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1984 DIRECT STRIKE LIGHTNING DATA

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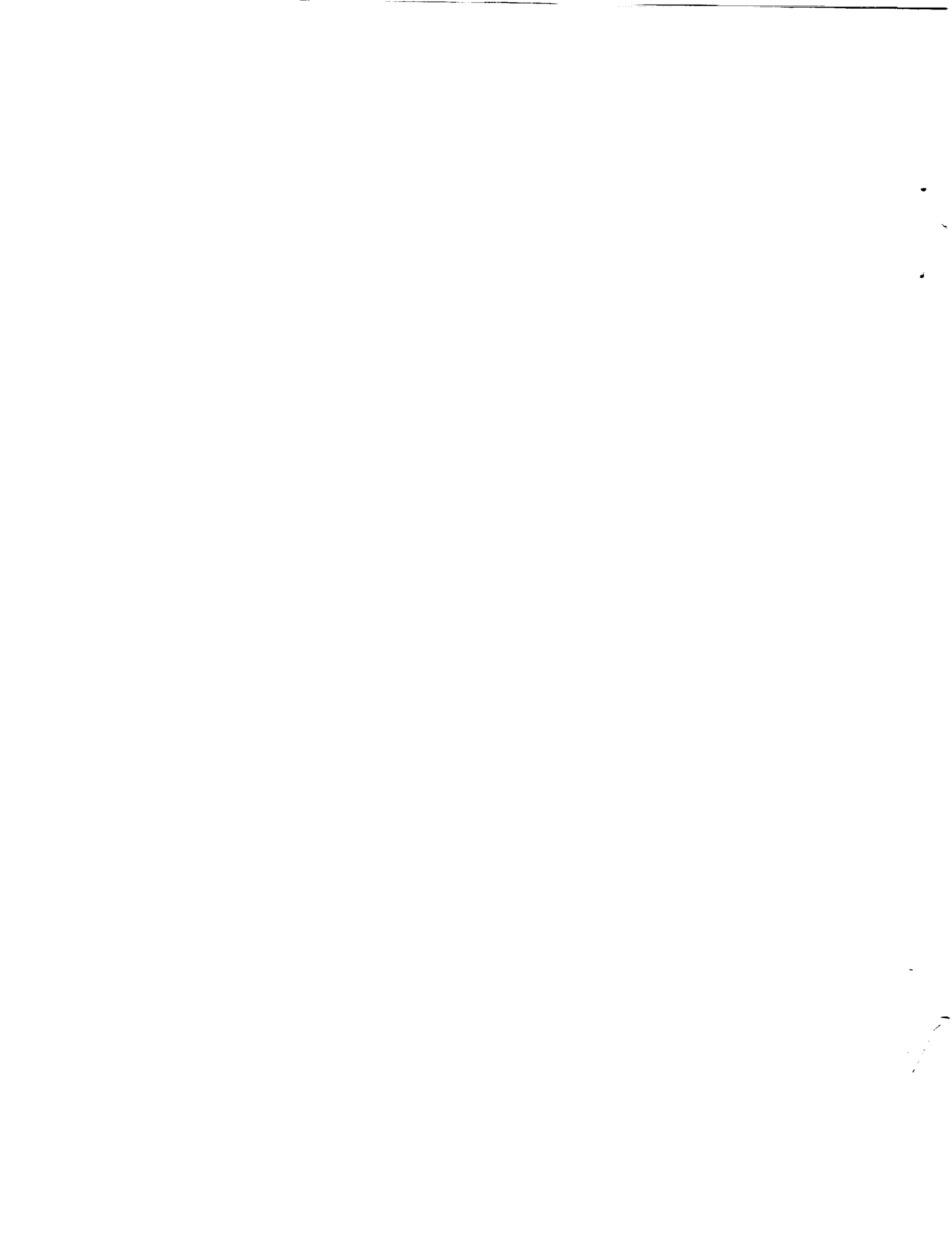
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*Part 2 and Part 3 published under separate cover.



1984 DIRECT STRIKE LIGHTNING DATA

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SUMMARY

This report presents the wideband waveforms recorded during the 1984 Direct-Strike Lightning Tests of the NASA Langley Research Center lightning-instrumented F-106B aircraft. The tests were conducted within about 150 nautical miles of the NASA Langley Research Center, Hampton, Virginia, where the aircraft was based. The entire transient recorder data obtained for 247 strikes and 11 nearby flashes in the 1984 campaign are presented in this report.

SYMBOLS

B	magnetic flux density, tesla
D	electric flux density, coulomb per square meter
I	current, ampere
A/m ²	ampere per square meter
m	meter
MHz	megahertz
T/s	tesla per second
A	ampere
A/s	ampere per second
V	volt

SUBSCRIPTS:

f	forward fuselage
l	longitudinal
n	nose
t	tail
w	wing
wl	wing-left
wr	wing-right

In the text and on the computer plots of the waveforms, the rate of change of a quantity is indicated by a dot over the symbol-e.g., \dot{B}_1

INTRODUCTION

This report presents the wideband direct-strike lightning data obtained from the digital transient recorders during the 1984 Lightning Flight Tests of the NASA Langley Research Center lightning-instrumented F-106B aircraft. There were 247 strikes to the aircraft during this campaign; there were 10 strikes in each of the 1980 and 1981 tests which were reported in references 1 and 2, and 156 strikes in 1982 which were reported in reference 3, and 214 strikes in 1983 which were reported in reference 4. The instrumentation system, transient recorders, external sensors, a summary overview of the previous tests and internal sensors and cables are described in references 5, 6, 7, 8, and 9, respectively.

DATA SYSTEMS

Data from seven external, wide-band, electromagnetic field sensors, three current sensors, and eight voltage and current sensors on internal aircraft cables was recorded with a twelve-channel, digital transient recorder configured to accommodate various combinations of these sensors. The external sensors (reference 7) and internal sensors (reference 9) demonstrate frequency response from near zero to 100MHz. Transmission lines connecting sensors to the recorder are 50-ohm coaxial cables, all properly terminated. Solid shield coaxial cable was used for long (15-20 feet) transmission lines in the aircraft, with some short lengths (less than 3 feet) of more flexible double-braid shielded cable used in close proximity to the sensors. The transmission lines, including coaxial cables, connectors, and power splitters, were tested for frequency response and the results are given in reference 9. The twelve transient recorder channels are configured in four units of three channels each. The available trigger options are: to trigger each unit of three channels from a separate data source, or to trigger any combination up to all channels from a single source, or to trigger all channels from any one of four

separate sources. These options are available by using a special "fan-out" device (see figure 1). The transient recorder stores 65536 data samples for each channel with 8-bit resolution and selectable sample rates from 200MHz to 1.5625MHz (sample interval from 5 nanoseconds to 640 nanoseconds). The sample interval selected for each measurement, and trigger source for each channel is shown in table 1. Dynamic range for each measurement was established by using selected attenuators inserted in the transmission lines from sensors to the transient recorder. Post-season calibration of the attenuators showed a maximum uncertainty between +2.3dB and -2.6dB in the attenuation factor used to process the data.

1984 LIGHTNING DATA

The 1984 tests resulted in 247 direct strikes to the aircraft and 11 nearby flashes from storm penetration flights at flight levels generally above 20,000 feet for the first half of the season, and generally below 20,000 feet for the remainder of the season. Table 2 summarizes, by flight number, the 1984 data records acquired with the twelve-channel transient recorder. The entries under the various sensor headings are the run numbers of each 65536 sample record acquired with the transient recorder system for a lightning strike or nearby flash. (A run consists of all the transient recorder data associated with a trigger from one lightning event.) Typically, a single dynamic sensor response was captured in memory for each channel of the transient recorder for a lightning strike or nearby flash and plots of these dynamic waveforms are presented with an expanded time scale in this report. Labeling on each plot indicates flight number, run number, trigger time, and a strike or nearby-flash code- e.g., S-001 or N-001, for each recorded event which can be used to correlate this data with other waveforms for the same event. A zero on the horizontal axis of the data plots indicates the trigger time of the transient recorder as it was triggered by the lightning event.

The minus values, on the horizontal axis, indicate pre-trigger time, while the positive values indicate post-trigger time. The correlation to other supporting data is through time of occurrence (trigger time) which is shown on the plot. The sign conventions established for the measurements shown in figure 2 indicates positive quantities in the direction of the arrows; the relation between the sign conventions of the variables D, B, and I and their derivatives are shown in the measurement polarity time history also in figure 2.

The external sensor locations on the aircraft are shown in figure 2, and the following labels identify the waveform plots for each sensor: I_n is the current measurement and \dot{I} is the rate-of-change of current measurement in the pitot boom at location 1, \dot{D}_f is the rate-of-change of electric flux density measurement at location 2, \dot{B}_l is the rate-of-change of magnetic flux density measurement at location 6, \dot{B}_{w1} is the rate-of-change of magnetic flux density measurement at location 8, \dot{D}_{w1} is the rate-of-change of electric flux density measurement at location 9, \dot{B}_{wr} is the rate-of-change of magnetic flux density measurement at location 10, \dot{D}_{wr} is the rate-of-change of electric flux density measurement at location 11, \dot{D}_t is the rate-of-change of electric flux density measurement at location 12, I_t is the current measurement between the vertical fin cap and aircraft structure at location 13. Voltage and current measurements on internal wires and cables are labeled and located in the aircraft as follows: V_w (or TP100) is a voltage measurement on an insulated, 18-gauge wire located in the leading edge of the left wing (see figure 3), V_{fa} is a voltage measurement on a shielded, 18-gauge wire in the forward fuselage (see figure 4), V_{fb} (or TP101) is a voltage measurement on an insulated, 18-gauge wire in the forward fuselage (see figure 4), V_{fc} (or TP102) is a voltage measurement on the center conductor of a coaxial cable in the forward fuselage (see figure 4), TP114 is a current measurement on the power cable for the

vertical fin position light (see figure 5), TP116 is a current measurement on a position light power cable in mid-fuselage (see figure 6), TP123 is a current measurement on the power cable to an aircraft radio, and TP125 is a current measurement on the shield of a coaxial antenna cable to the same radio (see figure 7). The voltages are measured at 50-ohm terminations at one end of the wires and cables, and the other end (shields also) are connected to aircraft structure. The currents are measured on functional aircraft cables.

Channel assignments for the twelve-channel transient recorder were changed six times during the season to acquire data from 18 sensors described above, and each configuration is shown in table 1. An operational problem with an integrator/amplifier signal conditioning component caused all data acquired on one channel of the transient recorder to be unusable. Consequently, data from only eleven transient recorder channels are presented in this report.

Measurement ranges, recorder trigger thresholds, and recorder sampling intervals for each configuration are also shown in table 1. On flights 84-013 through 84-039, all transient recorder channels were triggered simultaneously by stimuli to the \dot{D}_f sensor only. On flights 84-040 through 84-048, all channels were triggered by the first response above the trigger threshold of either \dot{D}_f or \dot{D}_t , and on flights 84-049 through 84-052, all channels were triggered by the first response above the trigger threshold of either \dot{D}_f , \dot{D}_t , or \dot{D}_{w_r} . The sample intervals shown in table 1 indicate that the 200MHz sample rate (5 nanosecond interval) was employed for the internal measurements to acquire data on high frequency resonances which were anticipated on internal conductors. External sensor data was sampled at 100MHz (10 nanosecond sample interval), which was appropriate for the fundamental resonant frequency associated with the longitudinal dimension of the aircraft structure (6-8 MHz) and several higher harmonic frequencies. A sample rate of 25MHz (40 nanosecond sample interval) was utilized for two magnetic field, and

subsequently, two current measurements to achieve a longer memory storage time (65536 samples and 40 nanosecond sample interval results in 2.621440 milliseconds memory length) to investigate multiple current impulses during a lightning strike to the aircraft.

Two battery powered peak-level recorders were used on the aircraft in 1984 to continuously monitor and record the maximum amplitude achieved by the \dot{D}_f and \dot{i} measurements for each flight through 84-048, and \dot{D}_f and I_t measurements for the remaining flights (the results are shown in table 3). The maximum current recorded from the I_t sensor was 54,000 A and occurred on flight 84-049, and the maximum rate of change of current recorded from the \dot{i} sensor was $19.38E+10$ A/s and occurred on flight 84-036, and the largest peak level recorded for \dot{D}_f was 75 A/m² on flight 84-048, although there were some "over-scales" (>97 A/m²) indicated for \dot{D}_f throughout the season.

CONCLUSION

The waveforms recorded in 1984 are a significant addition to the data set of simultaneously recorded currents and electromagnetic fields which have been acquired to study and define the aircraft/lightning interaction. The data presented in this paper is the first large data set of time correlated electromagnetic measurements from multiple points on the surface of the aircraft with 10 nanosecond time resolution. The 1984 data also includes voltage and current measurements on internal aircraft wires and cables. Data was acquired from lightning strikes to the aircraft between the altitudes of 15,000 and 39,000 feet. The bandwidth of the data system makes it possible to analyze electromagnetic data acquired on the surface of the aircraft at the aircraft fundamental resonant frequency and several higher harmonics. Accuracy of this data is limited by a maximum uncertainty between +2.3dB and -2.6dB in the value of attenuation used to establish transient recorder channel sensitivity.

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TABLE 1. 1984 LIGHTNING MEASUREMENT RANGES

FLIGHT NUMBER	SENSOR	FULL SCALE	SAMPLE INTERVAL	TRIGGER THRESHOLD
84-013 to -018	\dot{B}_{w1}	± 930 T/s	10 ns	triggered by \dot{D}_f
	\dot{B}_{wr}	± 930 T/s	10 ns	triggered by \dot{D}_f
	\dot{D}_t	± 10 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{i}	$\pm 2.4E+11$ A/s	10 ns	triggered by \dot{D}_f
	\dot{B}_1	± 1800 T/s	10 ns	triggered by \dot{D}_f
	\dot{D}_{wr}	± 19 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{D}_{w1}	± 19 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{D}_f	± 12 A/m ²	10 ns	± 3.7 A/m ²
	V_{fb} TP101	± 51 V	10 ns	triggered by \dot{D}_f
	I_n	± 9100 A	10 ns	triggered by \dot{D}_f
	I_t	± 9100 A	10 ns	triggered by \dot{D}_f
84-019 to -027	\dot{B}_{w1}	± 930 T/s	40 ns	triggered by \dot{D}_f
	\dot{B}_{wr}	± 930 T/s	40 ns	triggered by \dot{D}_f
	\dot{D}_t	± 2.5 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{i}	$\pm 2.4E+11$ A/s	10 ns	triggered by \dot{D}_f
	\dot{B}_1	± 1800 T/s	10 ns	triggered by \dot{D}_f
	\dot{D}_{wr}	± 19 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{D}_{w1}	± 19 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{D}_f	± 12 A/m ²	10 ns	± 3.7 A/m ²
	V_{fa}	± 51 V	10 ns	triggered by \dot{D}_f
	I_n	± 9100 A	10 ns	triggered by \dot{D}_f
	I_t	± 9100 A	10 ns	triggered by \dot{D}_f
84-028 to -034	I_n	± 16200 A	40 ns	triggered by \dot{D}_f
	I_t	± 16200 A	40 ns	triggered by \dot{D}_f
	\dot{D}_t	± 2.5 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{i}	$\pm 2.4E+11$ A/s	10 ns	triggered by \dot{D}_f
	\dot{B}_1	± 1800 T/s	10 ns	triggered by \dot{D}_f
	\dot{D}_{wr}	± 19 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{D}_{w1}	± 19 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{D}_f	± 12 A/m ²	10 ns	± 3.7 A/m ²
	V_w TP100	± 51 V	10 ns	triggered by \dot{D}_f
	V_{fb} TP101	± 51 V	10 ns	triggered by \dot{D}_f
	V_{fc} TP102	± 2.6 V	10 ns	triggered by \dot{D}_f

TABLE 1 Continued

FLIGHT NUMBER	SENSOR	FULL SCALE	SAMPLE INTERVAL	TRIGGER THRESHOLD
84-035 to -039	I_n	± 16200 A	40 ns	triggered by \dot{D}_f
	I_t	± 16200 A	40 ns	triggered by \dot{D}_f
	\dot{D}_t	± 2.5 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{i}	$\pm 2.4E+11$ A/s	10 ns	triggered by \dot{D}_f
	\dot{B}_1	± 1800 T/s	10 ns	triggered by \dot{D}_f
	\dot{D}_{wr}	± 19 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{D}_{w1}	± 19 A/m ²	10 ns	triggered by \dot{D}_f
	\dot{D}_f	± 12 A/m ²	10 ns	± 3.7 A/m ²
	V_w TP100	± 51 V	5 ns	triggered by \dot{D}_f
	V_{fb} TP101	± 51 V	5 ns	triggered by \dot{D}_f
	TP123	± 14 V	5 ns	triggered by \dot{D}_f
84-040 to -048	I_n	± 16200 A	40 ns	triggered by \dot{D}_f or \dot{D}_t
	I_t	± 16200 A	40 ns	triggered by \dot{D}_f or \dot{D}_t
	\dot{D}_t	± 2.8 A/m ²	10 ns	± 0.8 A/m ²
	\dot{i}	$\pm 2.4E+11$ A/S	10 ns	triggered by \dot{D}_f or \dot{D}_t
	\dot{B}_1	± 1800 T/s	10 ns	triggered by \dot{D}_f or \dot{D}_t
	\dot{D}_{wr}	± 19 A/m ²	10 ns	triggered by \dot{D}_f or \dot{D}_t
	\dot{D}_{w1}	± 19 A/m ²	10 ns	triggered by \dot{D}_f or \dot{D}_t
	\dot{D}_f	± 12 A/m ²	10 ns	± 3.7 A/m ²
	V_w TP100	± 26 V	5 ns	triggered by \dot{D}_f or \dot{D}_t
	V_{fb} TP101	± 26 V	5 ns	triggered by \dot{D}_f or \dot{D}_t
	TP123	± 2.6 V	5 ns	triggered by \dot{D}_f or \dot{D}_t
84-049 to -050	I_n	± 16200 A	40 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	I_t	± 22800 A	40 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	\dot{D}_t	± 2.8 A/m ²	10 ns	± 0.8 A/m ²
	\dot{i}	$\pm 2.4E+11$ A/s	10 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	\dot{B}_1	± 1800 T/s	10 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	\dot{D}_{wr}	± 21 A/m ²	10 ns	± 6.2 A/m ²
	\dot{D}_{w1}	± 15 A/m ²	10 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	\dot{D}_f	± 12 A/m ²	10 ns	± 3.7 A/m ²
	V_w TP100	± 26 V	5 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	V_{fb} TP101	± 26 V	5 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	TP123	± 2.6 V	5 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}

TABLE 1 Concluded

FLIGHT NUMBER	SENSOR	FULL SCALE	SAMPLE INTERVAL	TRIGGER THRESHOLD
84-051 to -052	I_n	± 16200 A	40 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	I_t	± 22800 A	40 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	\dot{D}_t	± 2.8 A/m ²	10 ns	± 0.8 A/m ²
	\dot{t}	$\pm 2.4E+11$ A/s	10 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	\dot{B}_1	± 1800 T/s	10 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	\dot{D}_{wr}	± 21 A/m ²	10 ns	± 6.2 A/m ²
	\dot{D}_{w1}	± 15 A/m ²	10 ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	\dot{D}_f	± 12 A/m ²	10 ns	± 3.7 A/m ²
	TP114	± 0.26 V	* ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	TP116	± 0.26 V	* ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}
	TP125	± 0.26 V	* ns	triggered by \dot{D}_f or \dot{D}_t or \dot{D}_{wr}

* 5 ns for flight 84-051 and 10 ns for flight 84-052

TABLE 2 Concluded

DATE	FLT NUM	NUM STKS	NUM NRBY	I _n	I _t	D _t	i	B ₁	RUN NUMBERS						D _{w1}	D _f	100	101	123	PAGE NUMB
									I _n	I _t	D _t	B ₁	D _{wr}	D _{w1}						
7/16	035	7	0	1-5	1-5	1-5	1-5	1-5	---	---	---	---	---	---	1-5	1-5	1-5	679-718		
7/24	036	9	0	1-6	1-6	1-6	1-6	1-6	2-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	719-783			
7/25	037	72	0	1-10 12-20	1-10 12-20	1-10 12-20	1-10 12-20	1-10 12-20	1,3-10 12-20	1-10 12-20	1-10 12-20	1-10 12-20	1-10 12-20	1-10 12-20	1-10 12-20	1-10 12-20	784-981			
7/27	038	2	0	1	1	1	1	1	---	1	1	1	1	1	1	1	982-991			
8/8	043	6	0	1-6	1-6	1-6	1-6	1-6	---	---	---	---	---	---	1-6	1-6	992-1039			
8/9	044	6	0	1-4	2-4	1-4	1-4	2-4	---	---	---	---	---	---	1-4	1-4	1040-1068			
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(SENSOR CHANGE) 8/12	046	2	0	I _n 1-2	I _t 1-2	D _t 1-2	B ₁ 1-2	i 1-2	D _{wr} 1-2	D _{w1} 1-2	D _f ---	100 1-2	101 1-2	123 1-2	1093-1112					
(SENSOR CHANGE) 8/13	047	5	0	I _n 1-4	I _t 1-4	D _t 1-4	B ₁ 1-4	i 1-4	D _f 1-4	D _{w1} 1-4	D _{wr} ---	100 1-4	101 1-4	123 ---	1113-1148					
8/14	048	5	1	1-5	1-5	1-3,5	1-5	1-5	---	1-5	---	1-3,5	1-5	1-5	1-5	1149-1191				
(SENSOR CHANGE) 8/23	049	1	0	I _n 1	I _t 1	D _t 1	i 1	B ₁ 1	D _{wr} 1	D _{w1} 1	D _f 1	100 1	101 1	123 1	1192-1202					
8/30	050	28	0	1-10	1-10	1-10	1-10	1-10	1-10	1-10	1-10	1-10	---	---	1-10	1203-1312				
(SENSOR CHANGE) 9/13	051	1	0	I _n 1	I _t 1	D _t 1	i 1	B ₁ 1	D _{wr} 1	D _{w1} 1	D _f 1	114 1	116 1	125 1	1313-1323					
10/18	052	2	0	1,2	1,2	1,2	---	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1324-1343				

TABLE 3. 1984 DATA SUMMARY-PEAK LEVELS

DATE	FLIGHT NUMBER	NUMBER OF STRIKES	NUMBER OF NEAR-BY	PEAK LEVELS RECORDED		I _t
				\dot{D}_f	\dot{i}	
5/27	84-014	2	0	*	*	
5/27	84-015	6	2	37 A/m ²	.38E+10 A/s	
5/28	84-017	2	0	*	*	
6/5	84/019	10	0	*	*	
6/6	84-020	7	1	**	7.79E+10 A/s	
6/7	84-021	3	1	0	0	
6/11	84-023	3	0	40 A/m ²	.19E+10 A/s	
6/12	84-024	7	3	37 A/m ²	3.04E+10 A/s	
6/13	84-025	19	1	39 A/m ²	1.71E+10 A/s	
6/14	84-026	5	0	40 A/m ²	4.37E+10 A/s	
6/14	84-027	5	1	28 A/m ²	4.75E+10 A/s	
6/28	84-028	6	0	40 A/m ²	1.52E+10 A/s	
6/29	84-029	3	0	31 A/m ²	.19E+10 A/s	
7/7	84-031	2	0	26 A/m ²	0	
7/7	84-032	5	0	28 A/m ²	1.14E+10 A/s	
7/10	84-033	14	1	*	*	
7/16	84-035	7	0	30 A/m ²	.57E+10 A/s	
7/24	84-036	9	0	44 A/m ²	19.38E+10 A/s	
7-25	84-037	72	0	**	5.32E+10 A/s	
7/27	84-038	2	0	23 A/m ²	3.99E+10 A/s	
8/8	84-043	6	0	**	11.02E+10 A/s	
8/9	84-044	6	0	17 A/m ²	16.15E+10 A/s	
8/9	84-045	3	0	28 A/m ²	7.79E+10 A/s	
8/12	84-046	2	0	7 A/m ²	8.74E+10 A/s	
8/13	84-047	5	0	28 A/m ²	6.08E+10 A/s	
8/14	84-048	5	1	75 A/m ²	12.73E+10 A/s	
8/23	84-049	1	0		9.69E+10 A/s	54KA
8/30	84-050	27	0		17.48E+10 A/s	44KA
9/13	84-051	1	0		8.17E+10 A/s	*
10/18	84-052	2	0		8.36E+10 A/s	*

* Peak Detector inoperative

** Off-scale reading

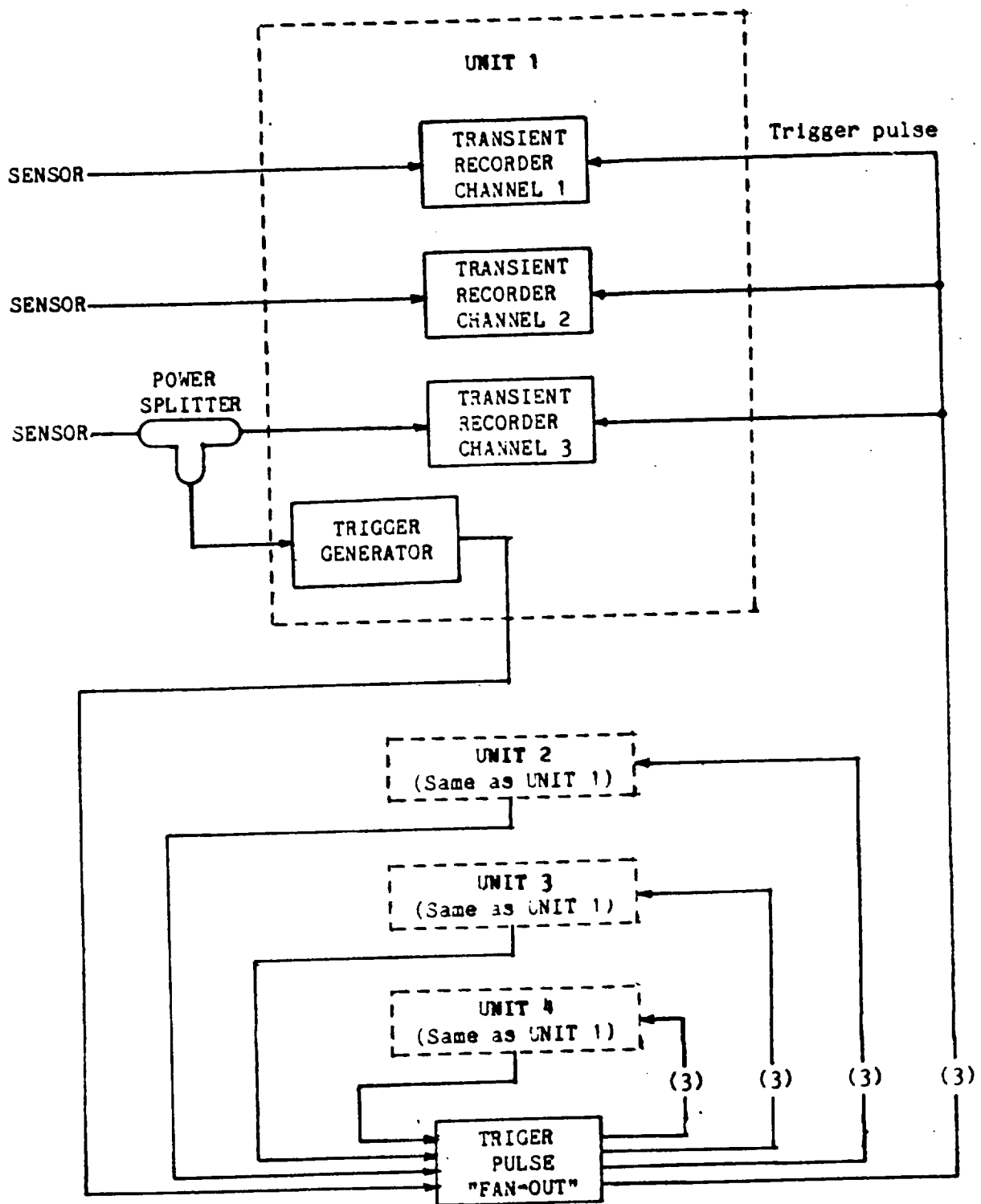


FIGURE 1. Transient Recorder Trigger Configuration

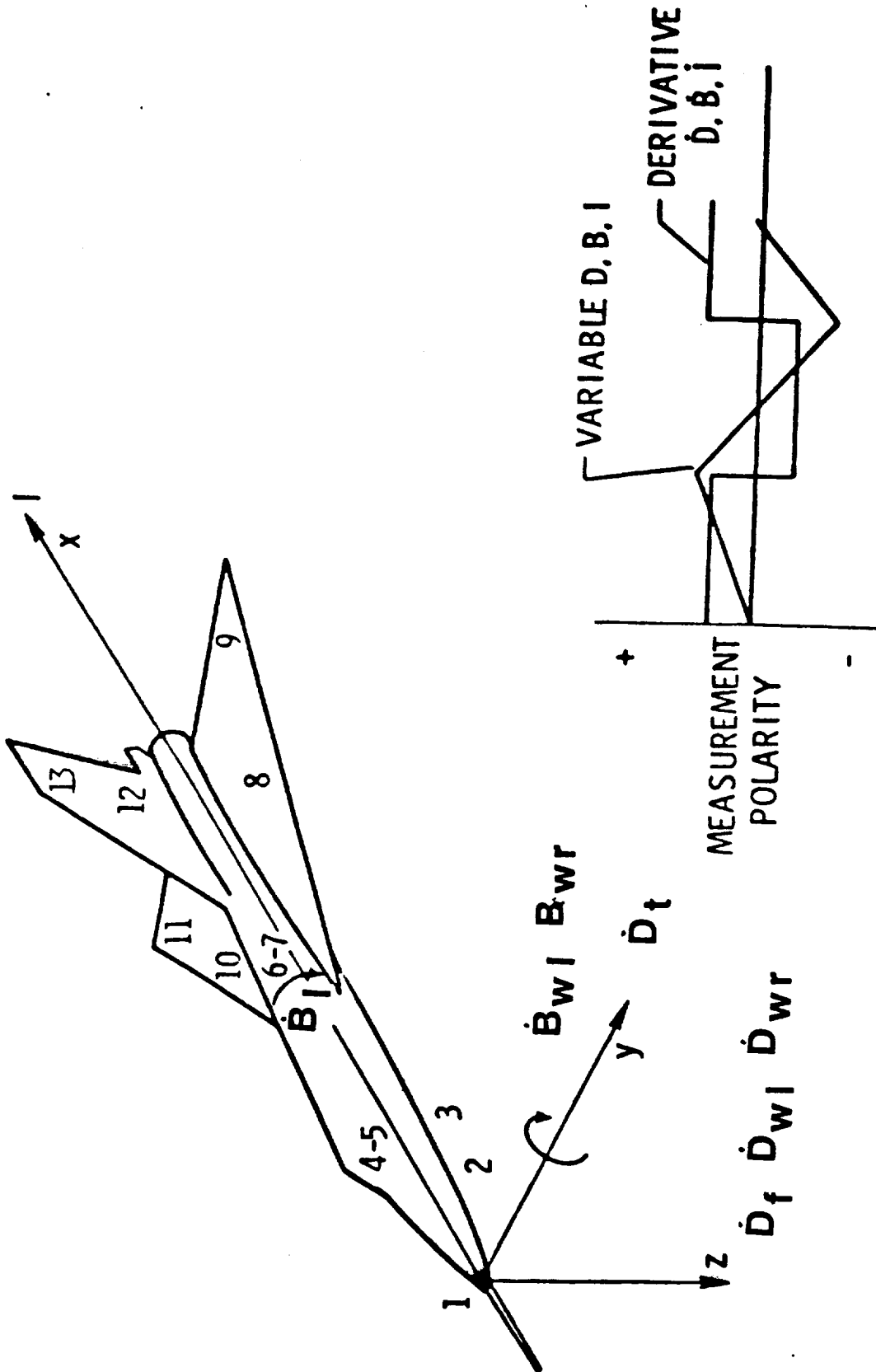


Figure 2. - Electromagnetic sign conventions and sensor locations.

