Case No.
54444

Large Exhibits

U.S.N.C.F. MICROGRAPHICS

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Schlumberger

COMPOSITE BOREHOLE COMPENSATED SONIC-COMPENSATED NEUTRON AND COMPENSATED NEUTRON-FORMATION DENSITY

COMPANY GULF OIL COMPANY - U.S.
C&K Pet. Inc. - Operator
WELL HAROLD OLIVE COM. #1
FIELD S. CARLSBAD
COUNTY EDDY STATE: NEW MEXICO
Location: 660' FSL & 1980' FEL, SEC 14, TWP 22-S, RGE 26-E
Other Services: DLL

COUNTY EDDY
STATE NEW MEXICO
FIELD S. CARLSBAD
LOCATION HAROLD OLIVE COM.
WELL HAROLD OLIVE COM. #1
COMPANY GULF OIL CO.-U.S.

Permanent Datum: G.L. Elev. 3188
Log Measured From: K.B. 19 Ft. Above Perm. Datum
Drilling Measured From: K.B.
Elev.: K.B. 3207 D.F. G.L. 3188

Date	12-11-73	1-15-74				
Run No.	ONE (BHC-CNL	TWO (CNL-FDC)				
Depth-Driller	9706	11720				
Depth-Logger	9771	11703				
Btm. Log Interval	9764	11699				
Top Log Interval	150	9764				
Casing-Driller	9 5/8@5125	9 5/8@5123	@		@	
Casing-Logger	5311	5311				
Bit Size	8 1/8	8 1/8				
Type Fluid in Hole	BRINE	SALT MUD				
Fluid Level	130	FULL				
Visc.	36	37				
Fluid Loss	17 ml	8.5 ml		ml		ml
Source of Sample	PIT	FLOWLINE				
Rm. @ Meas. Temp.	.046@75 °F	.052@65 °F	@ °F		@ °F	
Rmf @ Meas. Temp.	.043@75 °F	.055@65 °F	@ °F		@ °F	
Rmc @ Meas. Temp.	@ °F	.07 @65 °F	@ °F		@ °F	
Source: Rmf / Rmc	M	M				
Rm @ BHT	.026@155 °F	.023@170 °F	@ °F		@ °F	
Time Since Circ.	4 HOURS	7 HOURS				
Max. Rec. Temp.	155 °F	170 °F		°F		°F
Equip. Location	7627 HOBBS	7645 HOBBS				
Recorded By	BIRKHEAD	J.R. WILSON				
Witnessed By	FOLTZ	FOLTZ				

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLE SCALE CHANGES

Run No.	Date	Depth	Type Log	Type Fluid	Density	Viscosity	pH	Fluid Loss	Source of Sample	Rm @ Meas. Temp.	Rmf @ Meas. Temp.	Rmc @ Meas. Temp.	Rm @ BHT	Time Since Circ.	Max. Rec. Temp.	Equip. Location	Recorded By	Witnessed By

Scale Down Hole
Scale Up Hole

RUN NO.

LOGGING DATA

	Bit	Mud Wt.	Visc.	Fluid Loss	Source of Sample	Rm @ Meas. Temp.	Rmf @ Meas. Temp.	Rmc @ Meas. Temp.	Rm @ BHT	Time Since Circ.	Max. Rec. Temp.	Equip. Location	Recorded By	Witnessed By
1														
2														
3														
4														

CASING RECORD

No.	Bit Size	Type Fluid	From	To
1	17½		SURF	525
2	12¼		525	5325
3	8⅛		5325	11720
4				

Run No.	Date	Depth-Driller	Depth-Logger	Bottom Log Interval	Top Log Interval	Casing-Driller	Casing-Logger	Bit Size	Type Fluid in Hole	Dens.	Visc.	pH	Fluid Loss	Source of Sample	Rm @ Meas. Temp.	Rmf @ Meas. Temp.	Rmc @ Meas. Temp.	Rm @ BHT	Time Since Circ.	Max. Rec. Temp.	Equip. Location	Recorded By	Witnessed By
ONE	12-11-73	9706	9771	9764	150	9 5/8@5125	5311	8 1/8	BRINE	10.4	36	9	17 ml	PIT	.046@75 °F	.043@75 °F	@ °F	.026@155 °F	4 HOURS	155 °F	7627 HOBBS	BIRKHEAD	FOLTZ
TWO	1-15-74	11720	11703	11699	9764	9 5/8@5123	5311	8 1/8	SALT MUD	10.4	37	8.5	14 ml	FLOWLINE	.052@65 °F	.055@65 °F	.07 @65 °F	.023@170 °F	7 HOURS	170 °F	7645 HOBBS	J.R. WILSON	FOLTZ

Run No.	Bit Size	Type Fluid	From	To
1	17½		SURF	525
2	12¼		525	5325
3	8⅛		5325	11720
4				

Run No.	Hole Size Size Conn.	Weight	Viscosity	Fluid Loss	From	To
ONE	8⅛	9.5	36	17	5300	9706
TWO	8⅛	10.0	37	14	9706	11720

Run No.	Density Type	Density Scale	From	To
ONE - CNL-FDC	CNL	5	150	9764
	FDC	5	9764	11720

Run No.	Hole Bsd Size	Density Scale	From	To
TWO - CNL-FDC	8⅛	5	9764	11720

REMARKS
Service Ticket No.: 1103
RUN #1 - BOTH CNL-FDC AND DLL BY DRILLER.
RUN #2 - CNL-FDC RECORDED 2" SHALLOW.
MEASUREMENTS: CALIPER RECORDED.

RUN #2 - GR ON REPEAT RUN ON 30 - 130 API.

CALIBRATION DATA

No.	API Units	Gamma Ray Background CPS	Gamma Ray Total CPS
1	0	20	130
2	165	240	530
3			
4			

No.	Long Spacing	Chl. Salinity Ppm NaCl
1	420	5200
2	520	4000
3	620	3000
4		

No.	Short Spacing	Chl. Salinity Ppm NaCl
1	420	5200
2	520	4000
3	620	3000
4		

No.	FDC — Matrix Log — ACPS	FDC — Matrix Log — ACPS
1	P_f	P_f
2	1.71	1.71
3	496	496
4	812	812

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

INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT
t_f 3 n 2 x_f
40 70 100 130 160

SONIC POROSITY INDEX %
-15 0 15 30 45

DEPTHS (RUN 1 CNL)

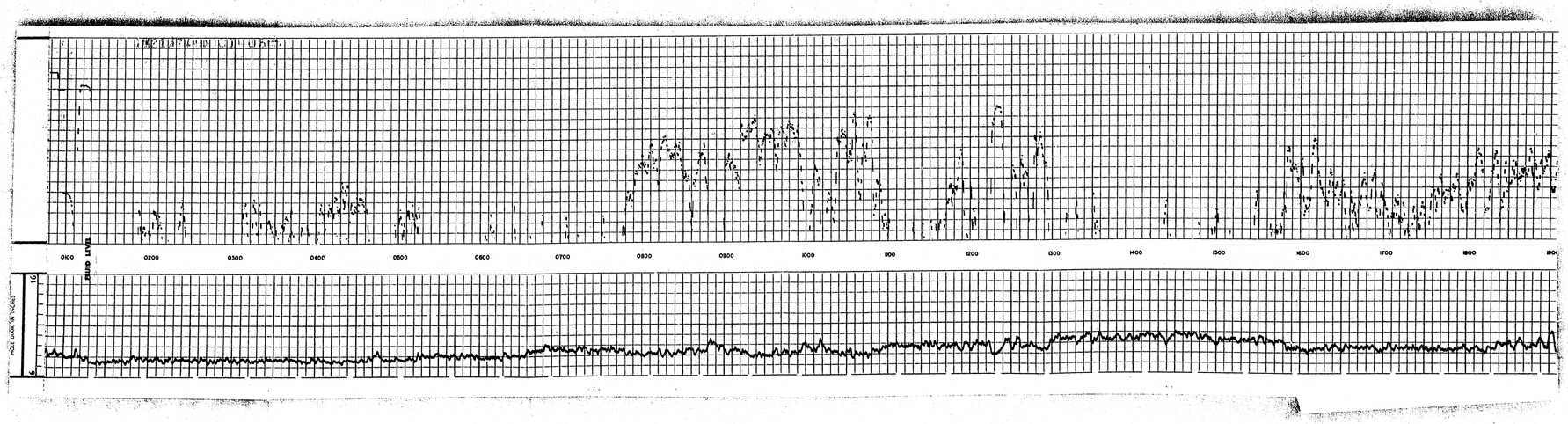
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FLUID LEVEL

