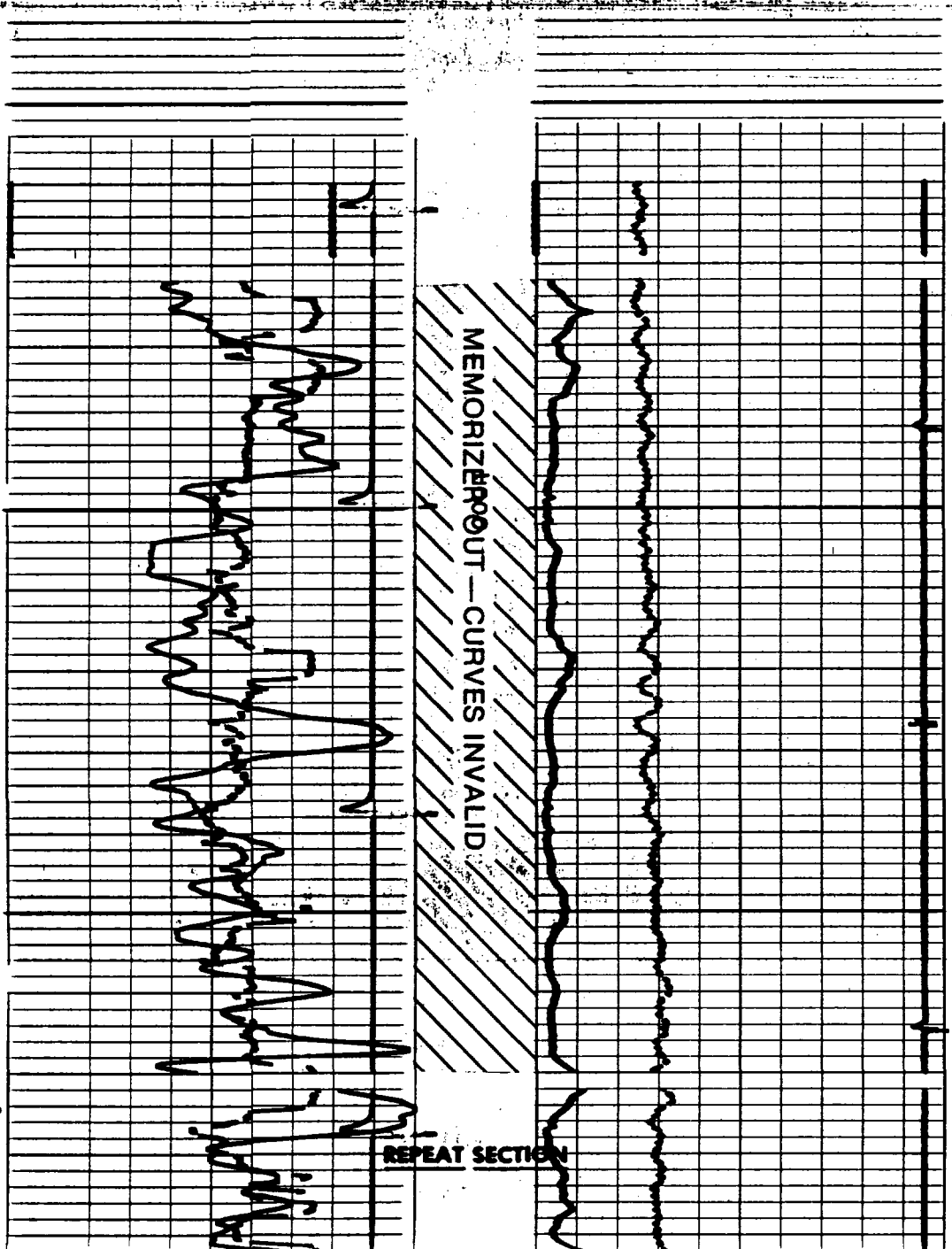
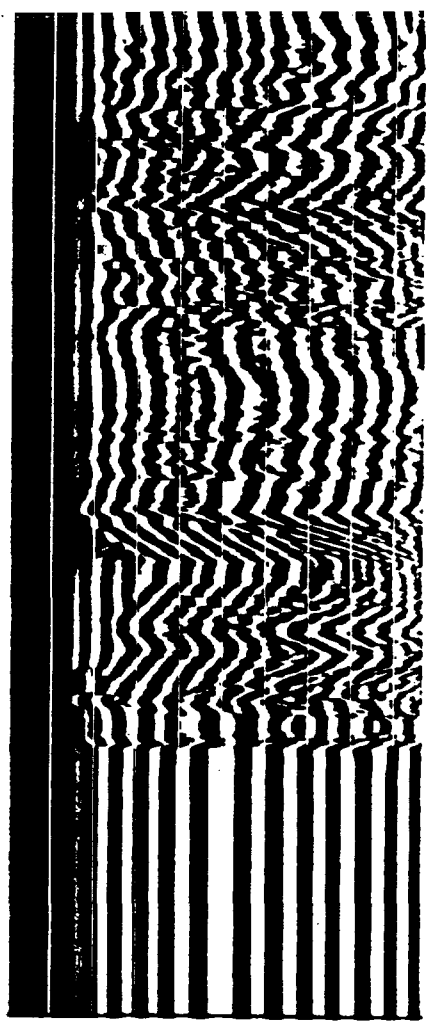
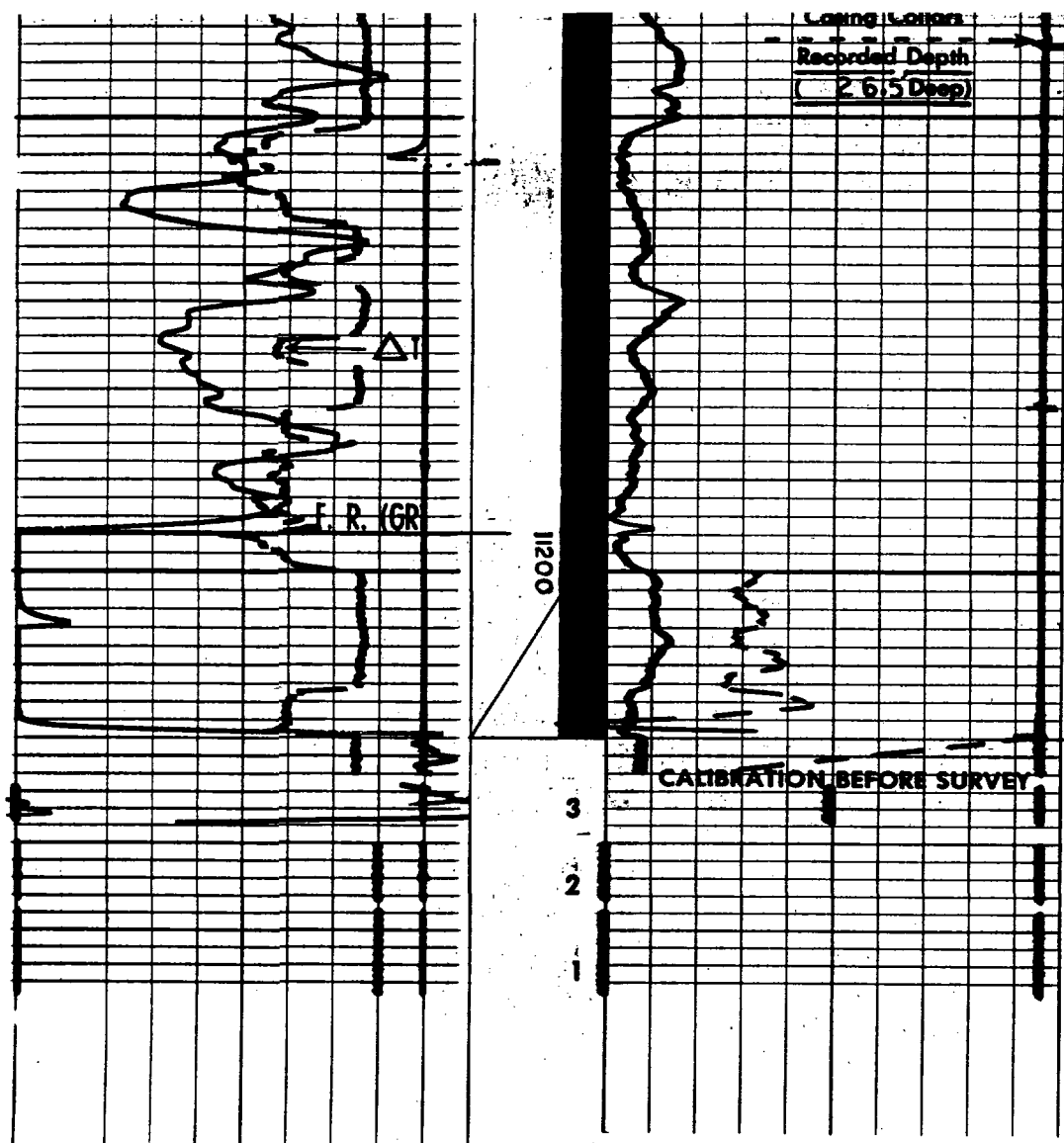
00011

00111



Coring Collar
Recorded Depth
2.615 Deep





REPEAT SECTION

11100

11200

DEPTH

TRANSIT TIME

MICROSECONDS 3' SPACING
400 200

GAMMA RAY API UNITS

0 100
100 200

Casing Collars
Corrected Depth

CASING BOND
MILLIVOLTS

0 50

BONDING CODE

GOOD
FAIR
POOR

VARIABLE DENSITY

MICROSECONDS 5' SPACING
200 1200

COMPANY CITIES SERVICE COMPANY

WELL GOVERNMENT "S" #2

FIELD BURTON FLATS NORTH

COUNTY EDDY STATE NEW MEXICO

SCHL. FR 11218
SCHL. TD 11229
DRLR TD 11240
Elev:

KB 3285
DF 3284
GL 3271



BOND LOG

ACOUSTIC CEMENT
BOND LOG

COMP. OXY USA INC.	
WELL GOVERNMENT AB #5	
FIELD BURTON FLAT MORROW	
COUNTY EDDY	ST. NM
SEC. 11 TWP. 20-S RGE. 28-E	
COMPANY OXY USA INC.	WELL GOVERNMENT AB #5
COUNTY EDDY	FIELD BURTON FLAT MORROW
RPI NO. 30-015-26248	STATE NM
LOCATION 1980' FNL & 660' FNL	OTHER SERVICES PERF.
MEASURED DATUM CL	ELEV. 3263.0
ILLING MEASURED FROM KB	17.0 FT. ABOVE PERM. DATUM
DATE LOGGED 02-21-90	TIME 1:00 PM
TYPE OF FLUID IN HOLE	H2O
DENSITY OF FLUID	NR
PTH - DRILLER	11,400
PTH - LOGGER	11,280
H. LOGGED INTERVAL	11,270
P. LOGGED INTERVAL	4,700
X TEMP. DEGREE	NR
MENTING DATA	SURFACE STRING PROTECTION STRING PRODUCTION STRING LINER
TE/INE CEMENTED	
IMRV/SQUEEZE	
PECTED	
MP. STRENGTH	
MENT VOLUME	
MENT TYPE/HEIGHT	
RELATION	
D TYPE/AUD HEIGHT	
NO. 7778	BOREHOLE RECORD FROM 3022 TO 11400
81T	CRSING AND TUBING RECORD FROM 0 TO 3020
8022	8 5/8 IN. 0
11400	8 5/8 IN. 0
5 1/2	0
	11300

FOLD HERE

SERVICE TICKET NO.: 43301 RPI SERIAL NO.: 30-015-26248 PCM VERSION: H L 8 DLS CH V3.4

THE WELL NAME, LOCATION, CEMENTING DATA AND BOREHOLE DESCRIPTION FURNISHED BY CLIENT

CEMENTING DATA

CEMENT PUMPED	NA		/ JOINT FROM	TO
PRECEDING FLUID	VOLUME	BBL	CENTRALIZERS	/ JOINT FROM TO
RETURNS	FULL PARTIAL NONE			/ JOINT FROM TO
PIPE ROTATED/RECIPITATED	DURING PUMPING	YES NO		
	AFTER PLUG DOWN	YES NO	/ JOINT FROM	TO
PLUG PUMPED		YES NO	CENTRALIZERS	/ JOINT FROM TO
PLUG LANDING PRESSURE:			/ JOINT FROM	TO
PRESSURE HELD	HRS AFTER PUMPING			

EQUIPMENT DATA

GAMMA		NEUTRON		ACOUSTIC	
RUN NO.	ONE	RUN NO.		RUN NO.	ONE
SERIAL NO.	187798	SERIAL NO.		SERIAL NO.	187798
MODEL NO.	271	MODEL NO.		MODEL NO.	271
DIAMETER	3 3/8	DIAMETER		NO. OF CENT	2-INLINE
DETECTOR MODEL NO.	182	LOG TYPE		SPACING	3 5 FEET
TYPE	SCINT.	SOURCE TYPE			
LENGTH	4"	SERIAL NO.			
DISTANCE TO SOURCE	NA	STRENGTH			

LOGGING DATA

GENERAL				GAMMA		NEUTRON		ACOUSTIC		
RUN NO.	DEPTHS		WELL HEAD PRESSURE	SPEED FT./MIN.	SCALE		SCALE		SCALE	
	FROM	TO			L	R	L	R	L	R
-1-	11270	4700	0	REC.	0	100			0	100

REMARKS: CORRECTED SEVEN FEET OUT OF THE HOLE TO LOG DATED 02-14-90.CNL.
NO CEMENT DATA AVAILABLE.

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

AFTER SURVEY CALIBRATION

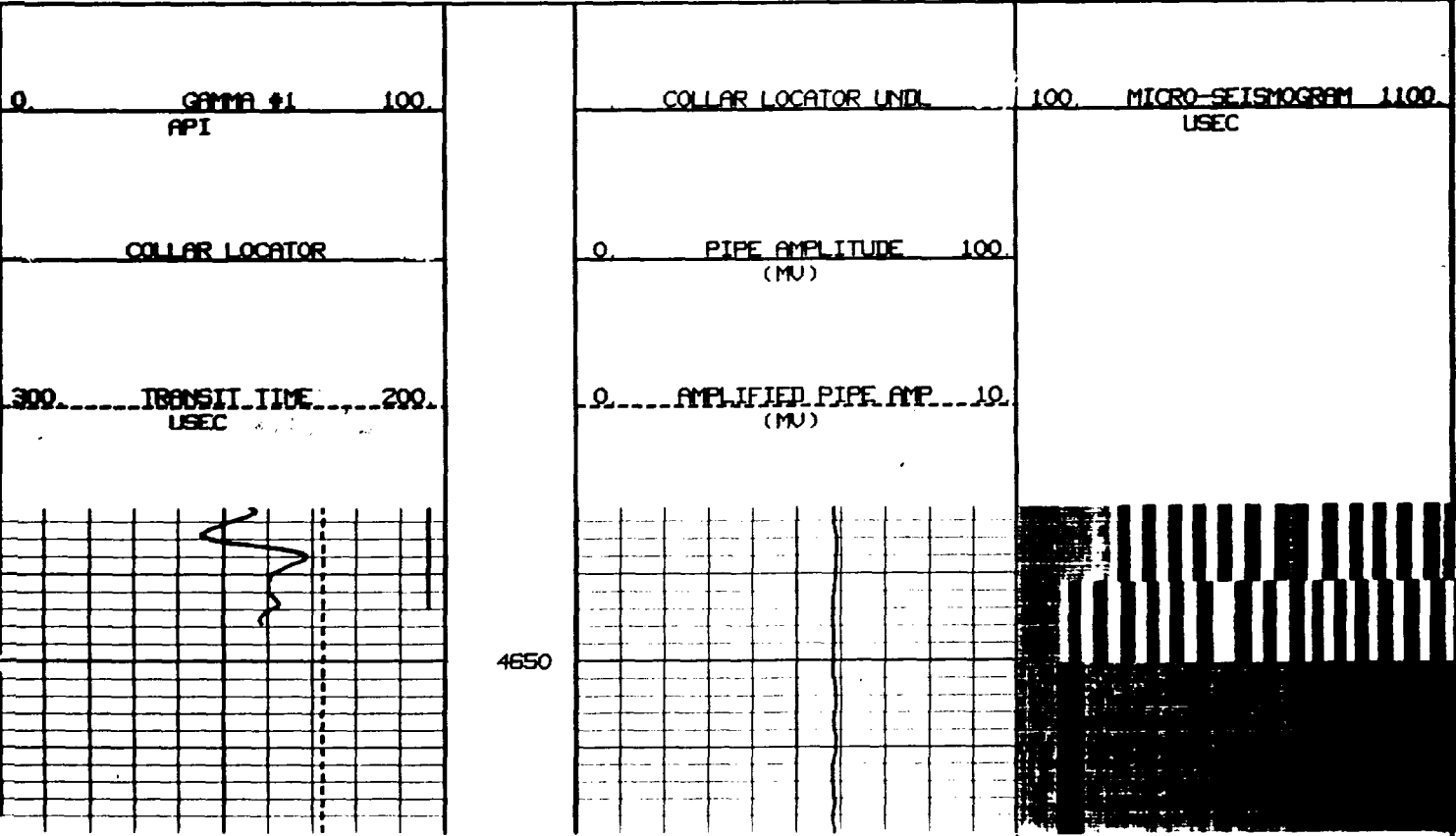
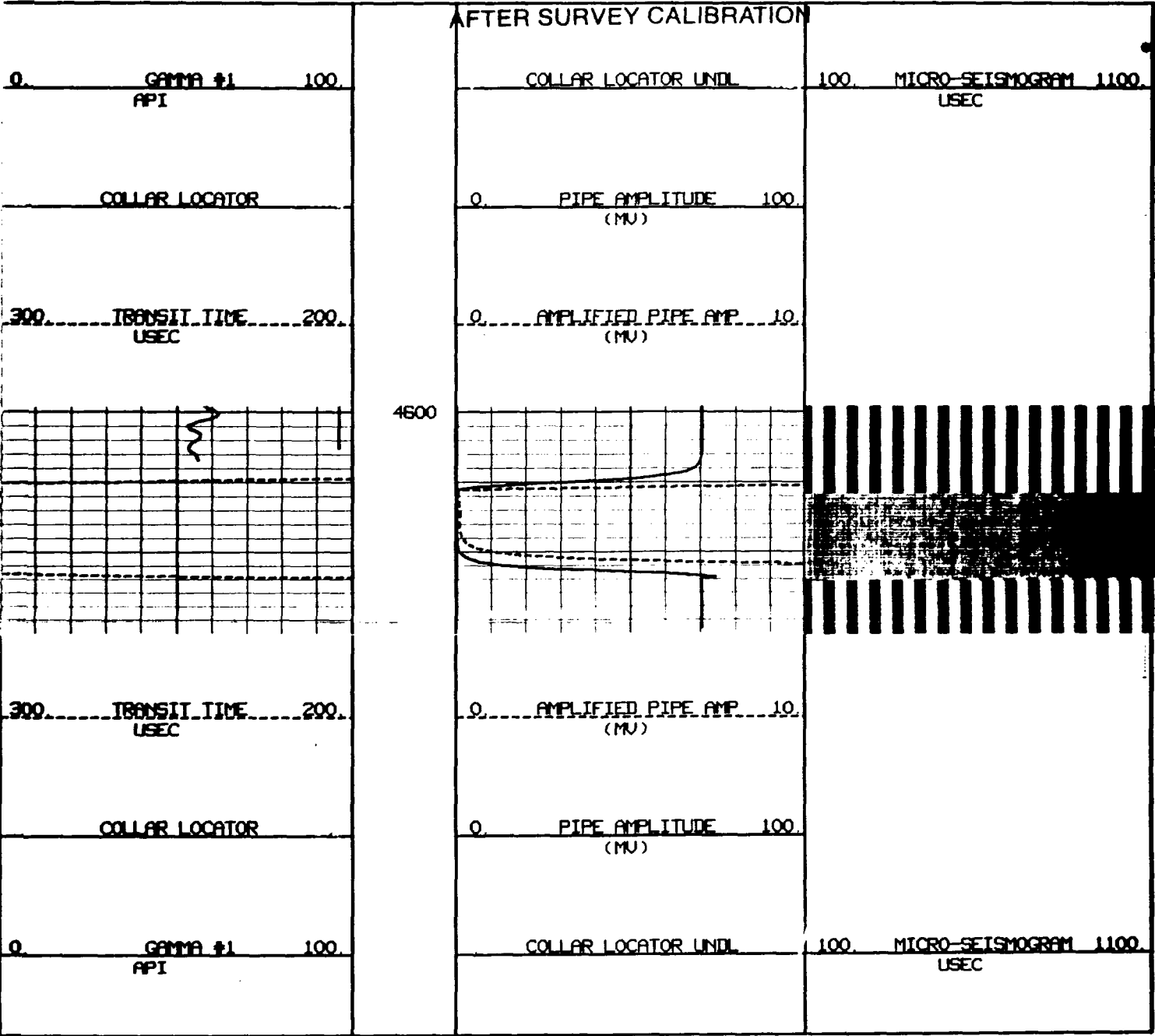
0 GAMMA #1 100