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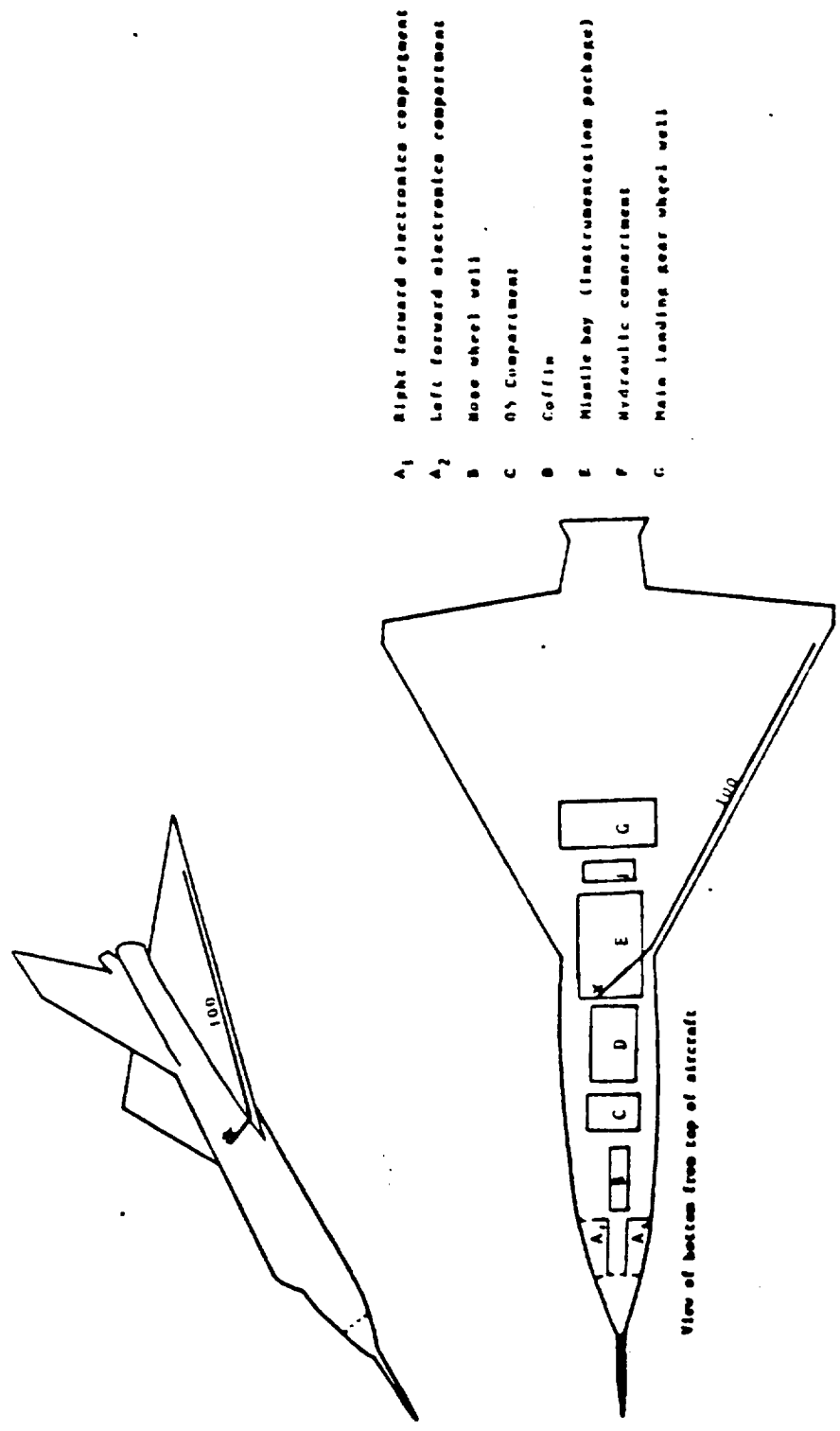


Figure 3. TP 100

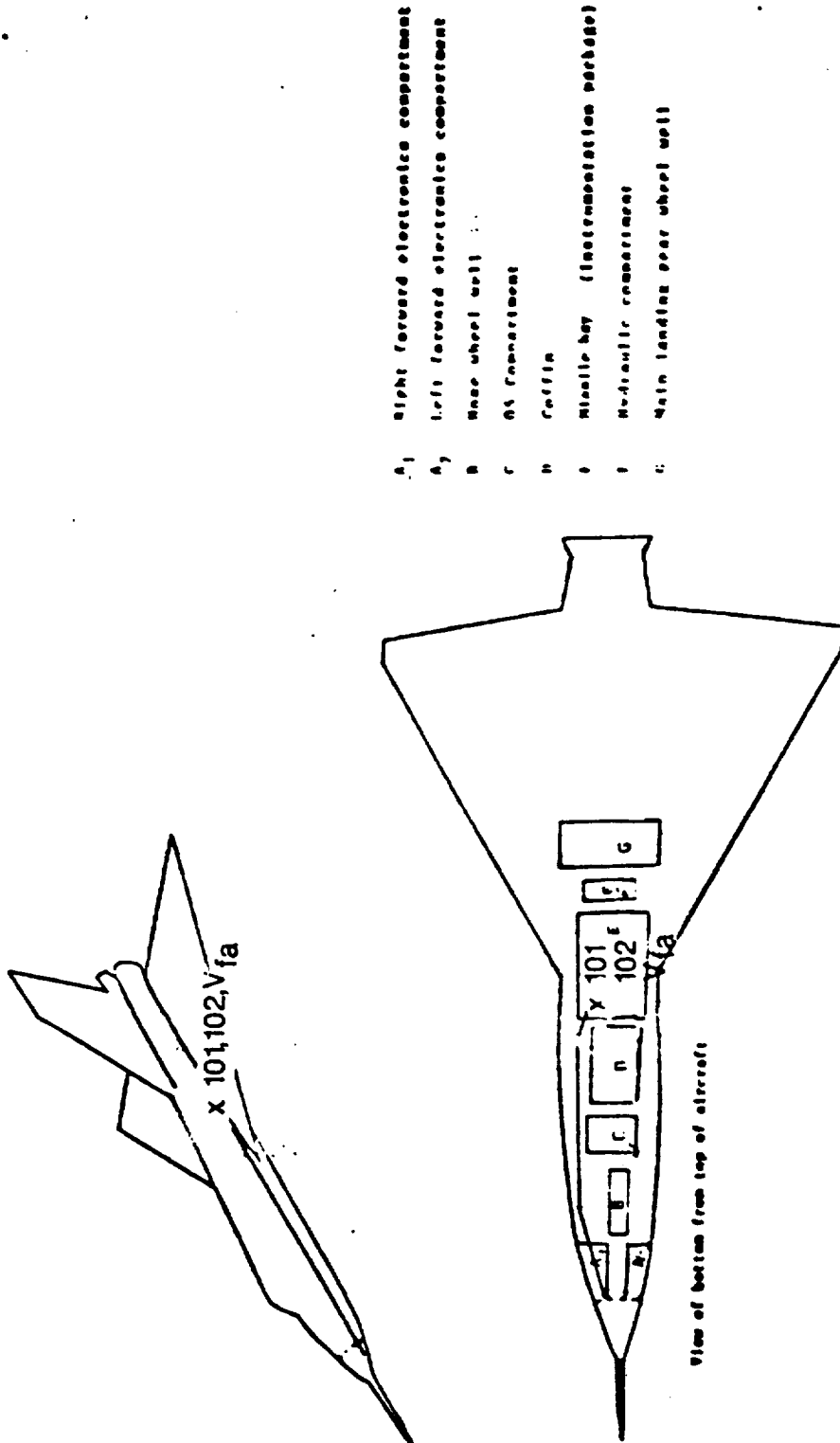


Figure 4. TP 101, 102, and V fa

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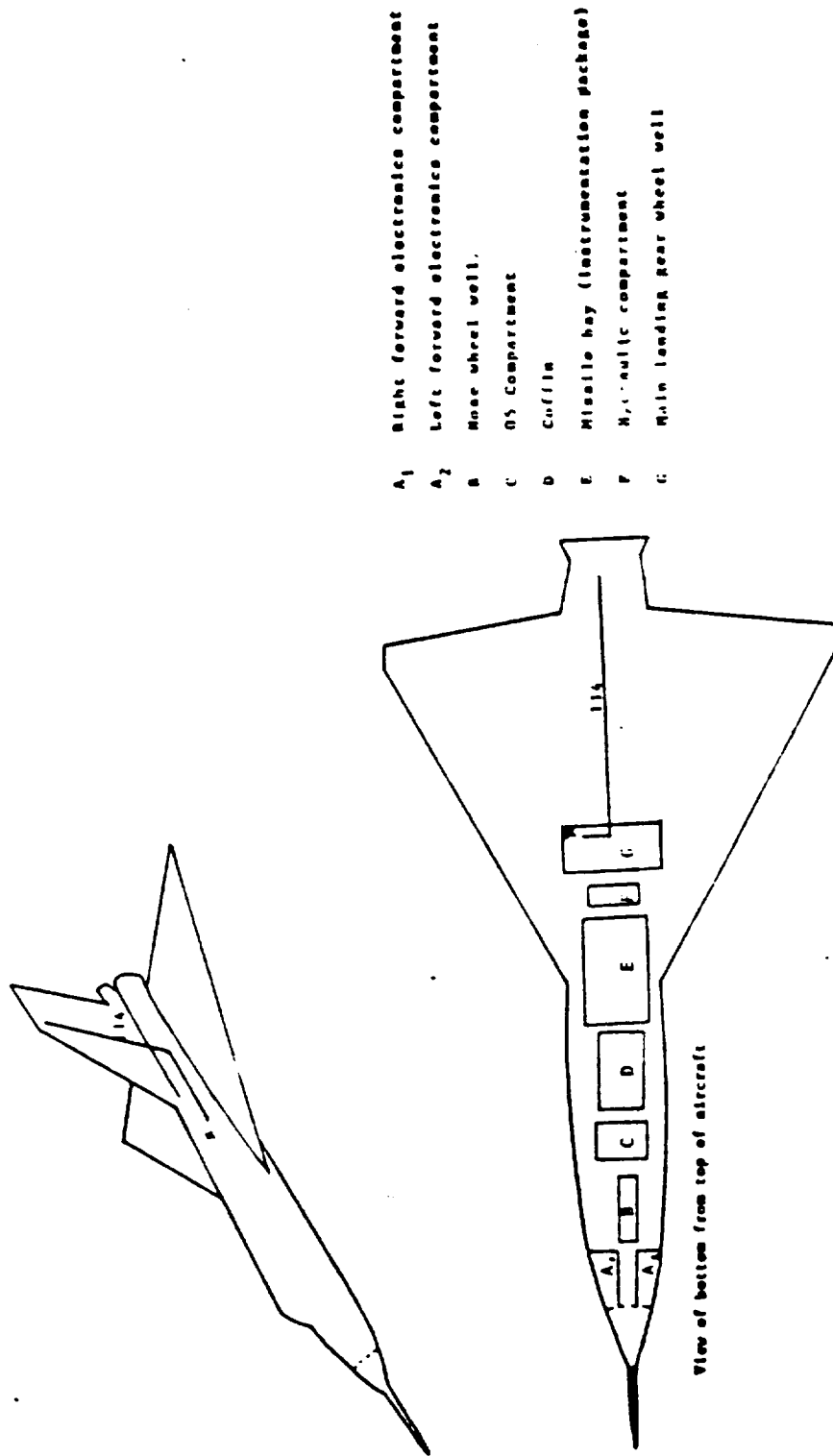
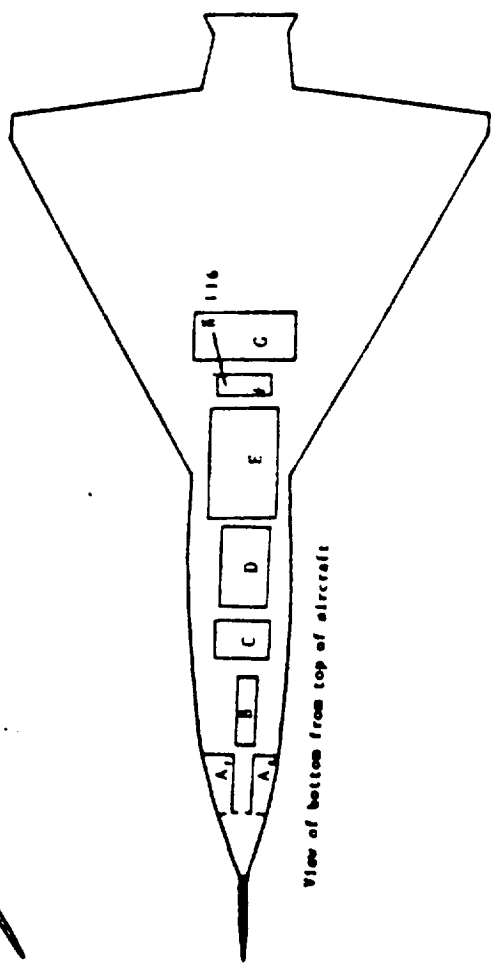
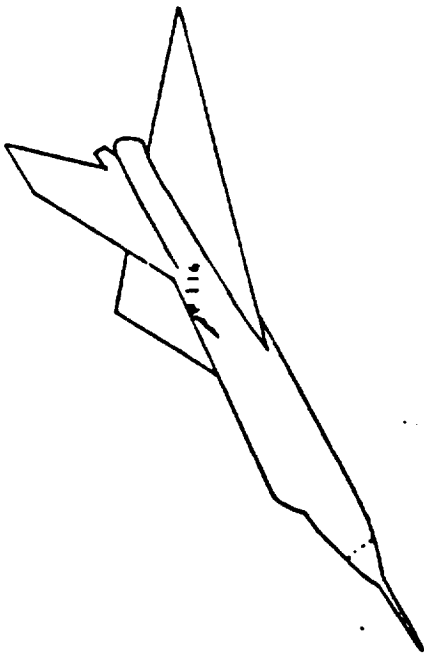


Figure 5. TP 114



- A1 Right forward electronics compartment
- A2 Left forward electronics compartment
- B Nose wheel well
- C O2 Compartment
- D Coffin
- E Missile bay (Instrumentation package)
- F Hydraulic compartment
- G Main landing gear wheel well

Figure 6. TP 116

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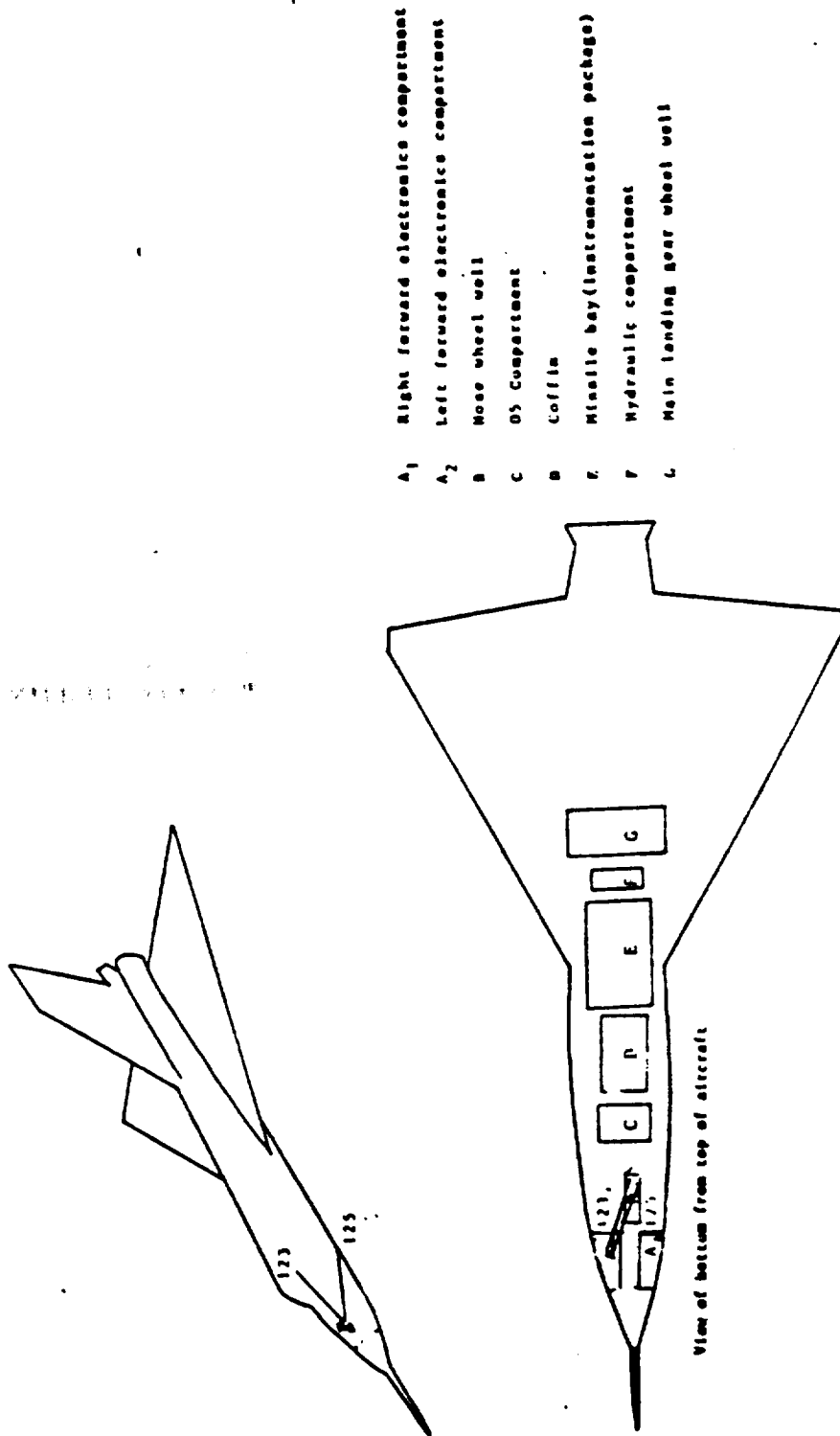


Figure 7. TP 123 and TP 125

E106 LIGHTNING/84.01H

REC 2 RUN NO. 1

5.001

\dot{D}_t A/m²

116:42:55.2
CHANNEL NO. 2.0

MICROSECONDS

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OF POOR QUALITY

F106 LIGHTNING/8#L01#

LECD RUN NO. 1

5.001

I A/s

16:42:56.2
CHANNEL NO. 2.1

MICROSECONDS



F106 LIGHTNING/84.014

LFC2 RUN NO. 1

5.001

B₁ T/s

1800 1200 600 0 -600 -1200 -1800

16:12:56.2
CHANNEL NO. 2:2

MICROSECONDS

0 .2 .4 .6 .8 1.0 1.2

F106 LIGHTNING/84 014

LEF 3 RUN NO. 1

0.001

D_w A/m²

116:42:56.2
CHANNEL NO. 3.1

1.8
1.6
1.4
1.2
1.0
.8
.6
.4
.2
0
-.2

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/8H.01H

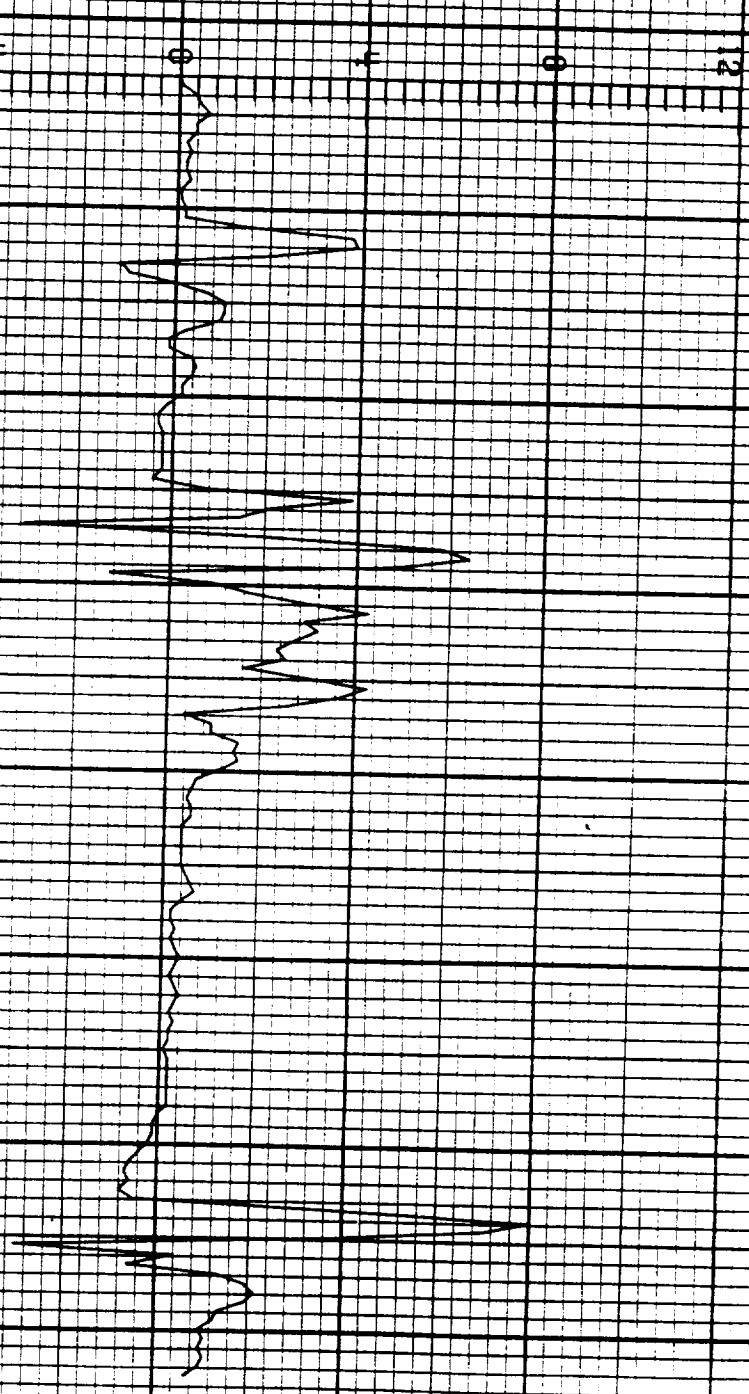
1 EC 3 RUN NO. 1

5.001

\hat{D}_r A/m²

16:42:56.2
CHANNEL NO. 3.2

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/84.014

LECH RUN NO. 1

3.001

TP 101

V
100V

18:42:56.2
CHANNEL NO. 4.0

MICROSECONDS

50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
-160
-170
-180
-190
-200
-210
-220
-230
-240
-250
-260
-270
-280
-290
-300
-310
-320
-330
-340
-350
-360
-370
-380
-390
-400
-410
-420
-430
-440
-450
-460
-470
-480
-490
-500
-510
-520
-530
-540
-550
-560
-570
-580
-590
-600
-610
-620
-630
-640
-650
-660
-670
-680
-690
-700
-710
-720
-730
-740
-750
-760
-770
-780
-790
-800
-810
-820
-830
-840
-850
-860
-870
-880
-890
-900
-910
-920
-930
-940
-950
-960
-970
-980
-990
-1000