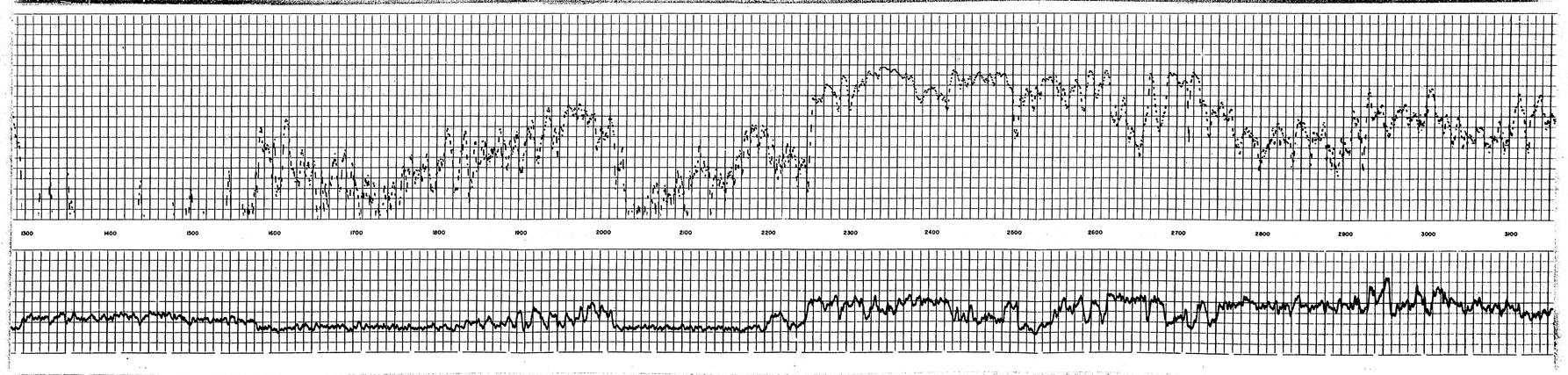
GAMMA RAY
API UNITS
0 100 200

CALIPER
HOLE DIAMETER IN INCHES
6 16

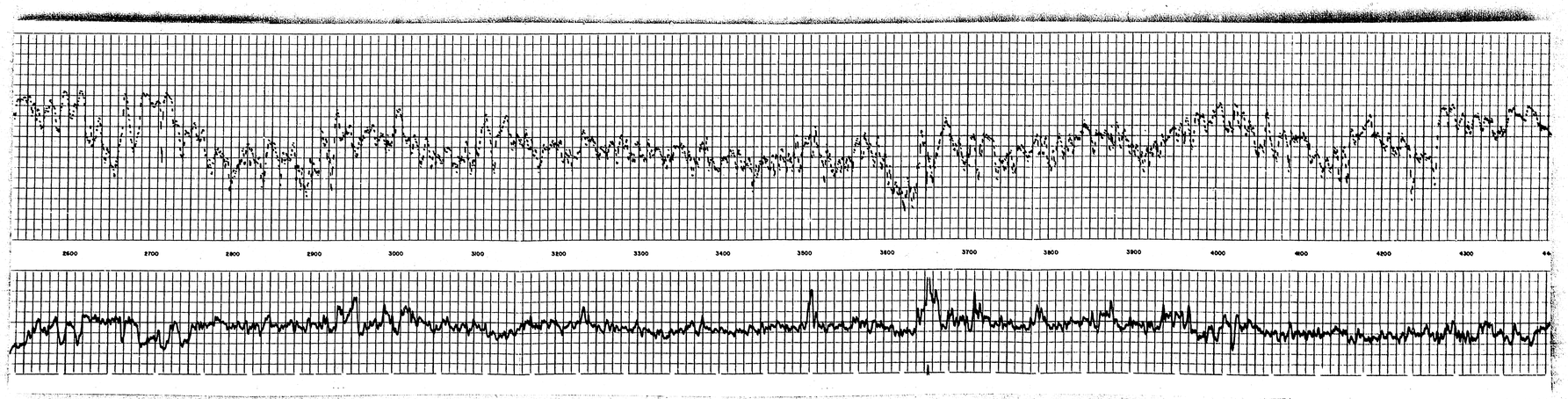
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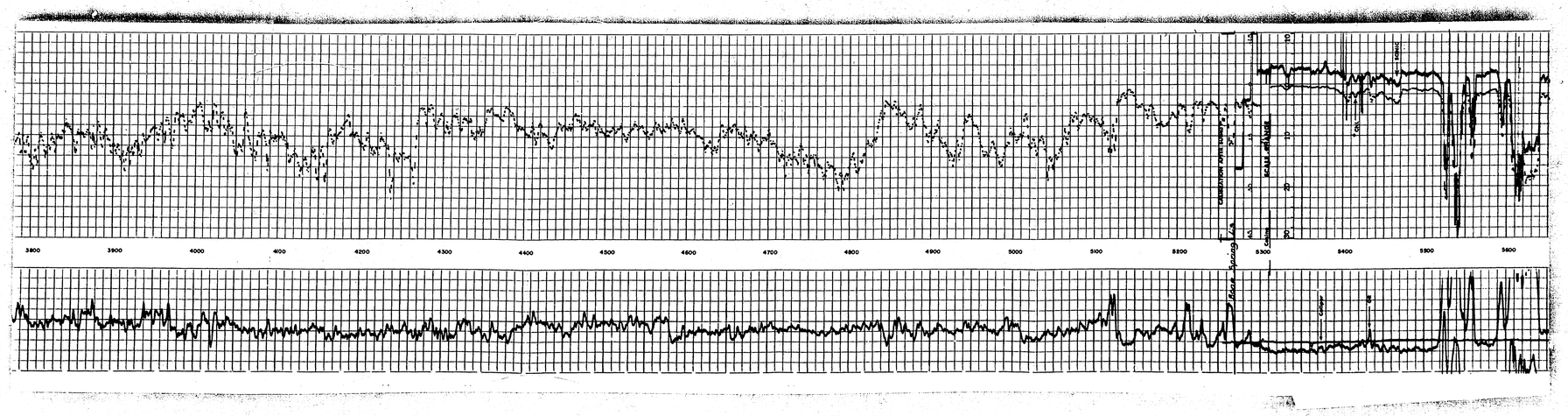