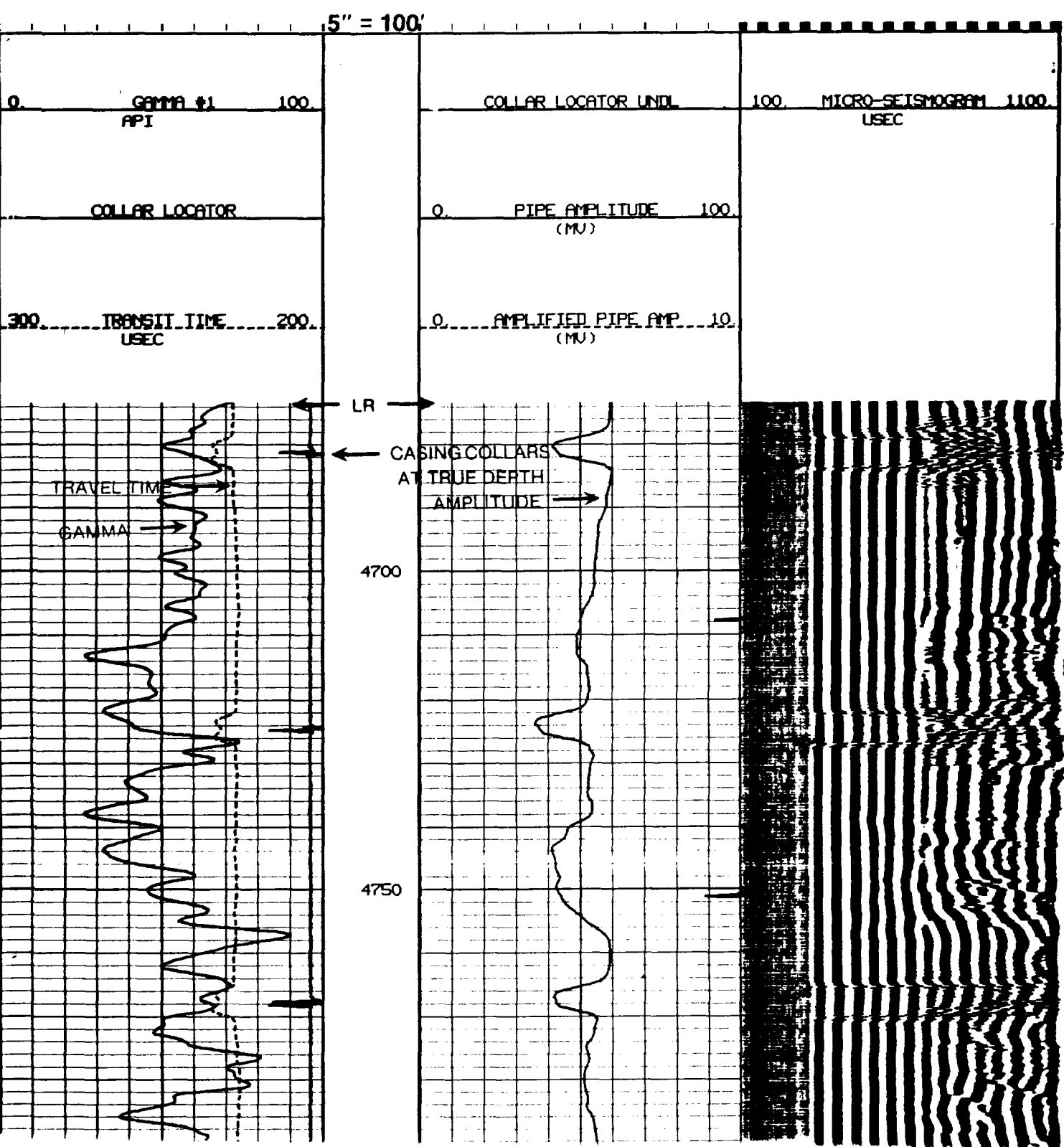
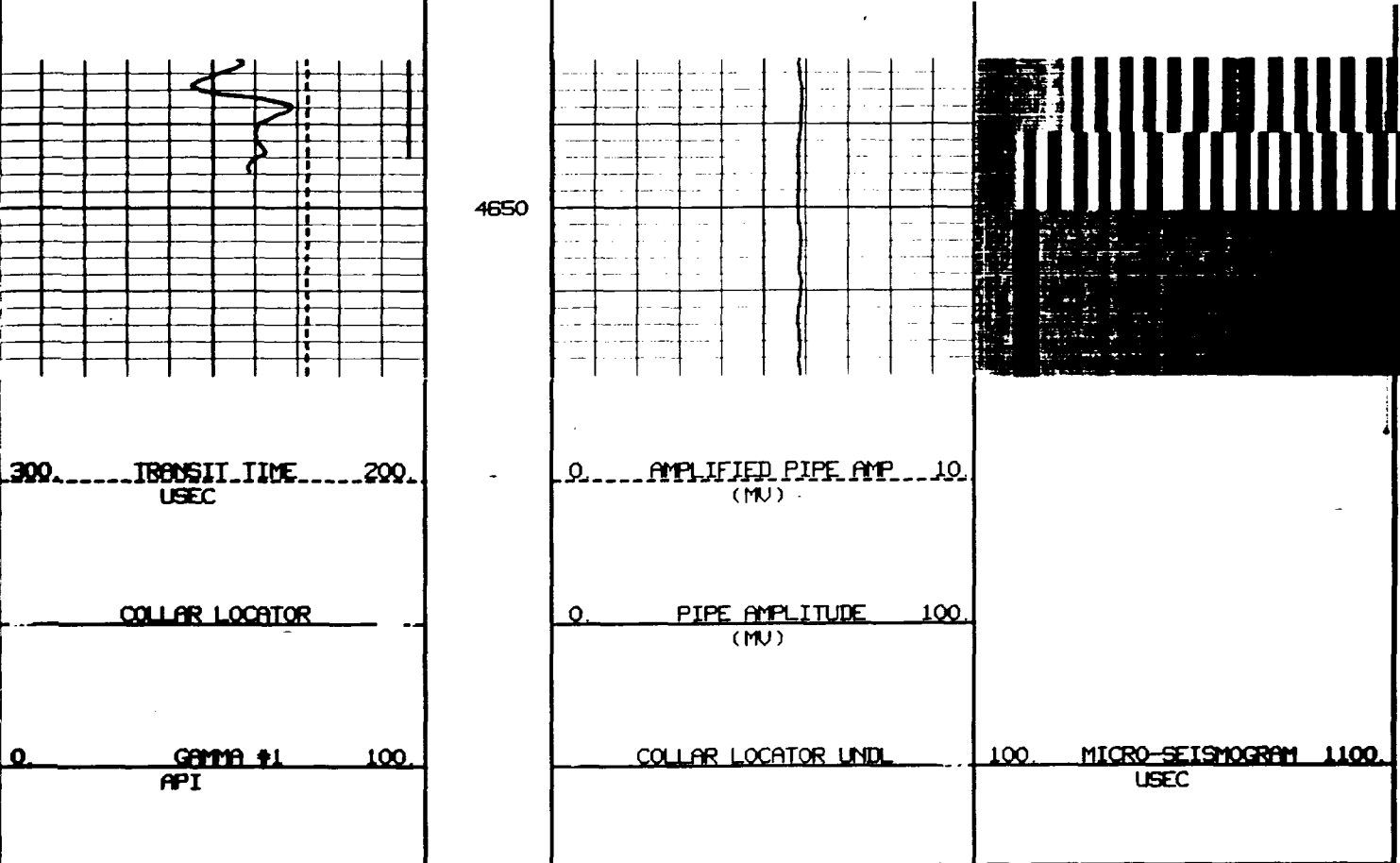
COLLAR LOCATOR UNCL

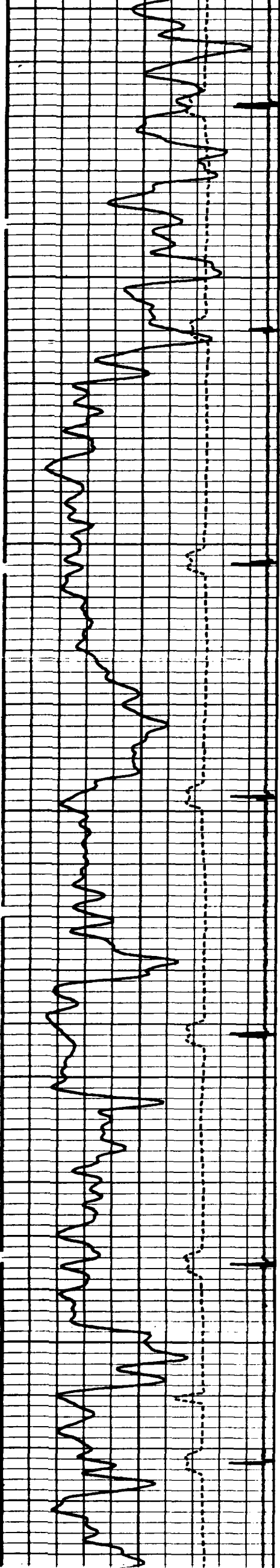
100 MICRO-SEISMOGRAM 1100

1550

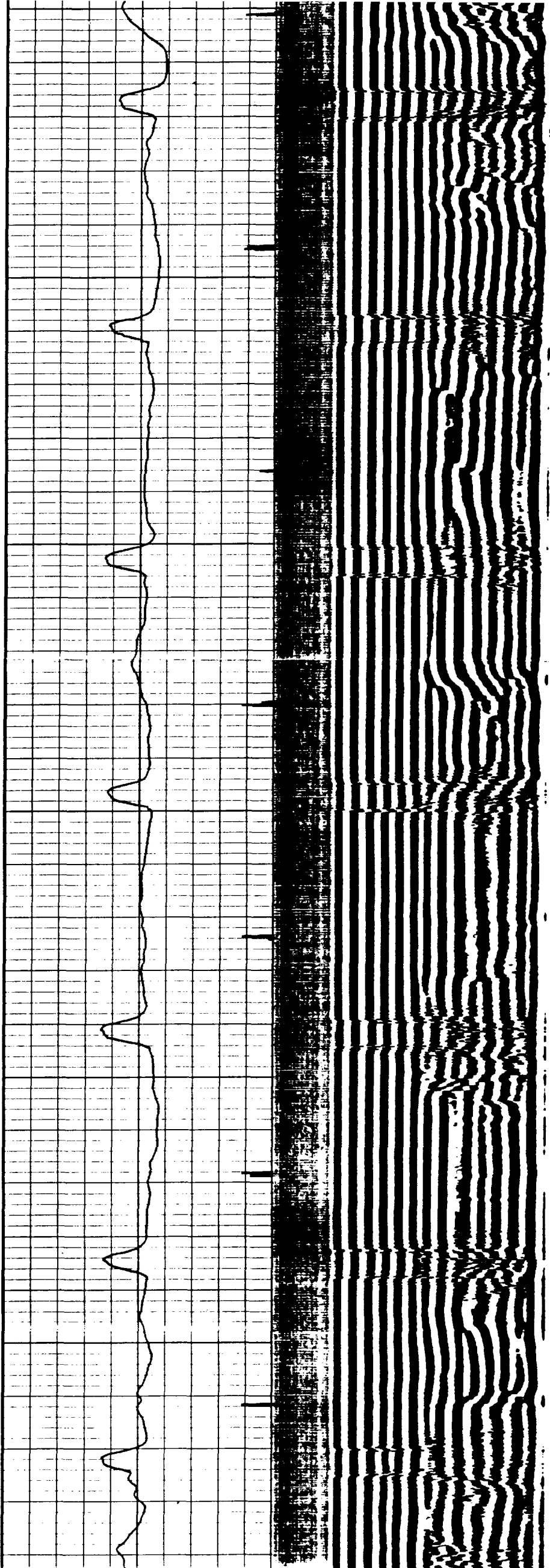
HALLIBURTON LOGGING SERVICES, INC. DOES NOT WARRANT THE ACCURACY OF ANY INFORMATION, PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HLS PERSONNEL OR WHICH MAY APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS OR RECOMMENDATIONS AGREES THAT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