27

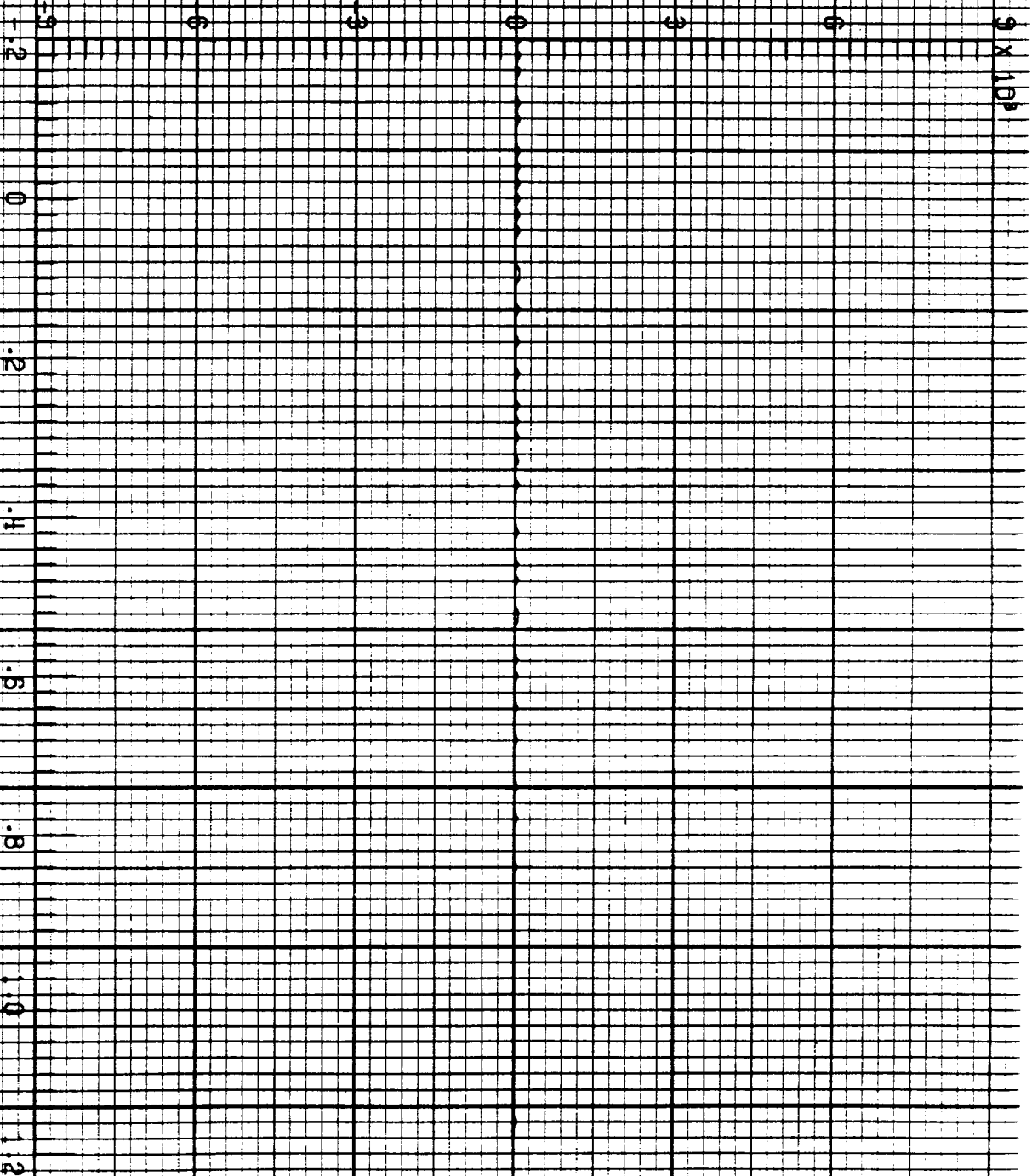
F106 LIGHTNING/8#01#

LECH# RUN NO. 1

5.001

I_n A

5×10^3



16:42:55.2
CHANNEL NO. 4.1

MICROSECONDS

F1008 LIGHTNING/8H.01H

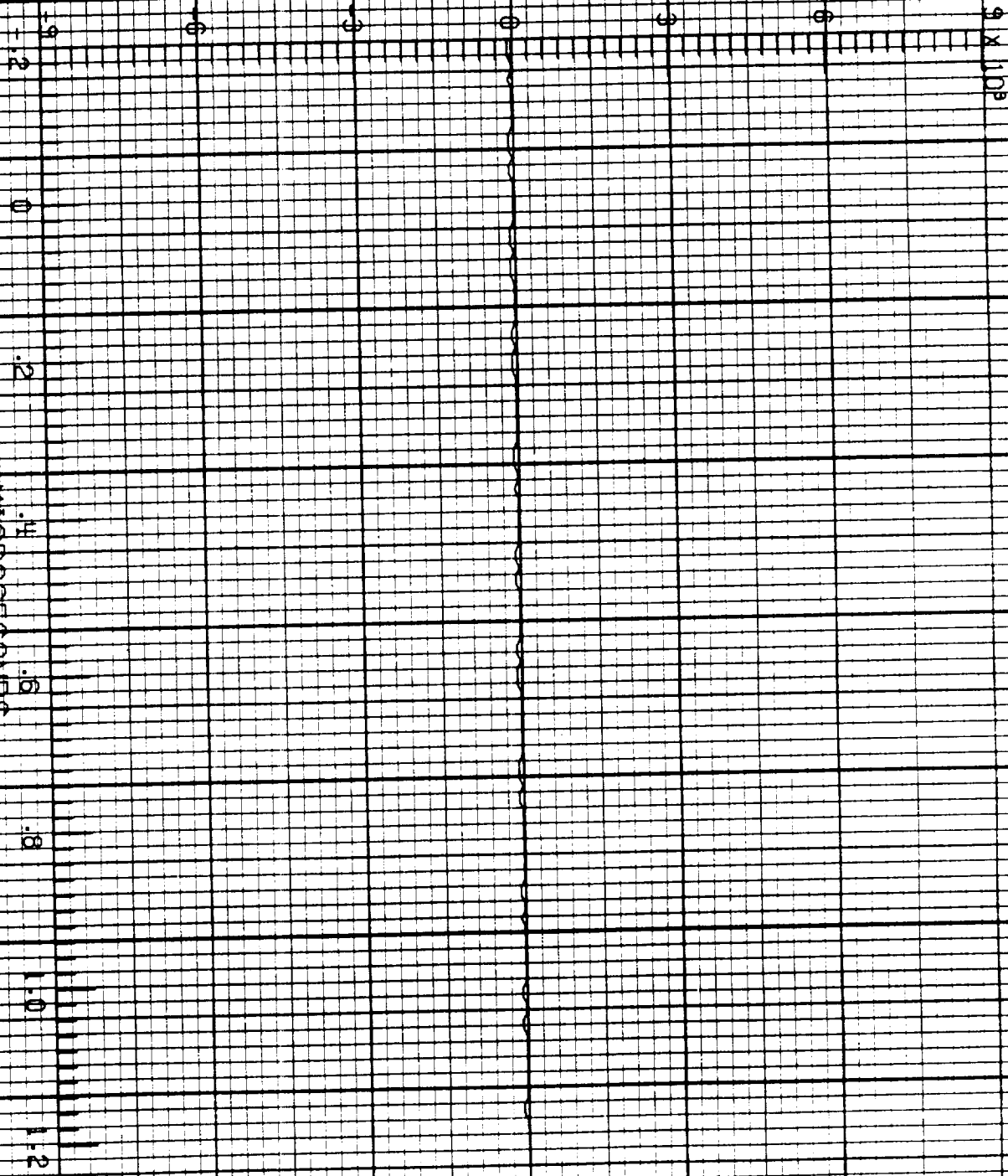
IFC# RIN NO. 1

3.001

T_r A

18:12:55.2
CHANNEL NO. #12

MICROSECONDS



F106 LIGHTNING/8#1014

LECD RUN NO. 2

5.002

D_t A/m²

16:55:36.0
CHANNEL NO. 2:0

MICROSECONDS

-8 -6 -4 -2 0 2 4 6

-4

-2

0

.2

.4

.6

.8

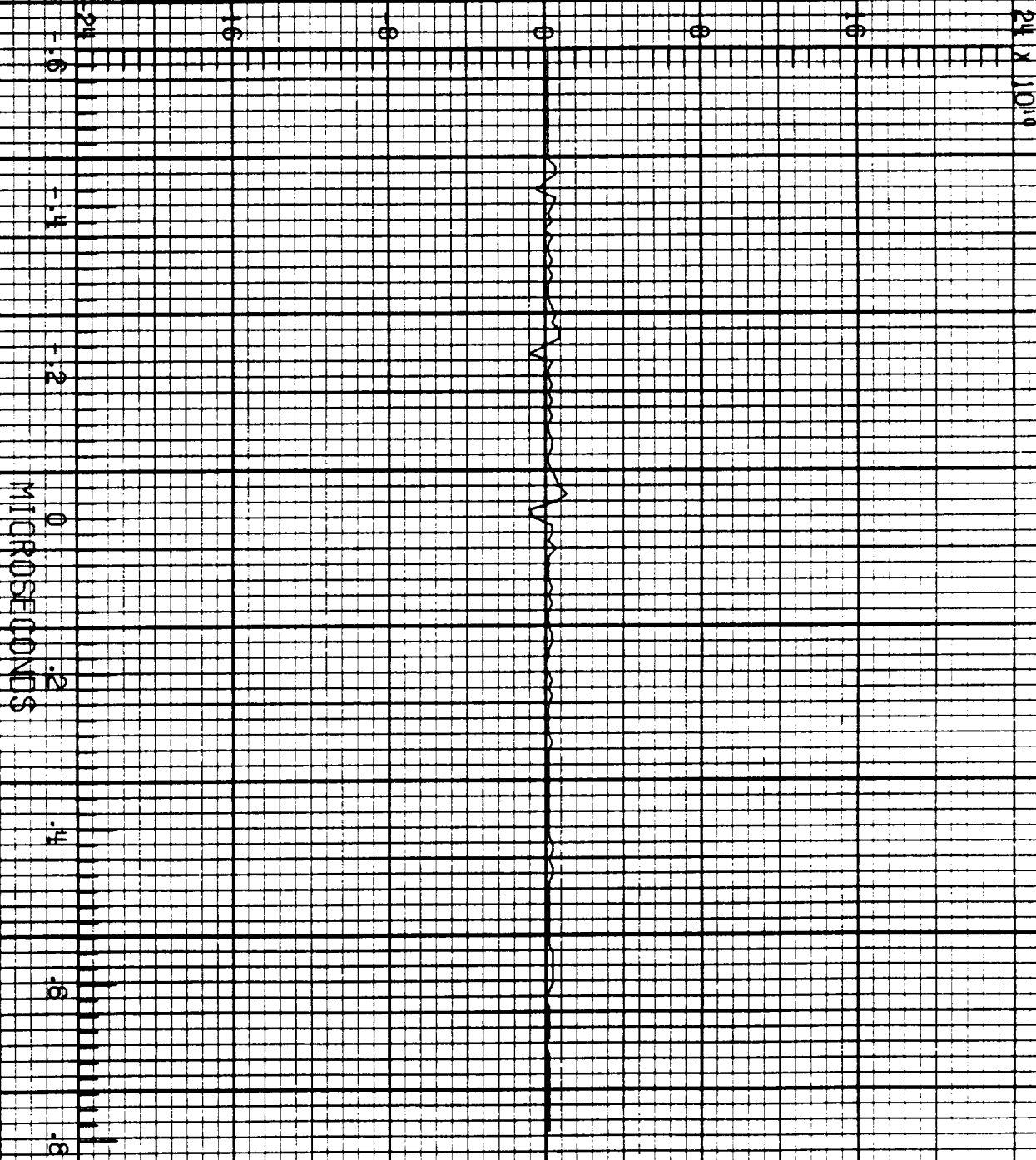
F106 LIGHTNING/84.014

LEC2 RUN NO. 2

5.002

I A/S

16:56:35.0
CHANNEL NO. 2.1



F106 LIGHTNING/84.01H

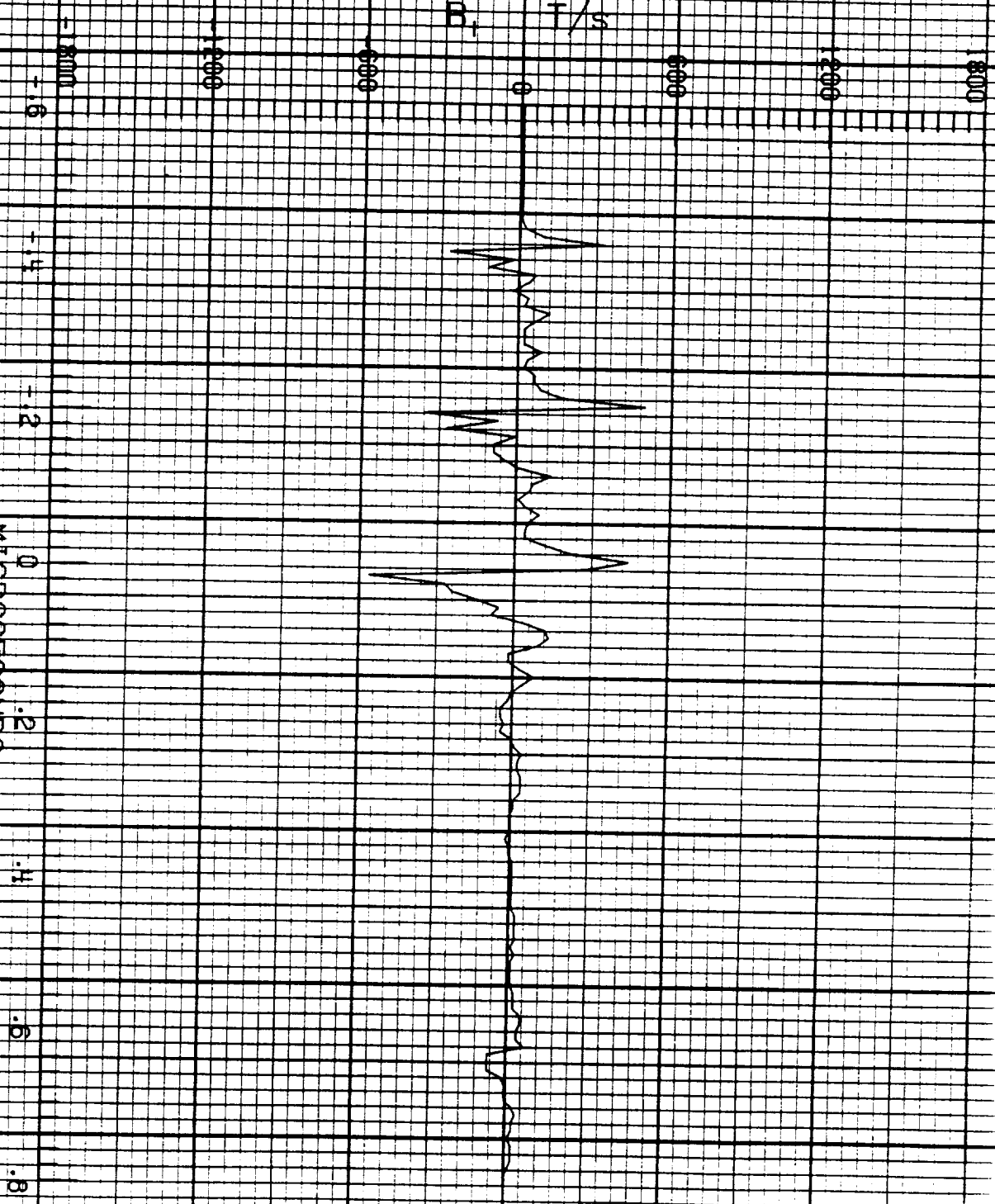
IFC2 RUN NO. 2

3.00P

B_1 T/s

16:55:36.0
CHANNEL NO. 2.2

MICROSECONDS



F106 LIGHTNING/84.014

LEC3 RUN NO. 2

3.002

D_w A/m²

116:56:35.0
CHANNEL NO. 3.1

MICROSECONDS



F106 LIGHTNING/8# .01#

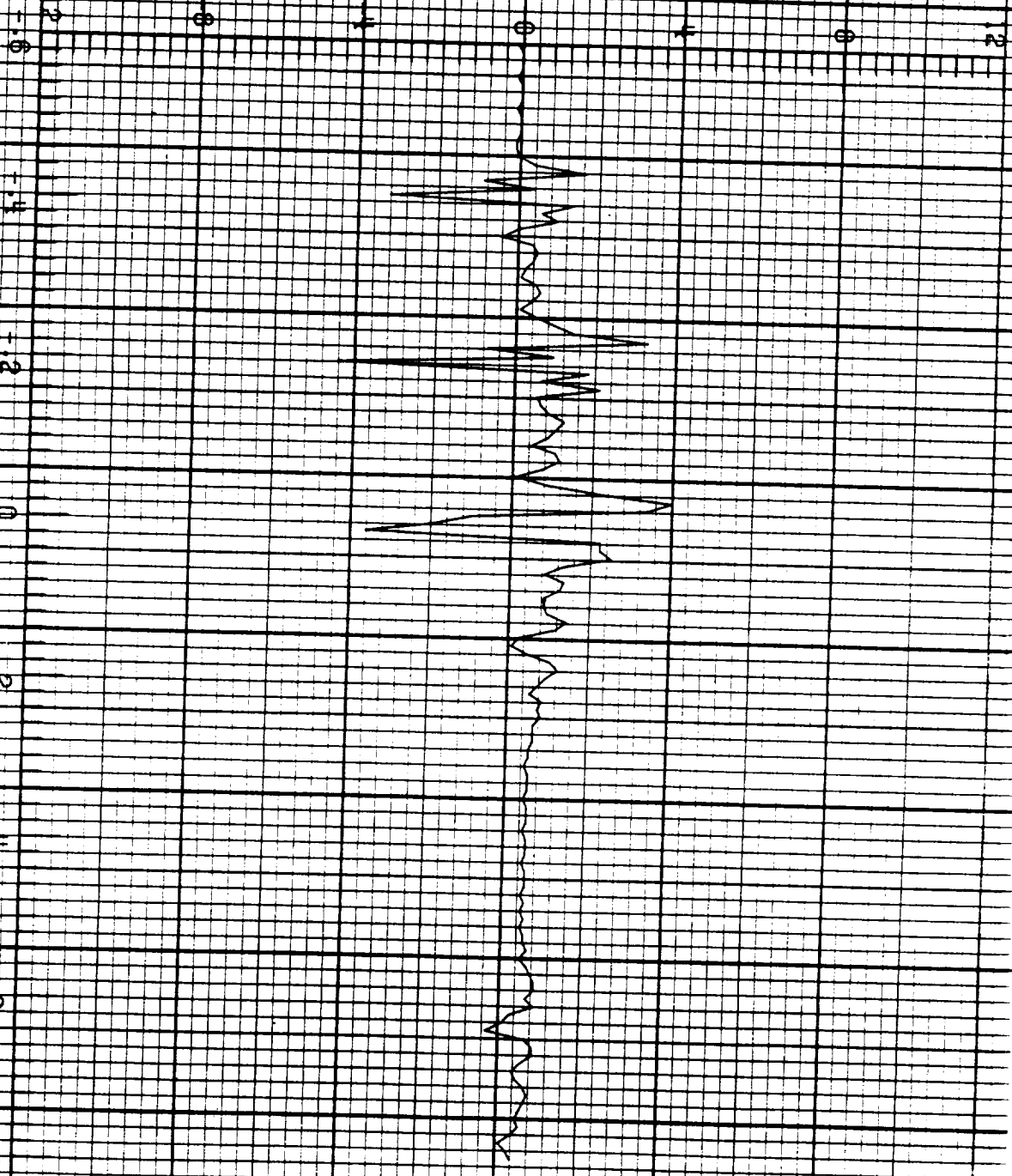
IFCR RUN NO. 2

5.002

D_r A/m²

16:58:35.0
CHANNEL NO. 3.2

MICROSECONDS



F106 LIGHTNING/84.014

LECH RUN NO. 2

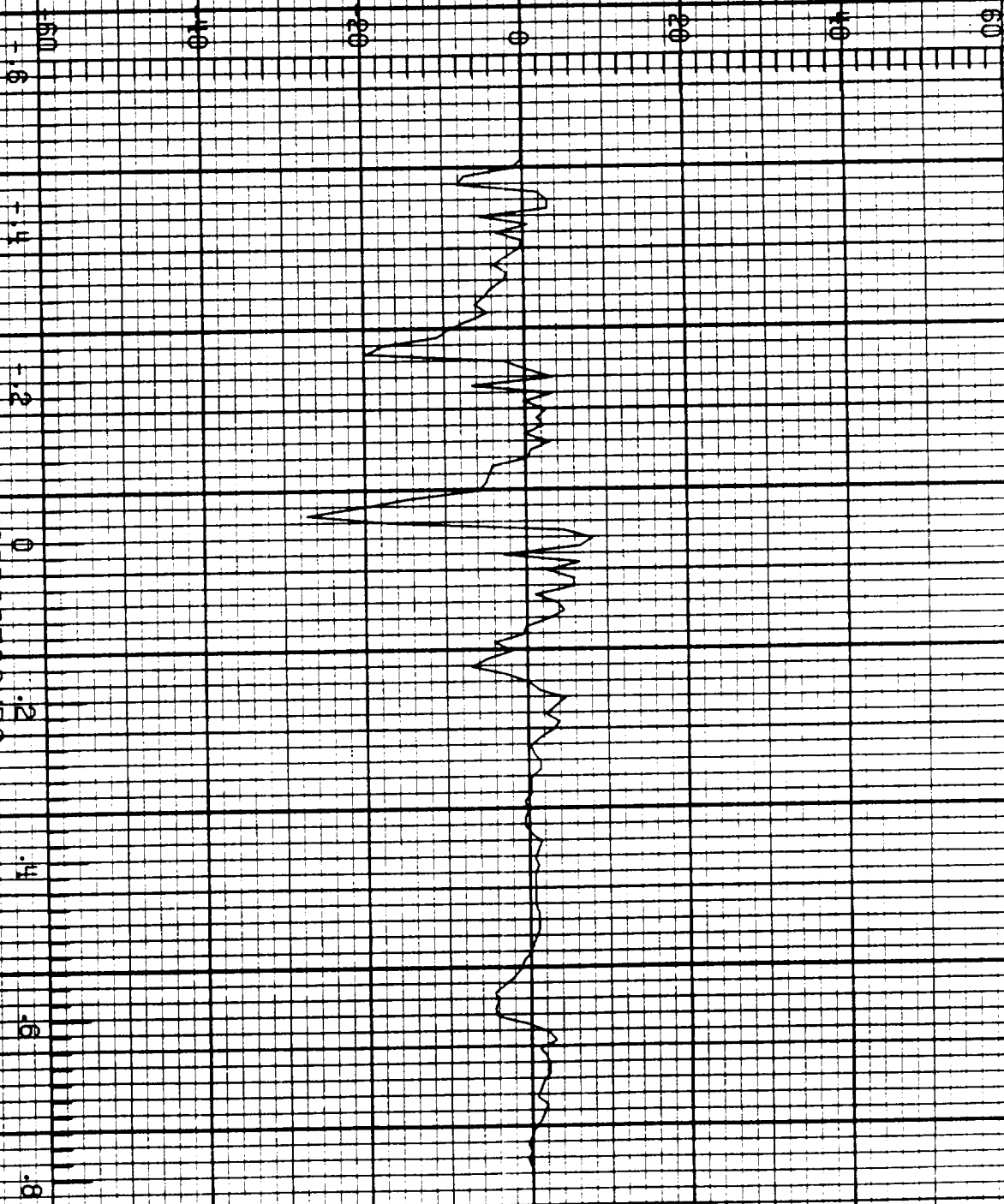
TP 101

5.002

V_{fb} V

18:56:36.0
CHANNEL NO. 4.0

MICROSECONDS



F106 LIGHTNING/8#L01#

IFC# RUN NO. 2

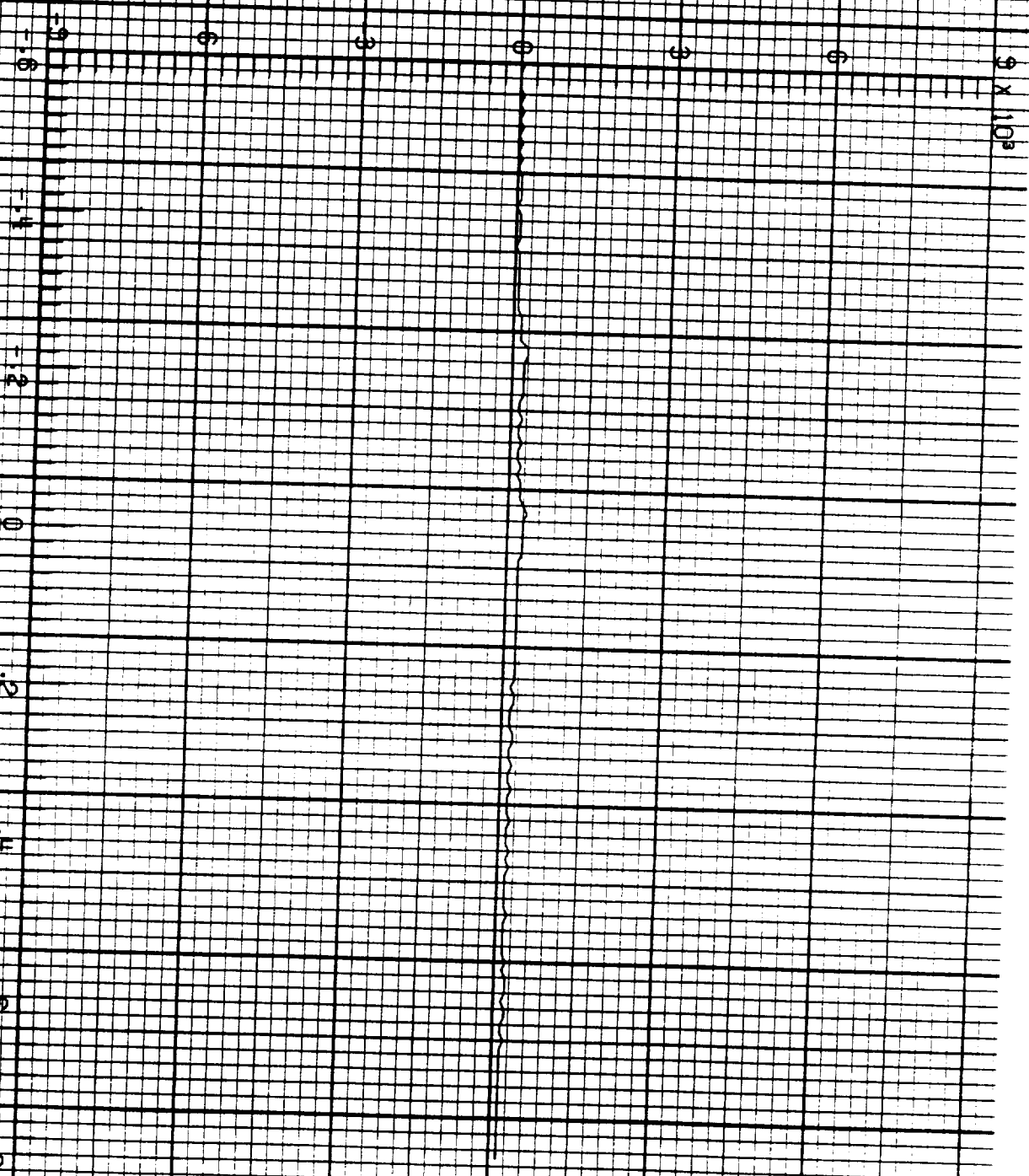
6.002

I_r A

116:56:36.0
CHANNEL NO. 4:1

MICROSECONDS

5 x 10³



F106 LIGHTNING/84.01#

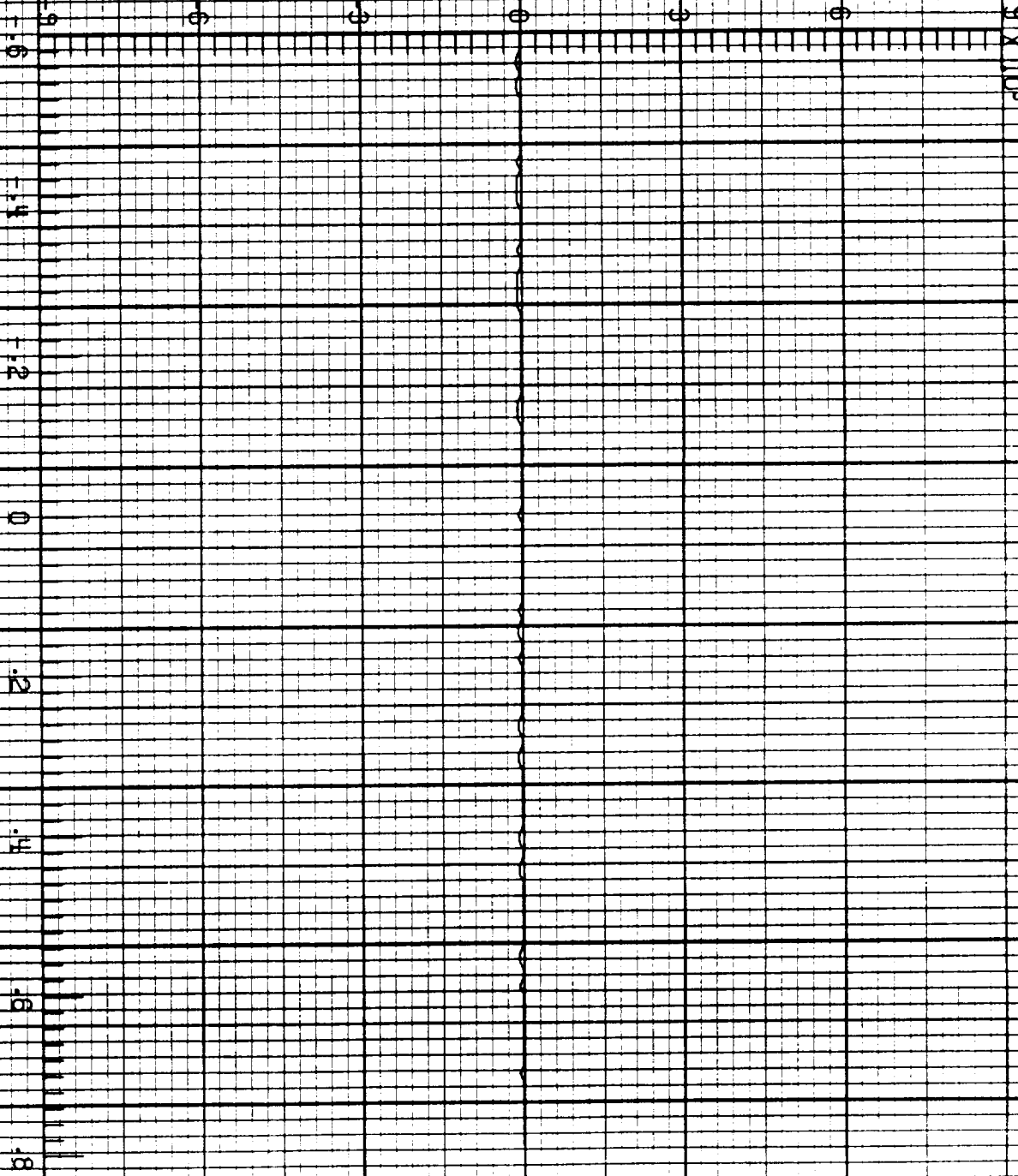
LEC4 RUN NO. 2

5.002

I_r A

16:56:36.0
CHANNEL NO. 4.2

MICROSECONDS



F106 LIGHTNING/84.015

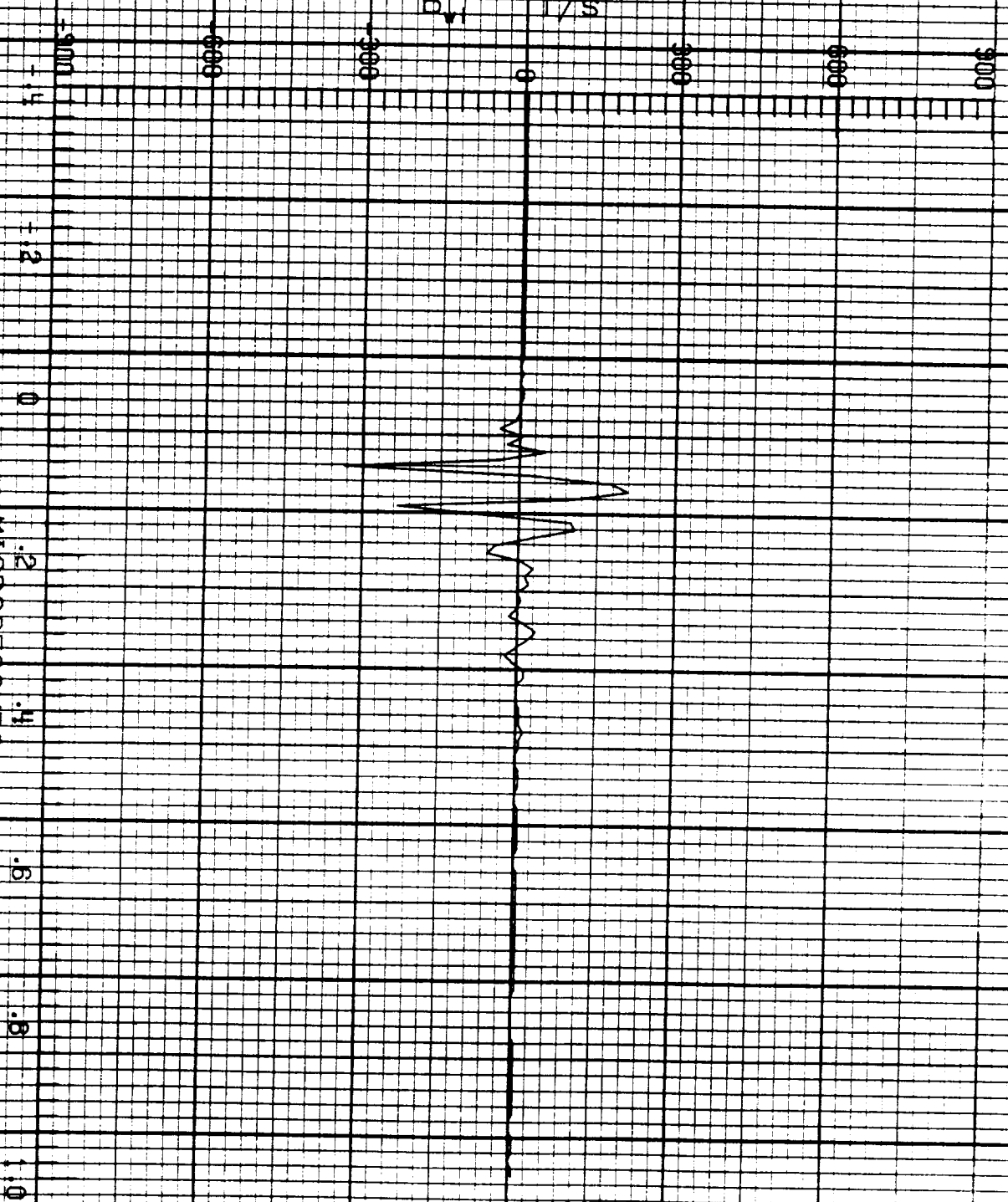
LFC1 RUN NO. 1