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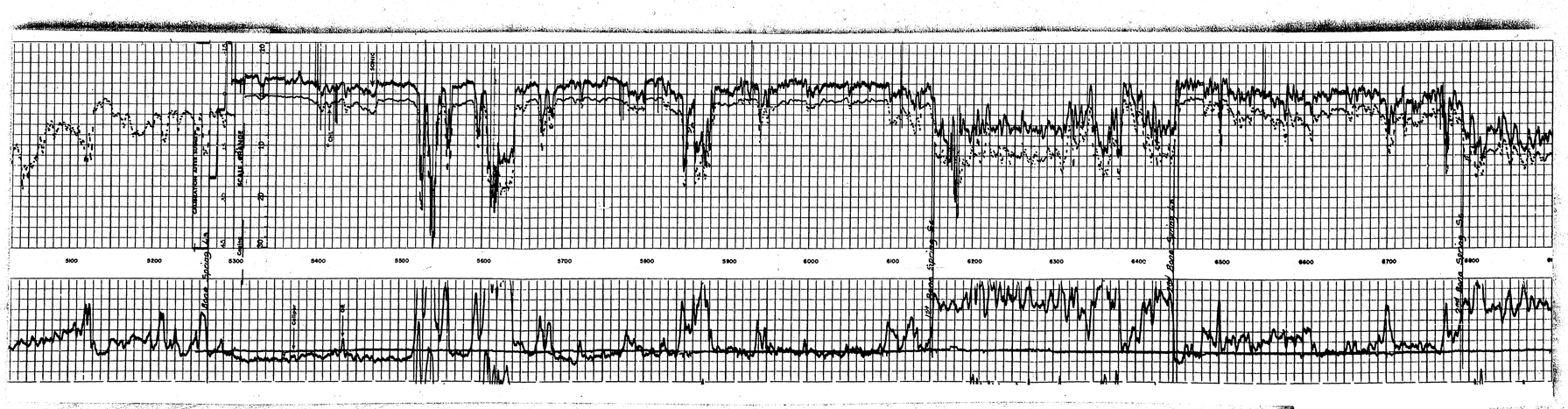


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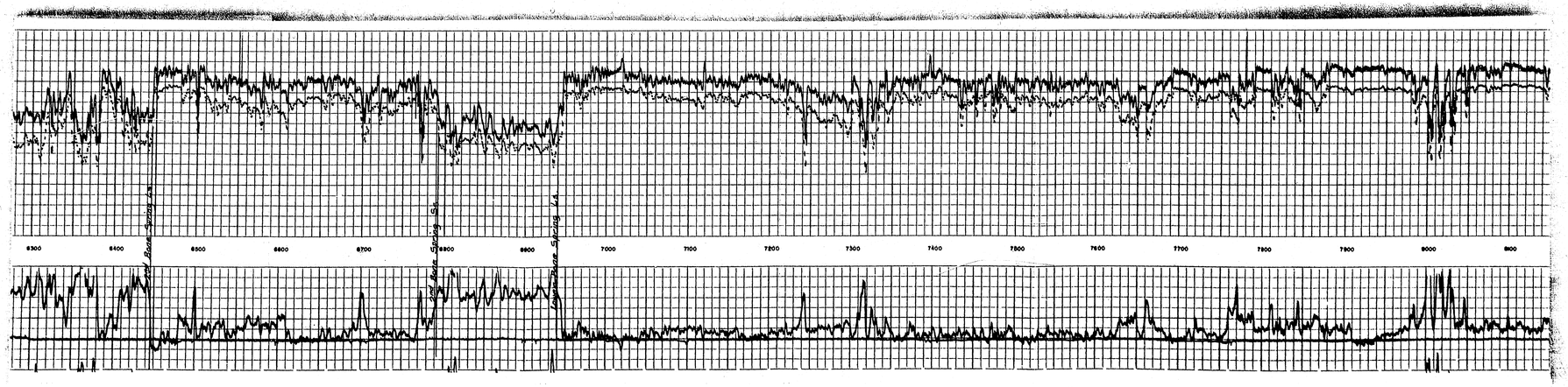
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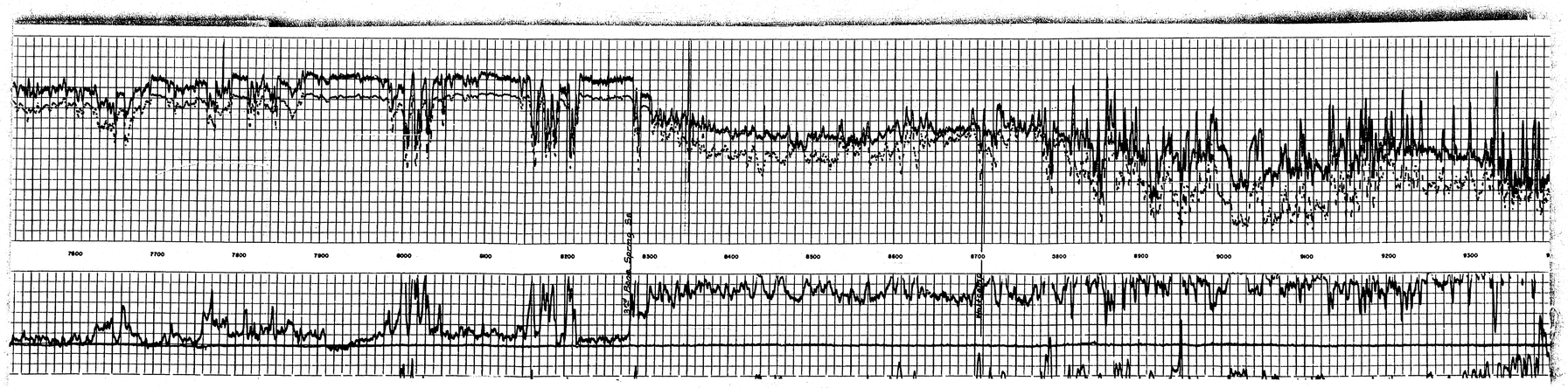
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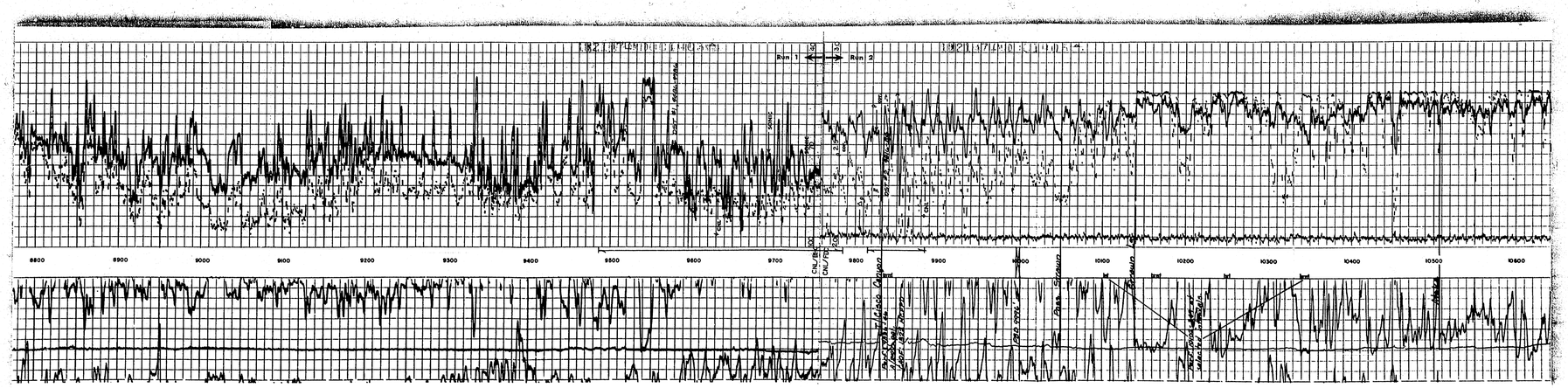
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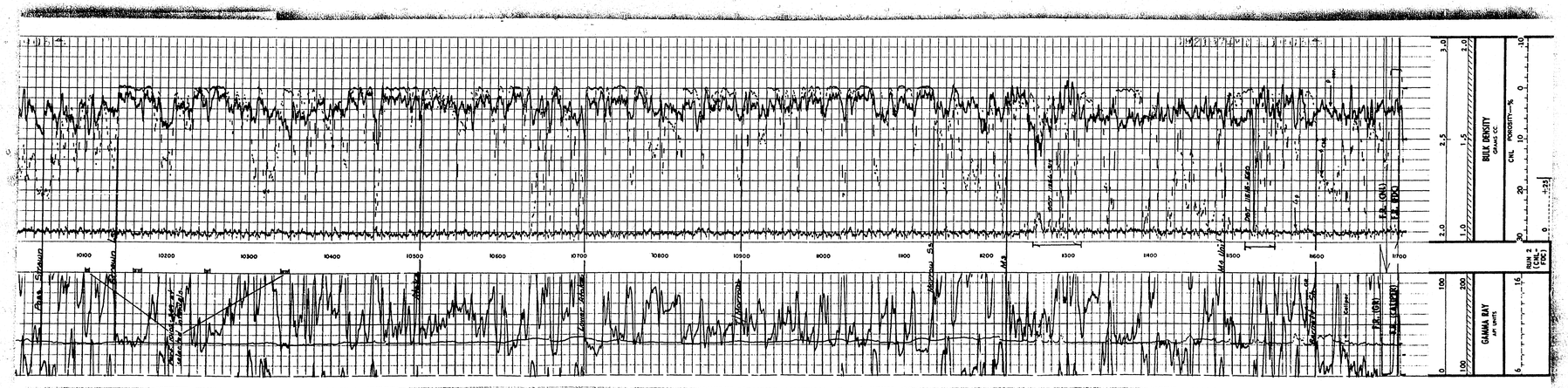
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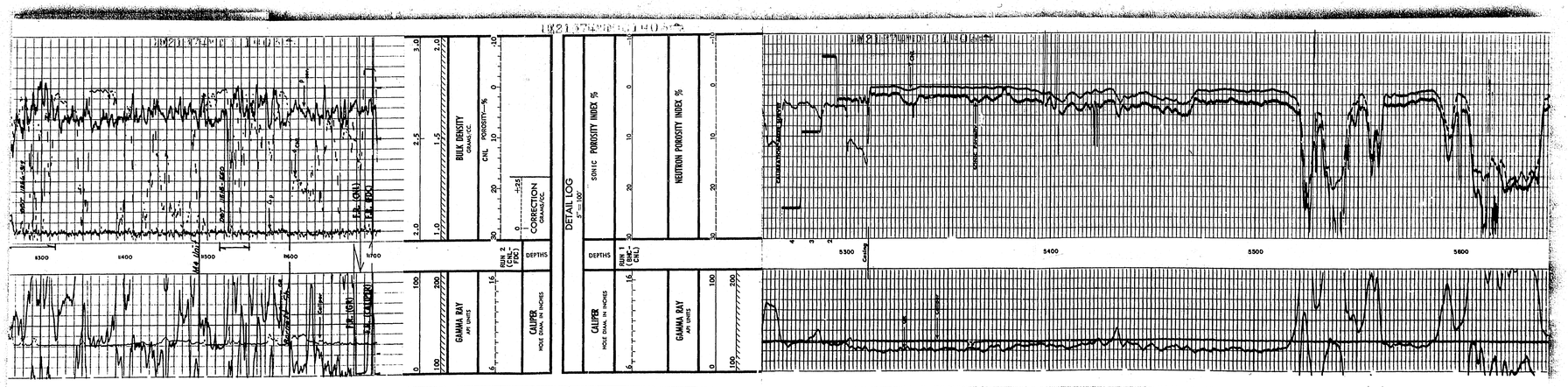