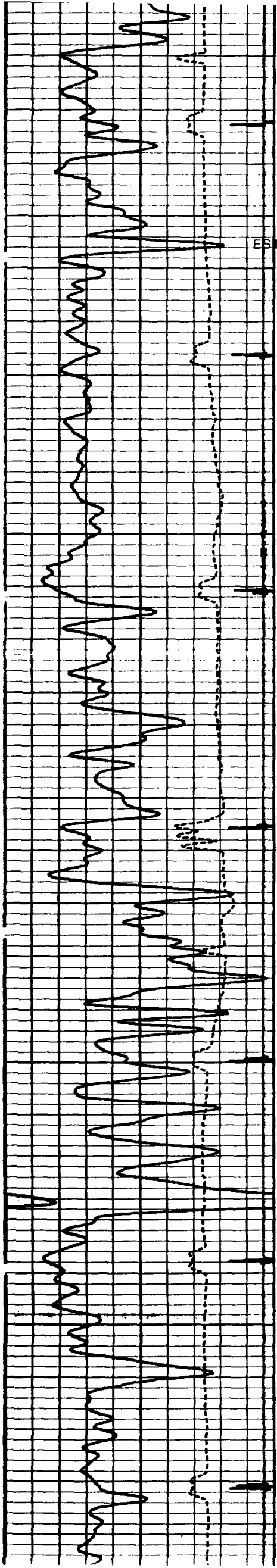






4750
4800
4850
4900
4950
5000





ESTIMATED CEMENT TOP →

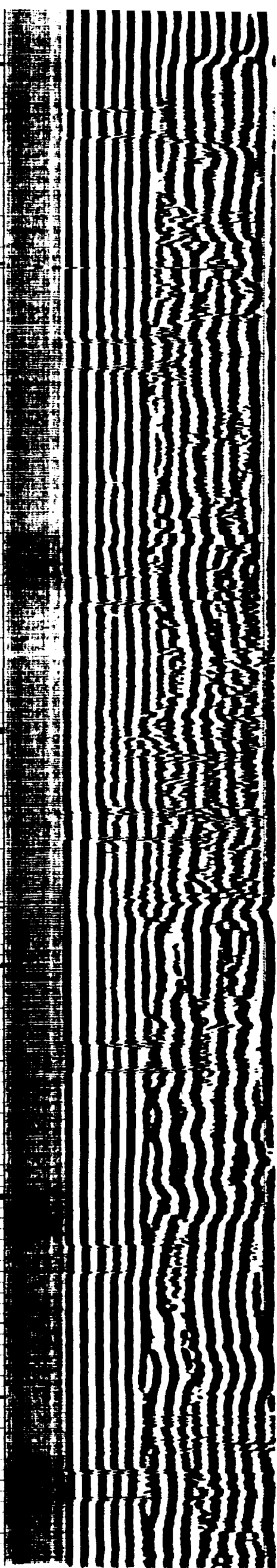
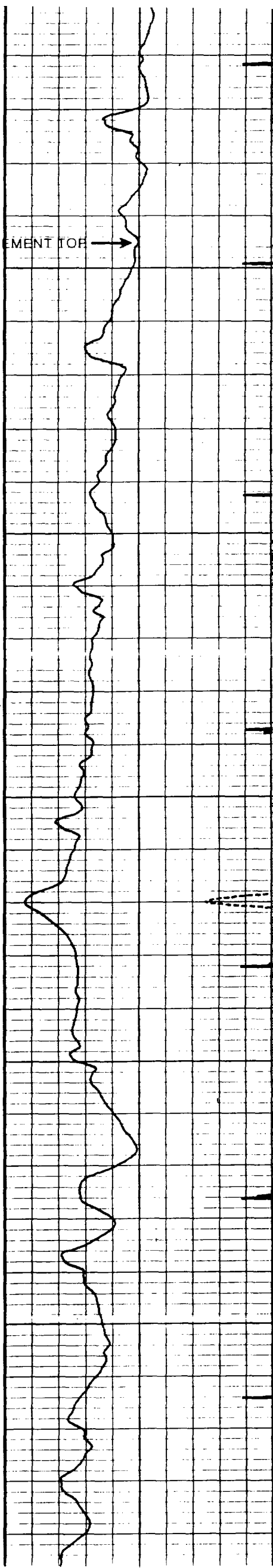
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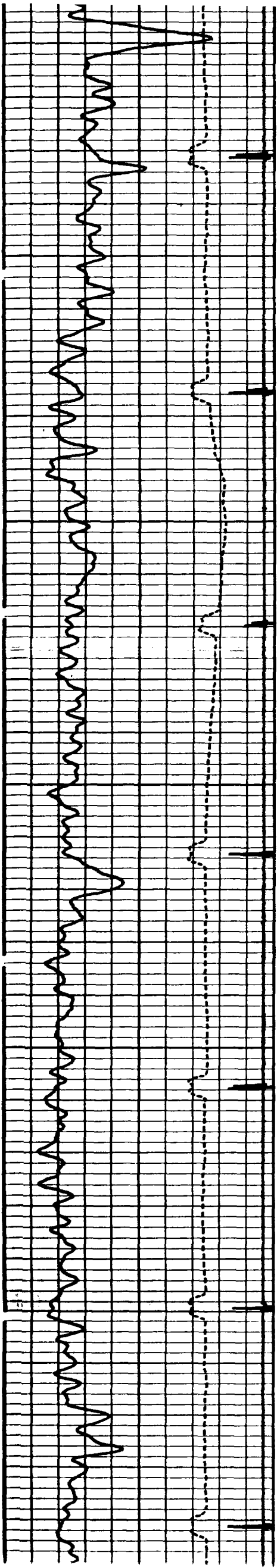
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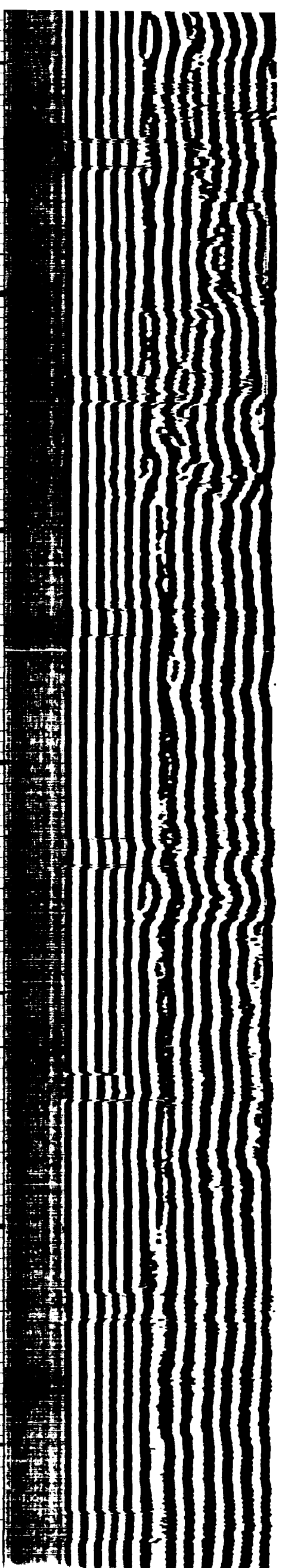
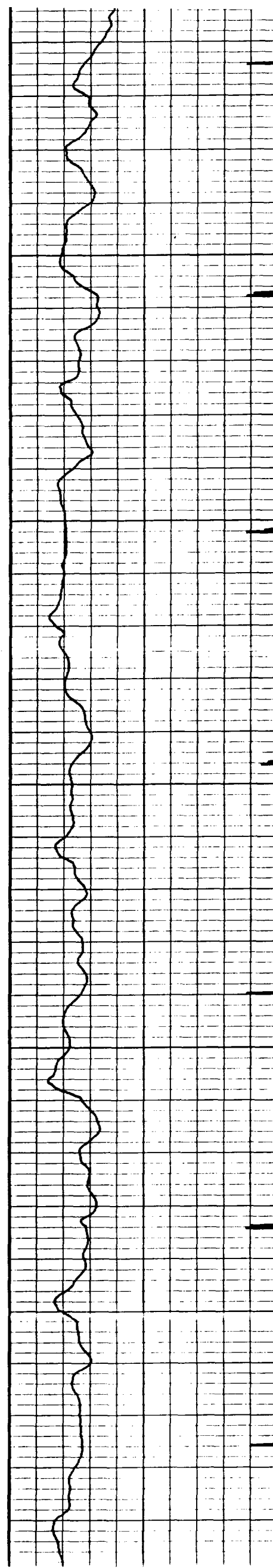
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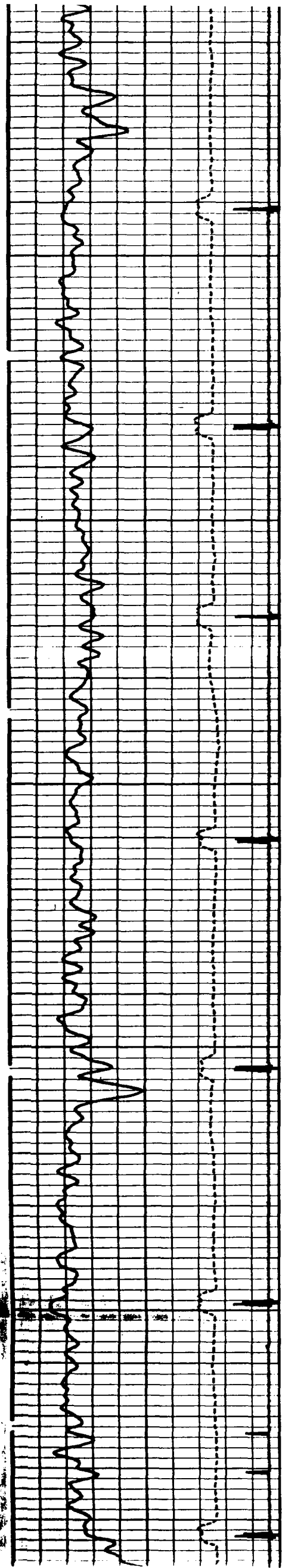
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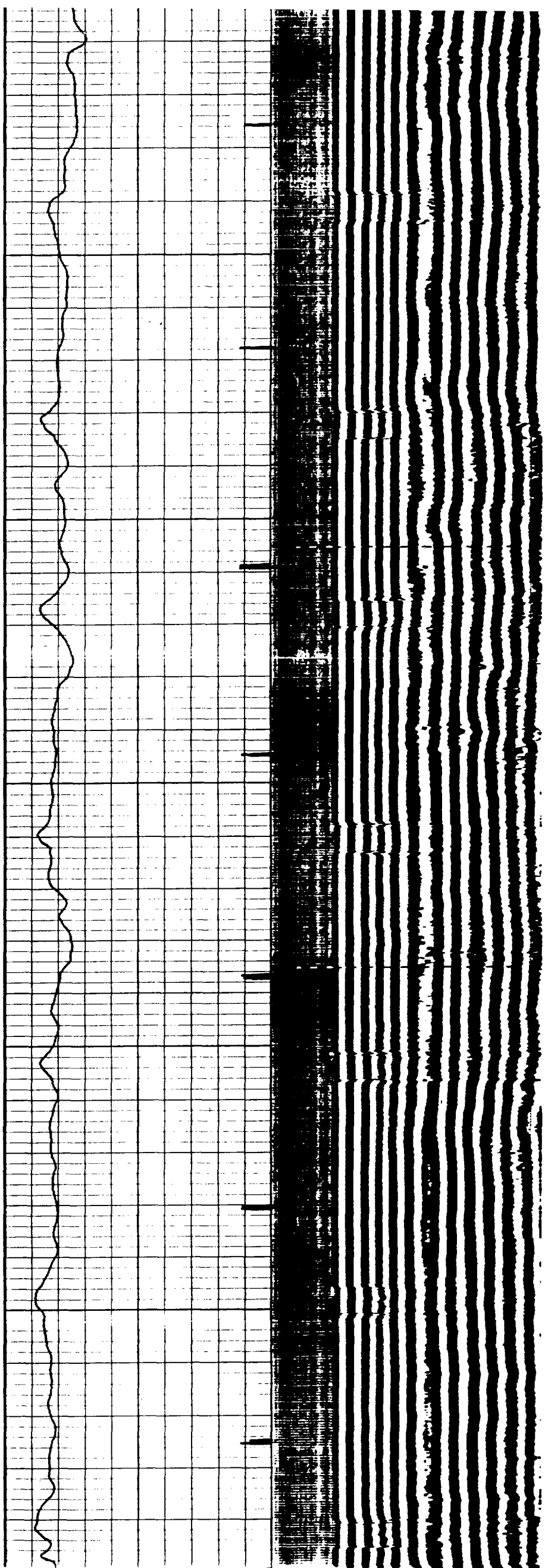
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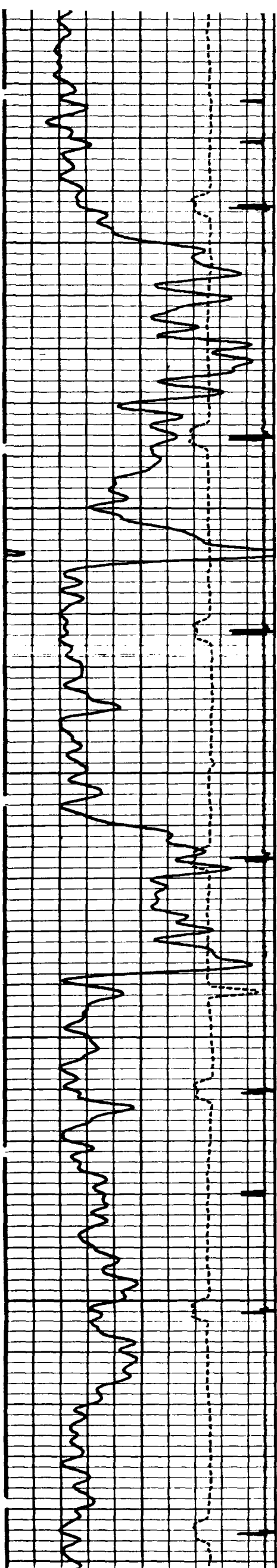
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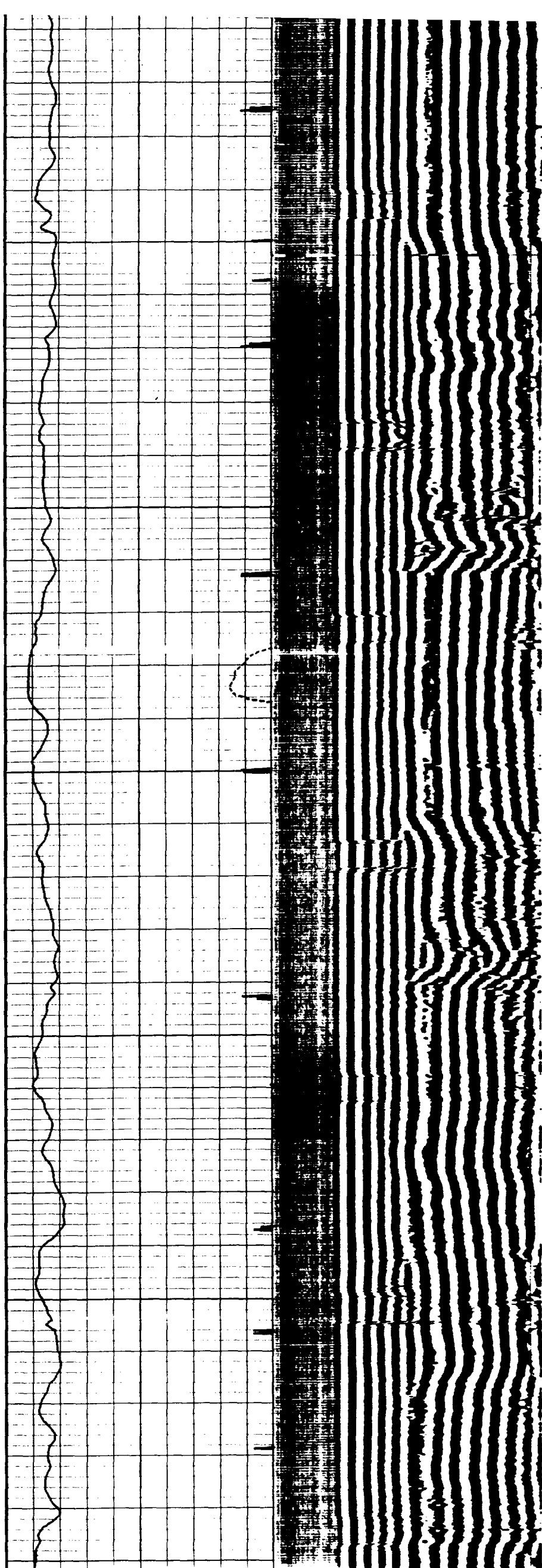
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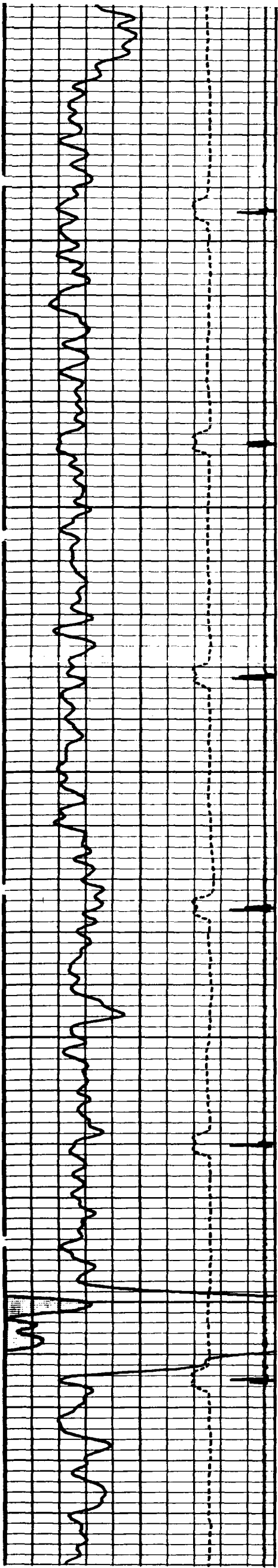
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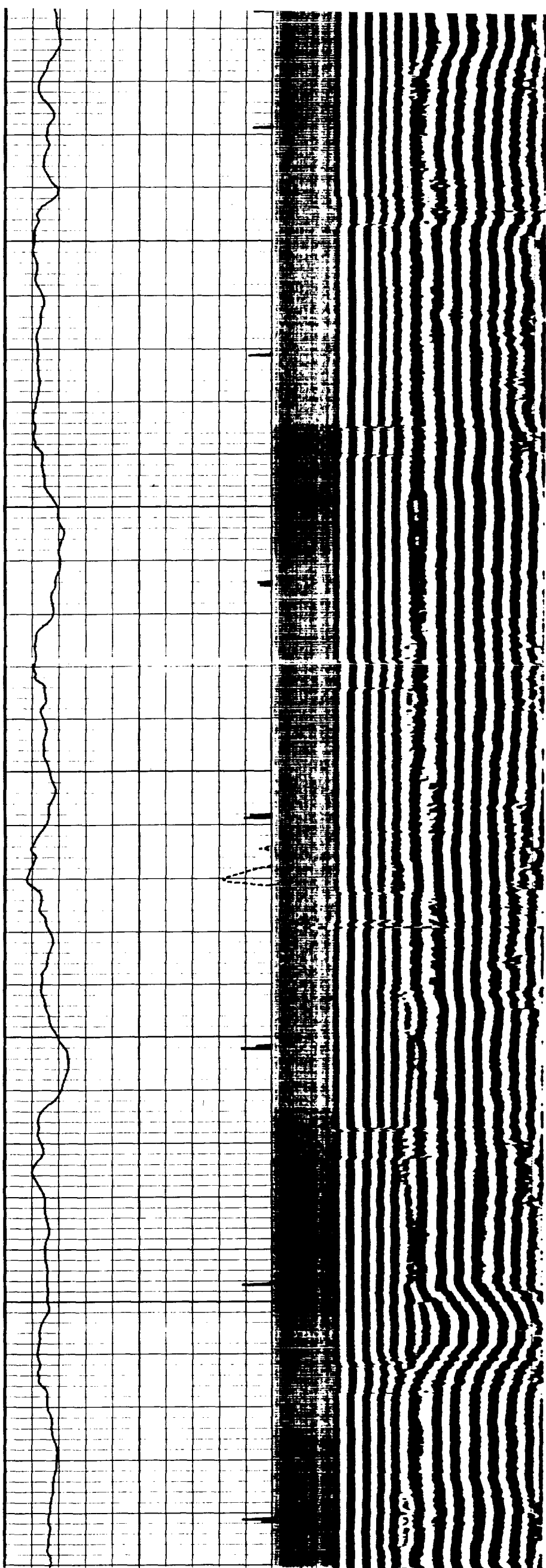
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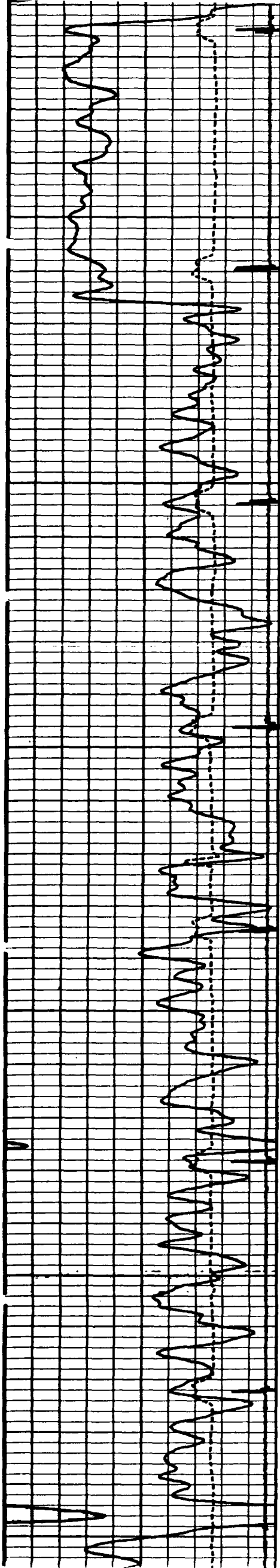
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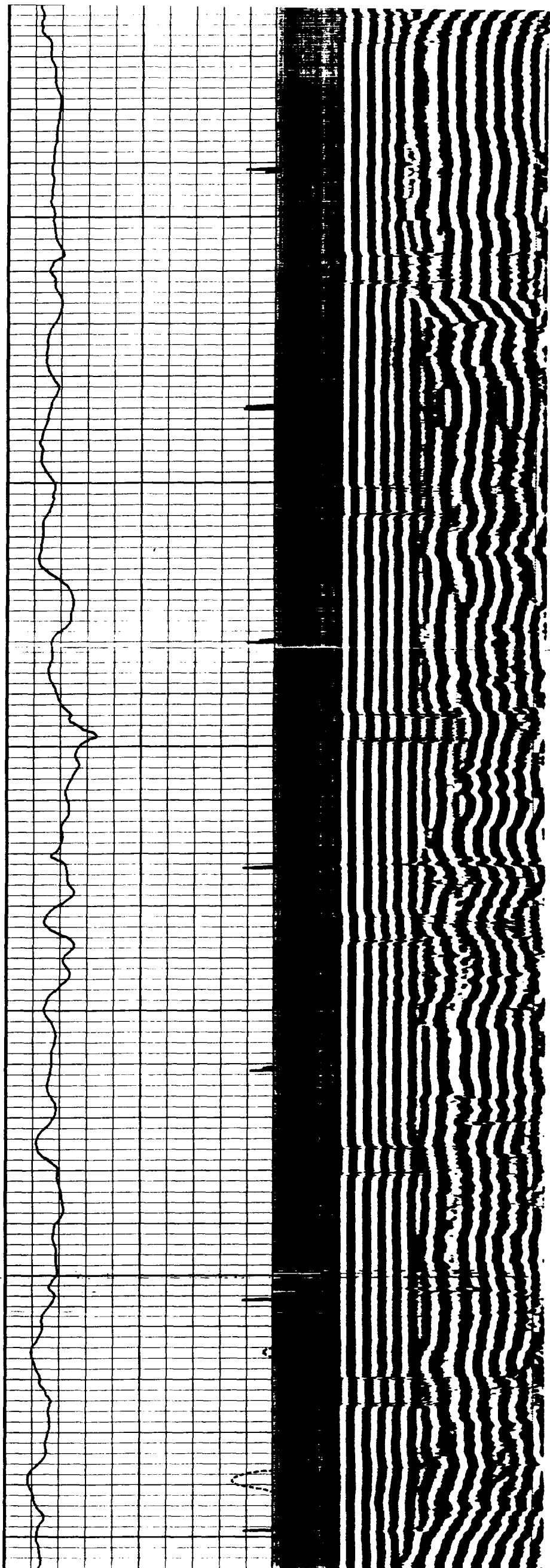