S.001

B_v T/s

20:28:28.8
CHANNEL NO. 1.1

MICROSECONDS



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F106 LIGHTNING/8# .015

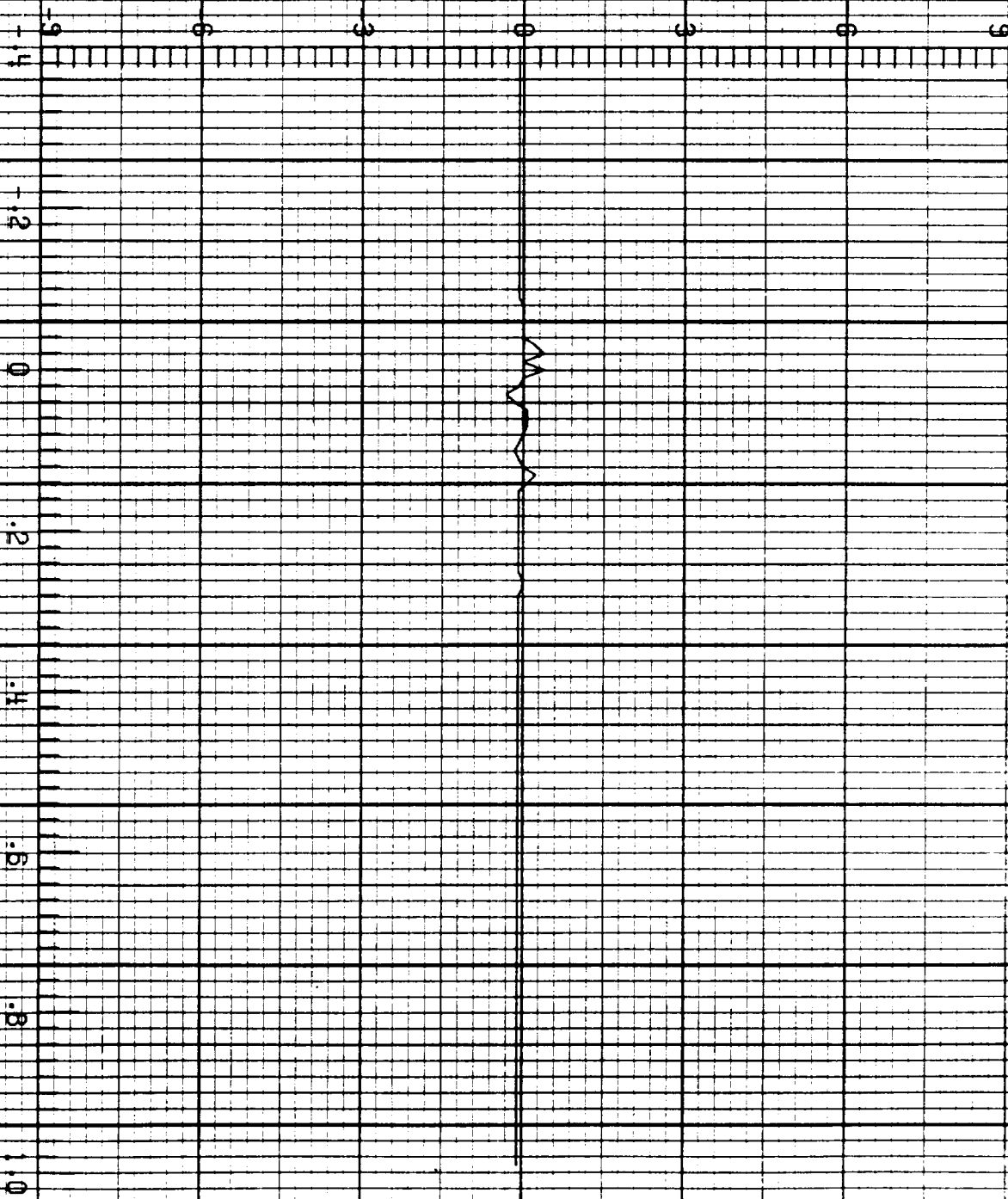
1 FC 2 RUN NO. 1

6.001

D_t A/m²

20:28:28.8
CHANNEL NO. 2.0

MICROSECONDS



F106 LIGHTNING/8#L015

IFC2 RUN NO. 1

5.001

I A/s

PC:23:28.8
CHANNEL NO.: 2.1

MICROSECONDS

24 X 10¹⁰

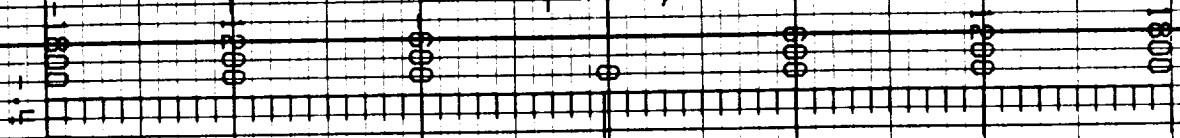
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F106 LIGHTNING/8# .015

LFC.2 RUN NO. 1

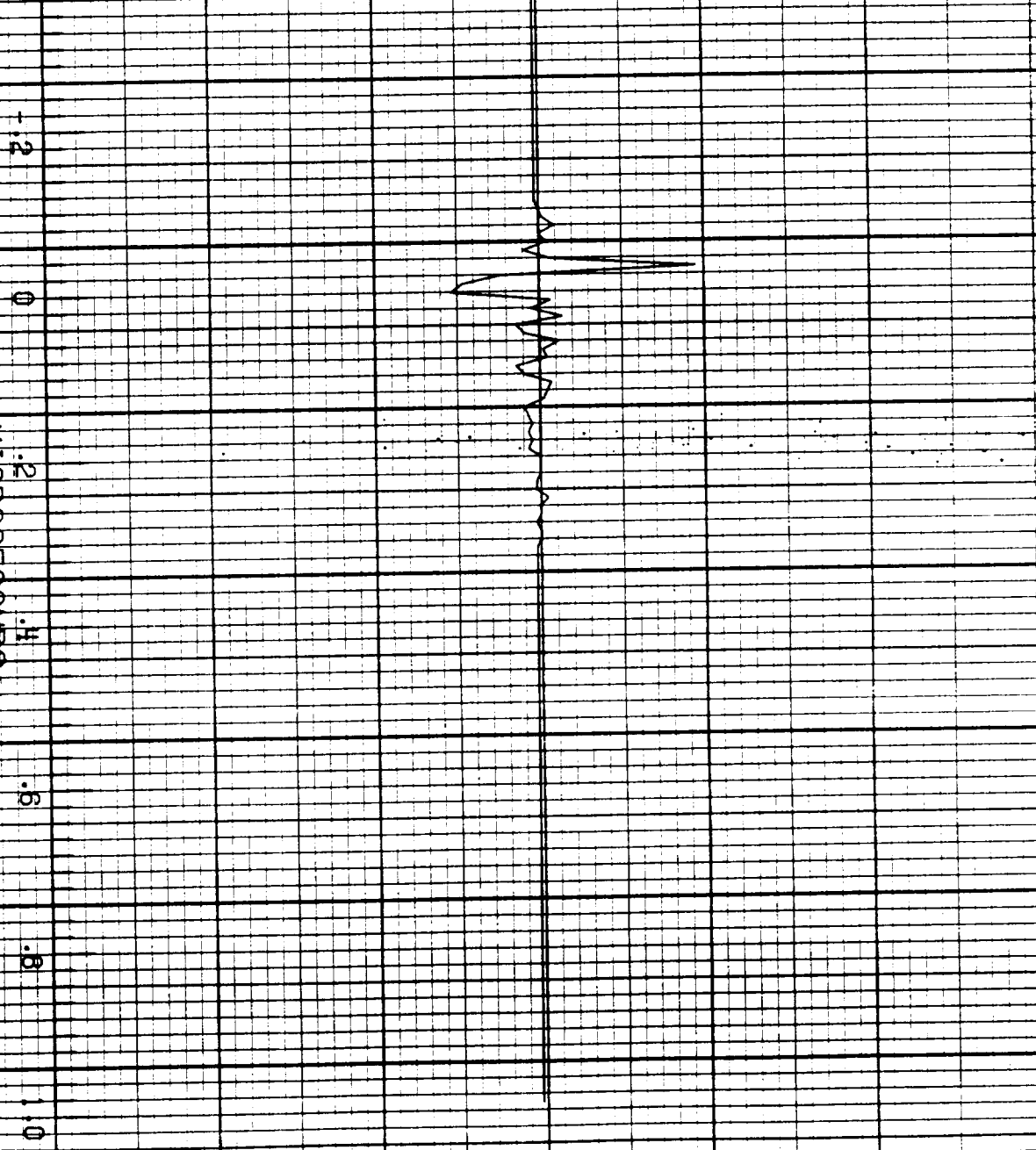
6.001

B_1 T/s



20:28:28.8
CHANNEL NO: 2:2

MICROSECONDS



F106 LIGHTNING/8# .015

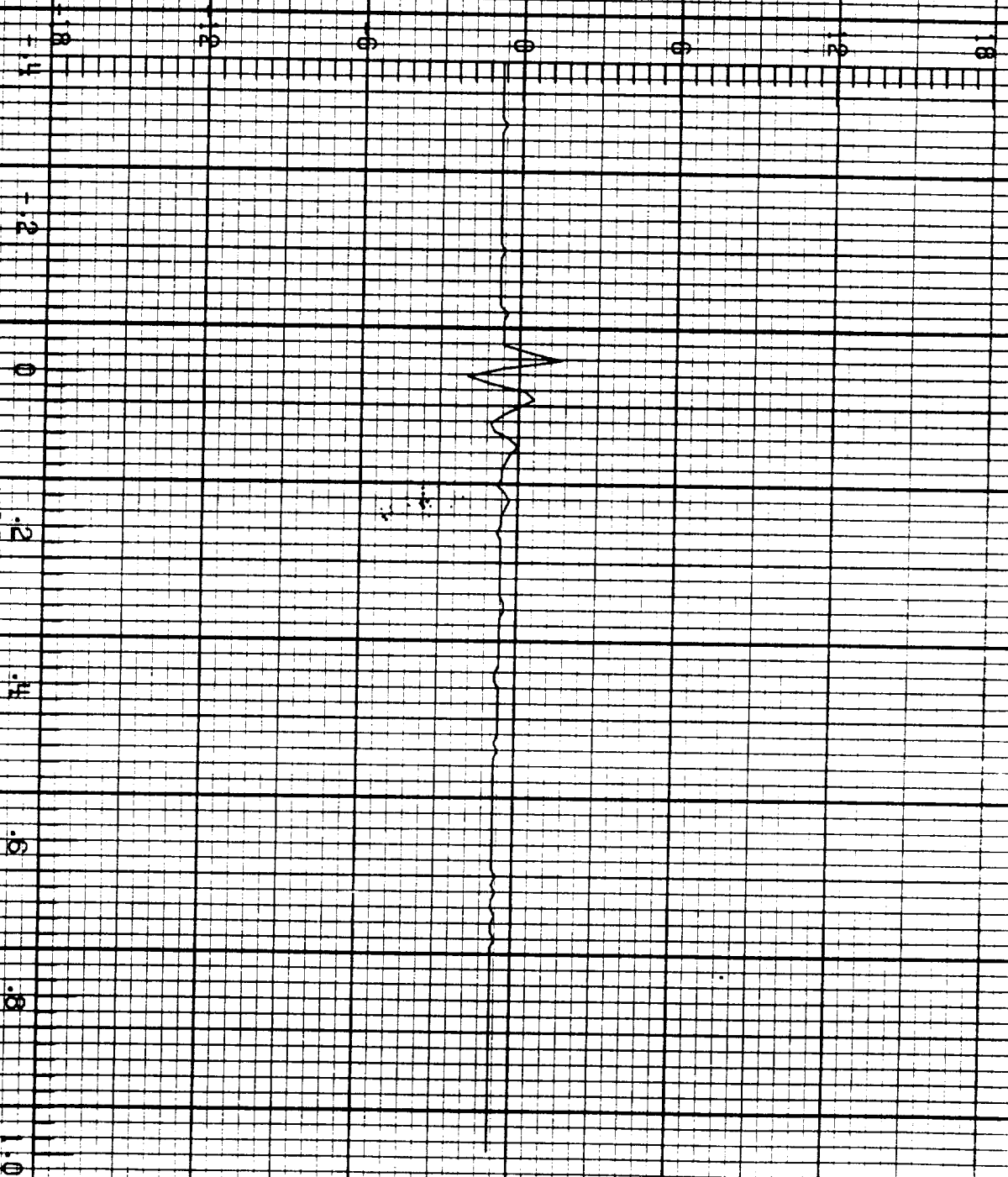
LFCB RUN NO. 1

5.001

D_{wt} A/m²

20:28:28.8
CHANNEL NO. 8.1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/8#J015

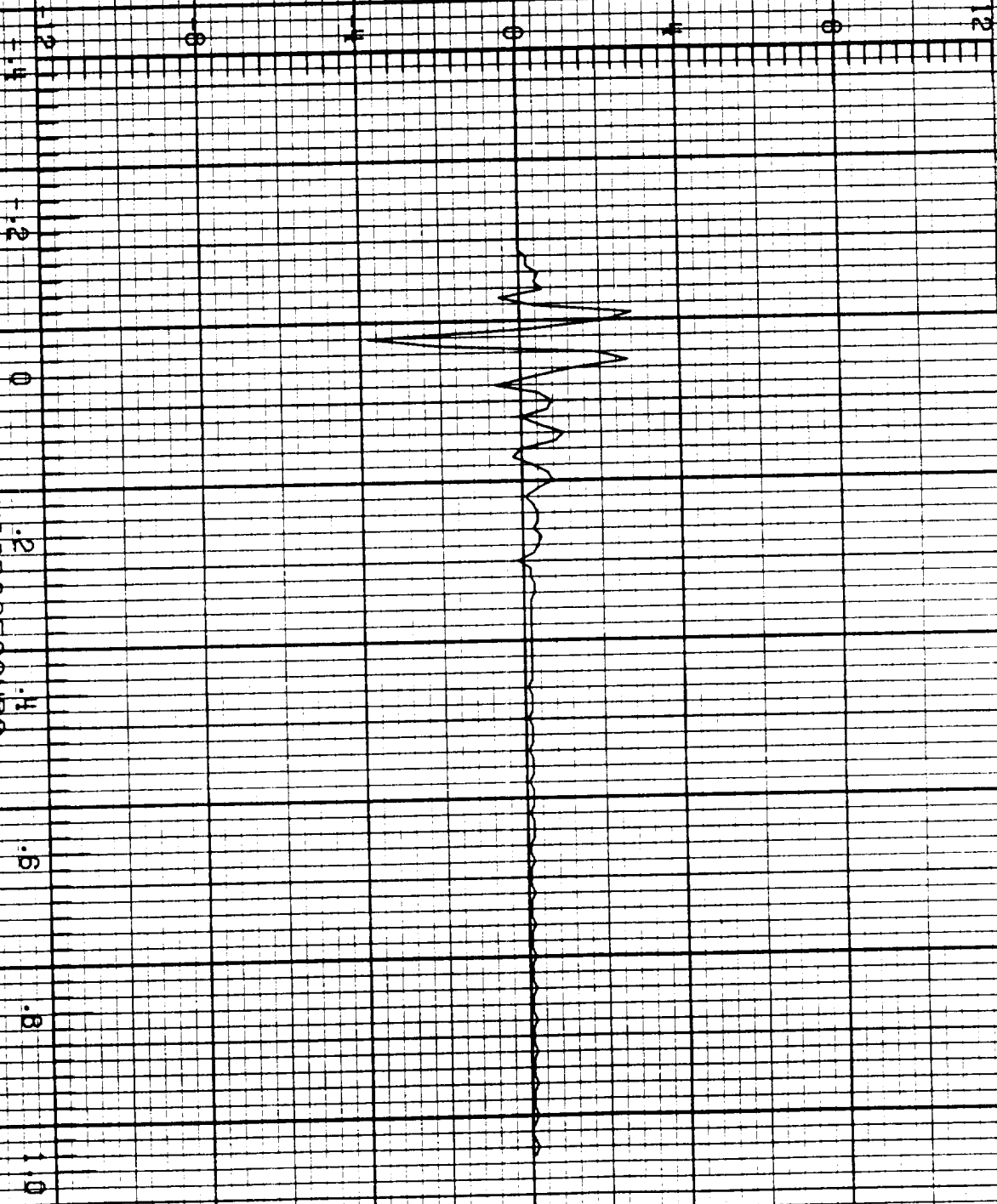
LECR RUN NO. 1

5.001

D_r A/m²

20:28:28.8
CHANNEL NO. 3.2

MICROSECONDS



E106 LIGHTNING/84.015

LECH RUN NO. 1

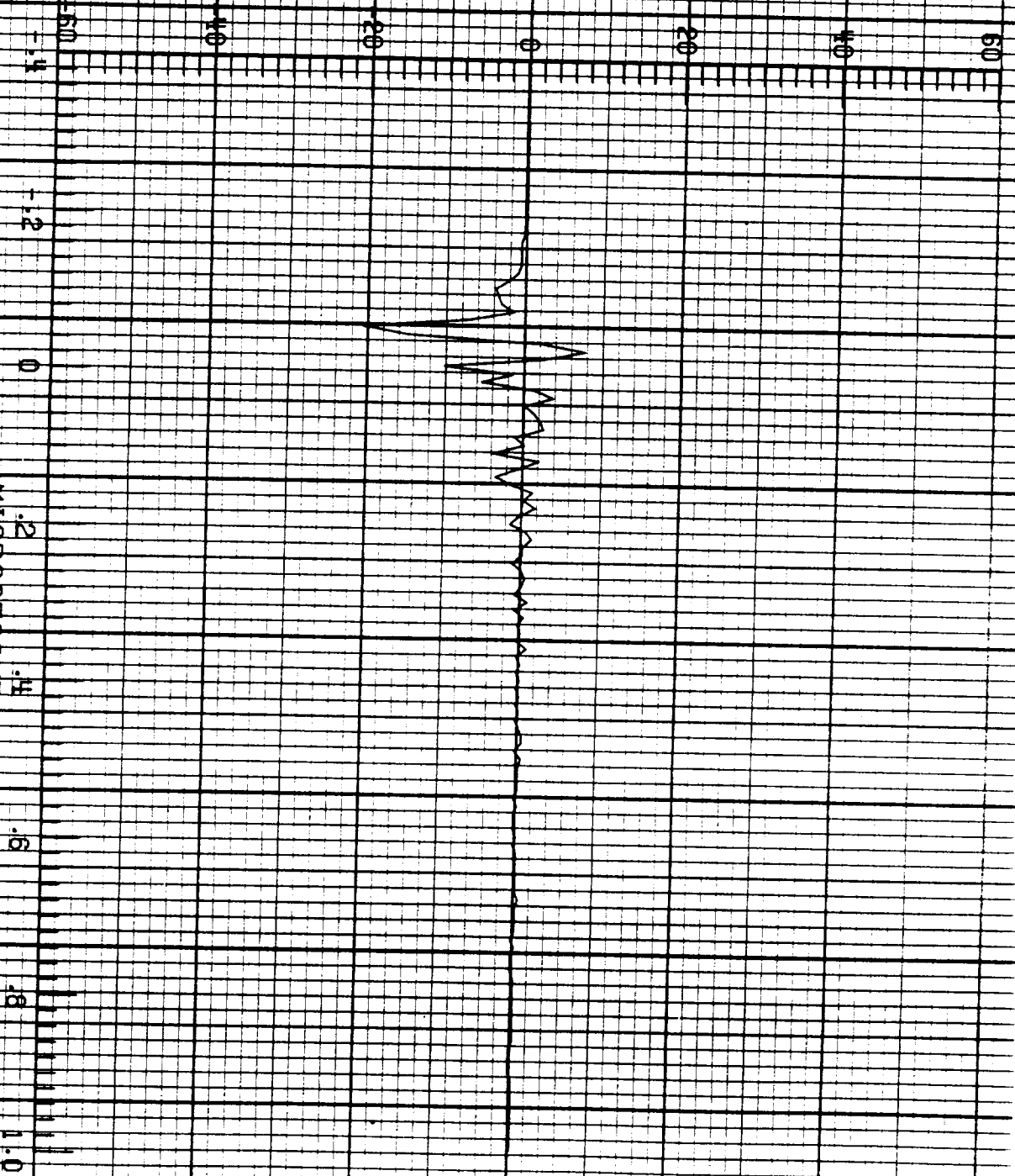
5.001

TP 101

V_{1b} V

20:28:28.8
CHANNEL NO. 4.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/8#.015

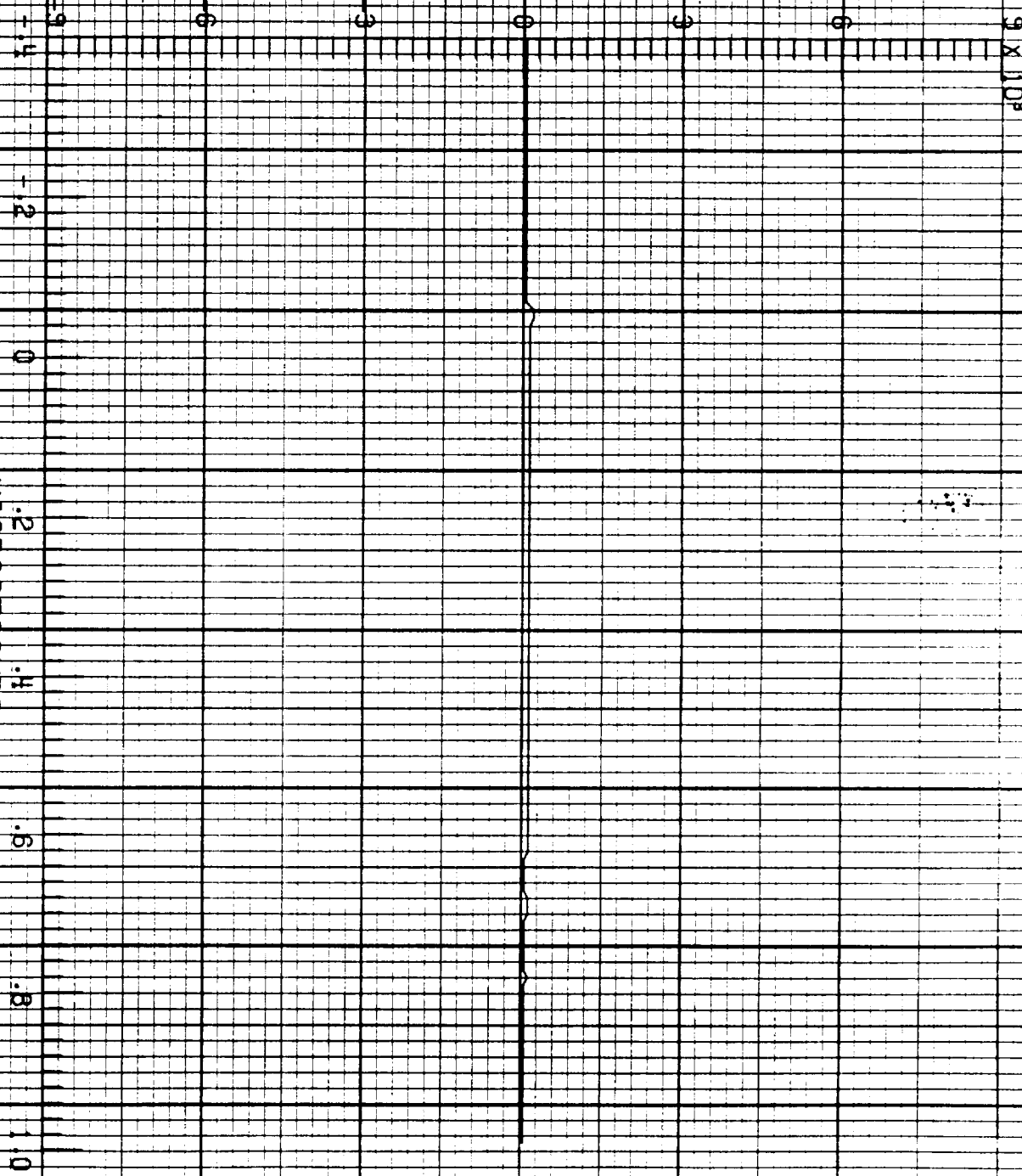
IFC# RUN NO. 1

5.001

I_r A

20:28:28.8
CHANNEL NO. #.1

MICROSECONDS



9 X 10³

F106 LIGHTNING/84.015

LEC 4 RUN NO. 1

3.001

I_t A

9 X 10³

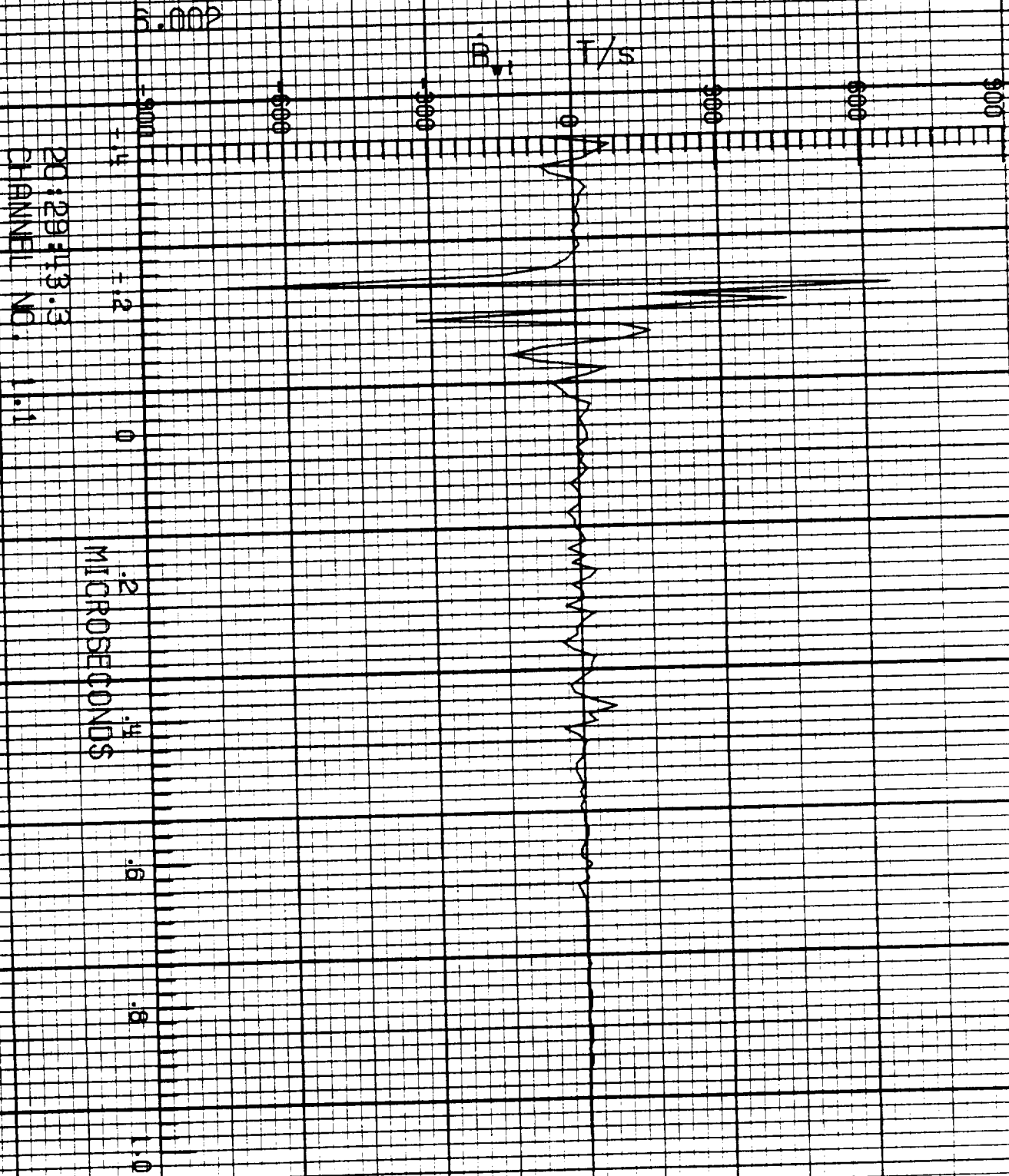
20:28:28.8
CHANNEL NO. #.2

MICROSECONDS

ORIGINAL PAGE IS
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F106 LIGHTNING/84.015