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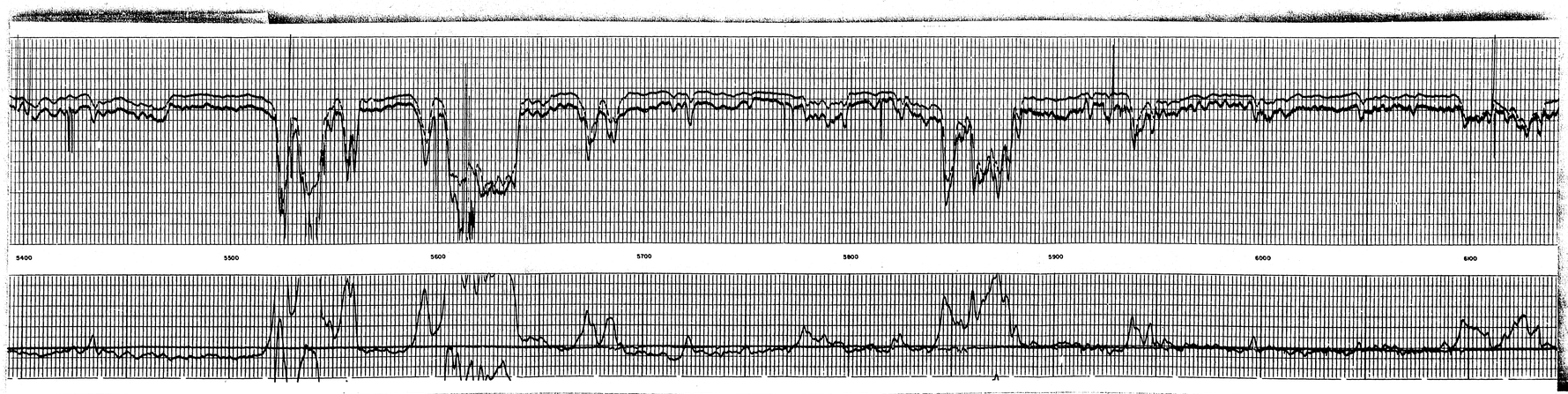