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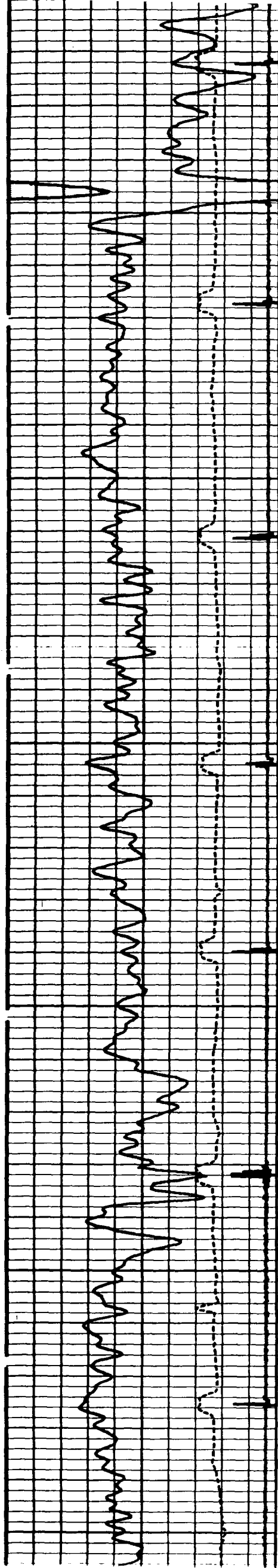
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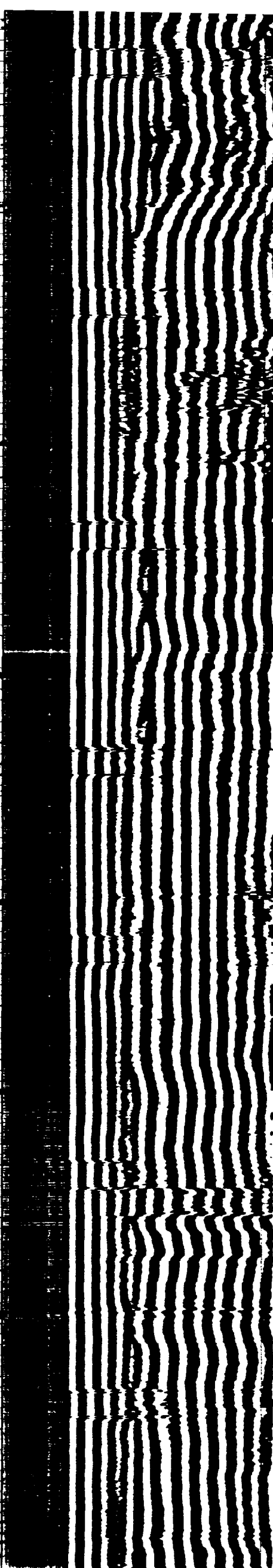
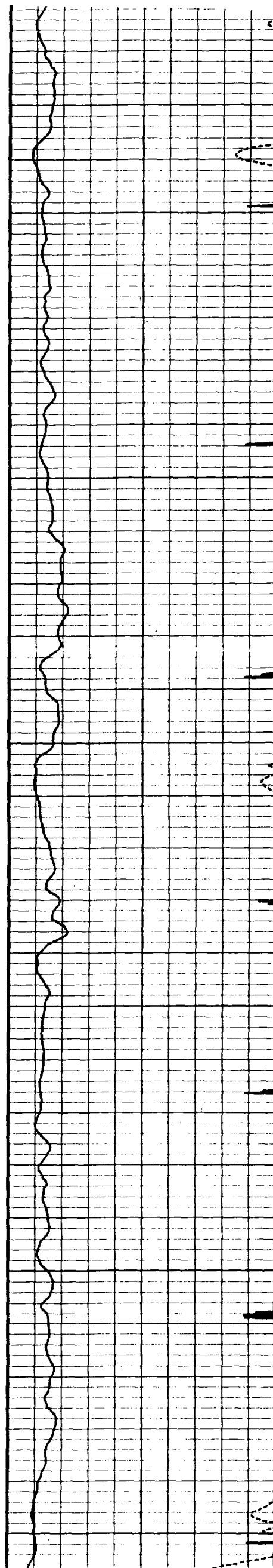
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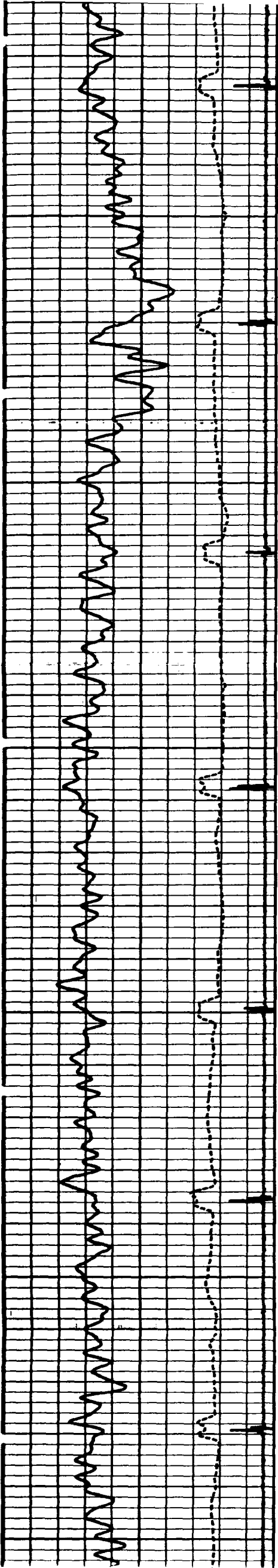
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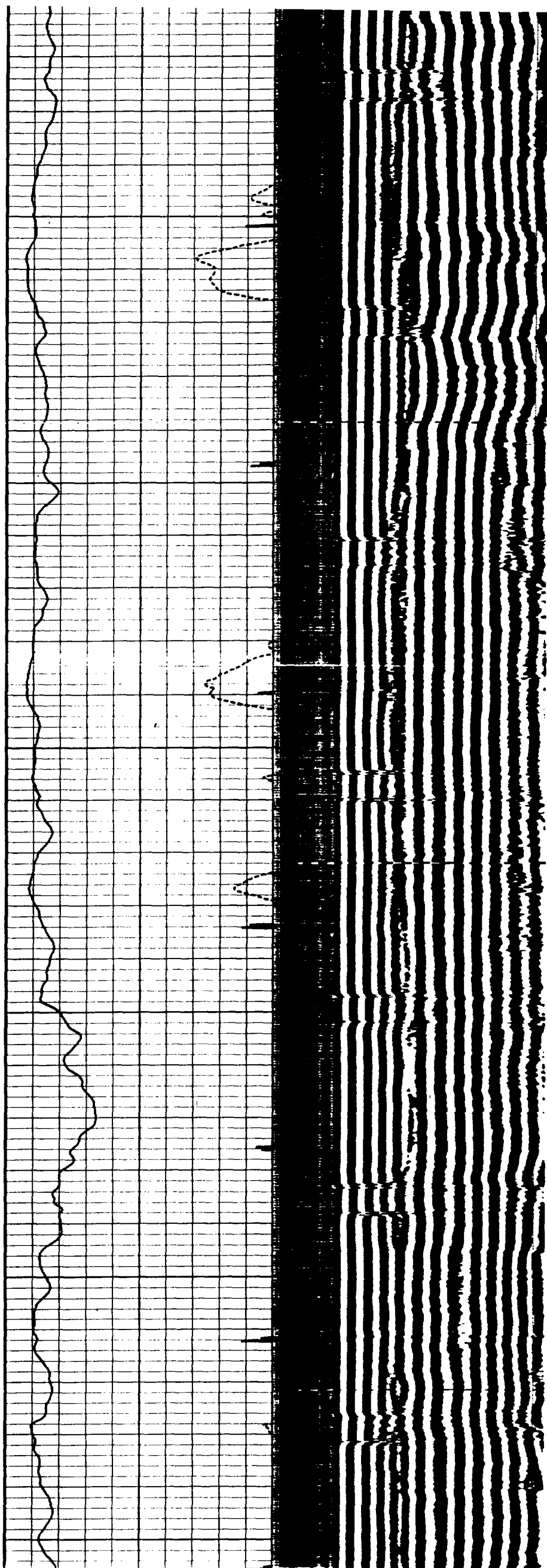
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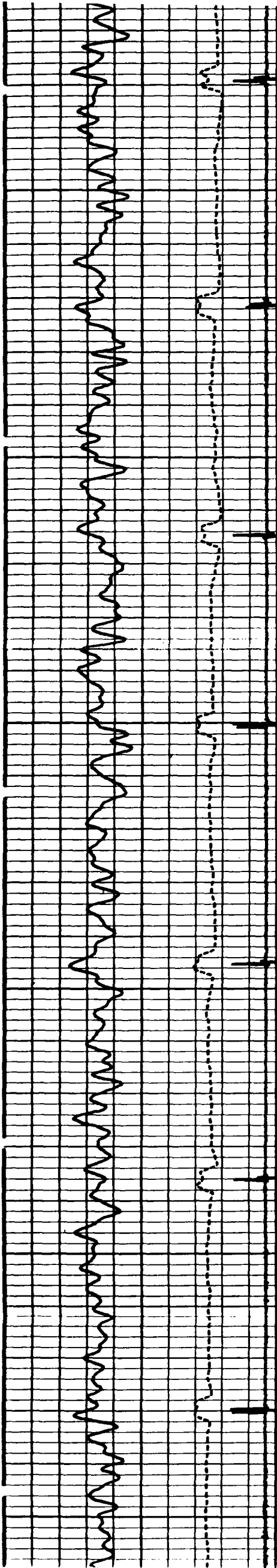
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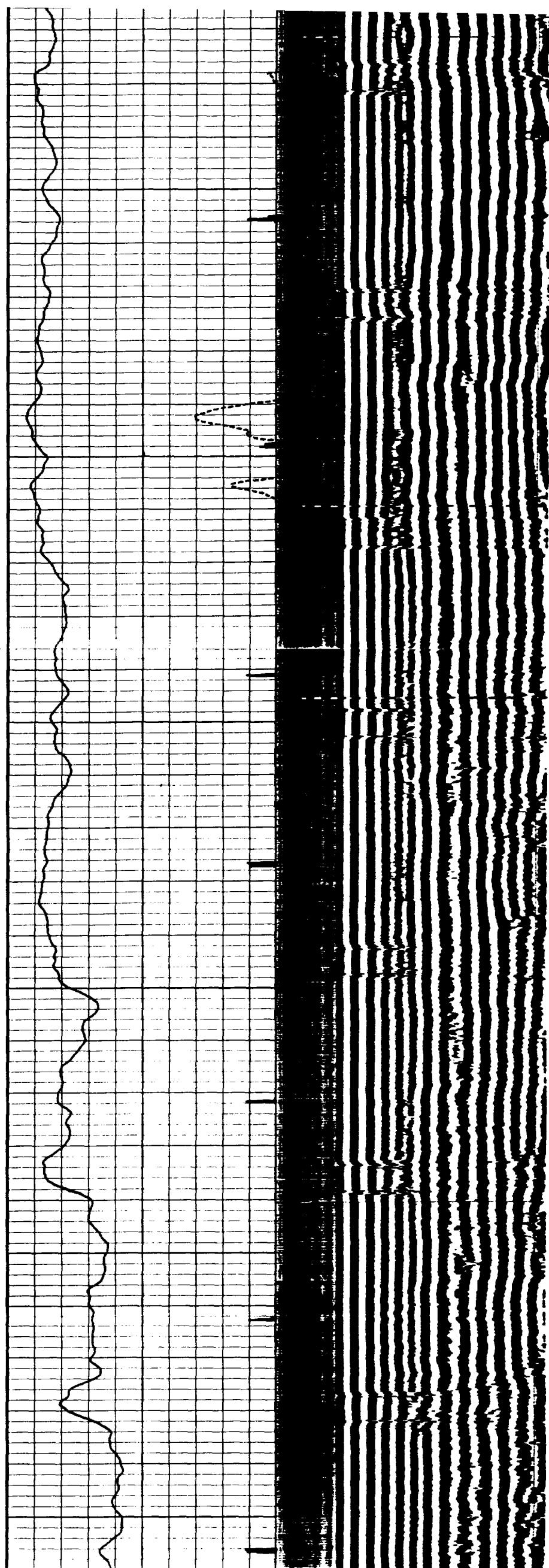
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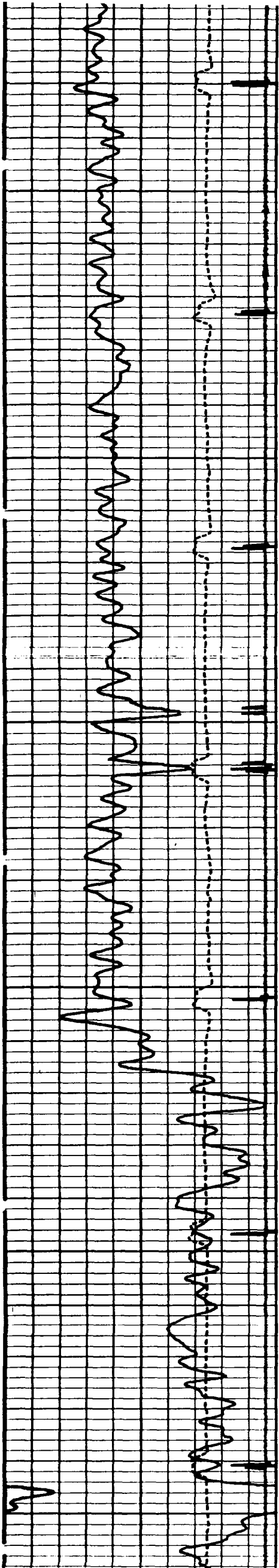
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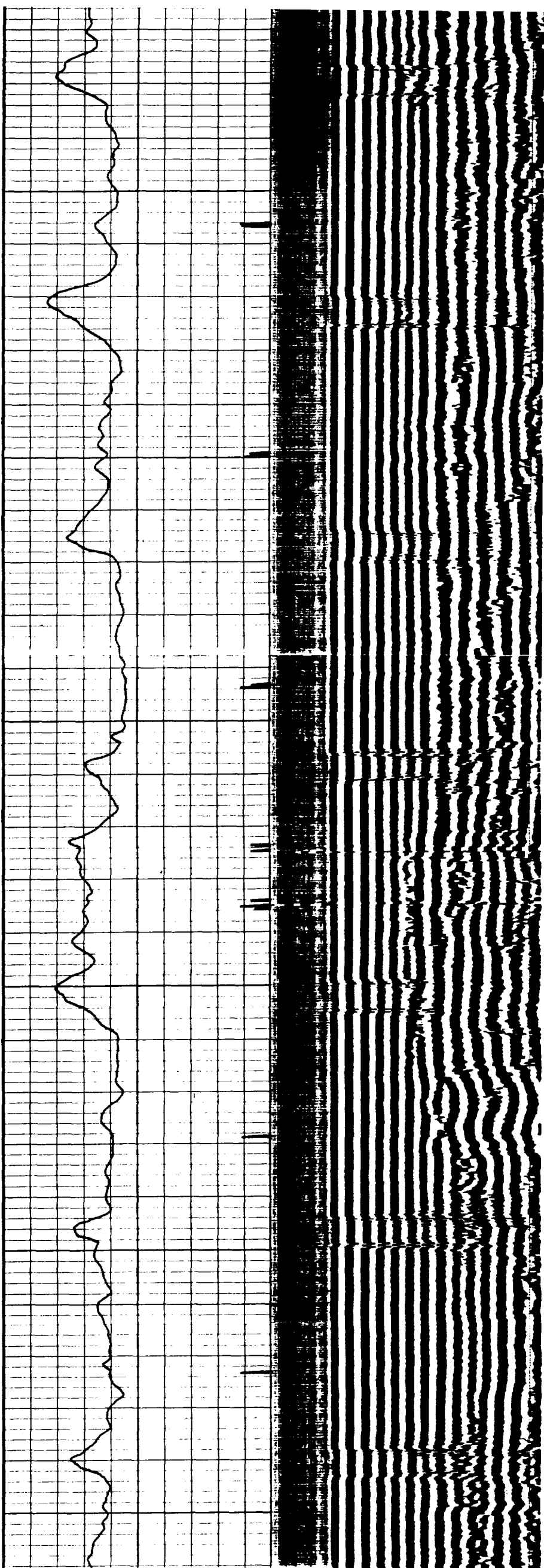
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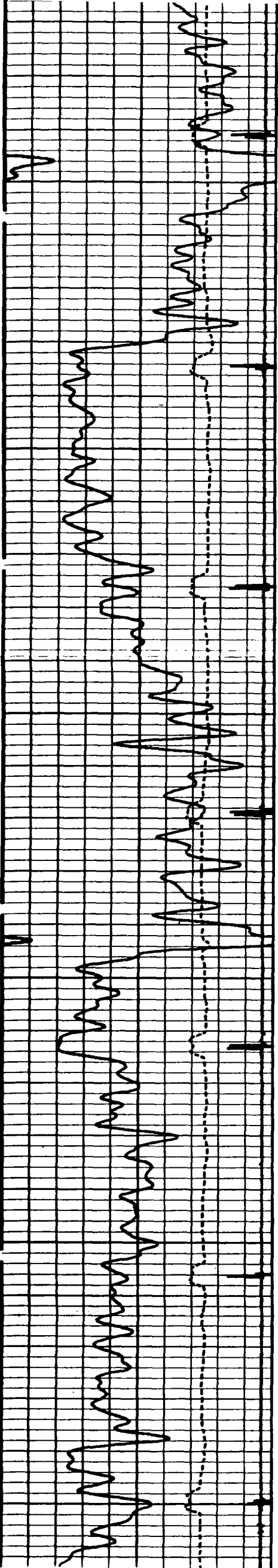
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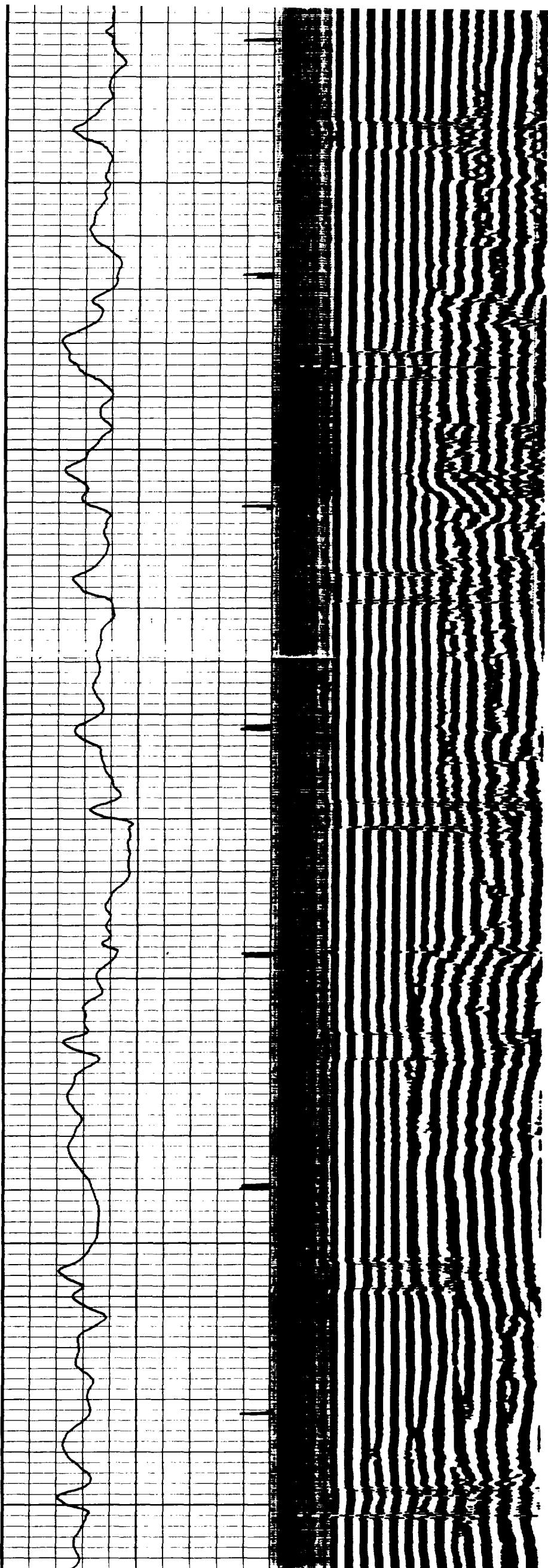
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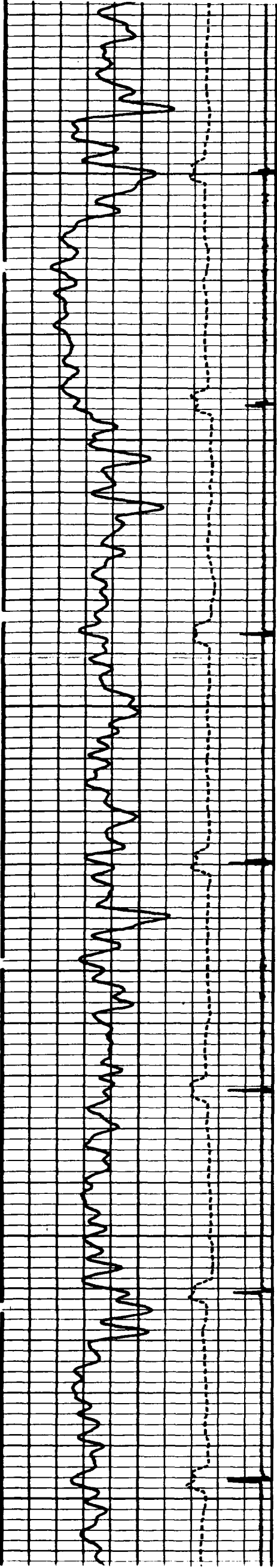
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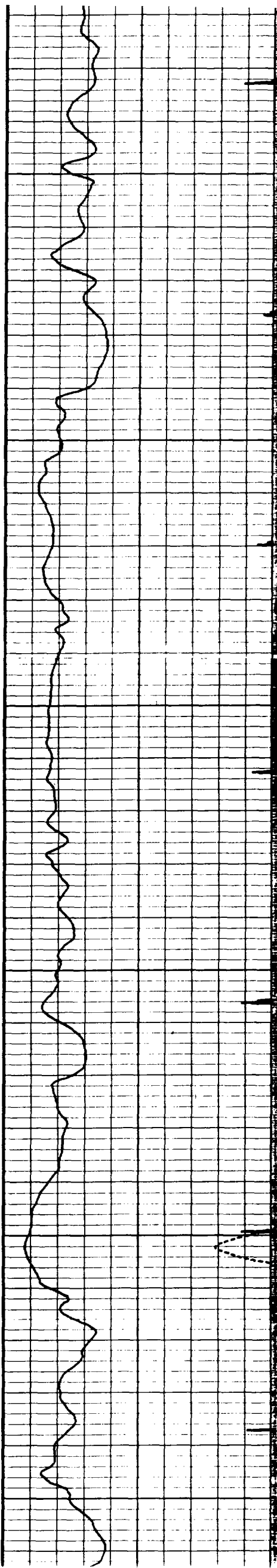