LEO 1 RUN NO. 2



20:29:43.3
CHANNEL NO. 1.1

F106 LIGHTNING/8#L015

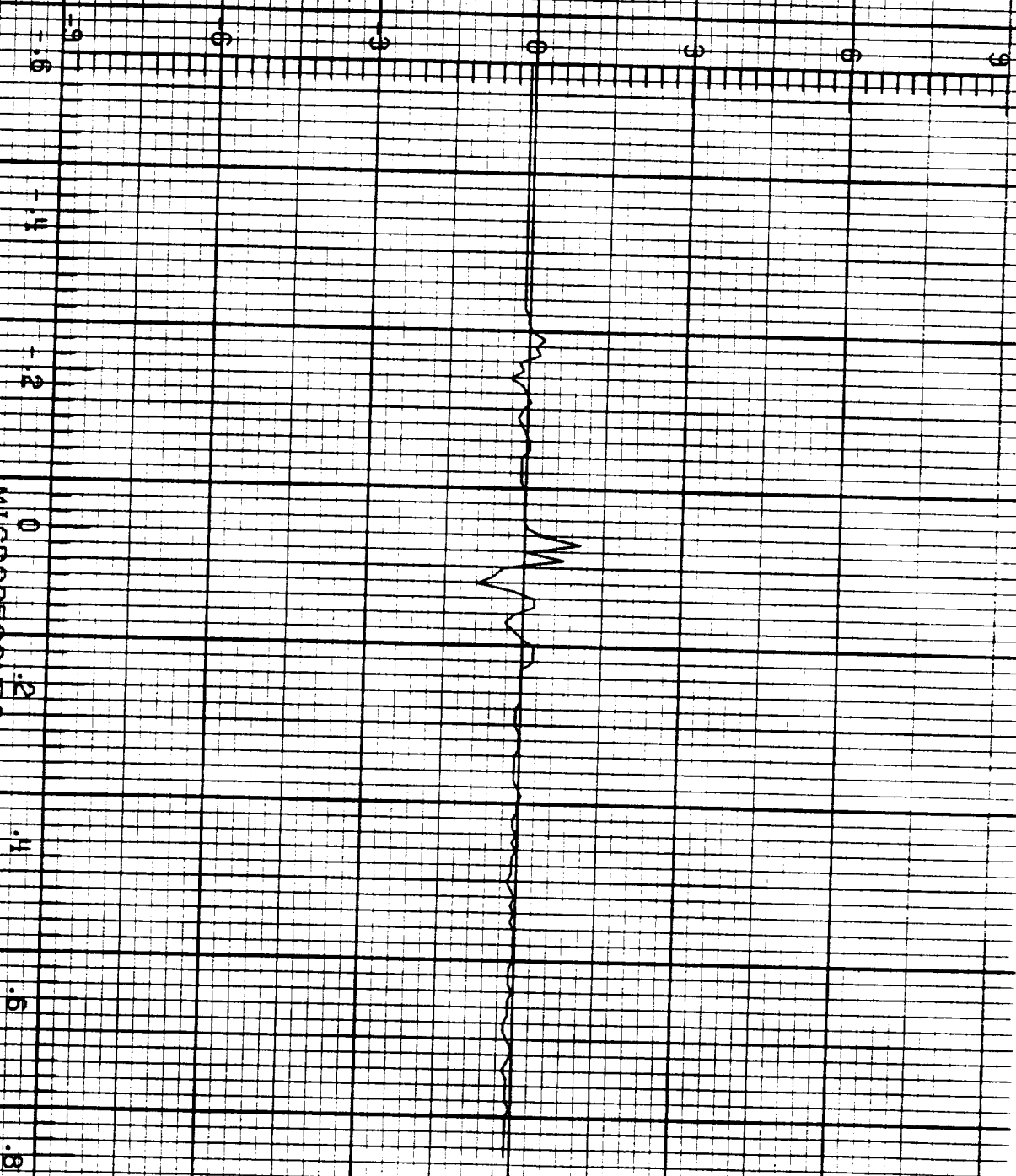
LEO2 RUN NO. 2

5.002

D_t A/m²

20:29:43.3
CHANNEL NO. 2.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/84.015

REC 2 RUN NO. 2

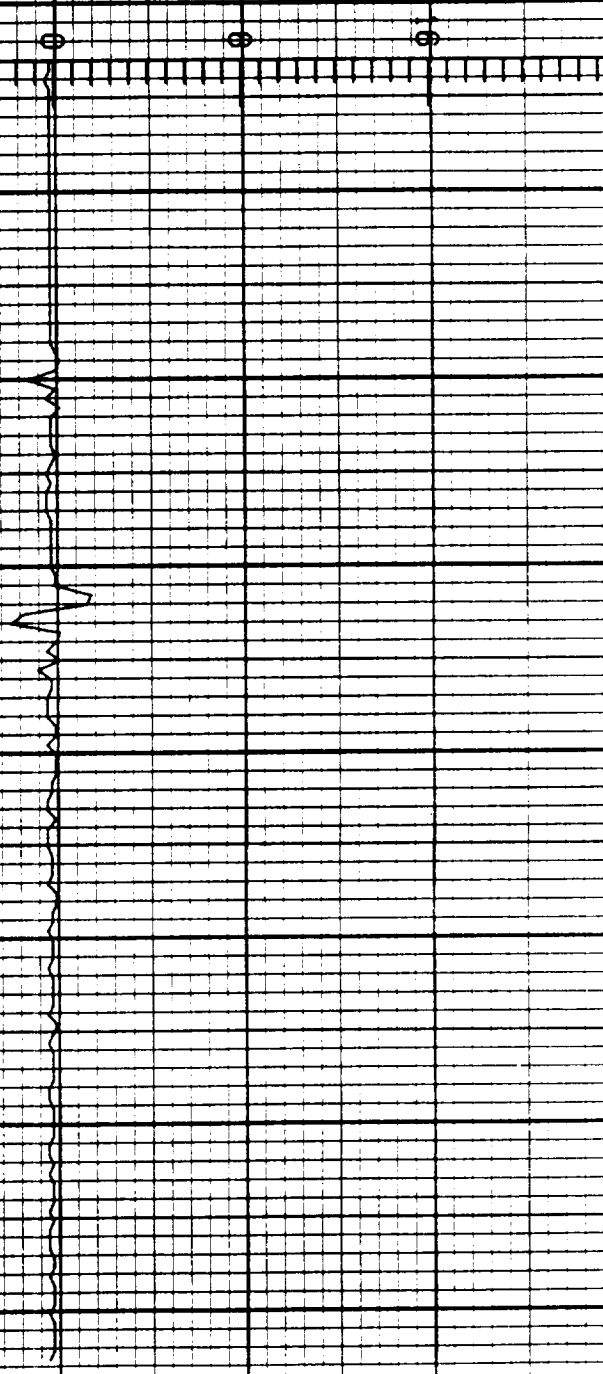
3.002

I A/s

20:29:43.3
CHANNEL NO. 2.1

MICROSECONDS

200
150
100
50
0
50
100
150
200



F106 LIGHTNING/84.015

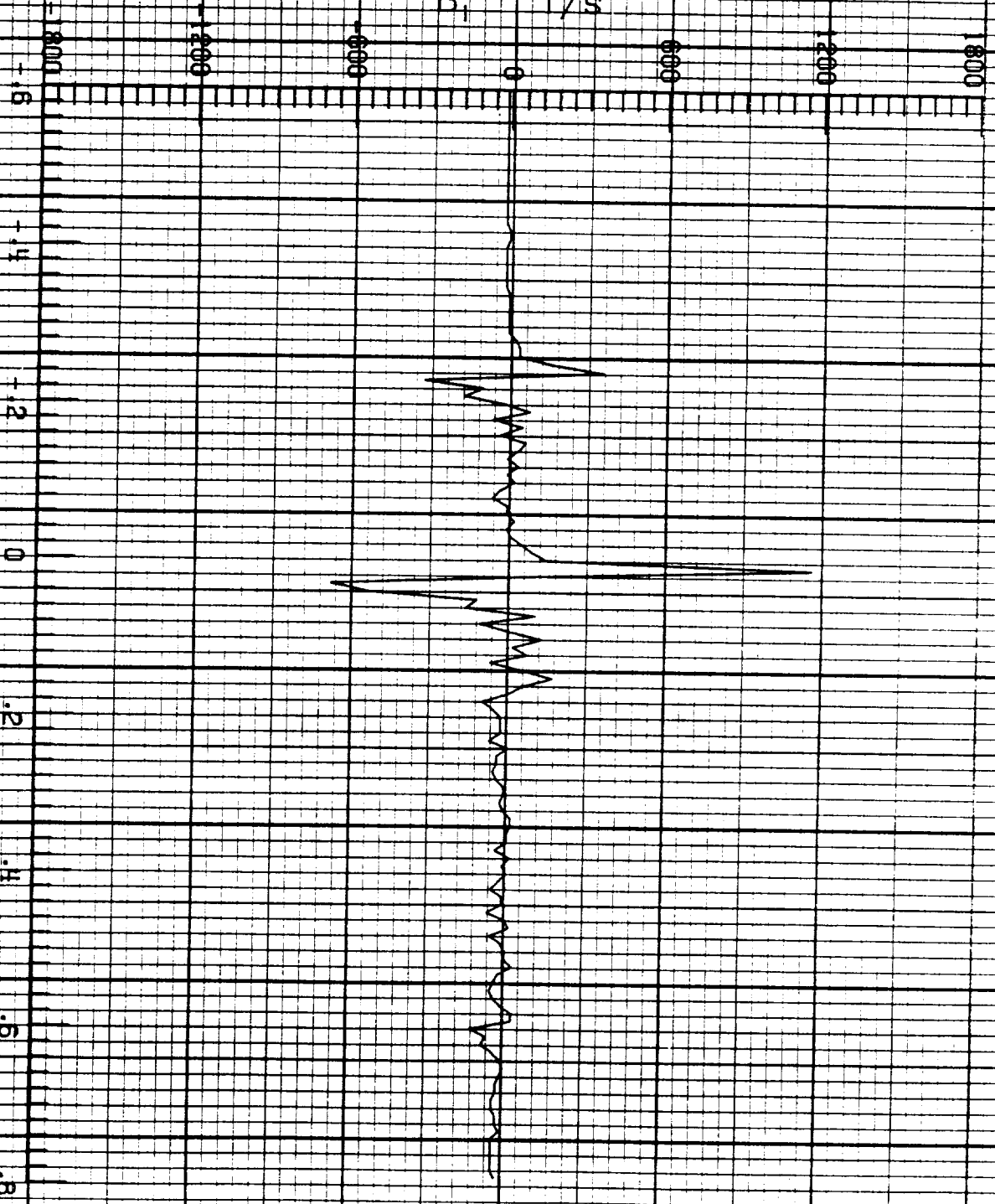
IFC 2 RUN NO. 2

5.002

B_1 T/s

20:29:43.3
CHANNEL NO. 2.2

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/84.015

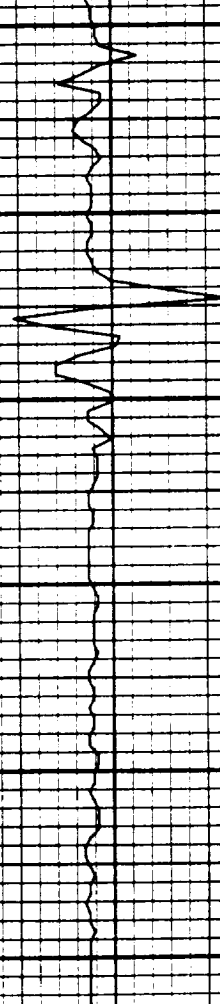
LECS RUN NO. 2

5.002

D_{wt} A/m^2

20:29:43.3
CHANNEL NO. 3.1

MICROSECONDS



F106 LIGHTNING/84.015

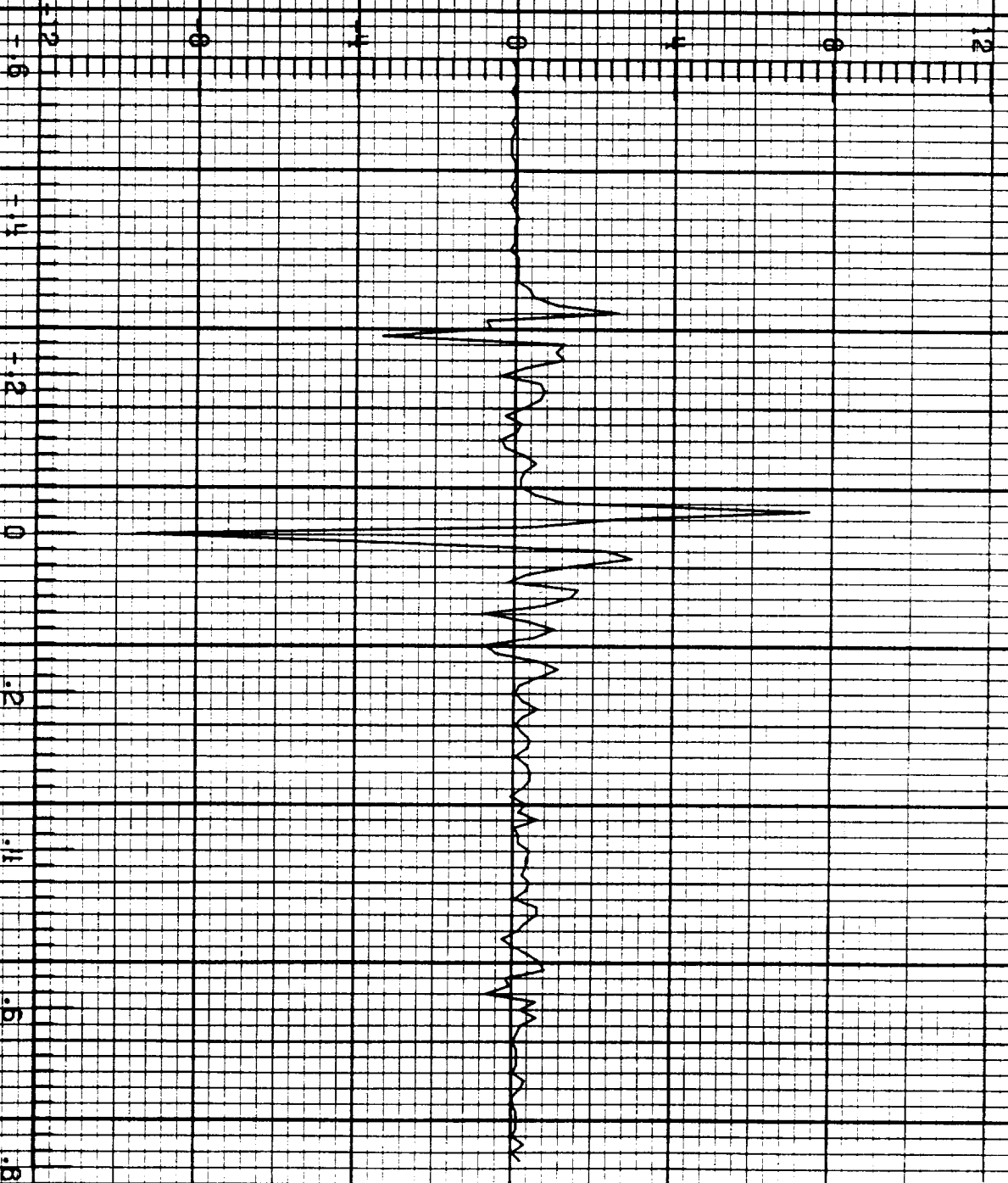
LEC 3 RUN NO. 2

5.002

D_r A/m²

20:29:43.3
CHANNEL NO. 3.2

MICROSECONDS



E106 LIGHTNING/84.015

LECH RUN NO. 2

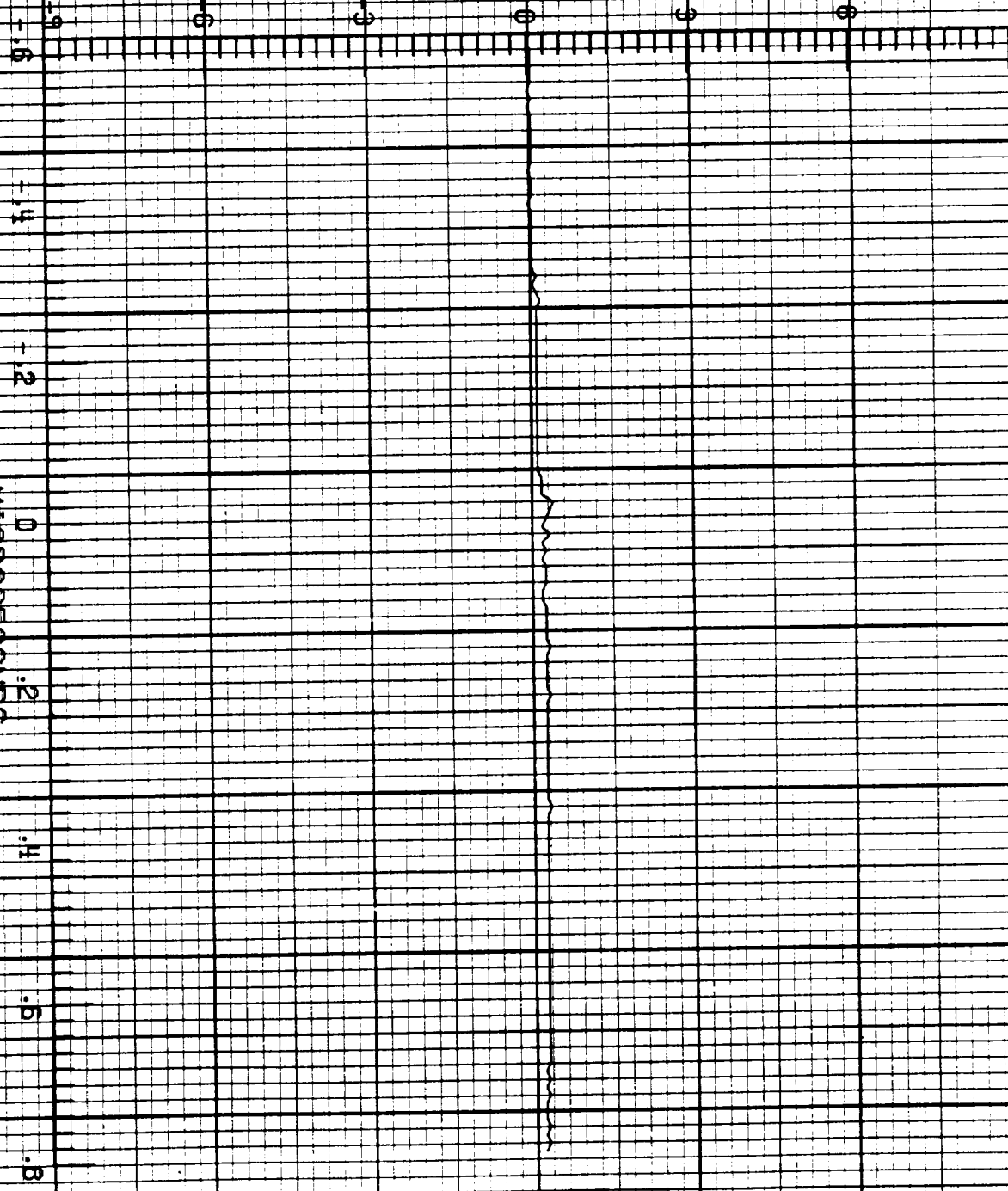
5.002

I_n A

20:29:43.3
CHANNEL NO. 4.1

0
MICROSECONDS

9×10^9



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OF POOR QUALITY

F106 LIGHTNING/8#L015

LECH RUN NO. 2

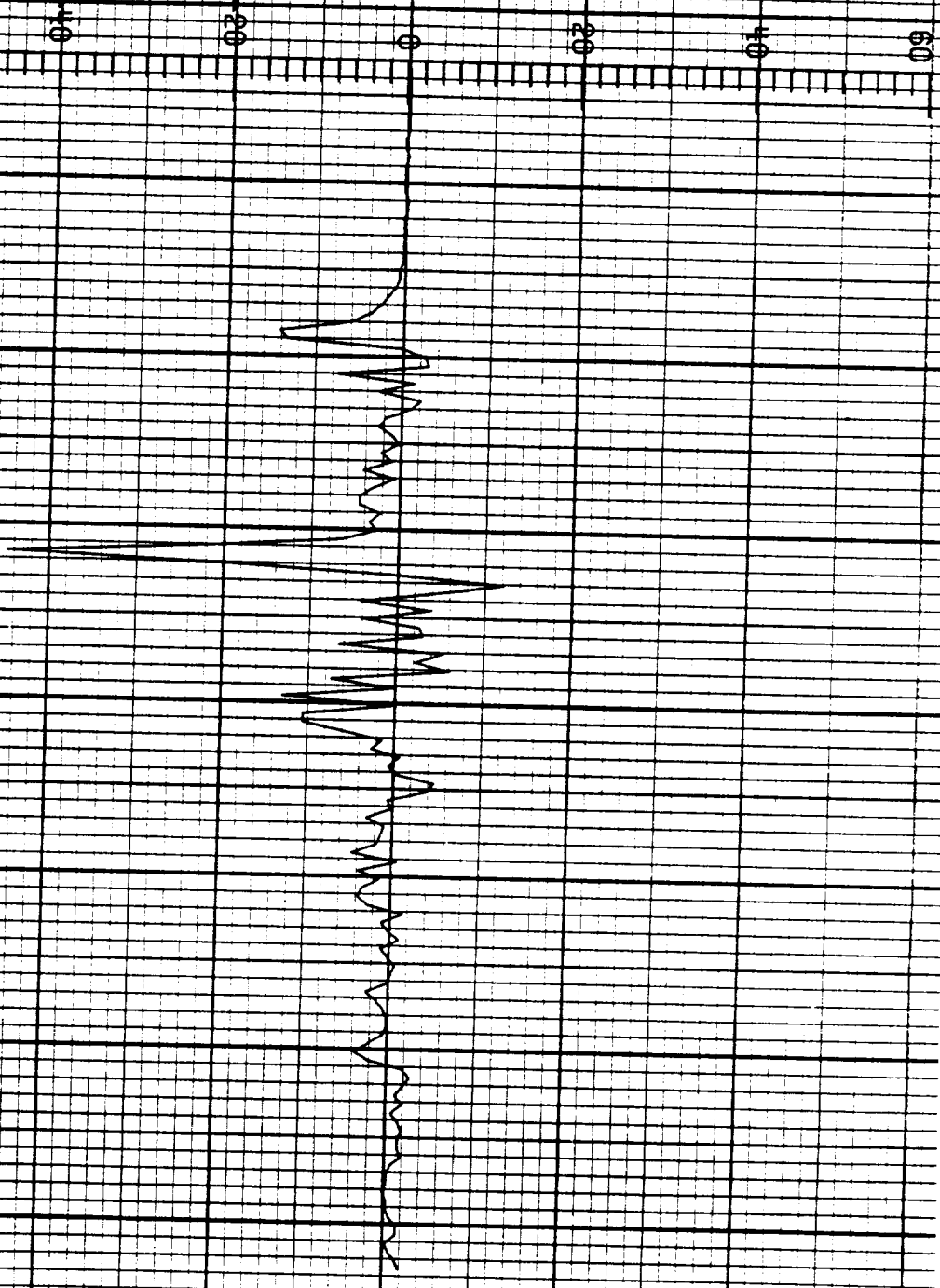
6.002

TP 101

V_{1b} V

20:29:43.3
CHANNEL NO. 4.0

MICROSECONDS



ORIGINAL PAGE IS
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F106 LIGHTNING/8#1.015

LEC# RUN NO. 2

5.002

T, A

20:29:43.3
CHANNEL NO. #1.2

MICROSECONDS

-.9
-.6
-.4
-.2
0
.2
.4
.6
.8

F106 LIGHTNING/84.015

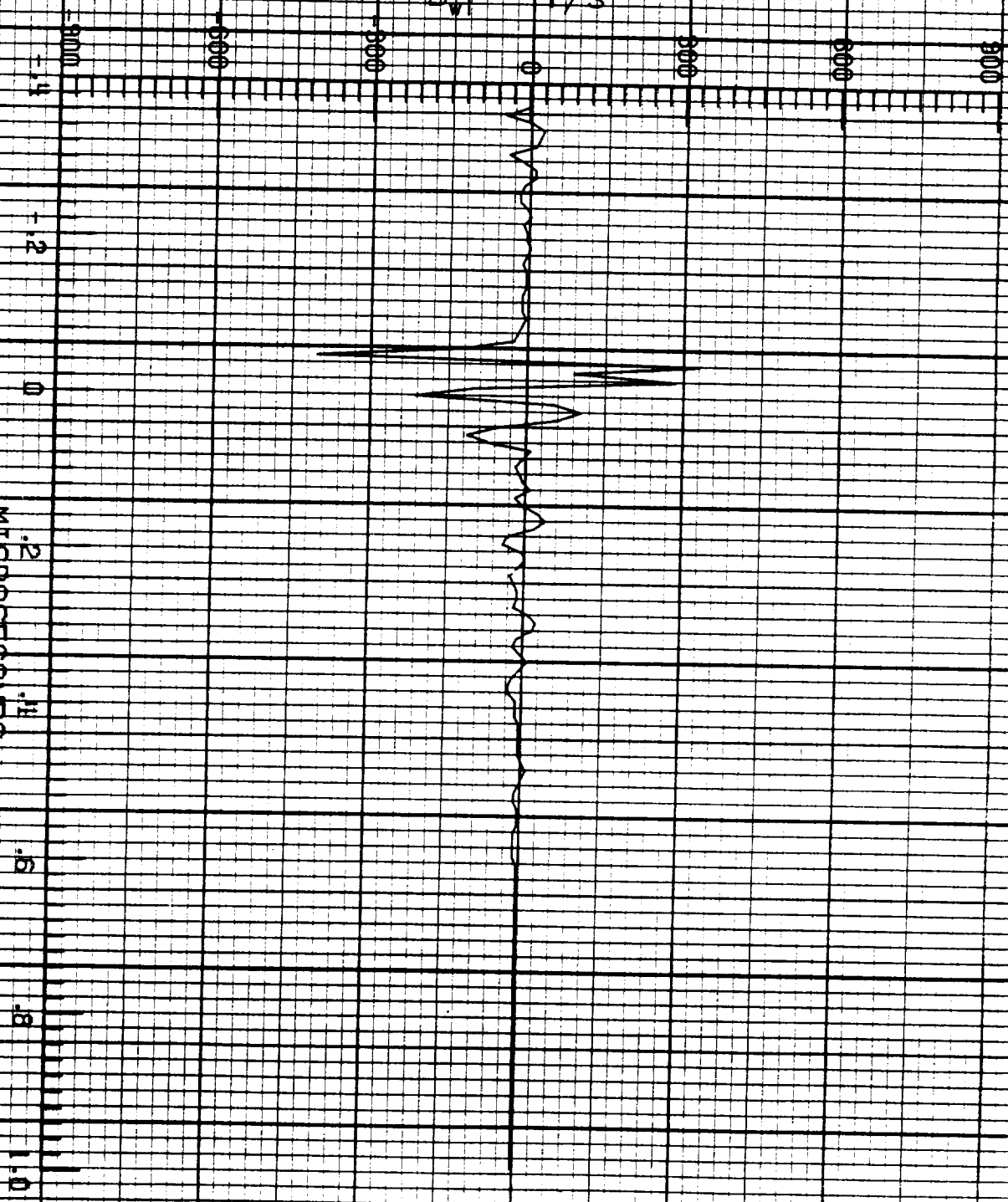
LECT. RUN NO. 3

N.001

B_{v1} T/s

20:39:45.3
CHANNEL NO. 1-1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/8#.015