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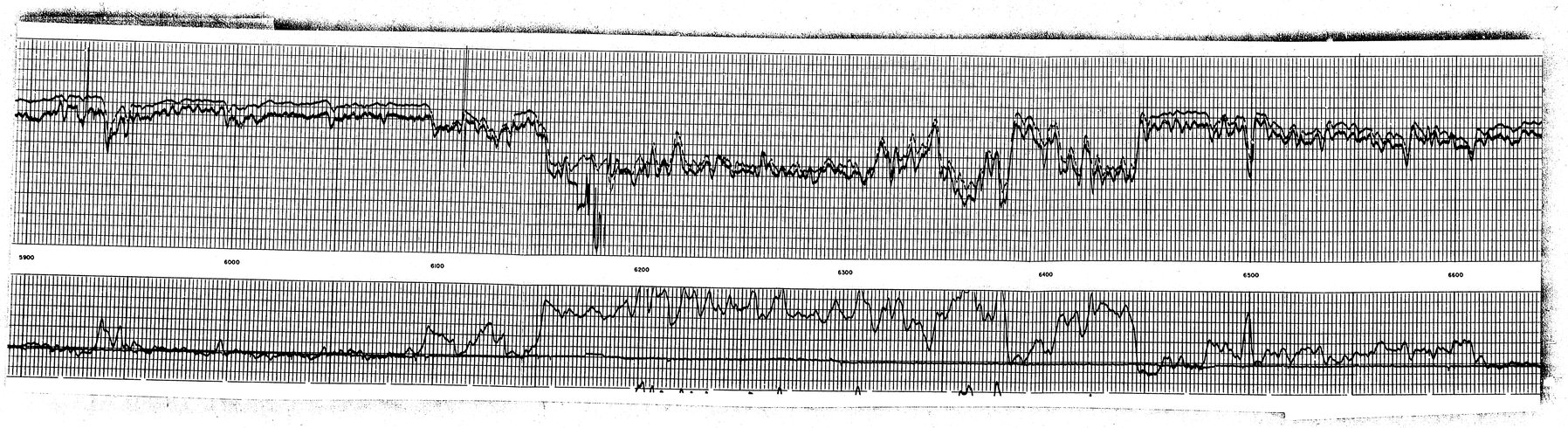
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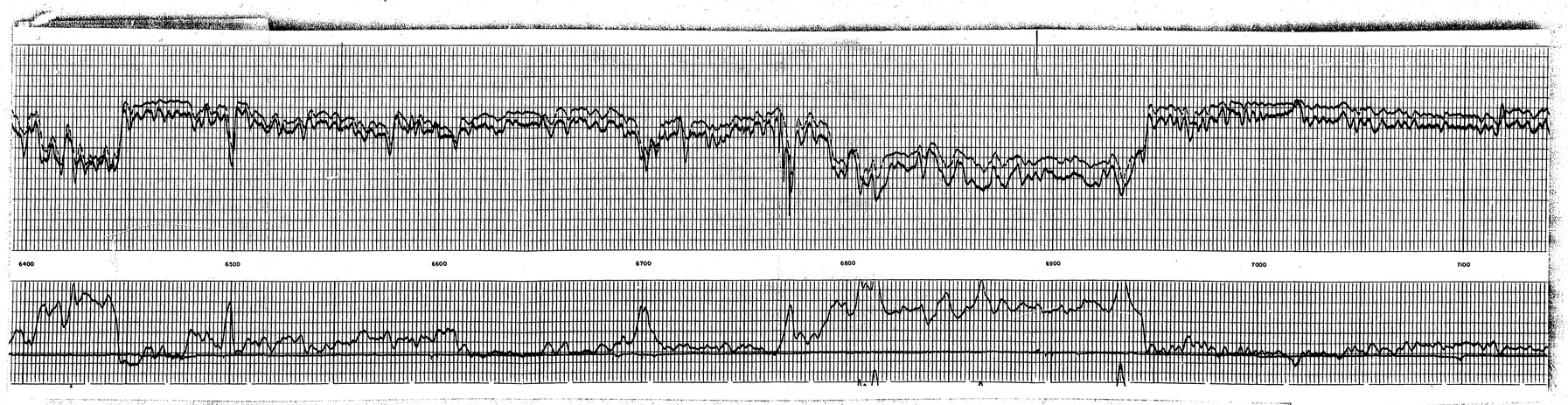
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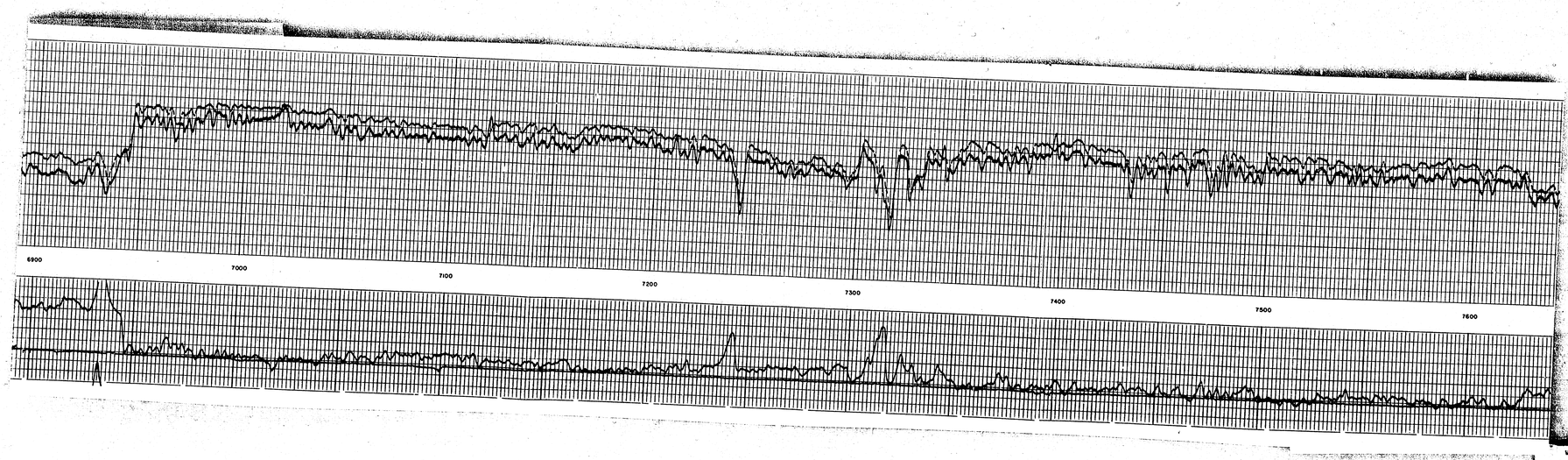
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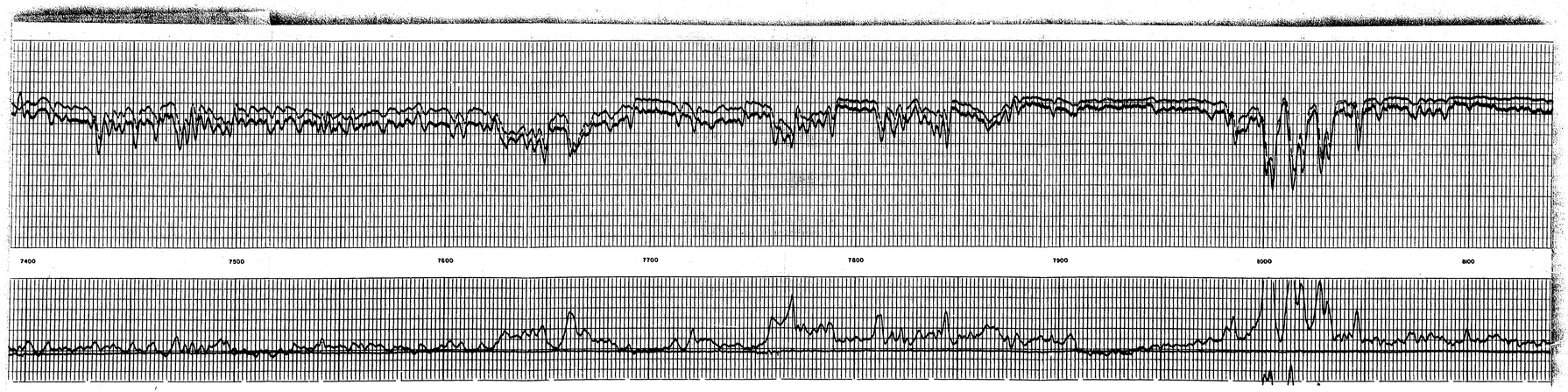
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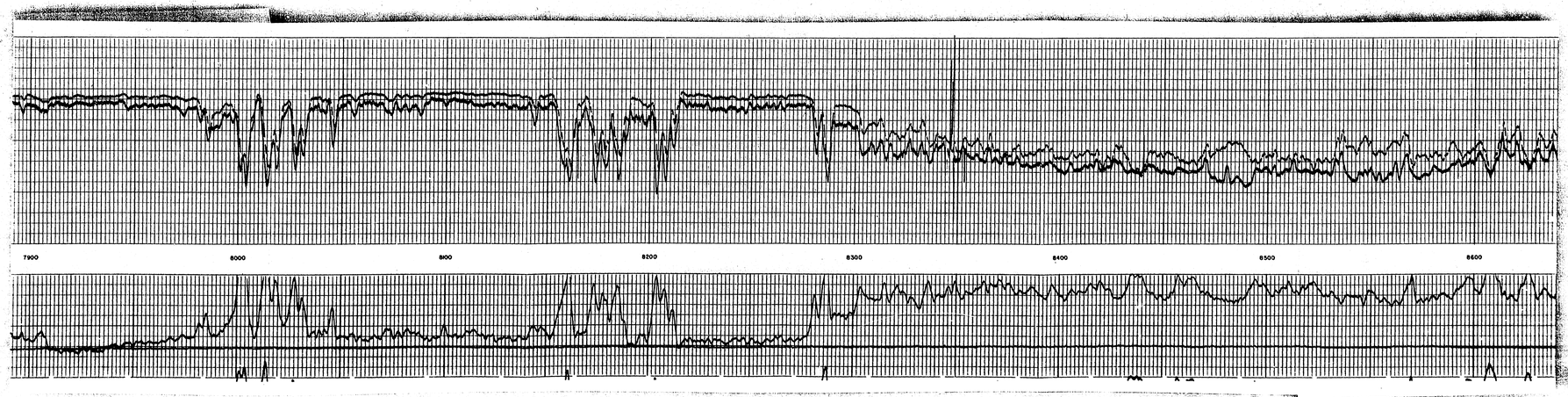