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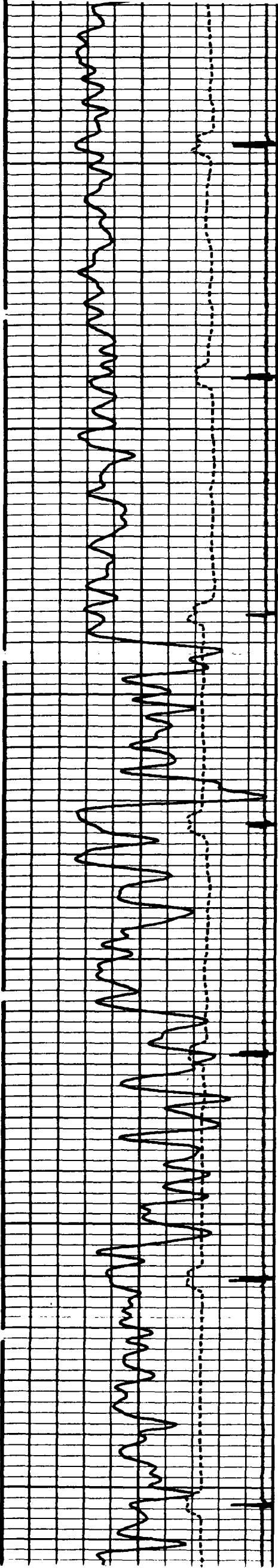
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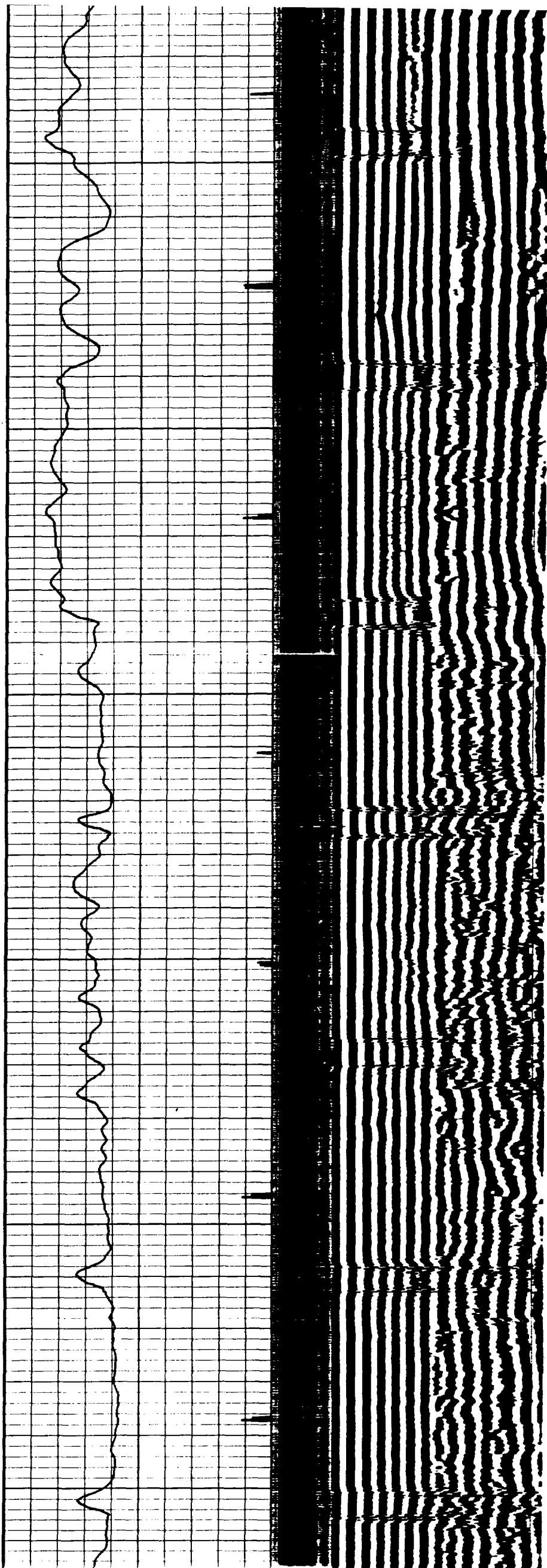
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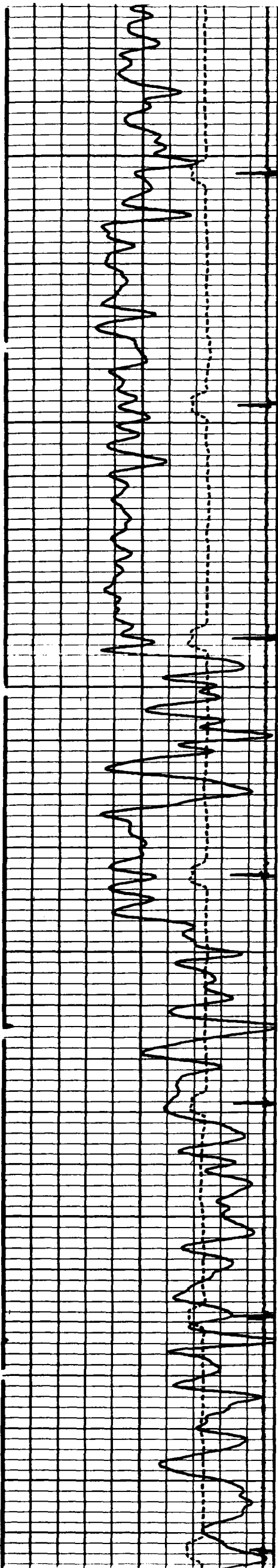
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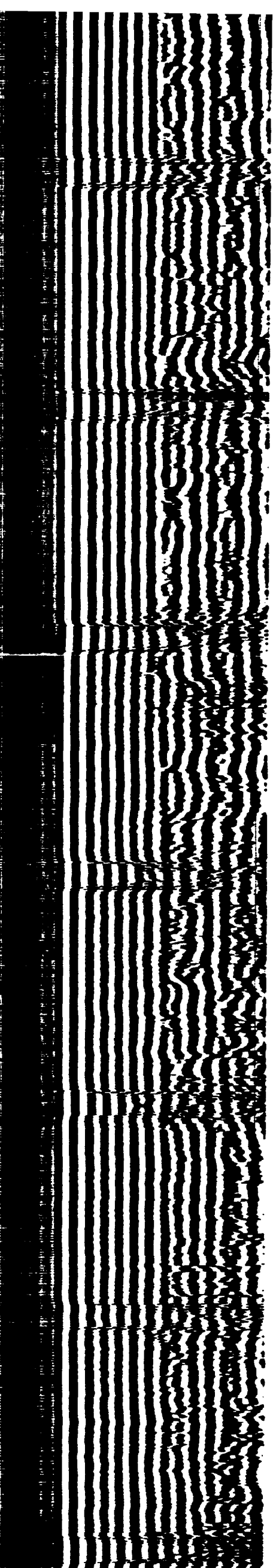
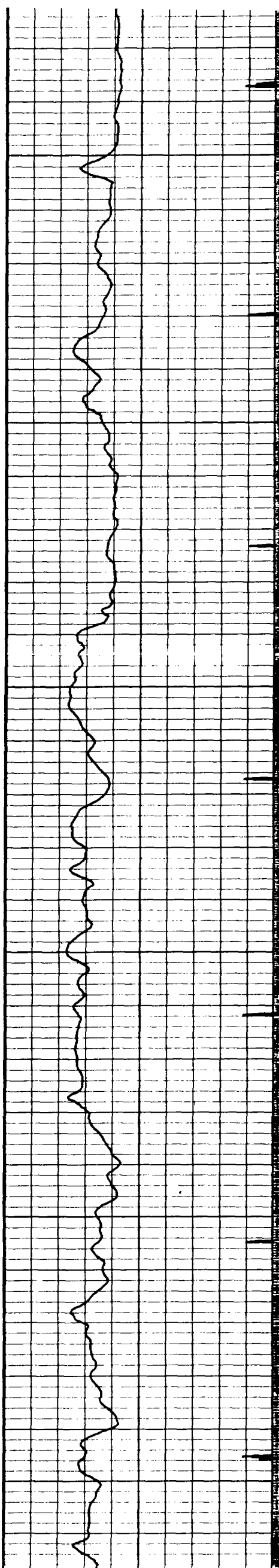
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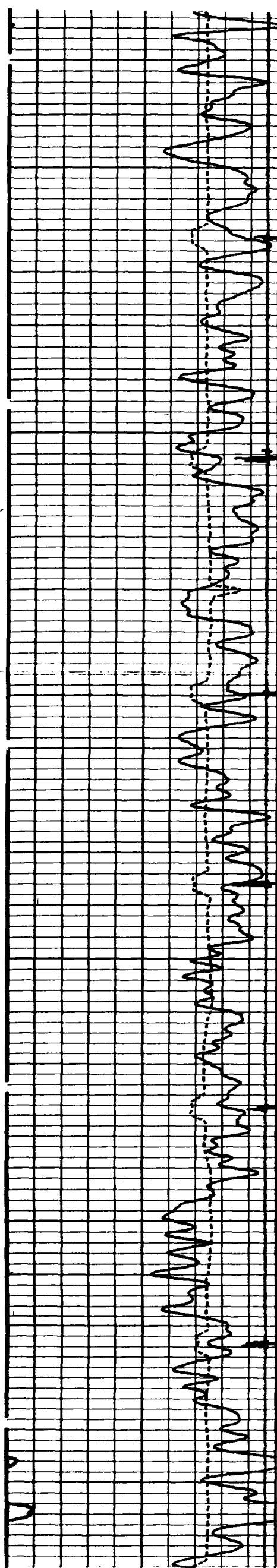
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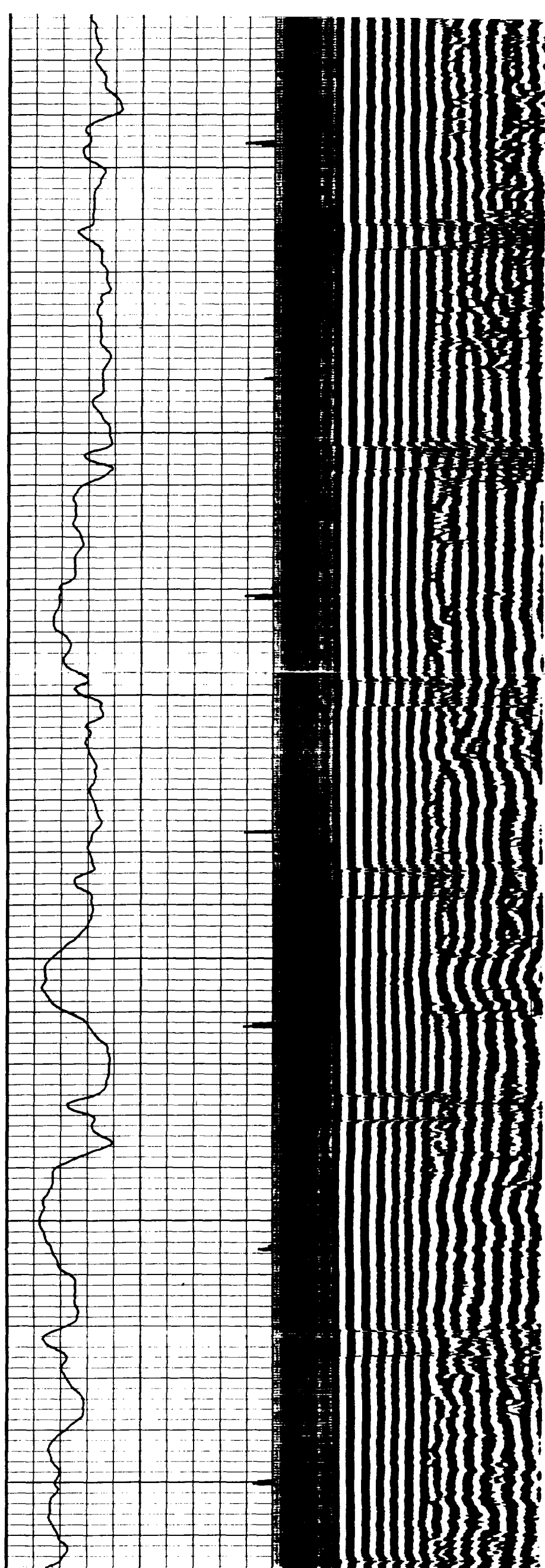
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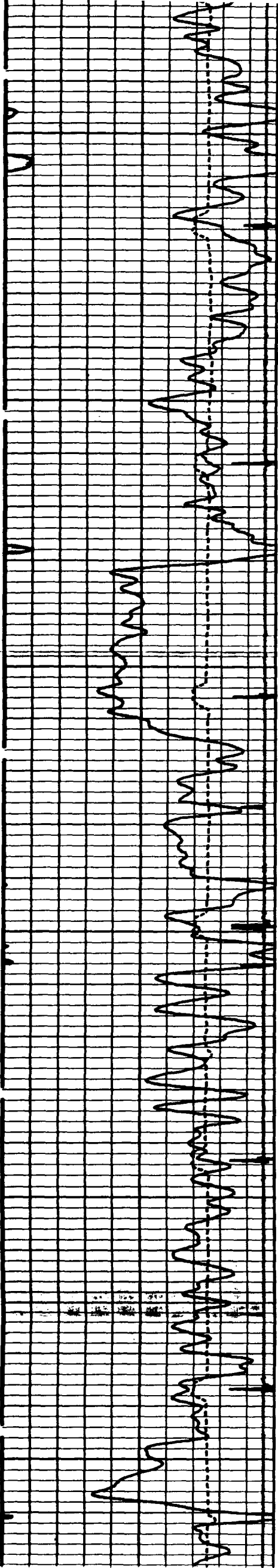
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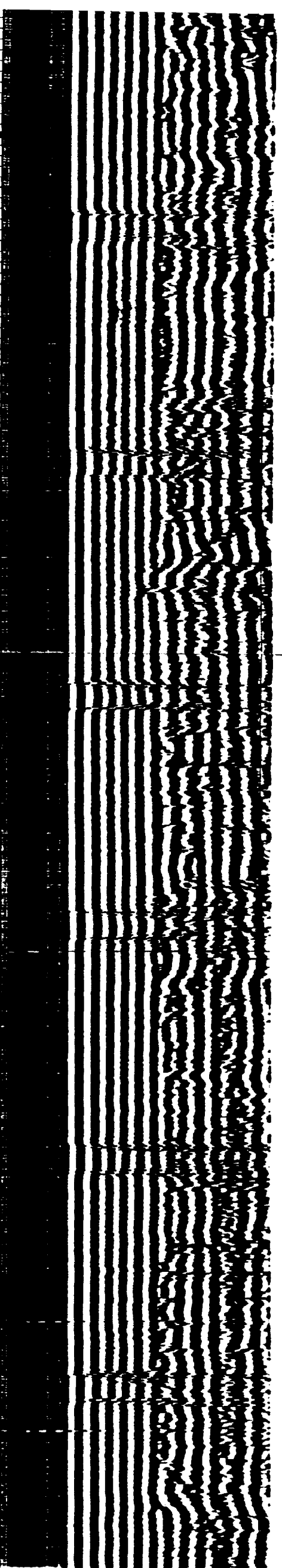
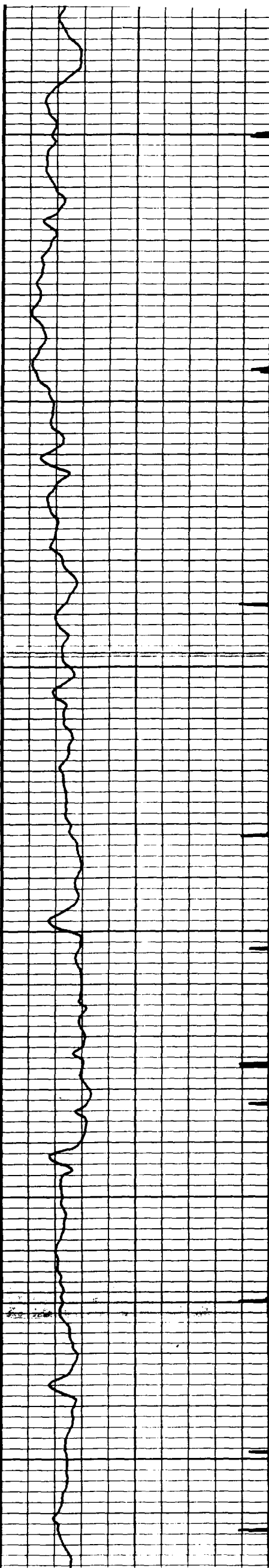
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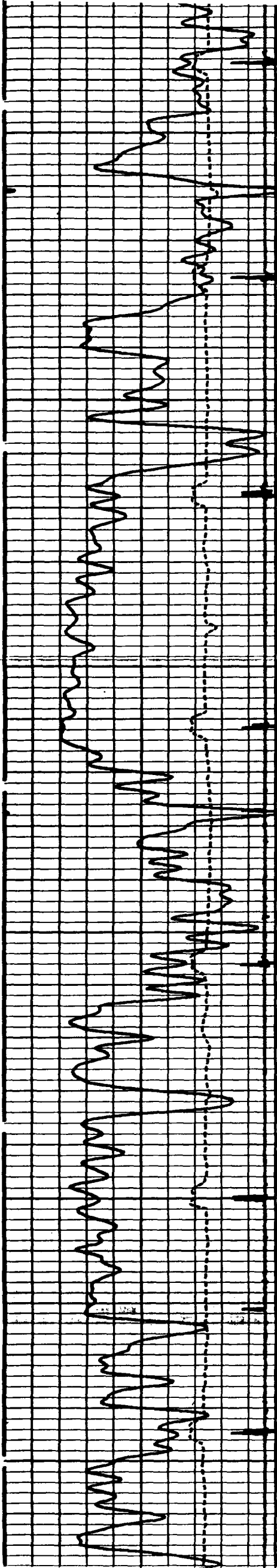
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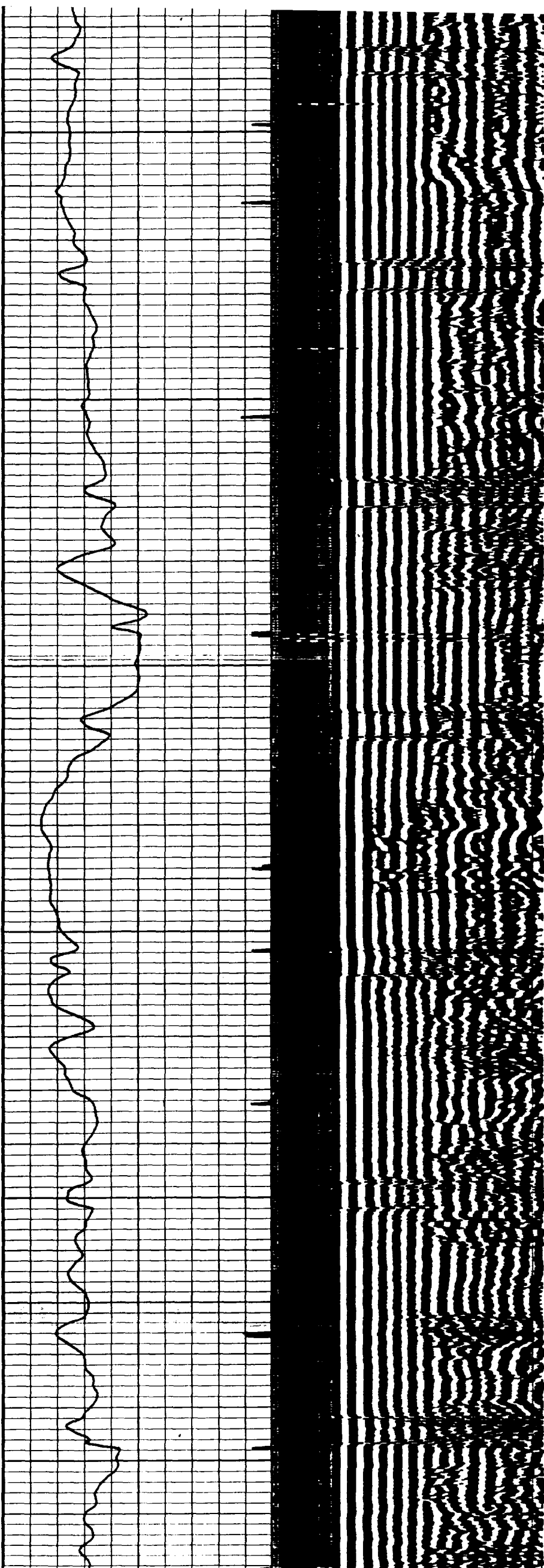
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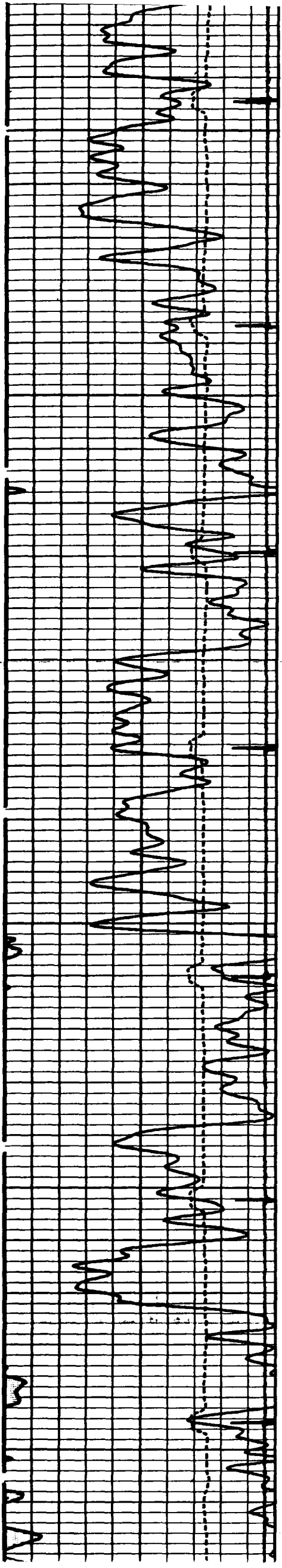
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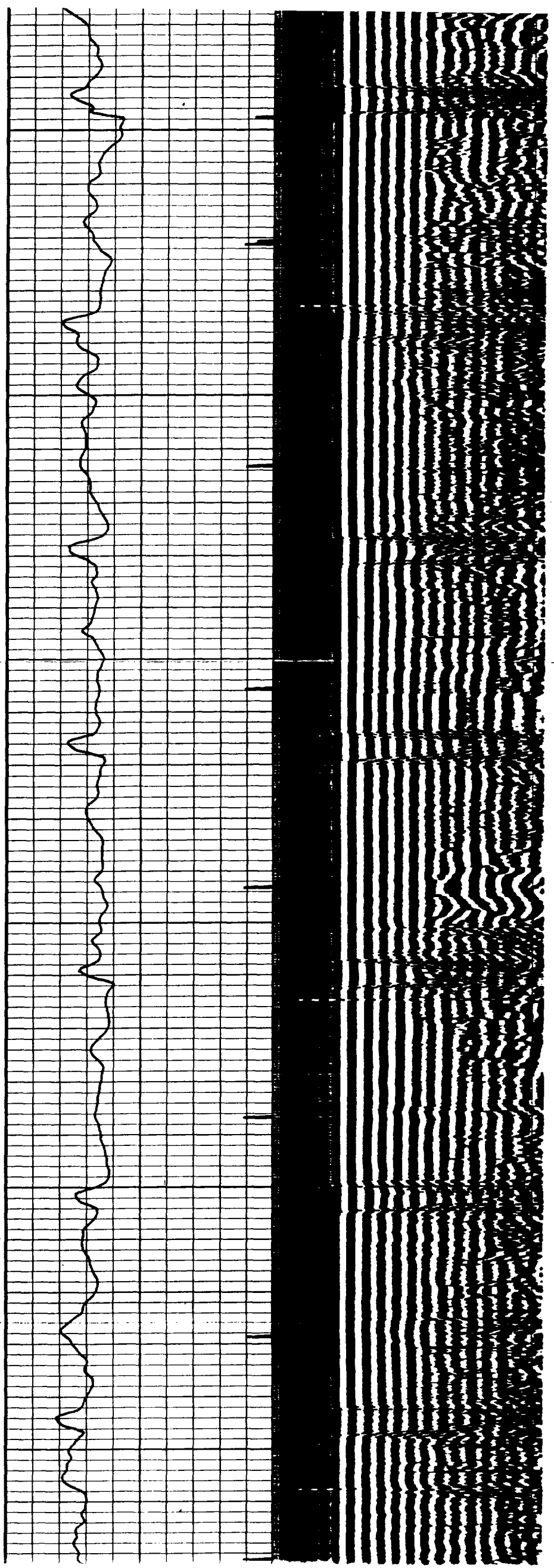