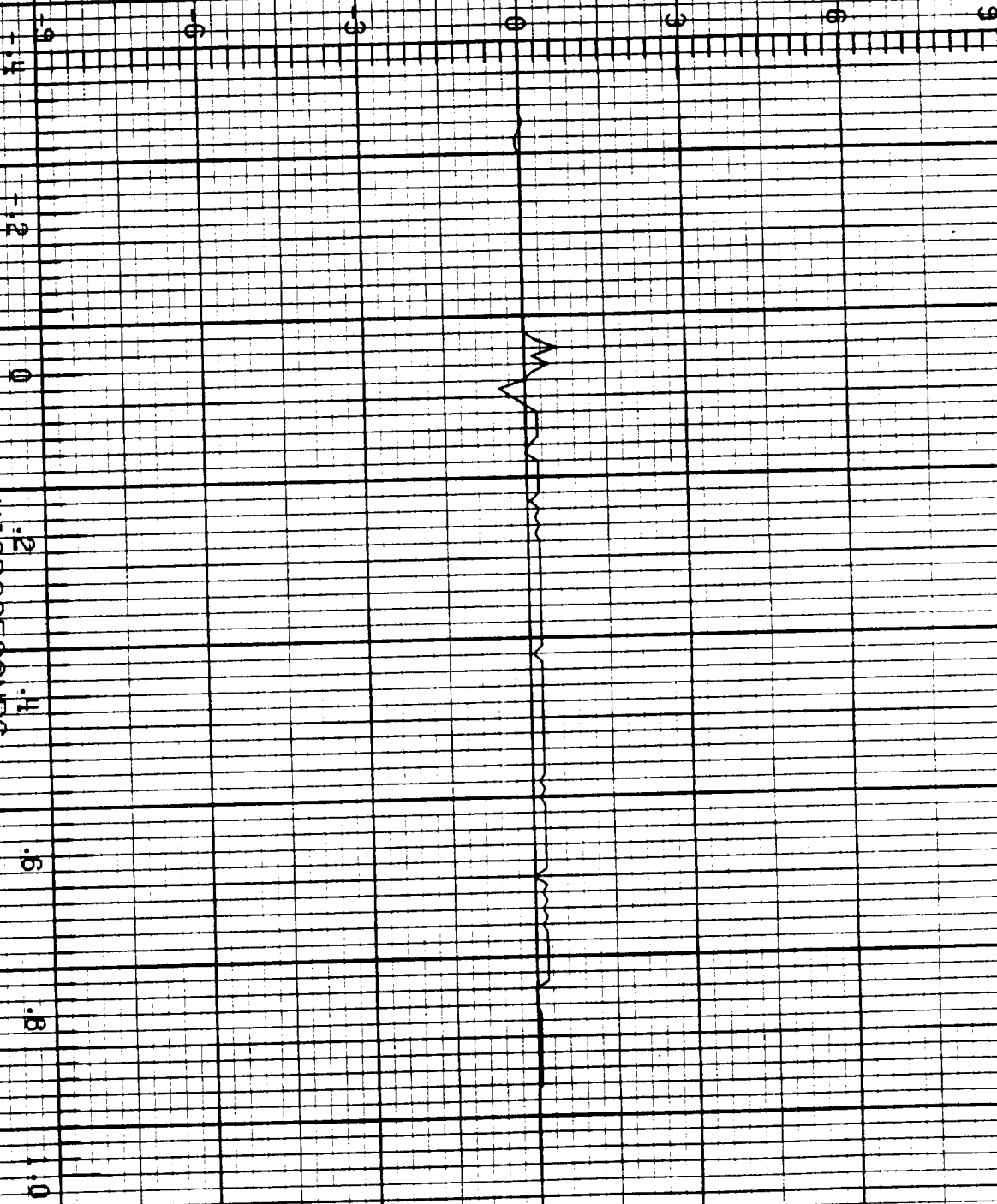
I FC 2 RUN NO. 3

4.001

D_t A/m²

20:39:45.3
CHANNEL NO. 2.0

MICROSECONDS



F106 LIGHTNING/84.015

LED 2 RUN NO. 3

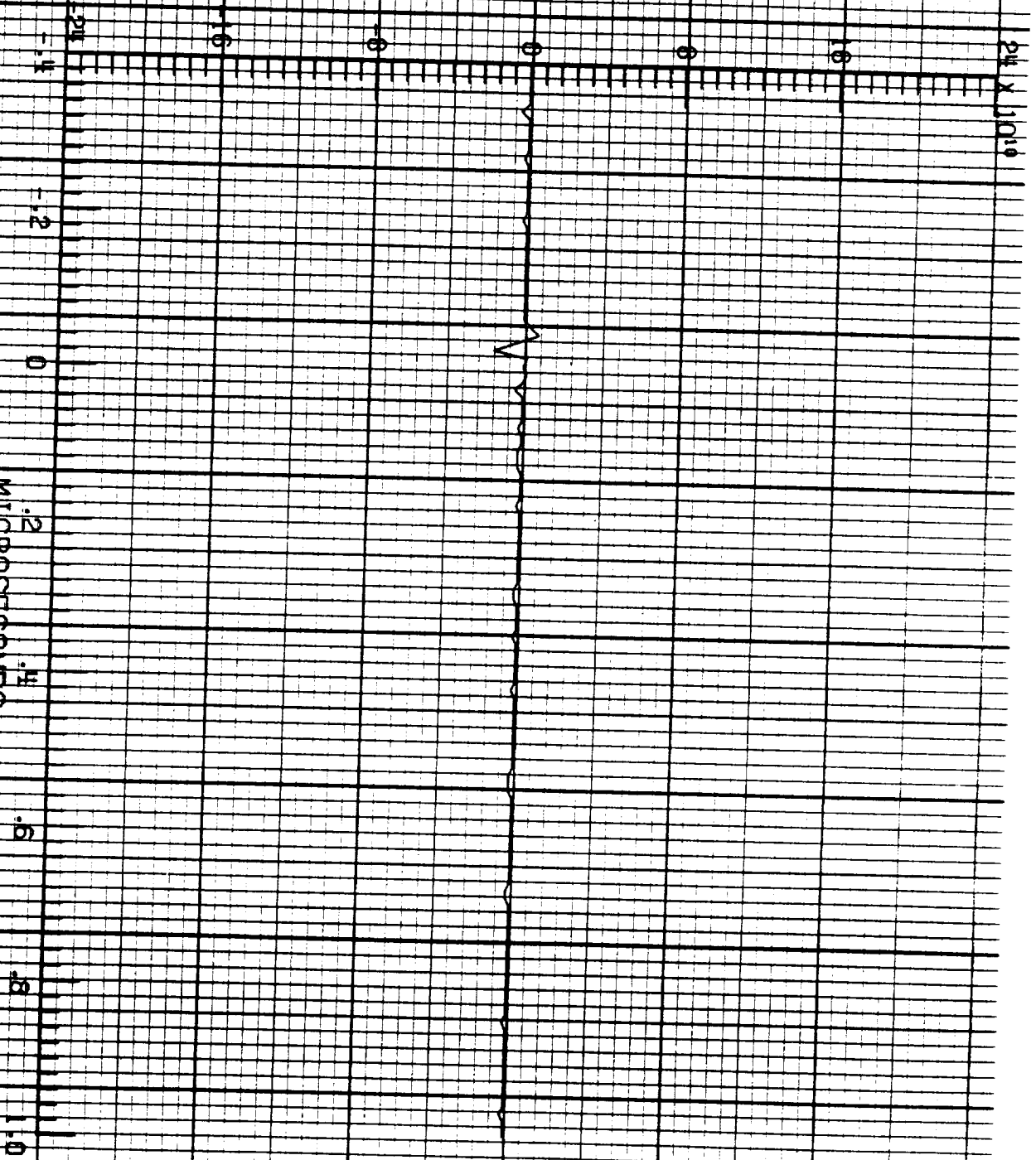
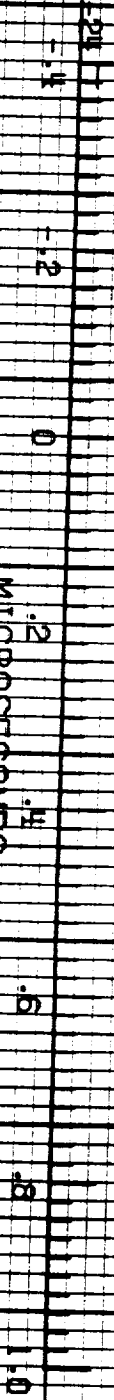
N.001

I A/s

20:35:45.3
CHANNEL NO. 2.1

24 X 10¹⁰

MICROSECONDS



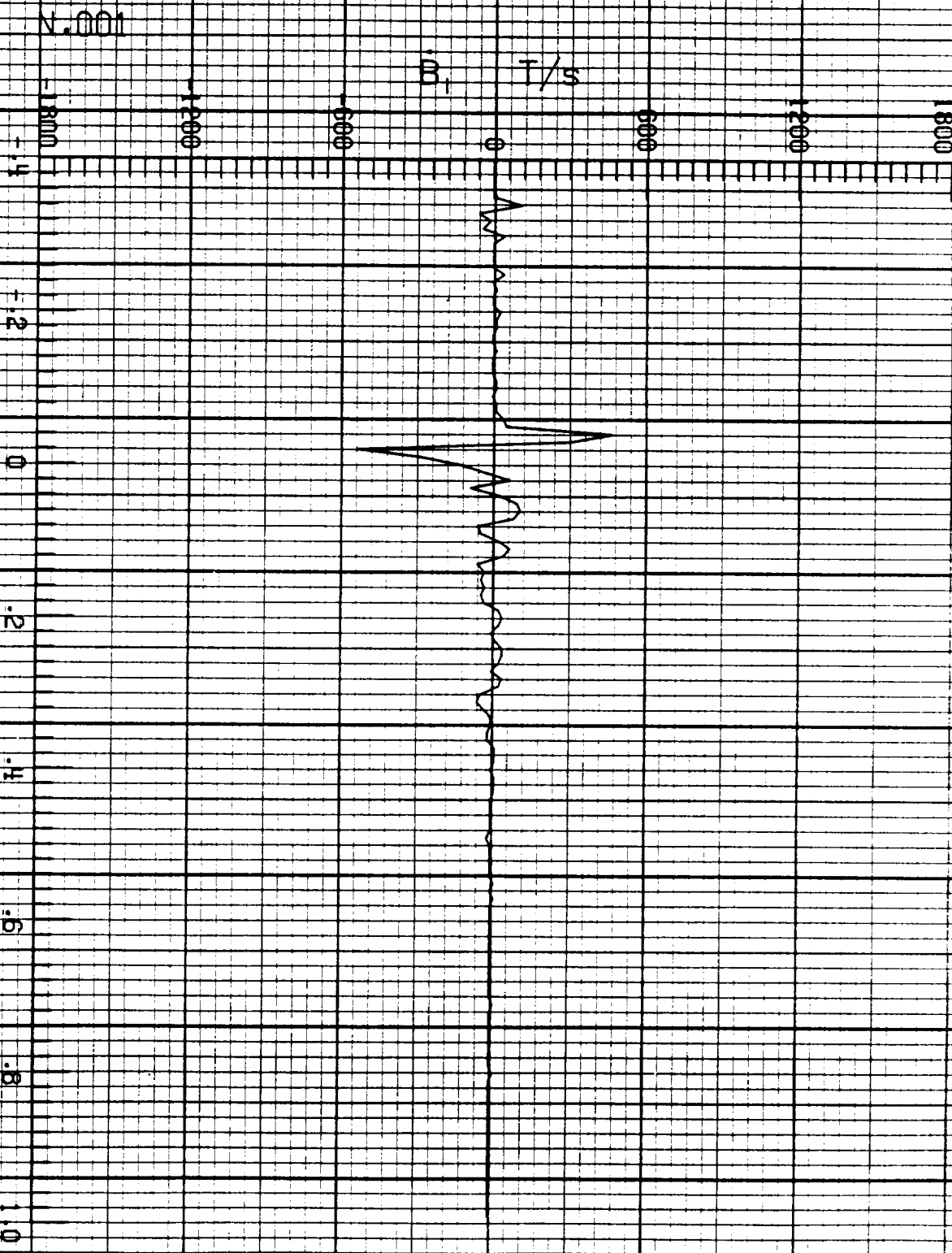
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OF POOR QUALITY

F106 LIGHTNING/8#.015

LEC 2 RUN NO. 3

20:39:45.3
CHANNEL NO. 2.2

MICROSECONDS



F106 LIGHTNING/84.015

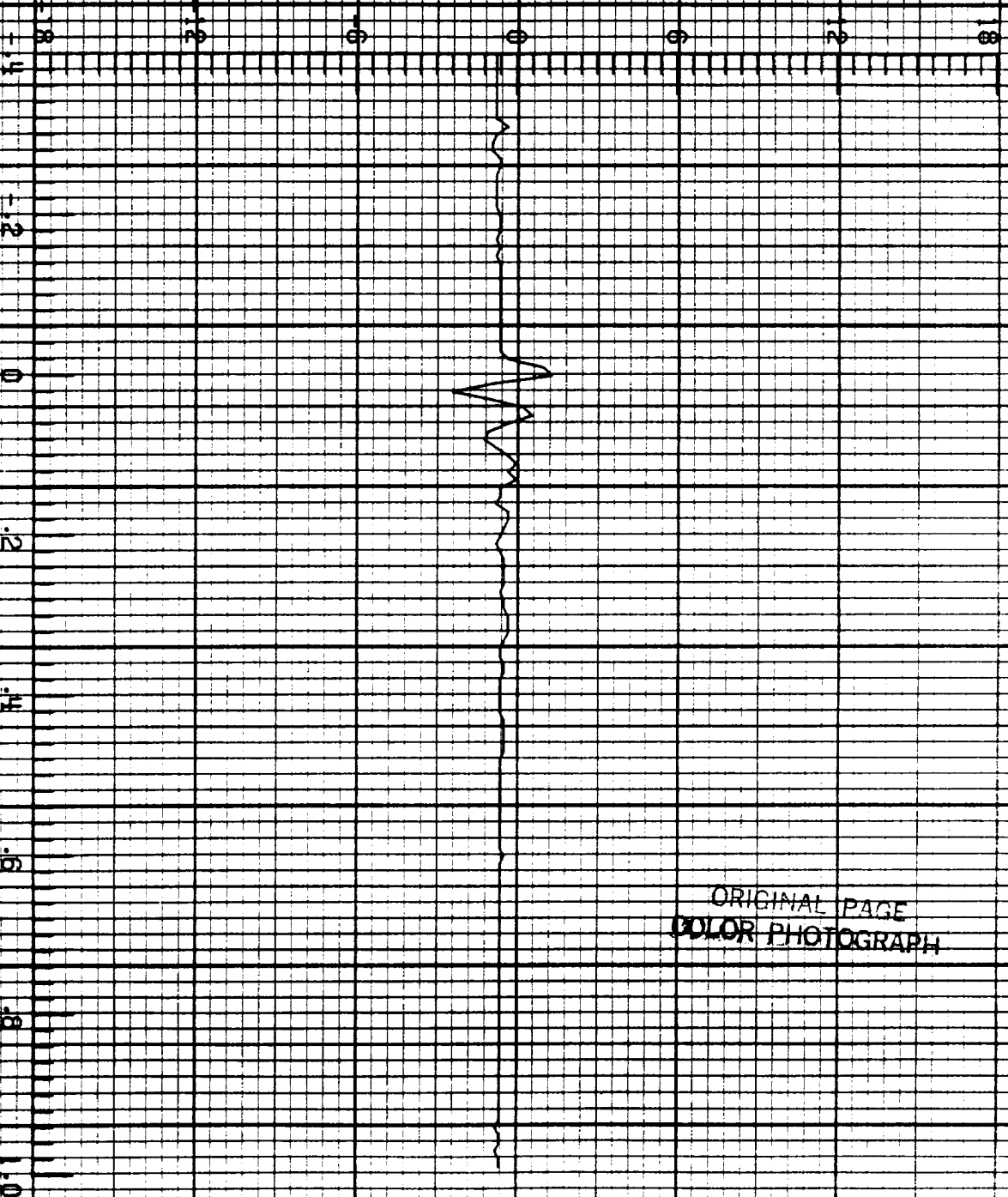
LECS RUN NO. 3

N.001

D_w A/m²

20:39:45.3
CHANNEL NO. 2.1

MICROSECONDS



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COLOR PHOTOGRAPH

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OF POOR QUALITY

F106 LIGHTNING/84.015

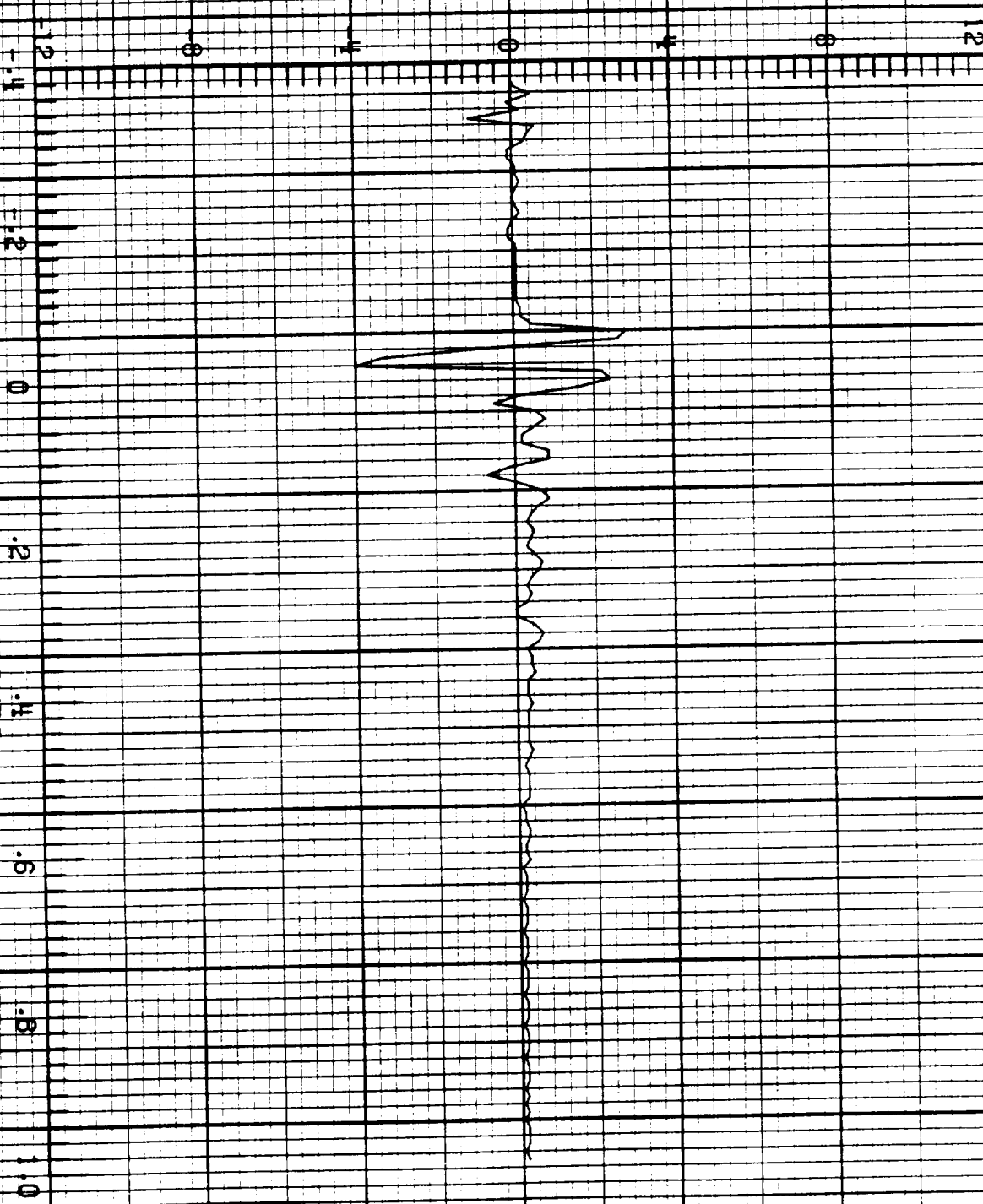
LECS RUN NO. 3

N.001

\dot{D}_r A/m²

20:39:45.3
CHANNEL NO. 3.2

MICROSECONDS



F106 LIGHTNING/8#015

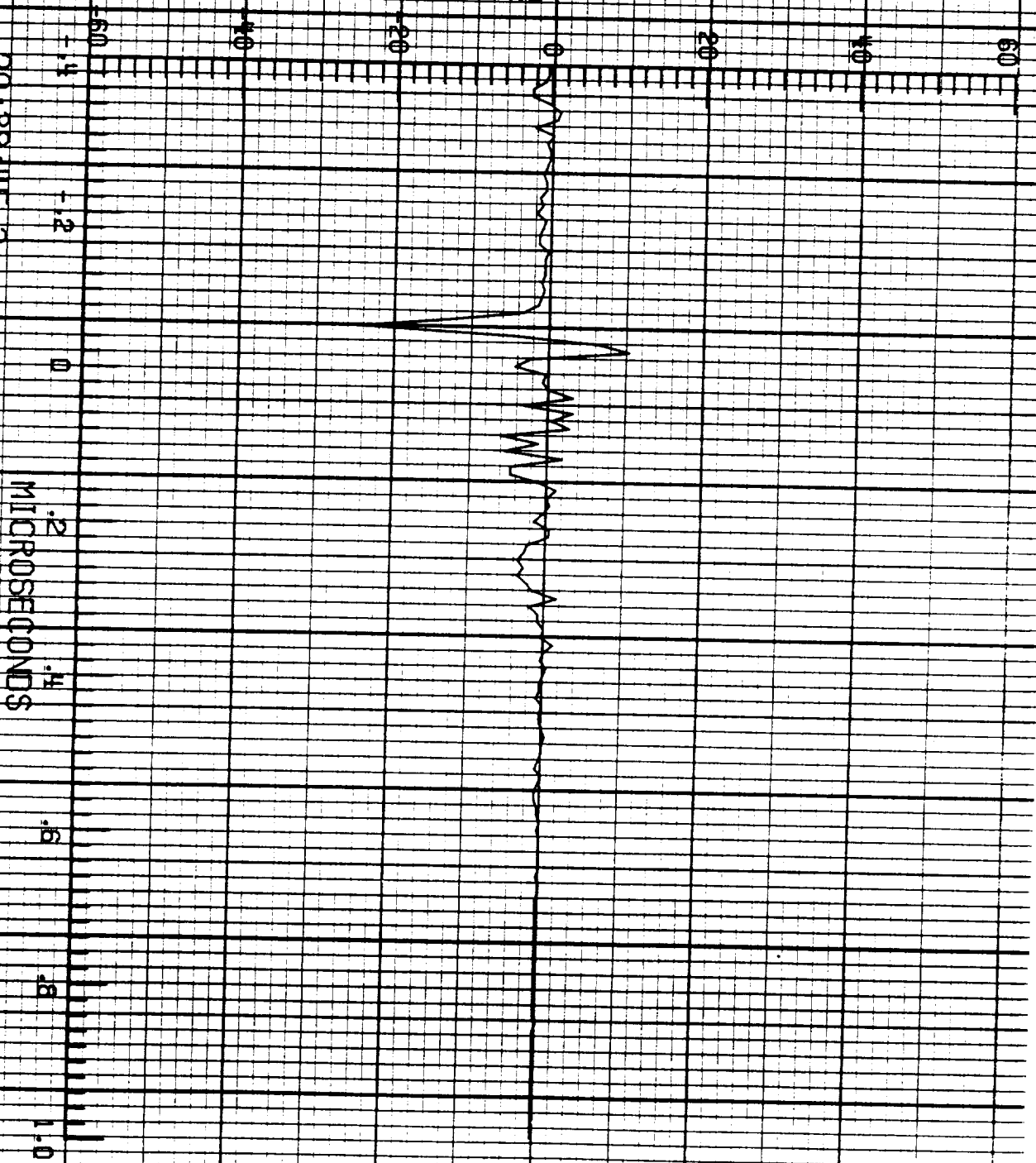
1 EC4 RUN NO. 3

N.001

TP 101

V_{fb} V

20:39:45.3
CHANNEL NO. 4.0



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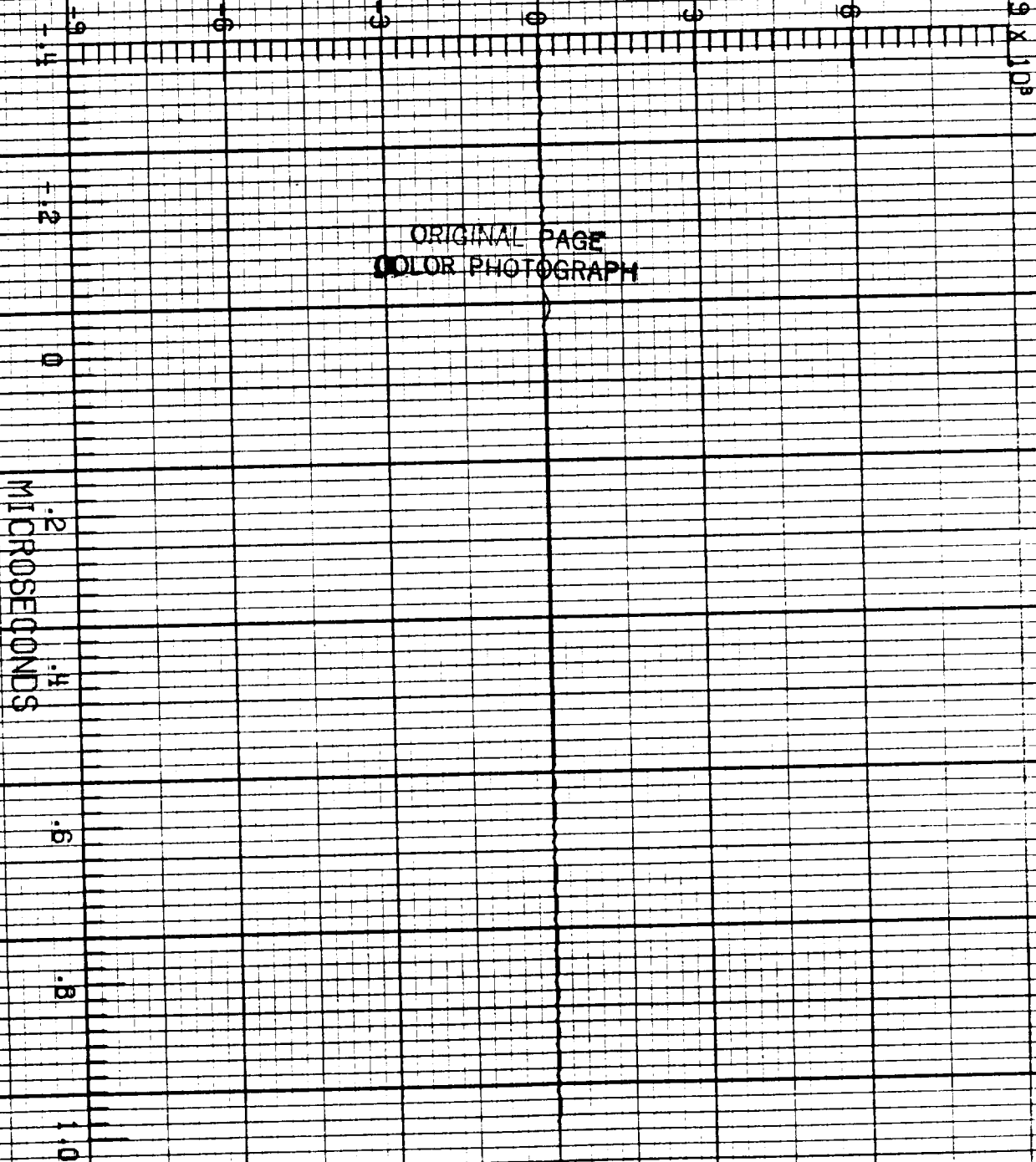
F106 LIGHTNING/8H.015