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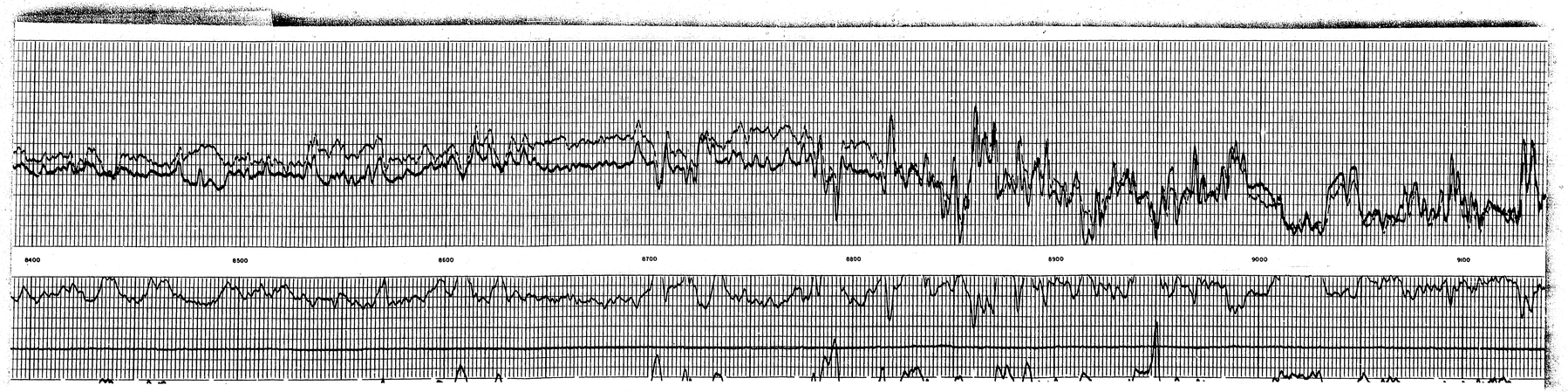