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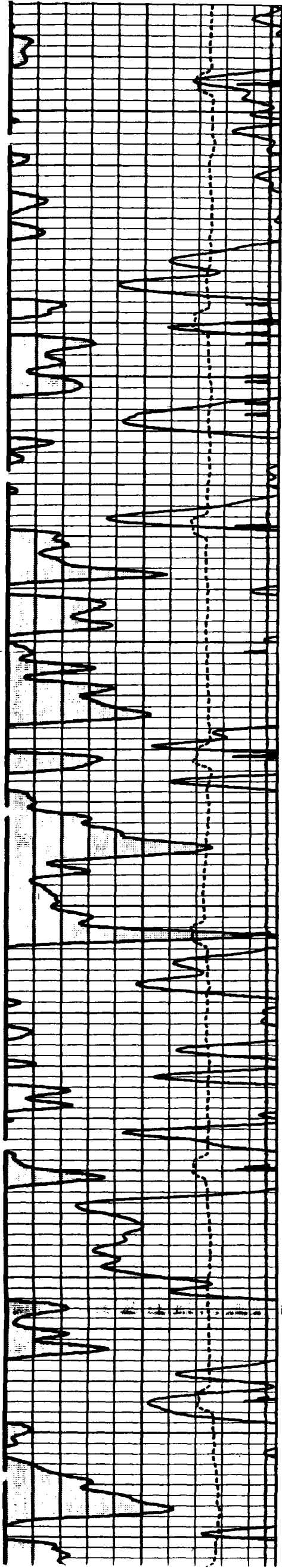
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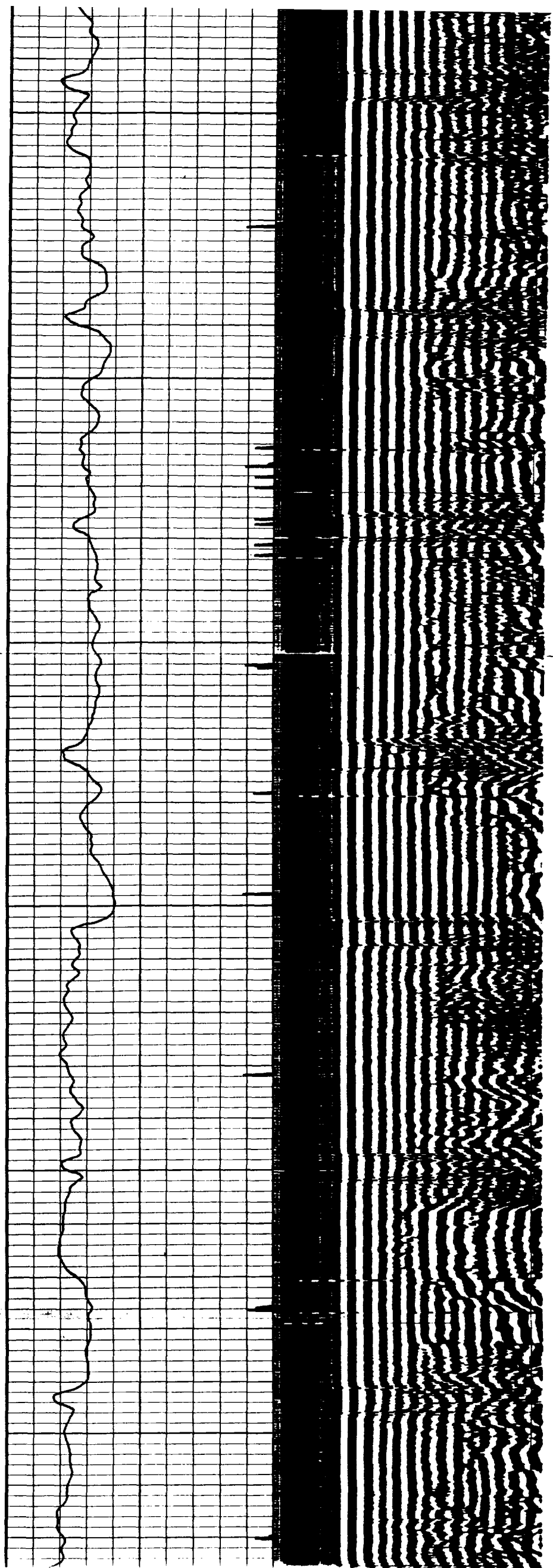
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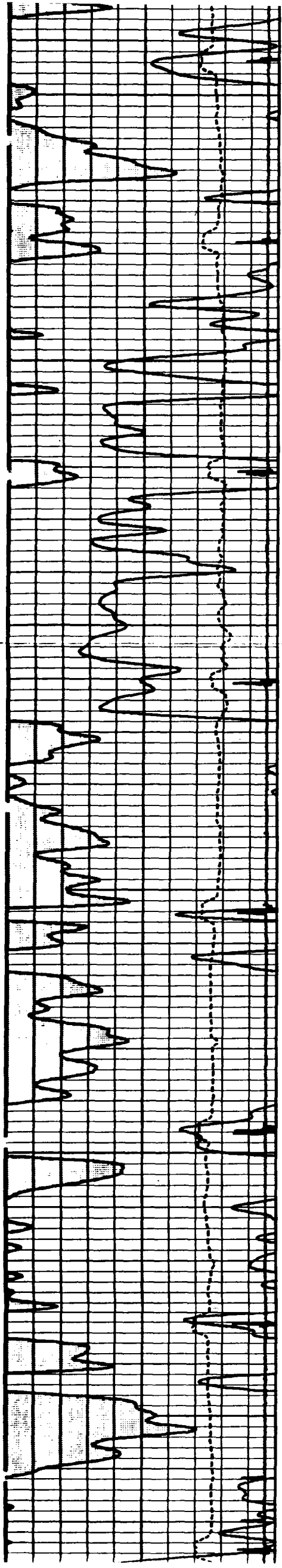
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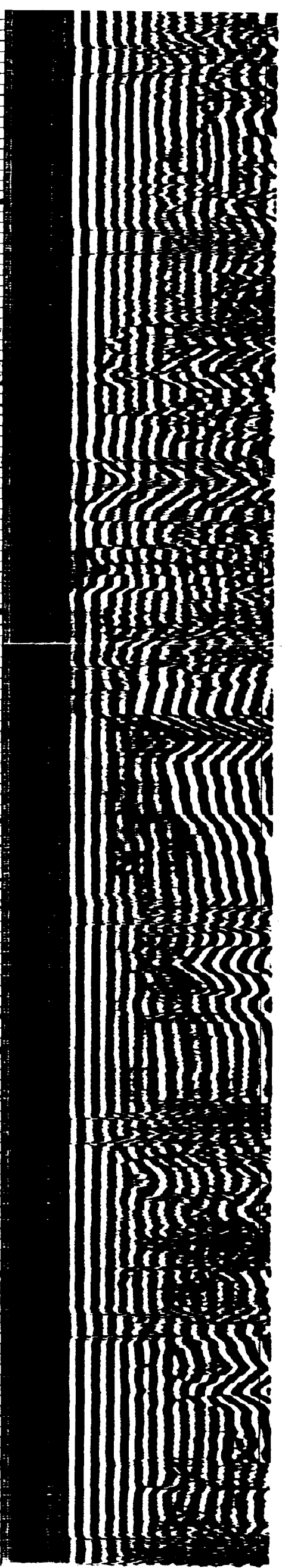
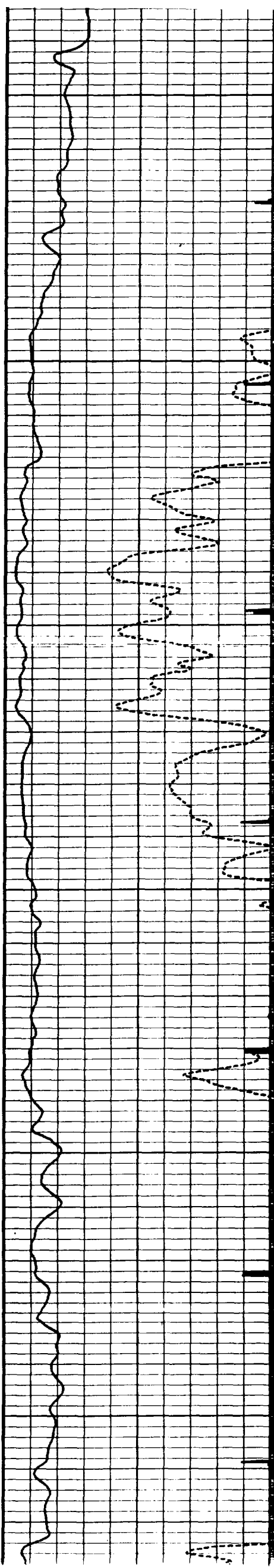
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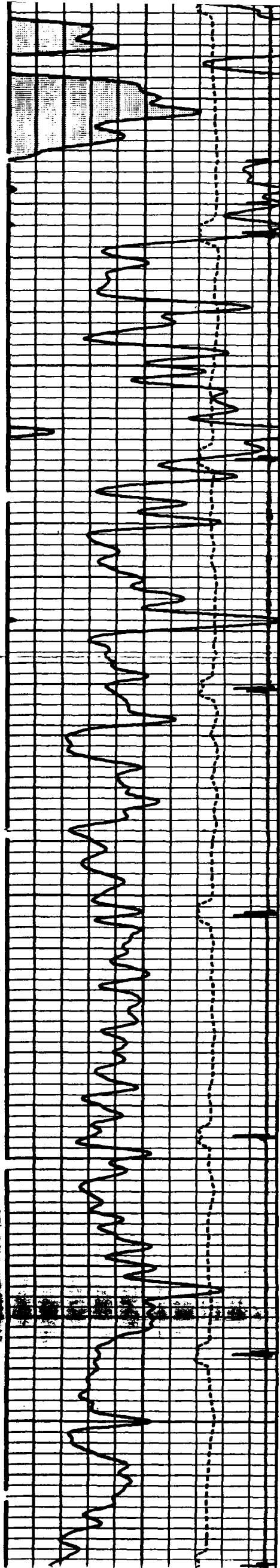
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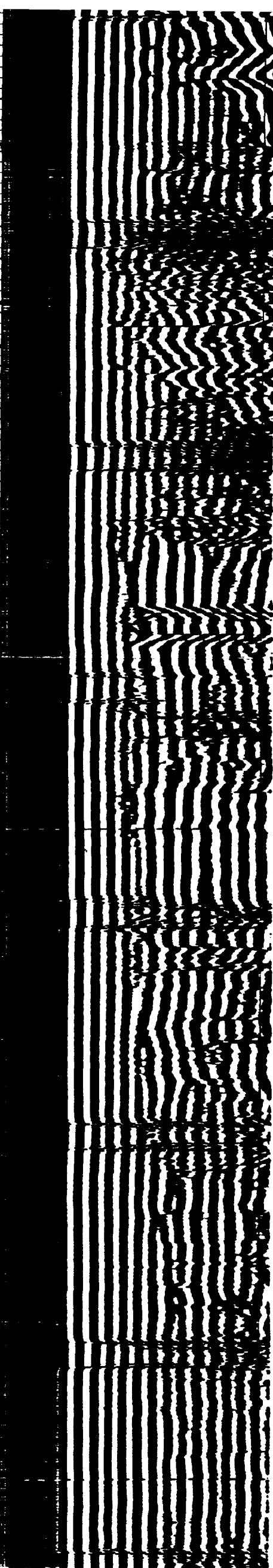
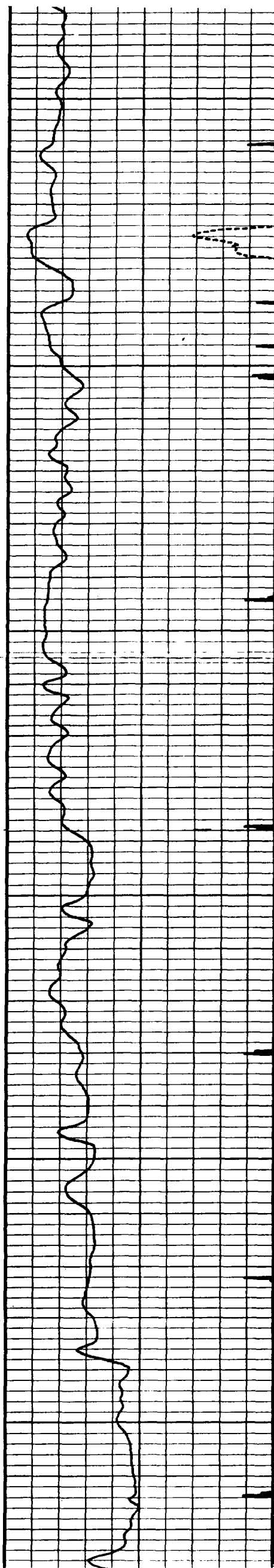
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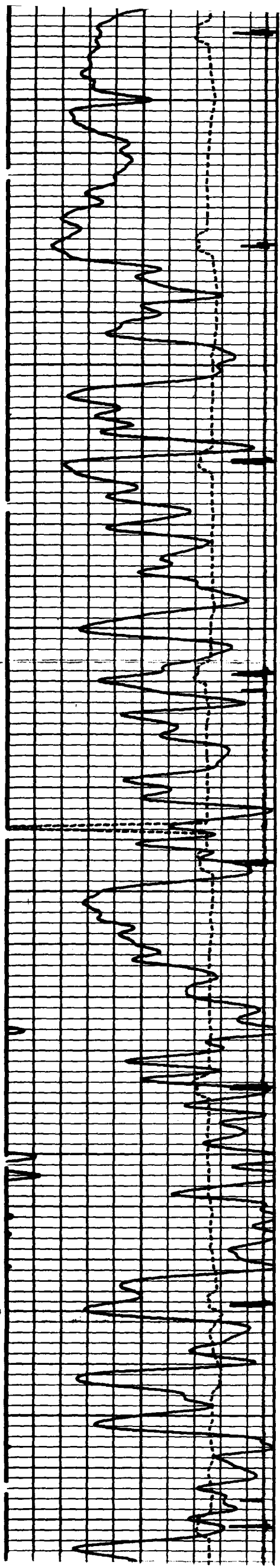
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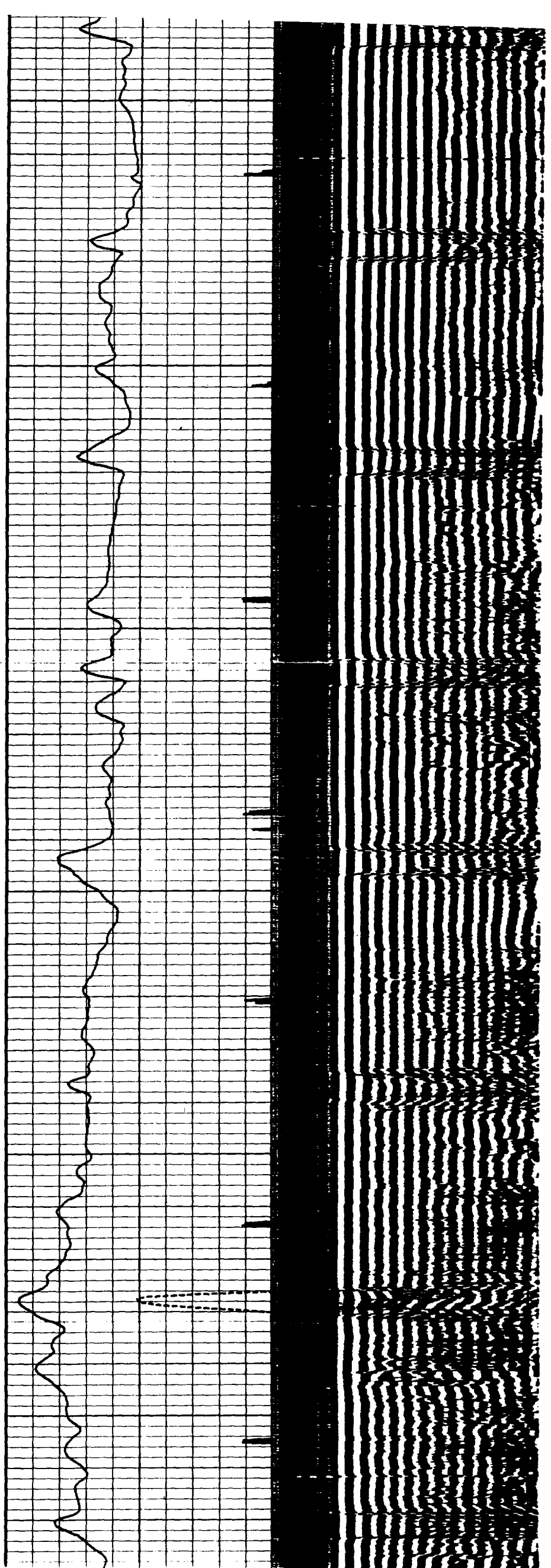
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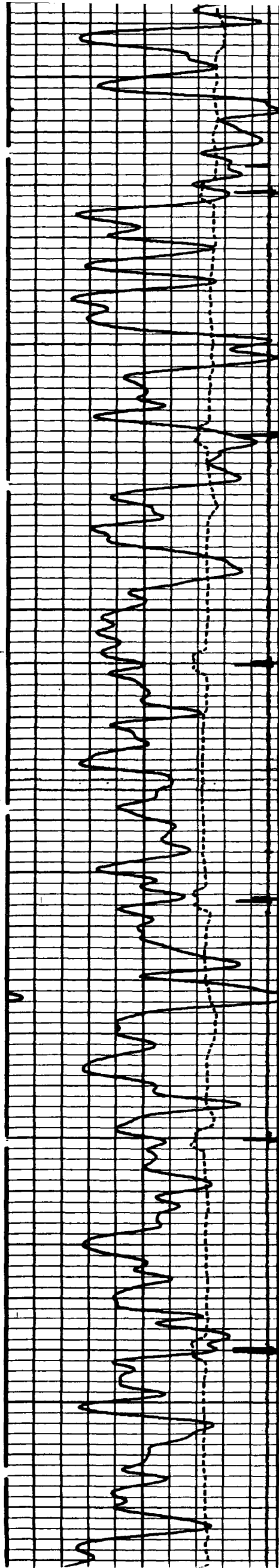
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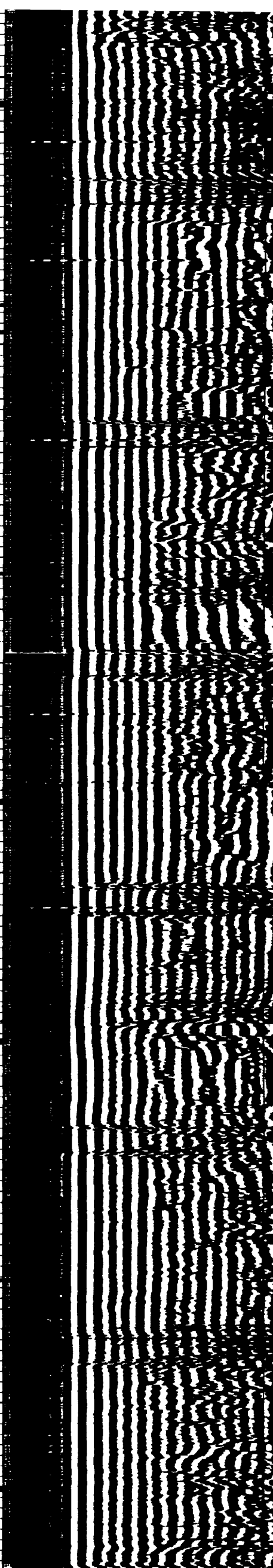
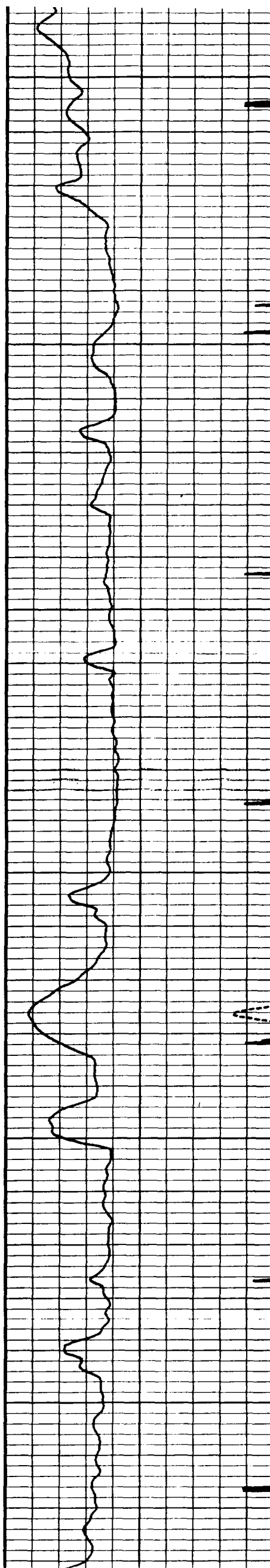
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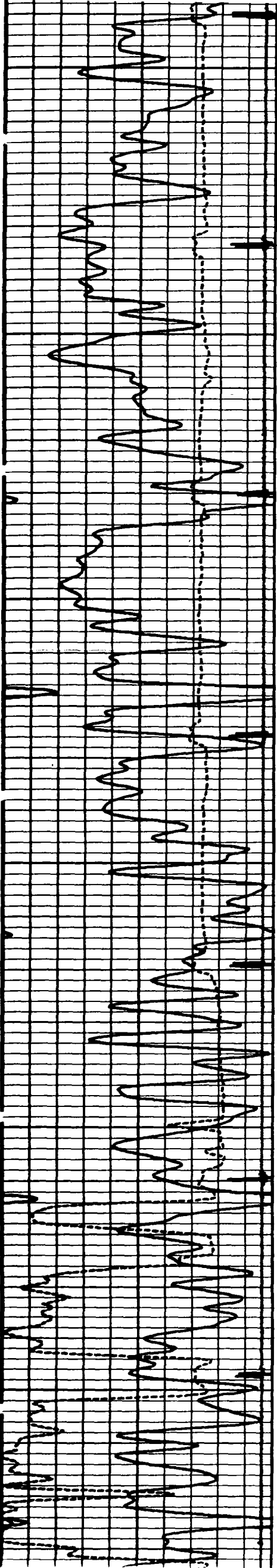
10650