1 FC 4 RUN NO. 3

N.001

T_n A

20:39:15.3
CHANNEL NO. 4.1



F106 LIGHTNING/84.015

LECH RIN NO. 3

N.001

T. A

20:39
CHANNEL NO. 4.2

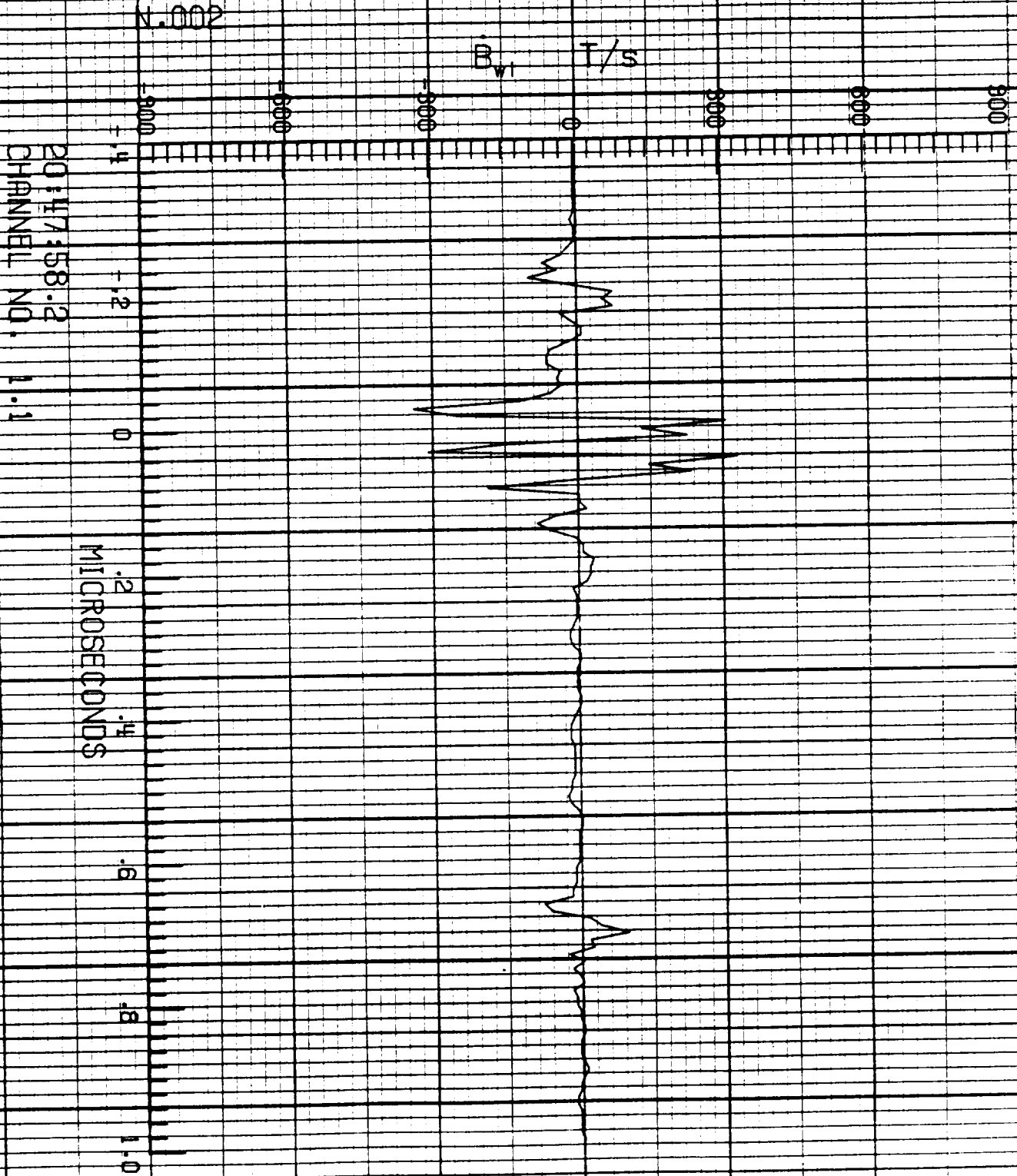
MICROSECONDS

9×10^3

ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/84.015

LEC 1 RUN NO. 4



20:47:58.2
CHANNEL NO. 1.1

F106 LIGHTNING/84.015

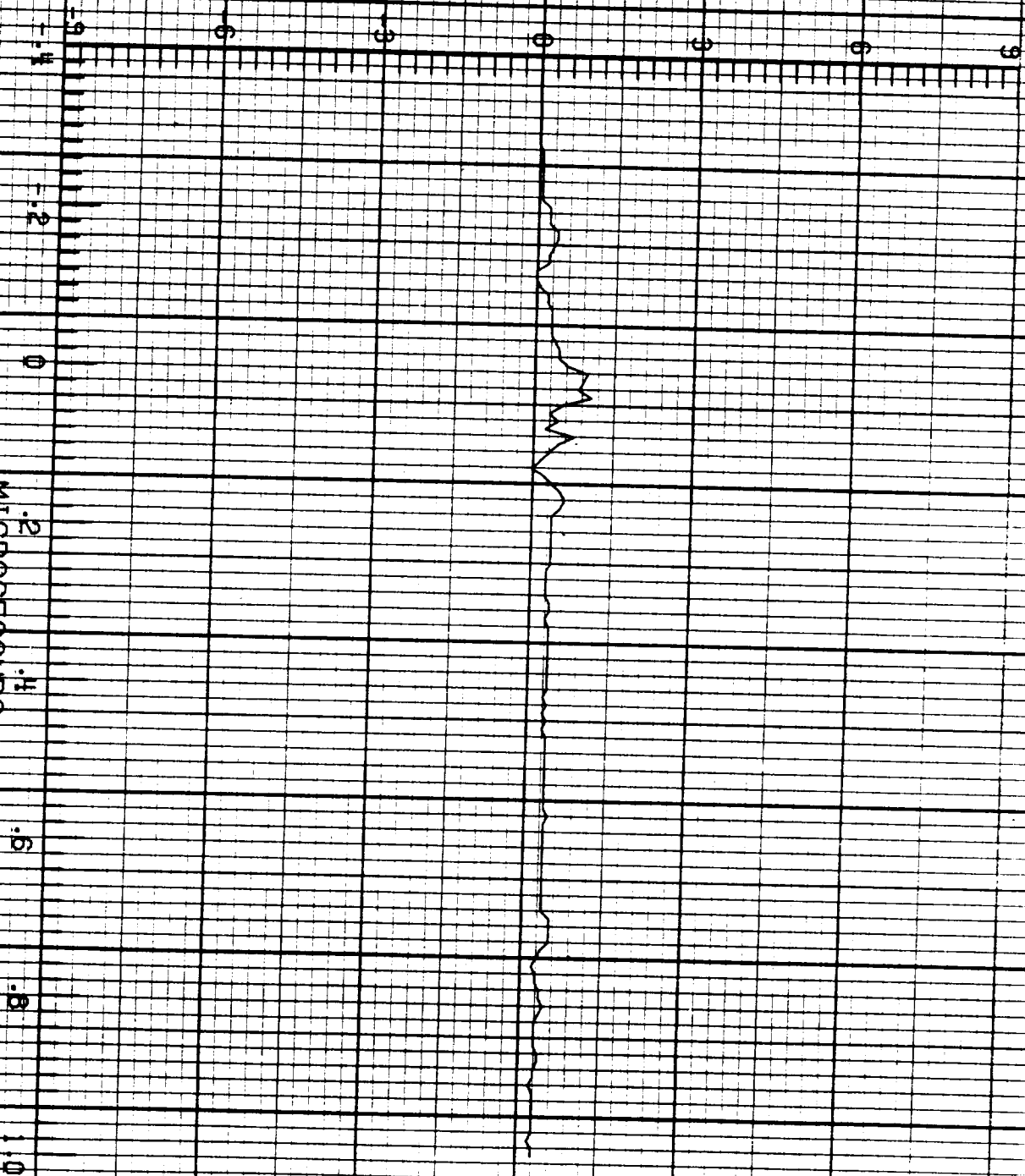
LEC2 RUN NO. 4

N.002

D_r A/m²

20:47:58.2
CHANNEL NO. 2.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/84.015

LEC2 RUN NO. 4

N.002

I A/s

20:47:58.2
CHANNEL NO. 2.1

MICROSECONDS

24 x 10¹⁰

F106 LIGHTNING/84.015

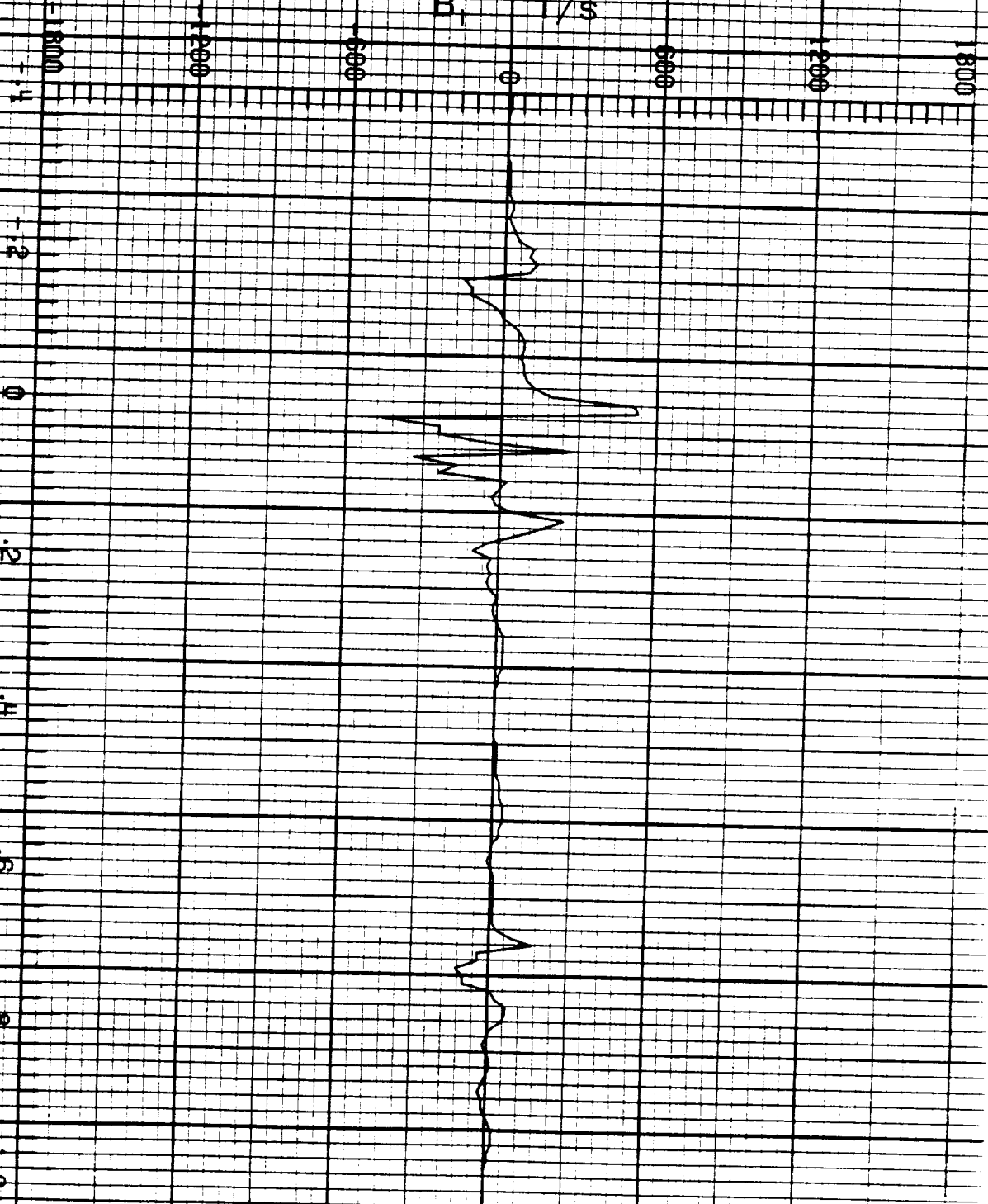
LECP2 RUN NO. 4

N.002

B₁ T/s

20:47:58.2
CHANNEL NO. 2.2

MICROSECONDS



F106 LIGHTNING/8#.015

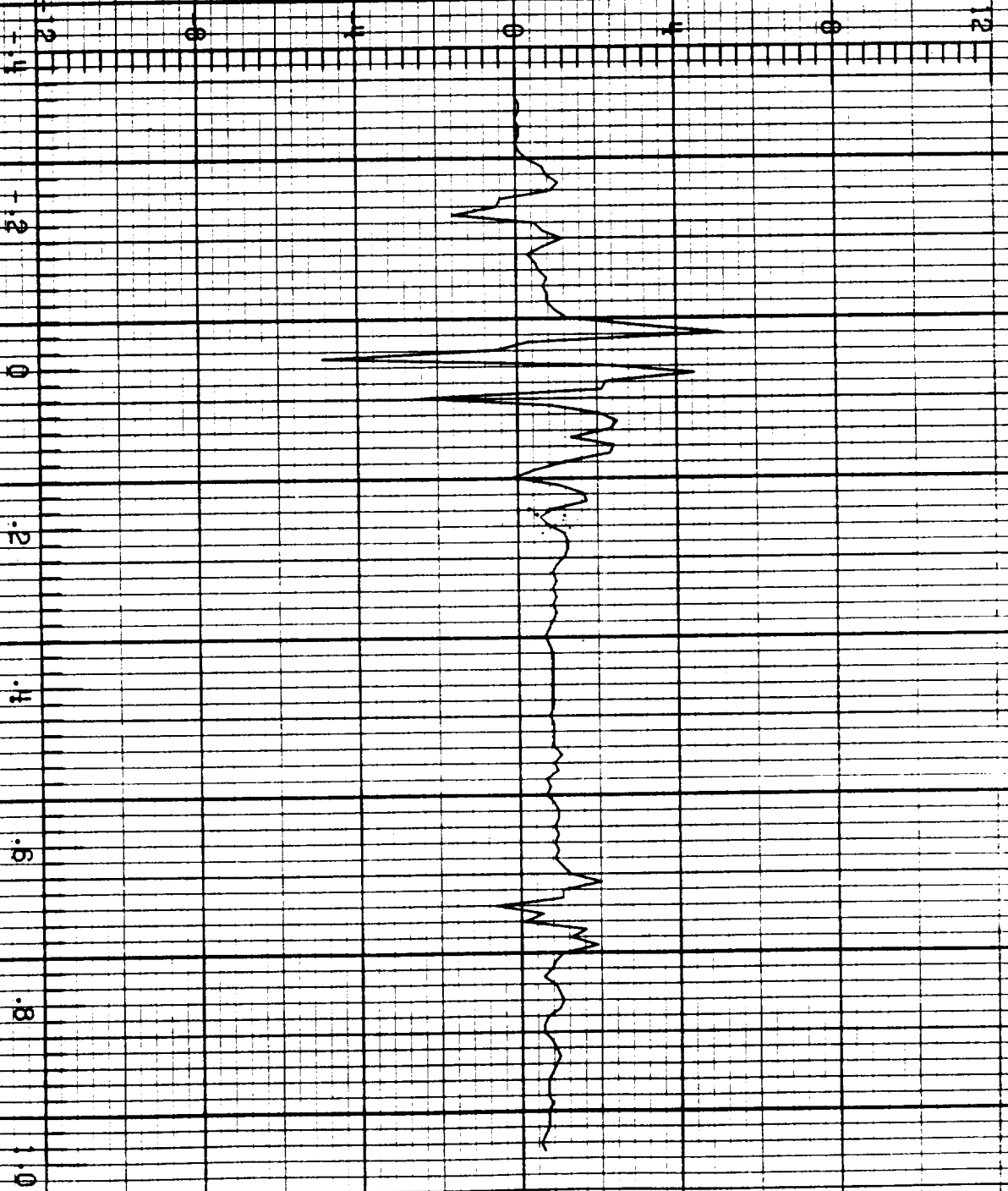
FCB RUN NO. 4

N.002

\bar{D}_r A/m²

20:47:58.2
CHANNEL NO: 3.2

MICROSECONDS



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OF POOR QUALITY

F106 LIGHTNING/84.015

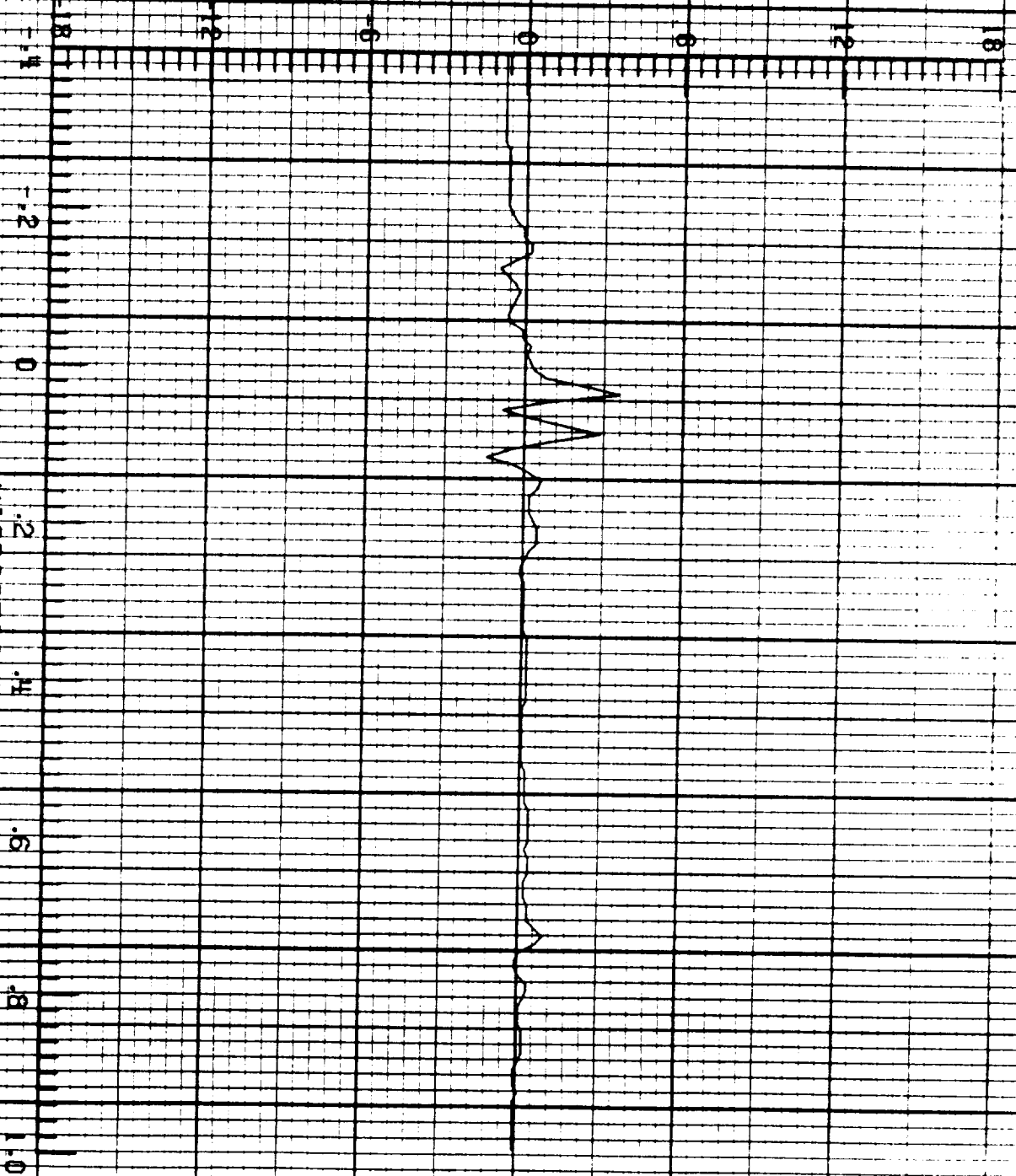
LECR RUN NO. 4

N.002

D_{wl} A/m²

20:47:58.2
CHANNEL NO. 8.1

MICROSECONDS



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F106 LIGHTNING/84.015

LE4 RUN NO. 4

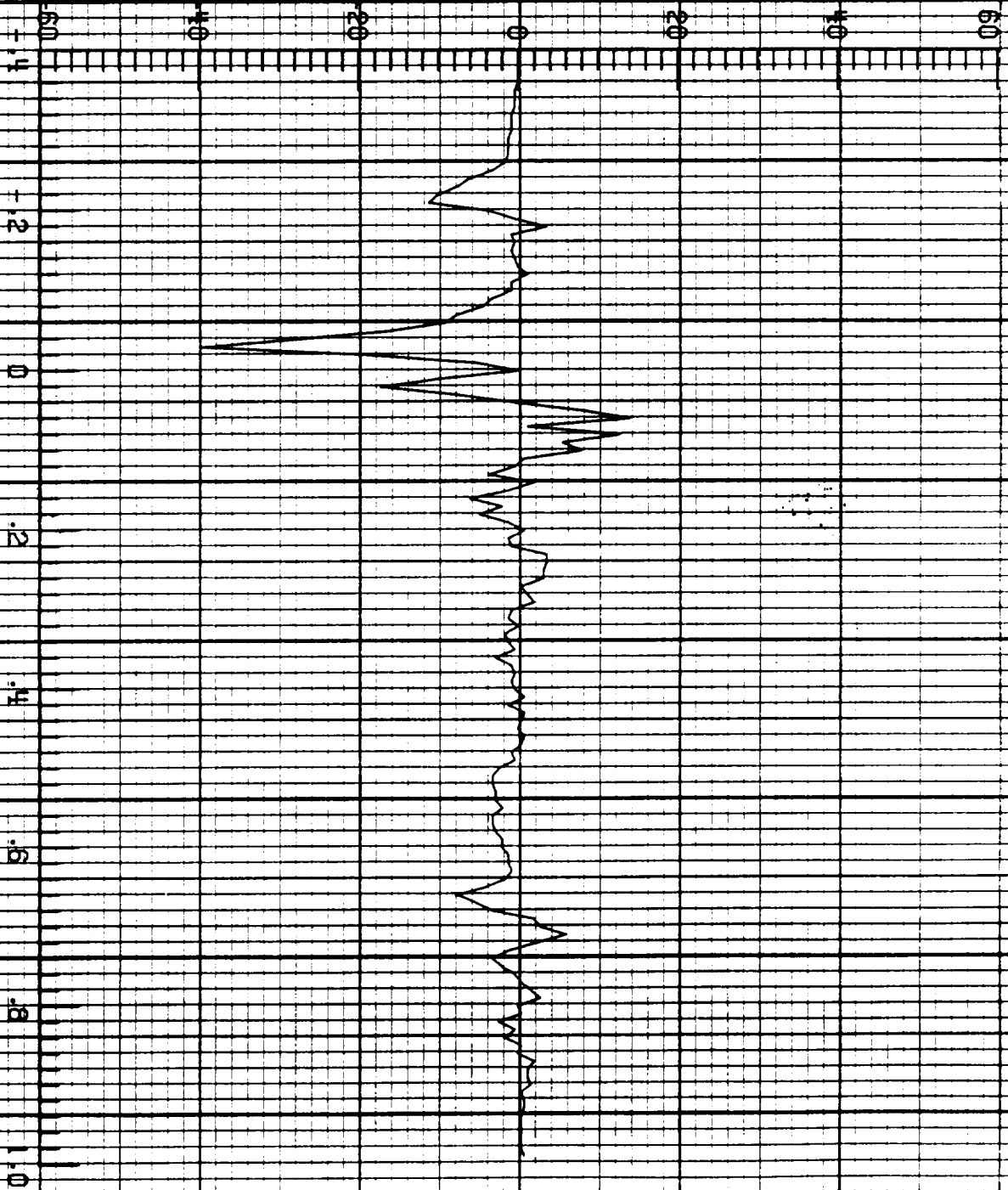
N.002

TP 101

V₁₀ V

20:47:58.2
CHANNEL NO. 4.0

MICROSECONDS



F106 LIGHTNING/84.015

LECH RUN NO. 4

N.002

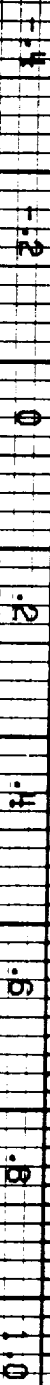
I_n A

9 x 10³



20:47:58.2
CHANNEL NO. 4.1

MICROSECONDS



ORIGINAL PAGE IS
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F106 LIGHTNING/84.015

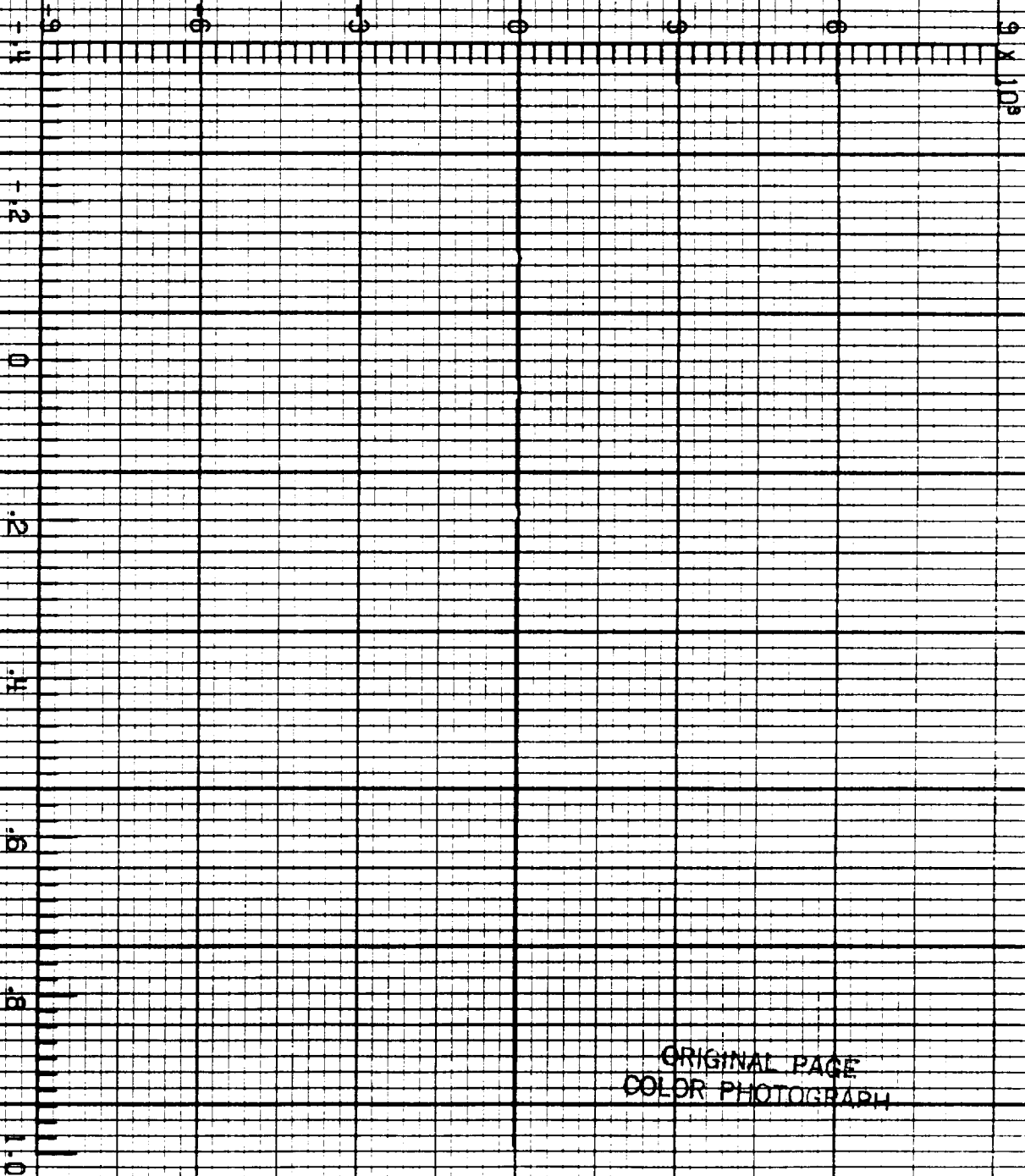
LEC 4 RUN NO. 4

N.002

I_t A

20:47:58.2
CHANNEL NO. #.2

MICROSECONDS



ORIGINAL PAGE
COLOR PHOTOGRAPH

F106 LIGHTNING/84.017

FC1 RUN NO. 1

6.002

B_{\perp} T/s

3000 2000 1000 0 1000 2000 3000

.2

0

.2

.4

.6

.8

1.0

1.2

20:35:09.1
CHANNEL NO. 1.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/84.017