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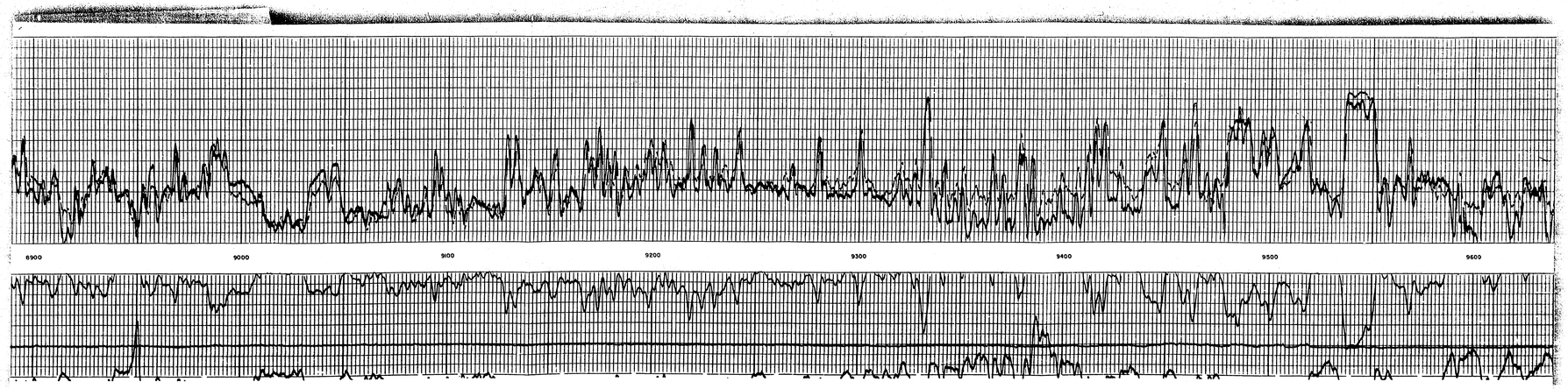
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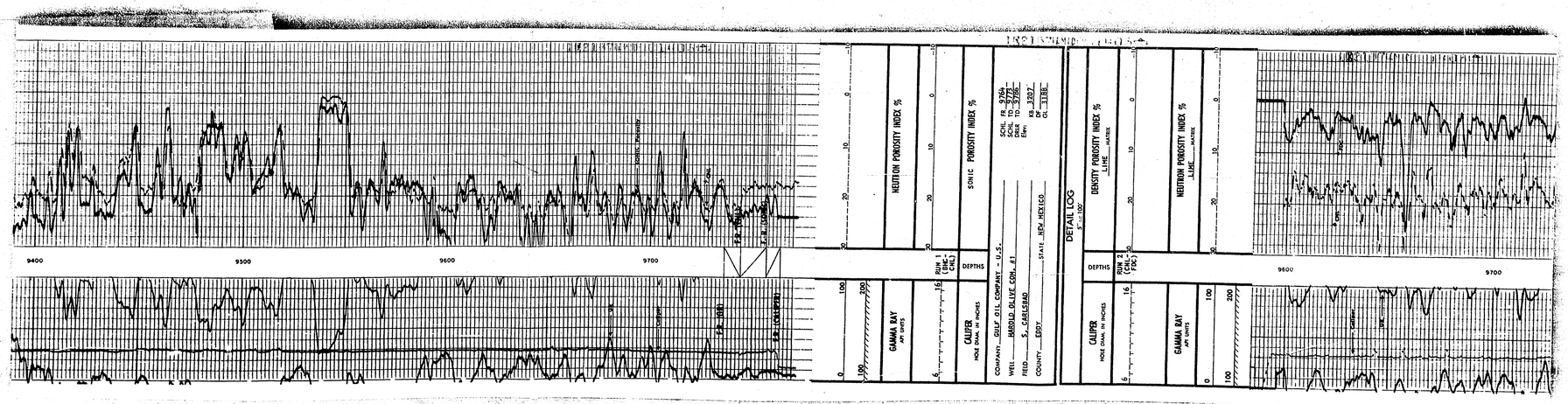
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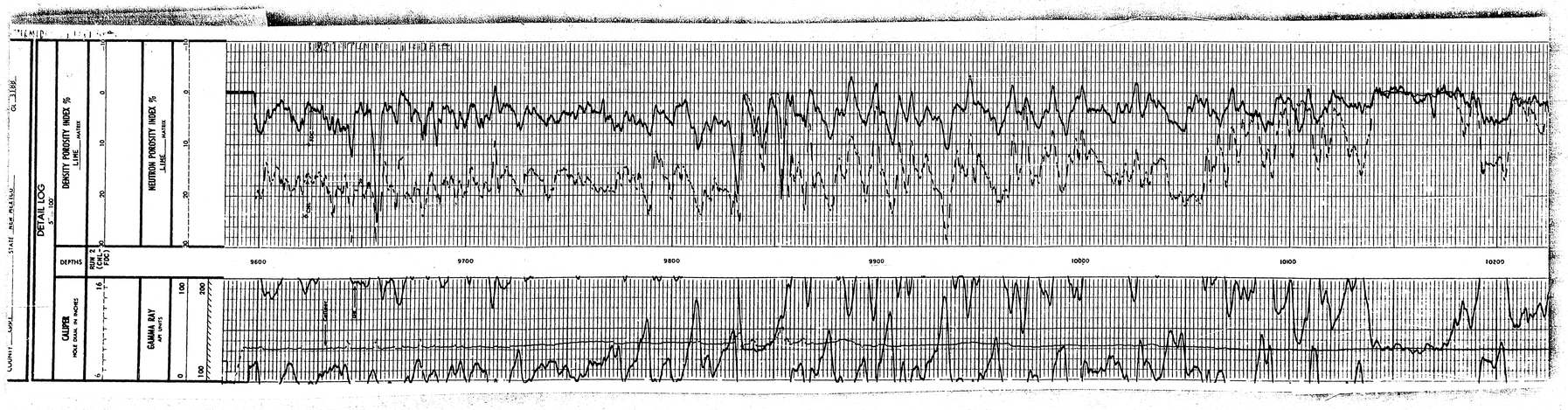
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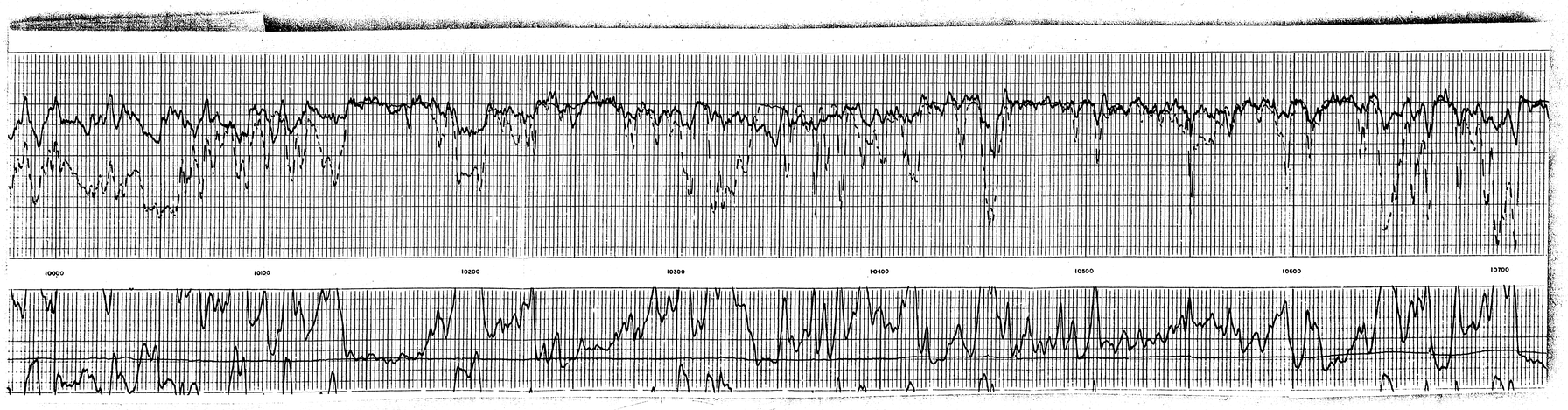
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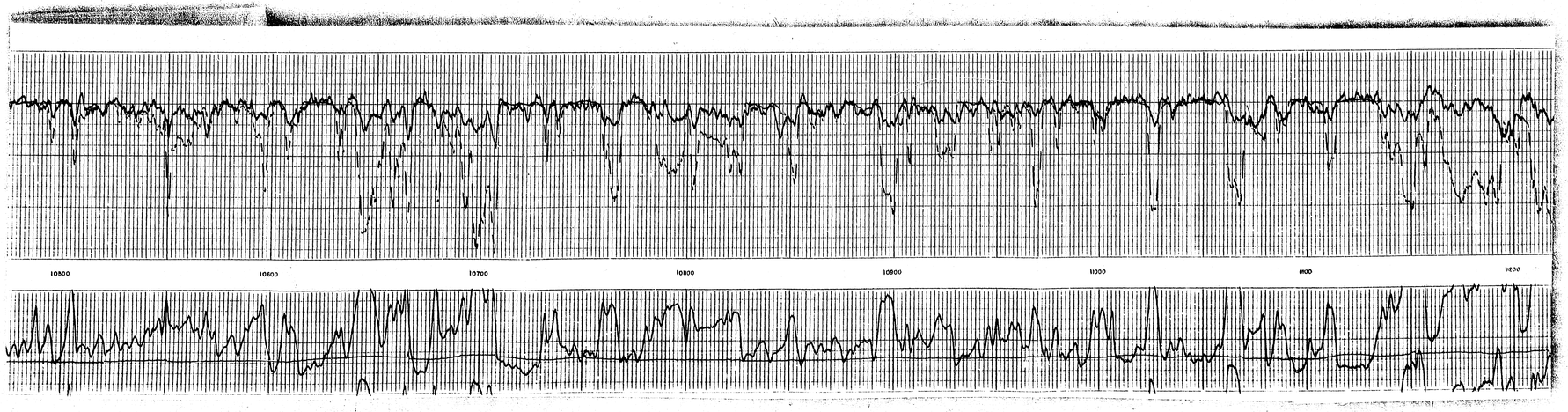
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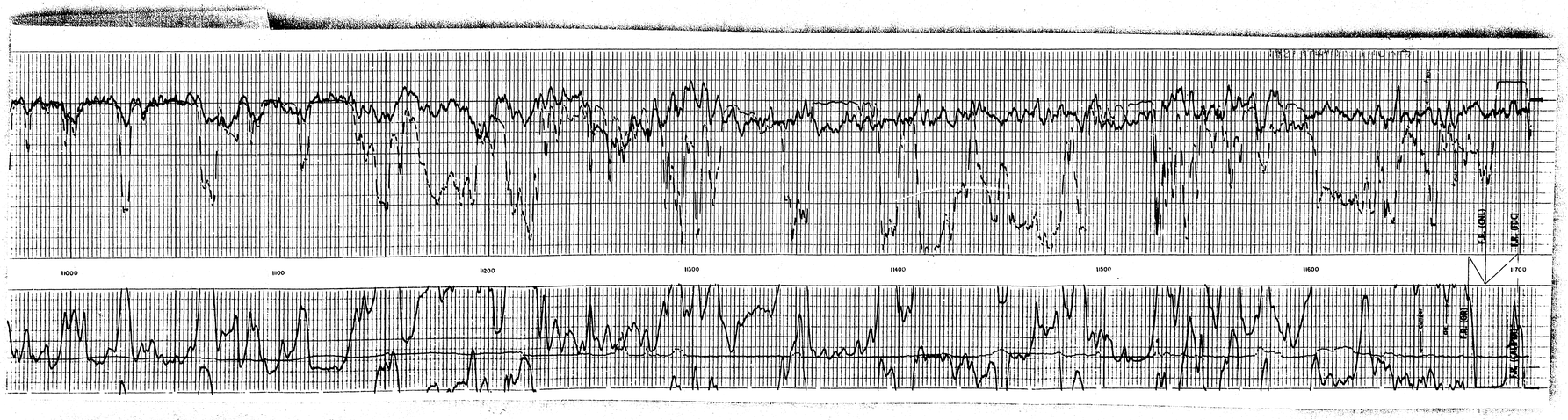
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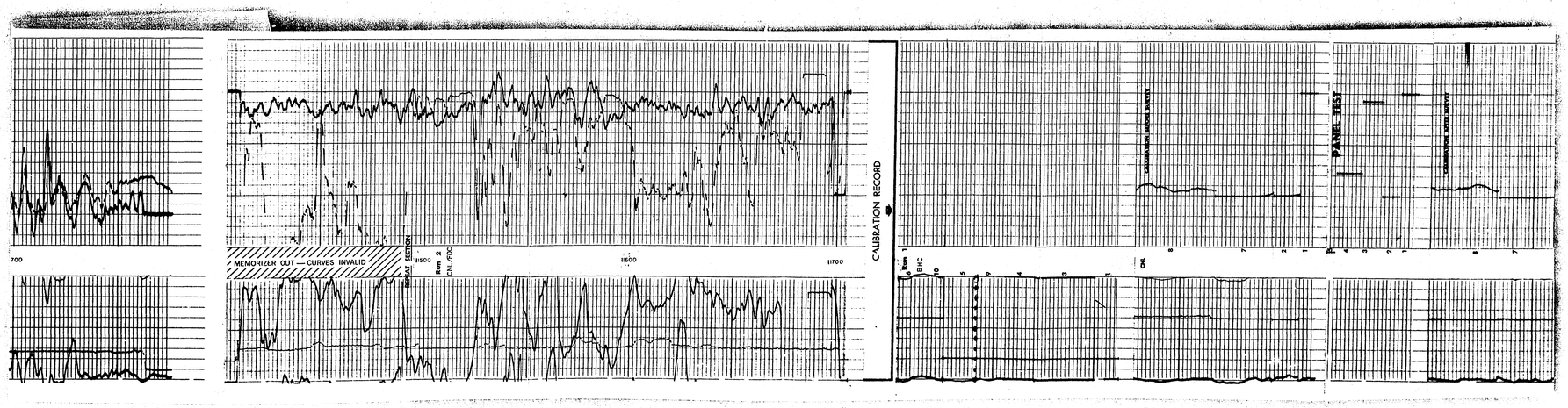