10700

10750

10800





10800

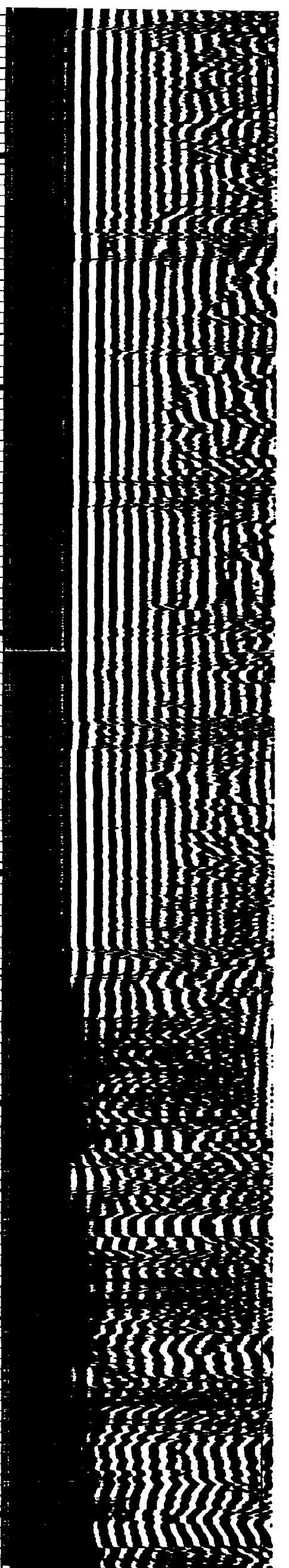
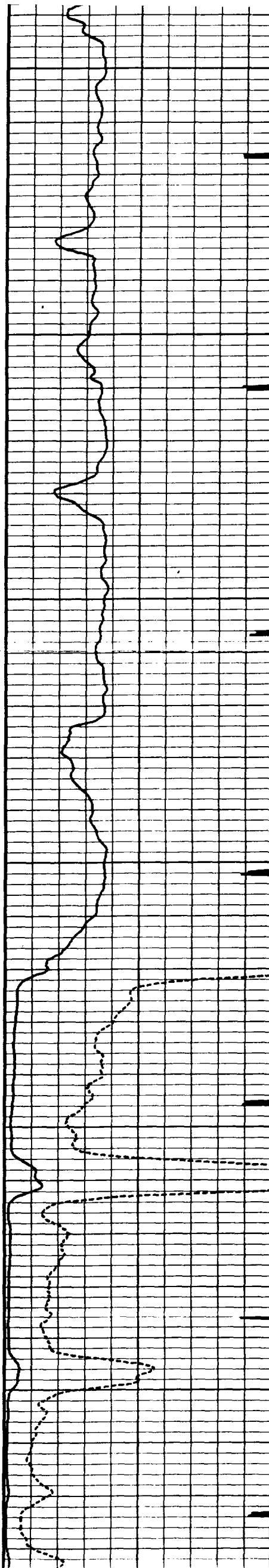
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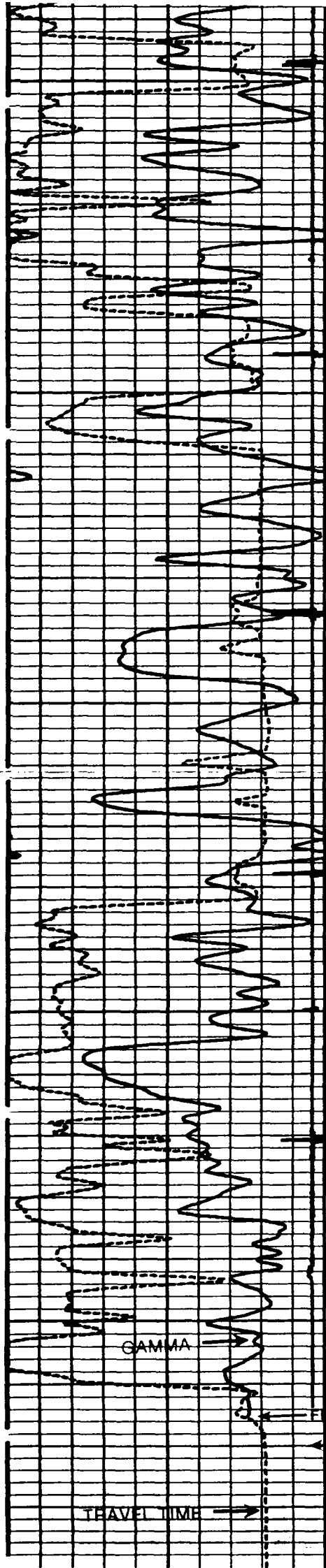
10900