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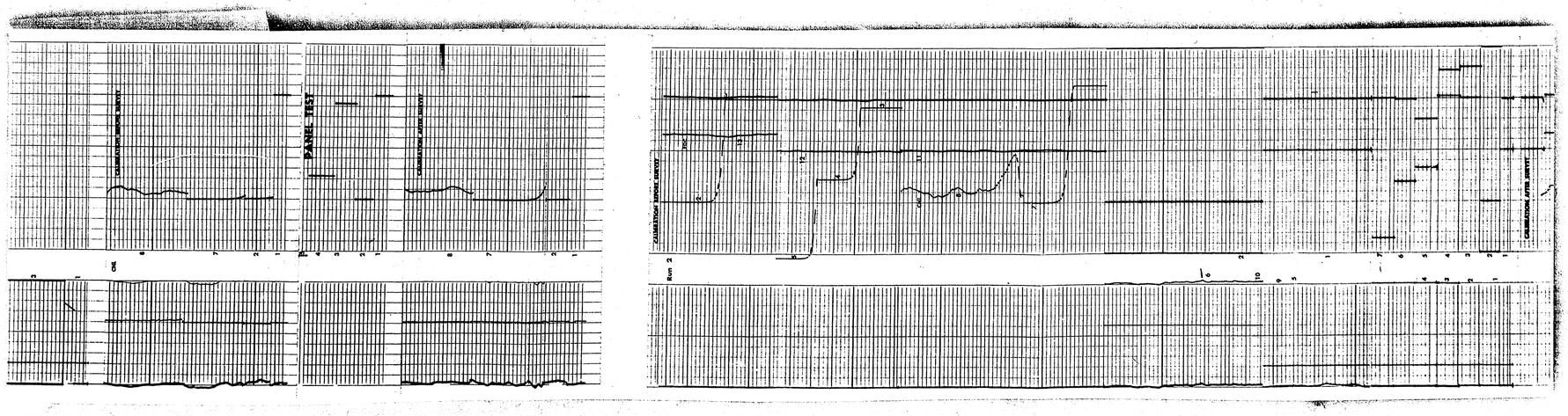


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BOREHOLE COMPENSATED SONIC CALIBRATION CODING

1. MECHANICAL ZERO
2. 40 - SEC/FT
3. 50 - SEC/FT
4. 80 - SEC/FT
5. 100 - SEC/FT
6. 150 - SEC/FT

GAMMA RAY CALIBRATION CODING

1. MECHANICAL ZERO
2. RECORDED SENSITIVITY
3. RECORDED BASELINE SHIFT
4. MICROLOG ADJUSTMENT
5. CALIBRATION

COMPENSATED NEUTRON CALIBRATION CODING

1. MECHANICAL ZERO
2. RECORDED SENSITIVITY (TWO MEMORIES IF USED)

PANEL TEST

RATIO	CH POROSITY 55 □	100 □	CH POROSITY 55 □	15 □
1	15 —	5	5	0
2	116	197	83	136	90
3	164	252	134	190	141
4	213	304	183	251	243
5	262	354	233	301	293
6	311	404	283	350	343
7	POROSITY NORMALIZED WITH CHBA IN PLACE				
8	LOG POSITION WITH CHBA IN PLACE				
9	LOG POSITION WITH CHBA NOT IN PLACE				

	CH		CH	
10	5	100	55	15
11	223	154	153	113
12	RATIO NORMALIZED	RATIO SCALE	RATIO LOG	

FORMATION DENSITY COMPENSATED CALIBRATION CODING

1. MECHANICAL ZERO
2. RECORDER SENSITIVITY

DENSITY SCALE

	100 LOG	150
POS	5	5
1	272	166
2	233	145
3	193	125
4	153	105
5	113	85
6	73	65
7	MECHANICAL ZERO CHECK	
8	17" PAD	
9	LOG CALIBRATE (1.95) — 2.95	
10	TOOL CALIBRATE (2.95) — 3.00	
11	LOG POSITION - 2.95 / + .855	

CALIBRATION RECORD

COMPANY GULF OIL COMPANY - U.S.

WELL HAROLD OLIVE COM. #1

FIELD S. CARLSBAD

COUNTY EDDY STATE NEW MEXICO

SCHL FB 11608
SCHL TD 11270
DRLR TD 11270
Elev.: KB 3302
DF
GL 3188

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