10950

11000

11050





11050

11100

11150

11200

11250

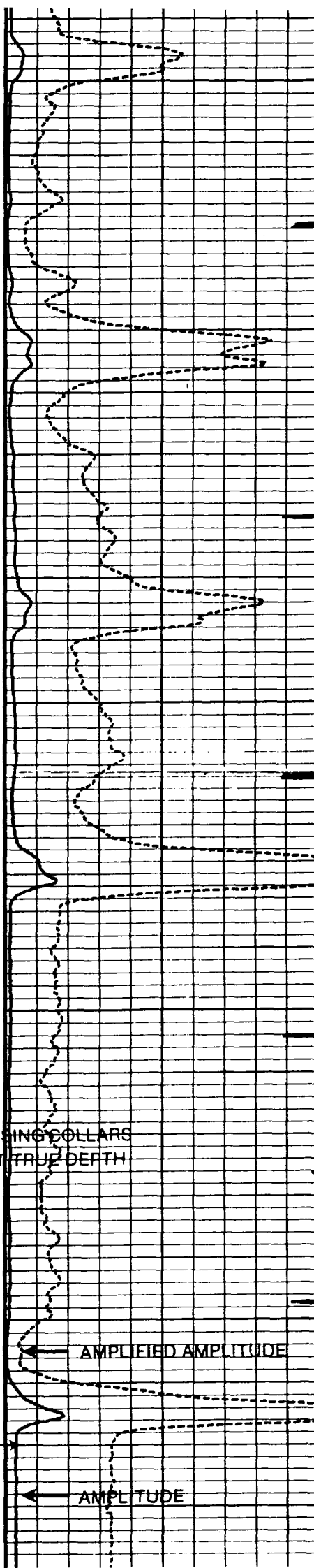
← CASING COLLARS
AT TRUE DEPTH

FR

TRAVEL TIME →

300 --- TRAVEL TIME --- 200 ---
USEC

COLLAR LOCATOR

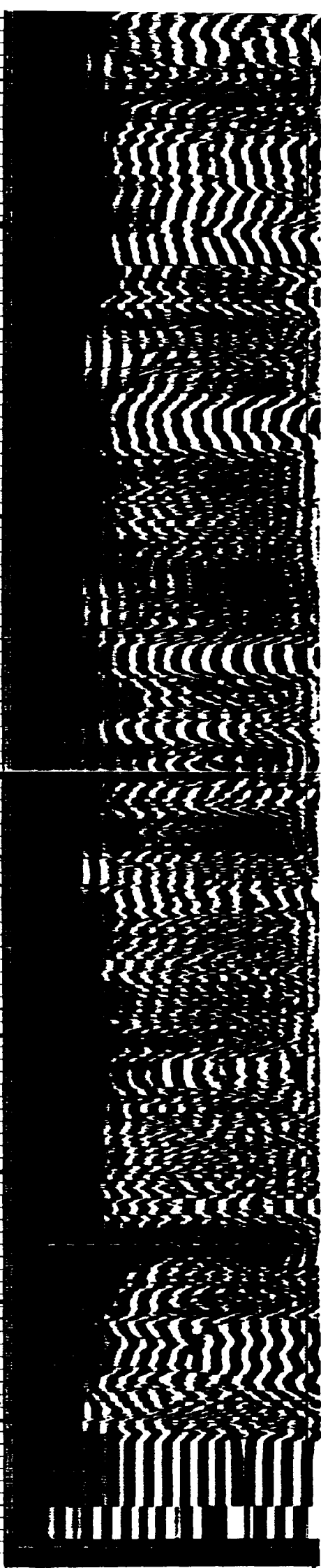


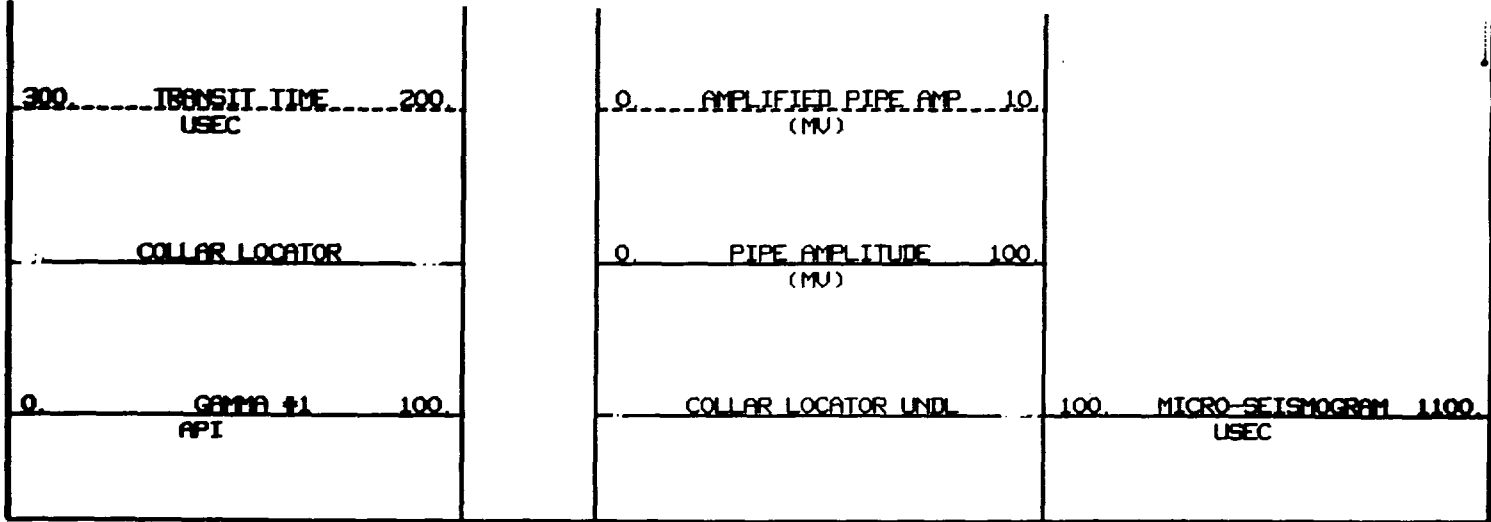
← AMPLIFIED AMPLITUDE

← AMPLITUDE

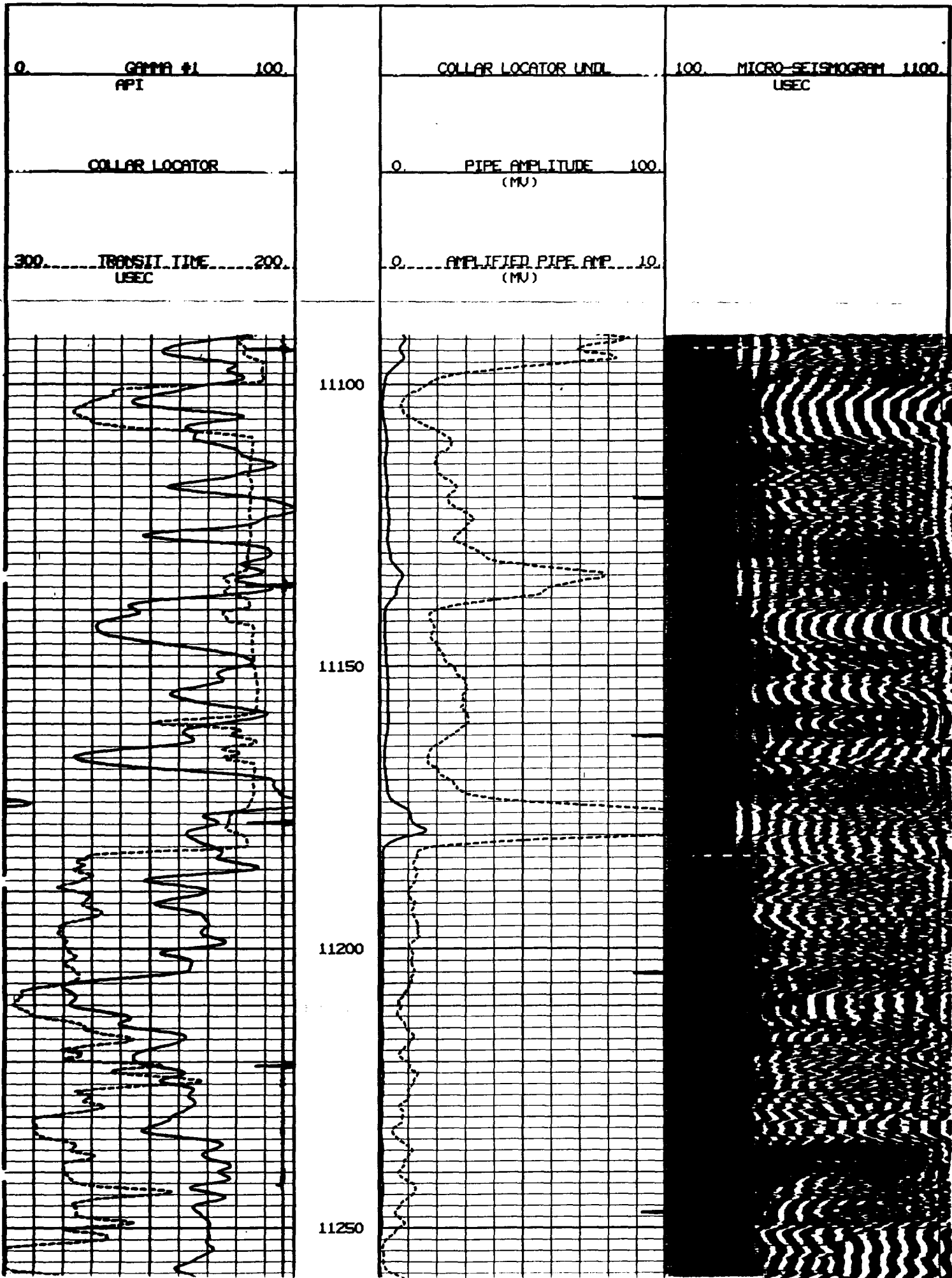
0 --- AMPLIFIED PIPE AMP --- 10 ---
(MV)

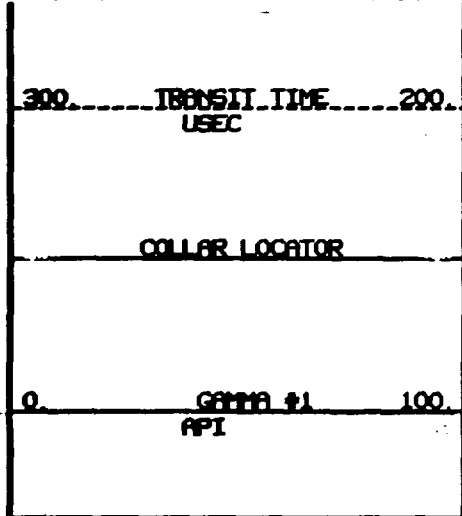
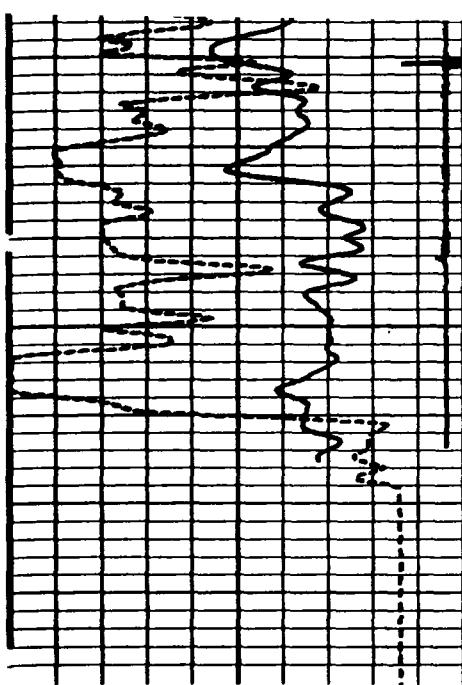
0 --- PIPE AMPLITUDE --- 100 ---
(MV)



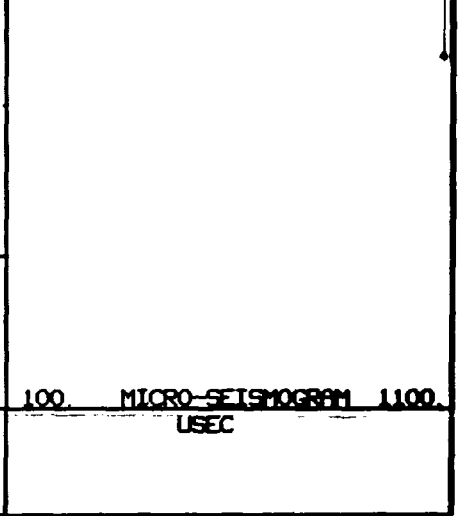
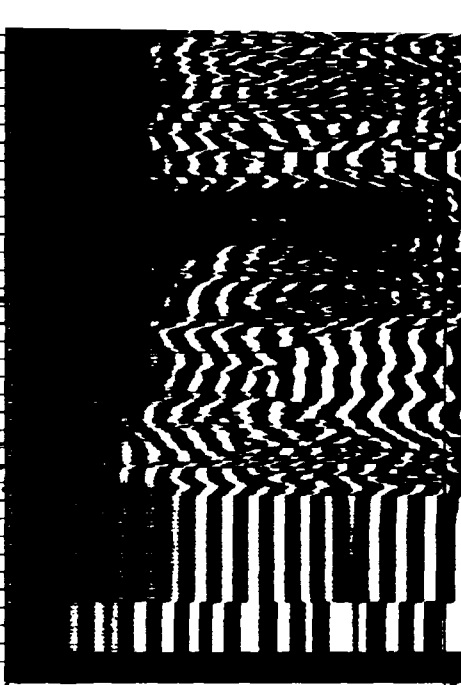
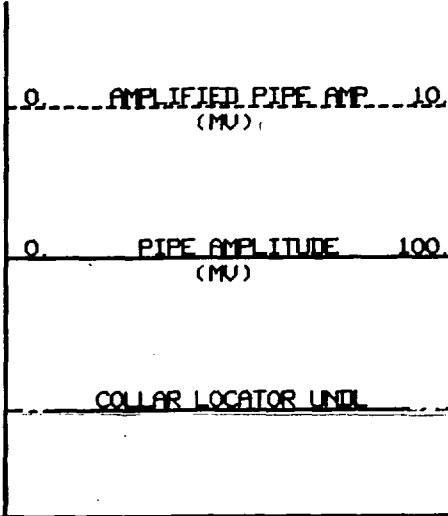
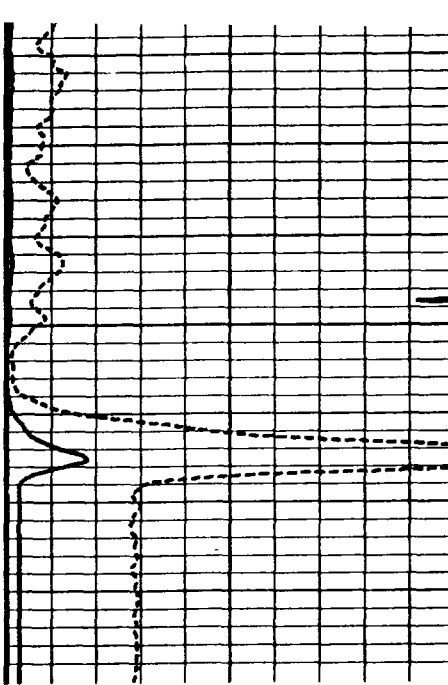


REPEAT SECTION





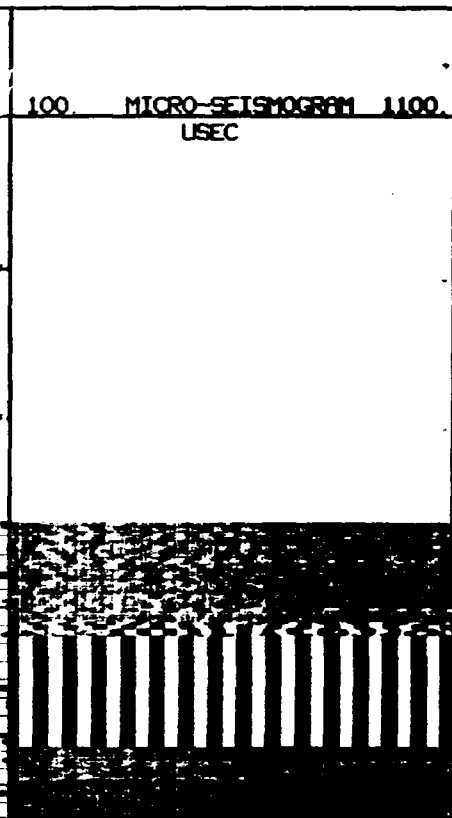
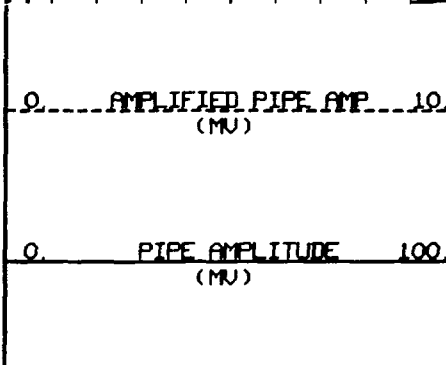
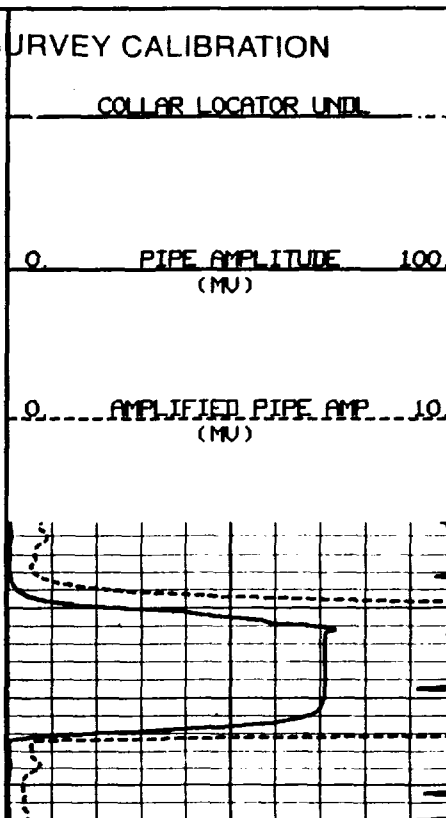
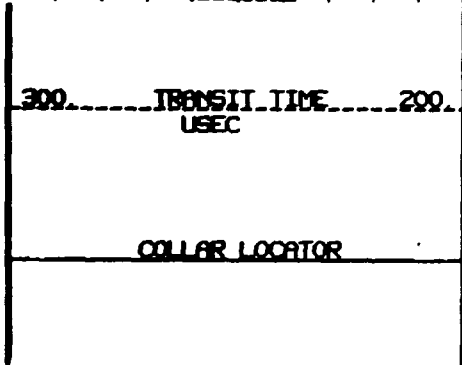
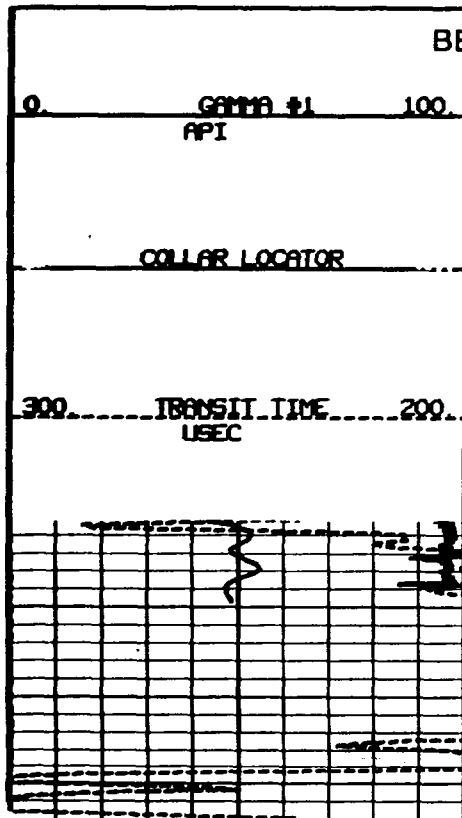
11250

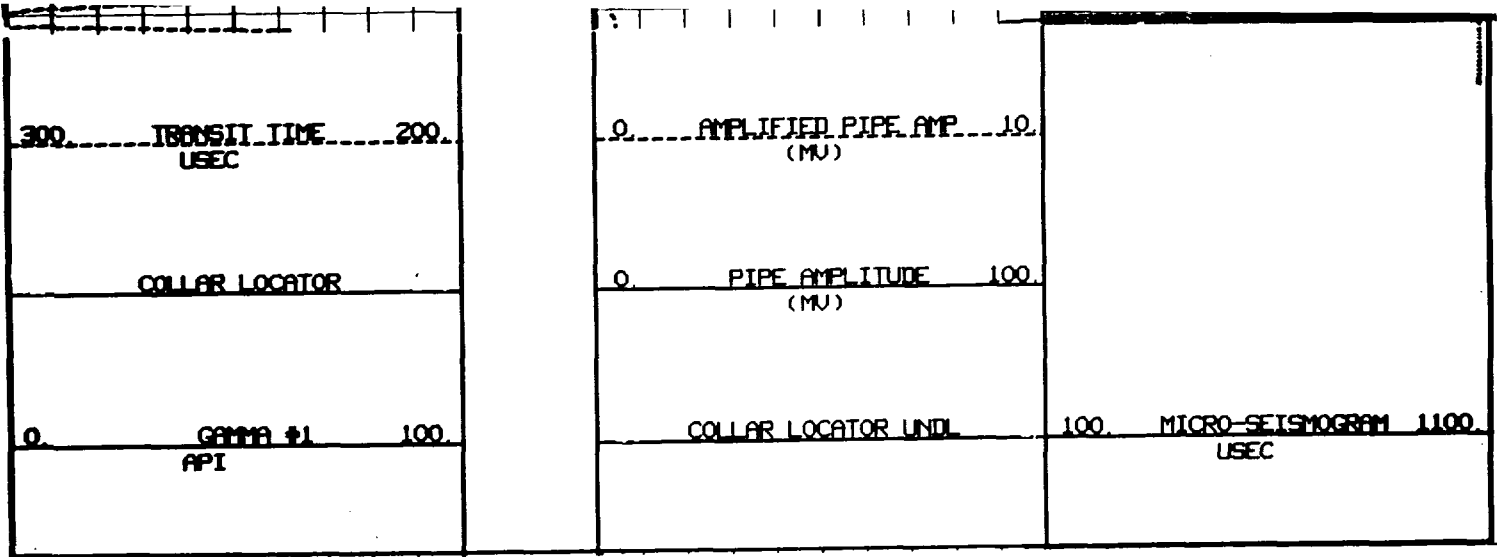


WELL LOCATION :

WELL NAME : GOVERNMENT "AB" #5

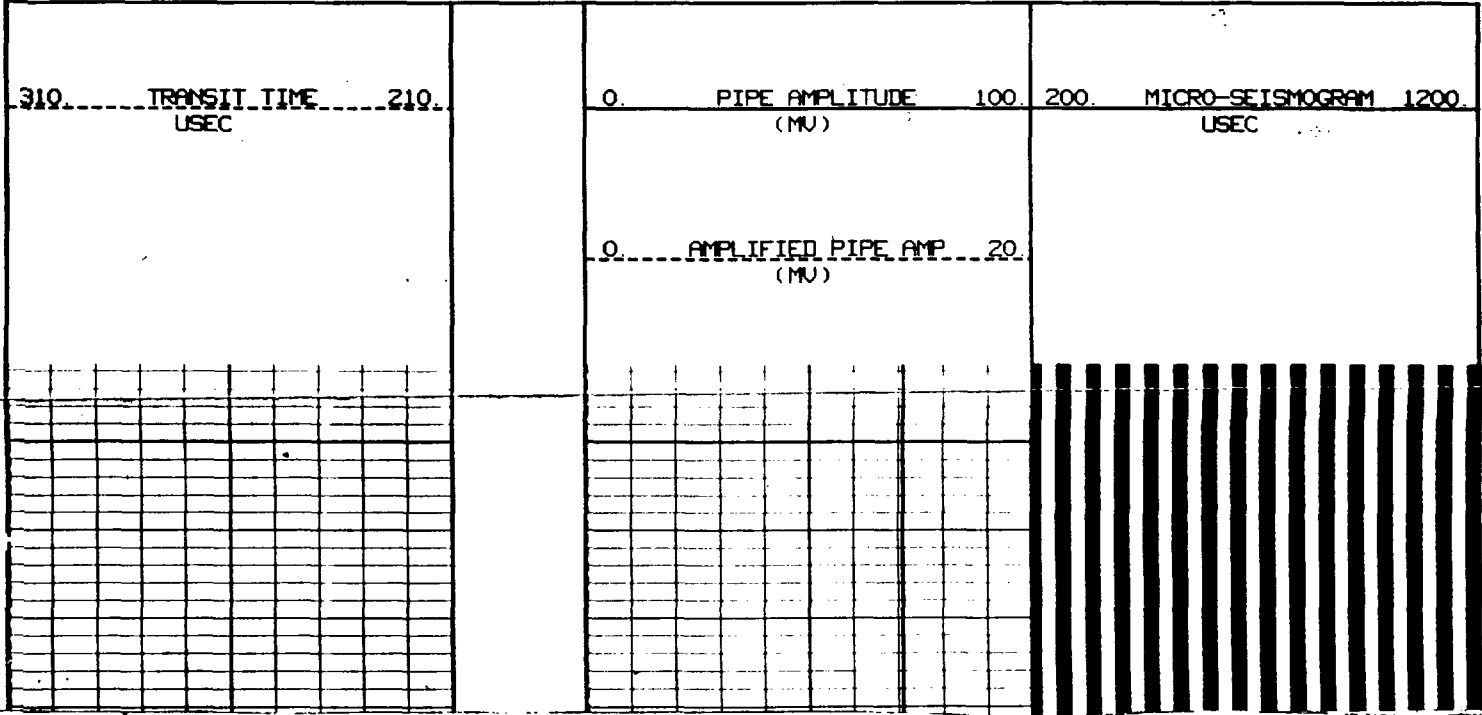
BEFORE SURVEY CALIBRATION





SHOP CALIBRATION

* INTERNAL CALIBRATION - CALIBRATED TO OSCILLATOR



* FREE PIPE WITH A VALUE OF 71.0 PIPE UNITS. TOOL WAS CALIBRATED IN 5.5 INCH CASING WITH 300 PSI ON CASING.