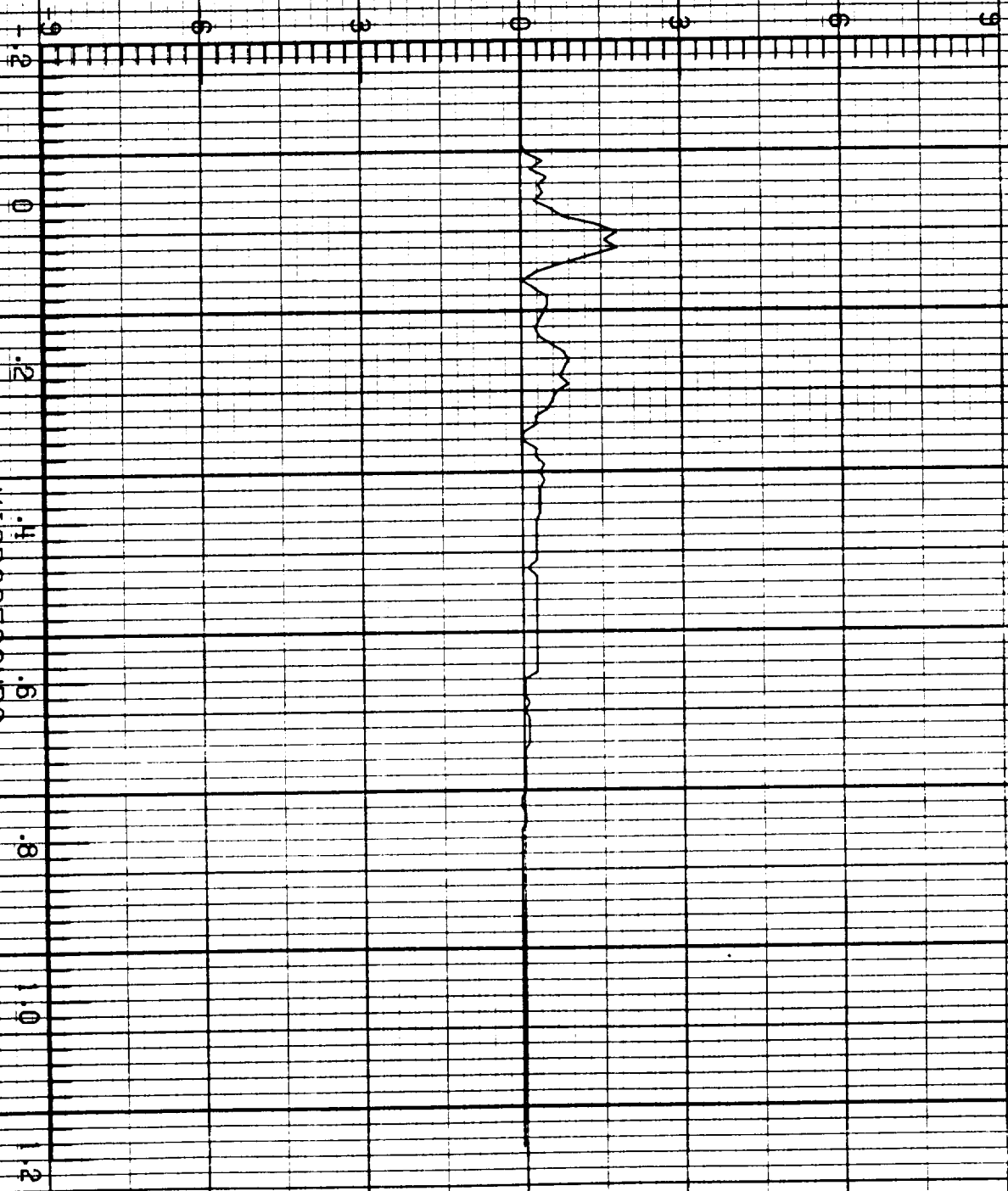
LEC 2 RUN NO. 1

5.002

D_t A/m²

20:35:09.1
CHANNEL NO. 2.0

MICROSECONDS



F106 LIGHTNING/84.017

LFC2 RUN NO. 1

6.002

\dot{I} A/s

24×10^{10}

24

16

8

0

8

16

-24

0

-2

-4

-6

-8

-10

-12

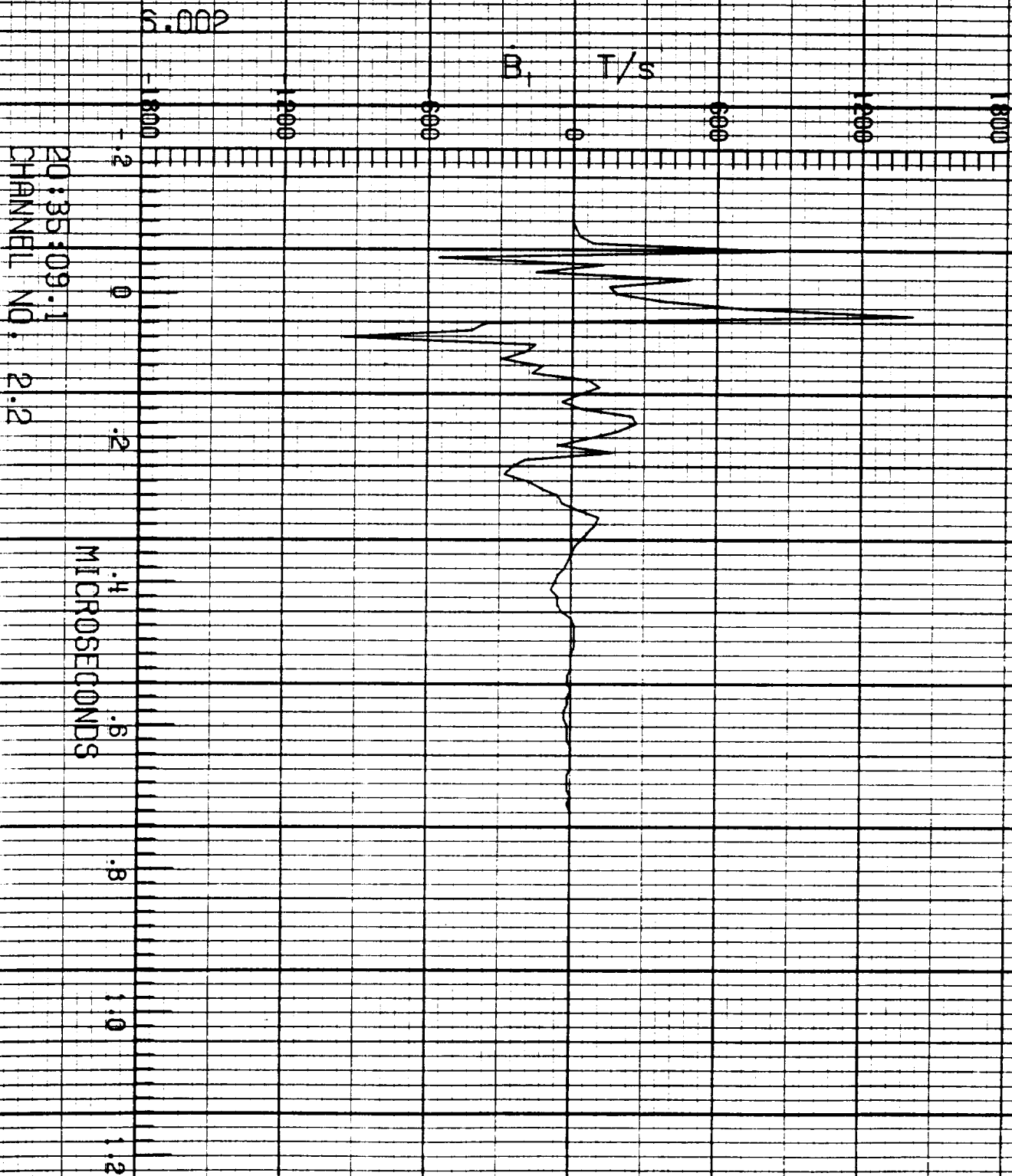
MICROSECONDS

20:35:09.1
CHANNEL NO. 2.1

ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/84.017

1 FC 2 RUN NO. 1

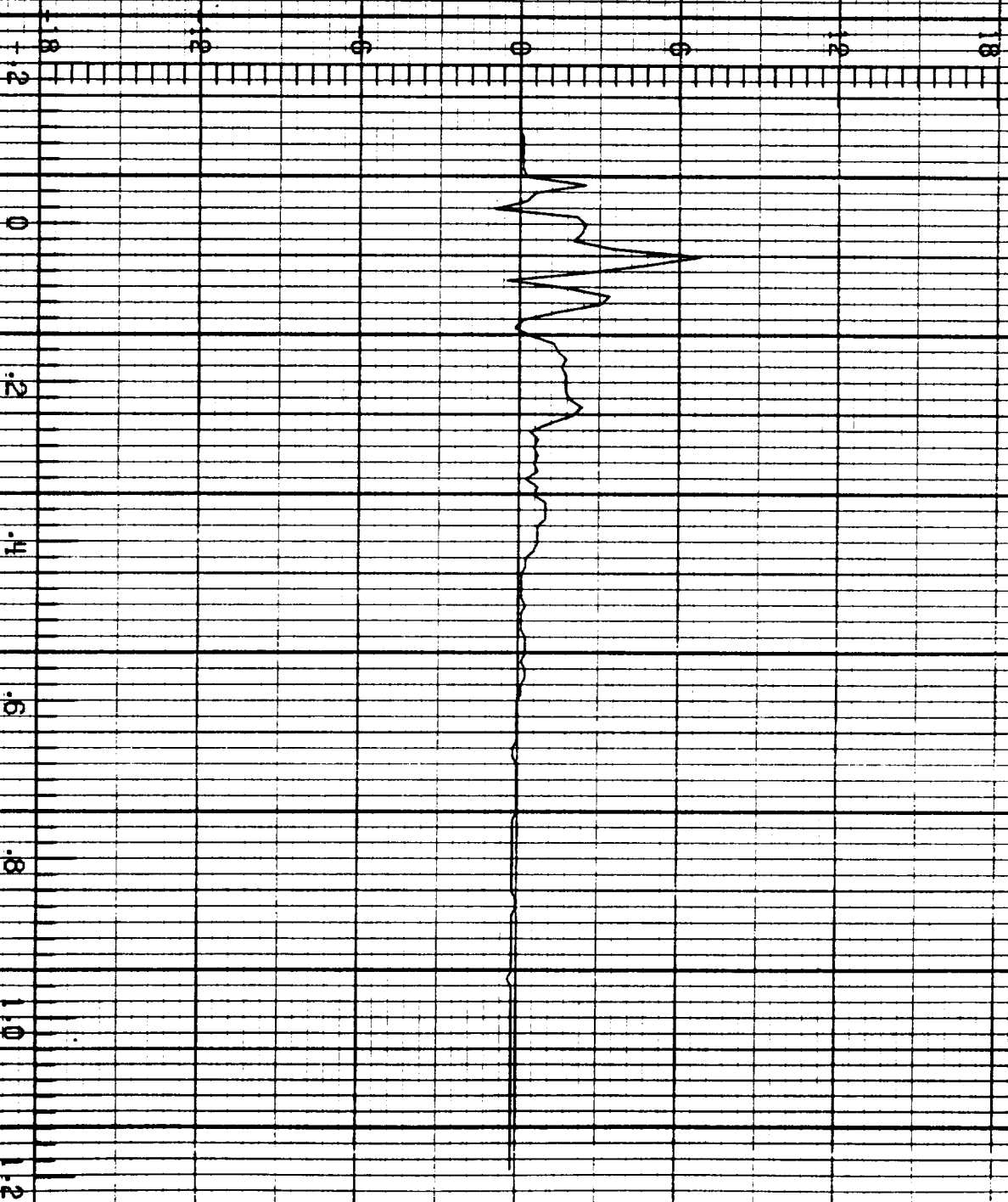


F106 LIGHTNING/8#L.017

LFC3 RUN NO. 1

5.002

D_{wl} A/m²



PC:35:09.1
CHANNEL NO. 3.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F106 LIGHTNING/8# .017

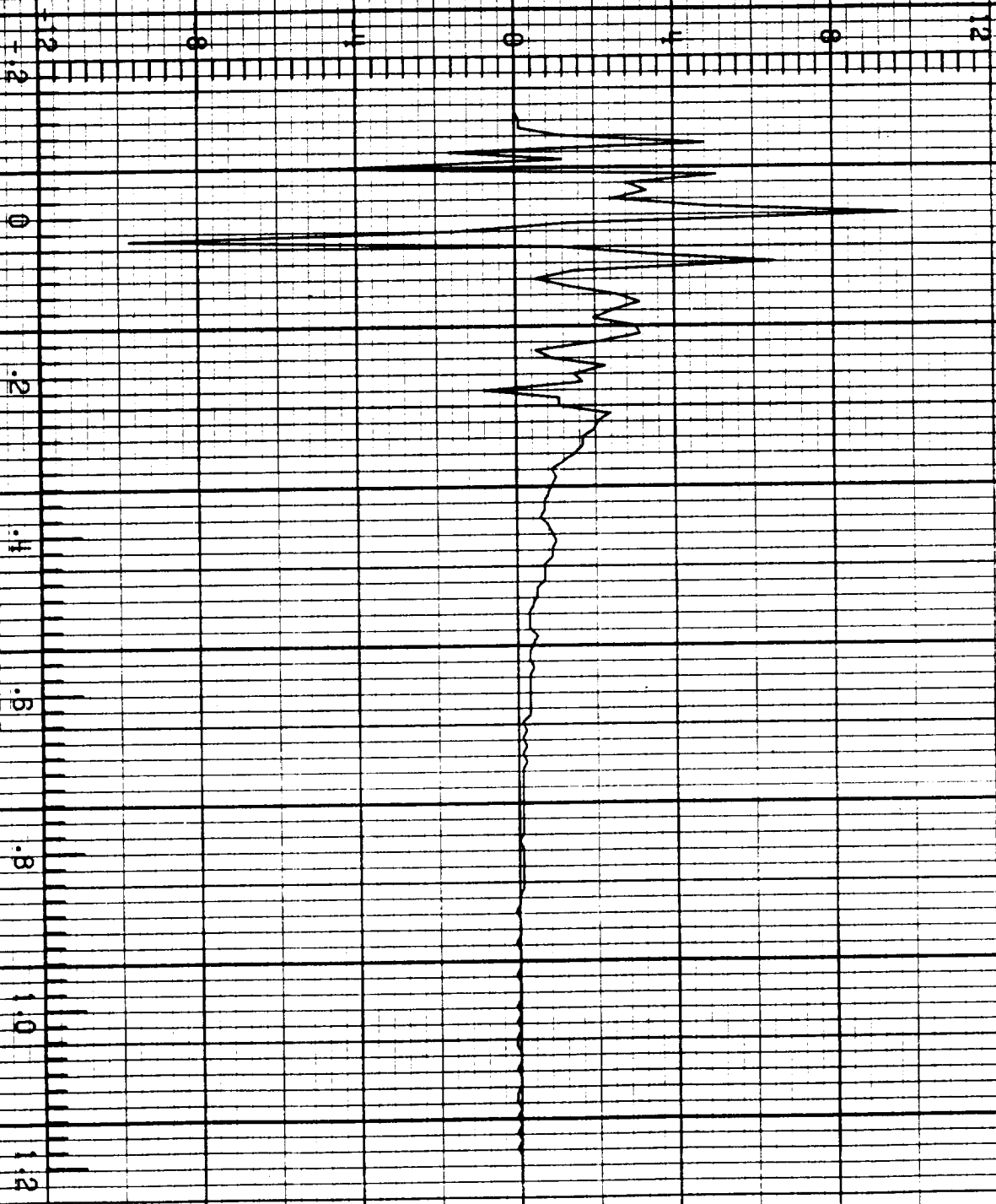
LEC.3 RUN NO. 1

5.002

\dot{D}_r A/m²

20:35:09.1
CHANNEL NO. 3.2

MICROSECONDS



F106 LIGHTNING/8# 017

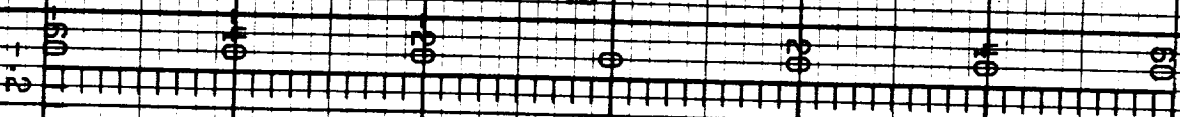
LEC# RUN NO. 1

5.002

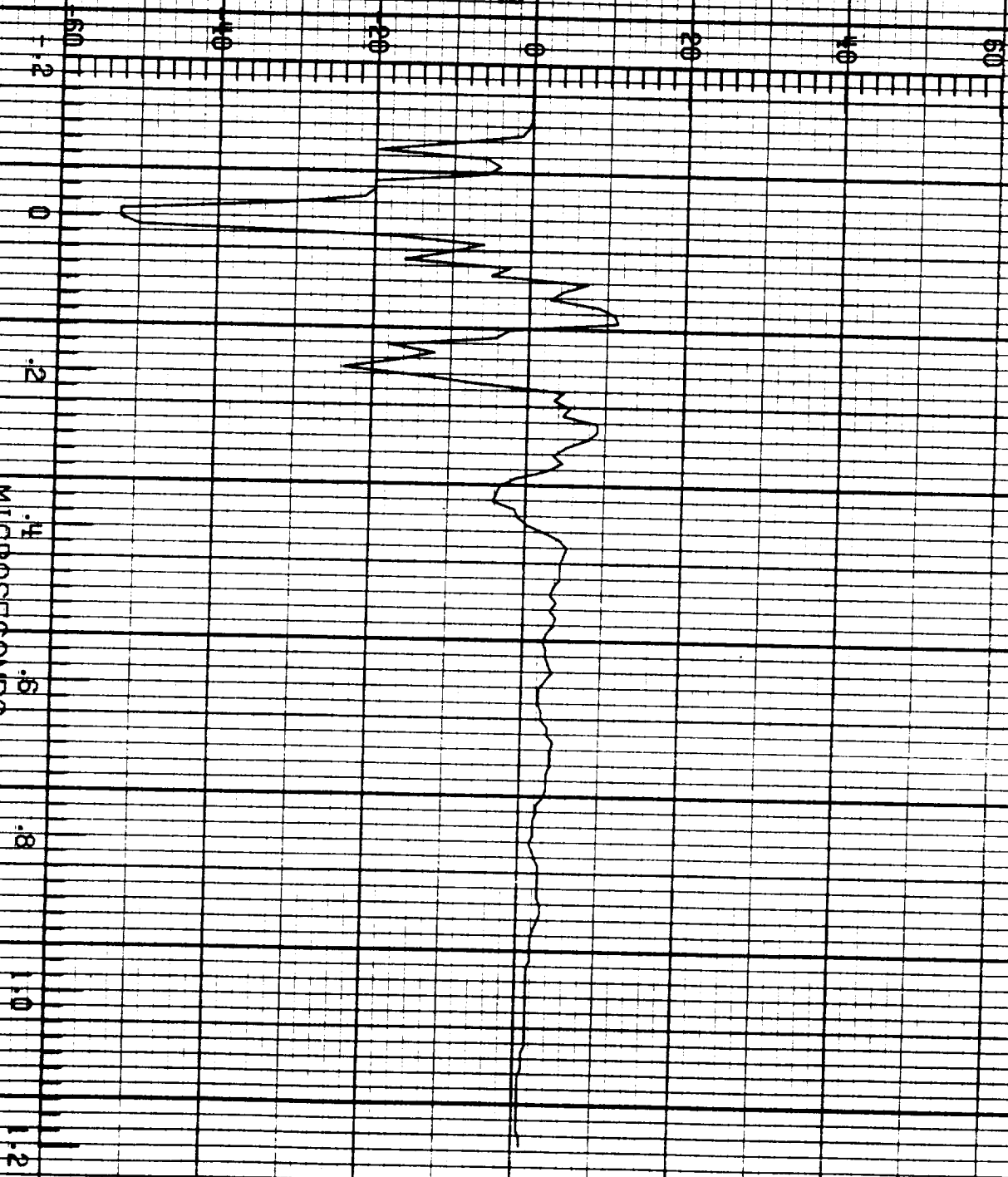
TP 101

V_{no} V

20:35:09.1
CHANNEL NO. 4.0



MICROSECONDS



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OF POOR QUALITY

F106 LIGHTNING/8+.017

LEC 4 RUN NO. 1

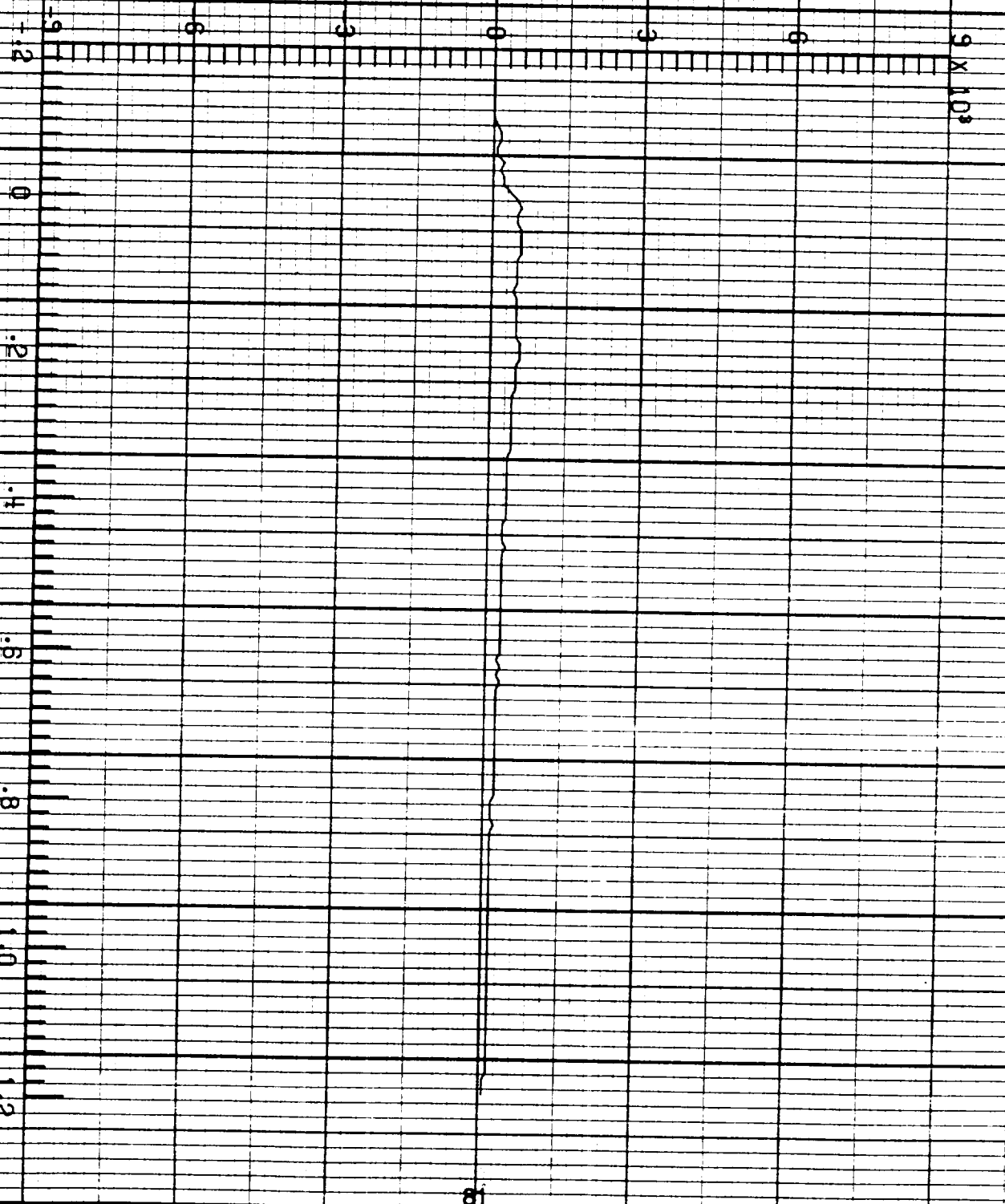
3.002

I_n A

20:35:09.1
CHANNEL NO. 4.1

9×10^3

MICROSECONDS



F106 LIGHTNING/84.017

LEC4 RUN NO. 1

5.002

I_t A



20:35:09.1
CHANNEL NO. 4.2

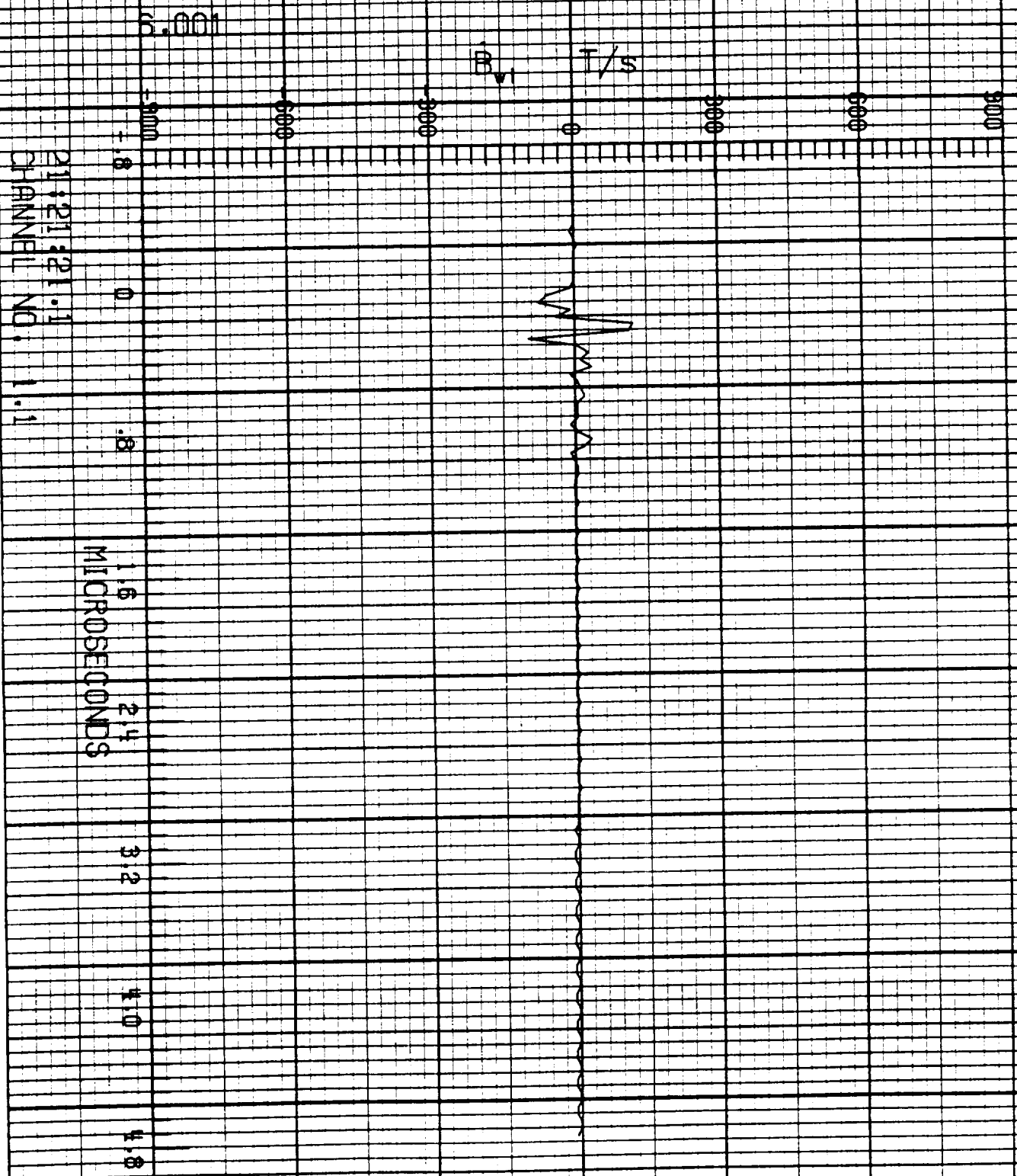
MICROSECONDS



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OF POOR QUALITY

F=106 LIGHTNING/ 84-019

LEC 1 RUN NO. 1



21:21:21.1
CHANNEL NO. 1.1

MICROSECONDS

F=106 LIGHTNING 84-019

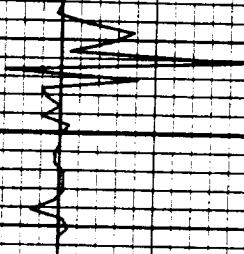
LEC1 RUN NO. 1

5.001

BP
T/s

500 500 500 500 500

21:21:21.1
CHANNEL NO. 1.2



1.6
2.4
MICROSECONDS

3.2

4.0

4.8

C-2

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

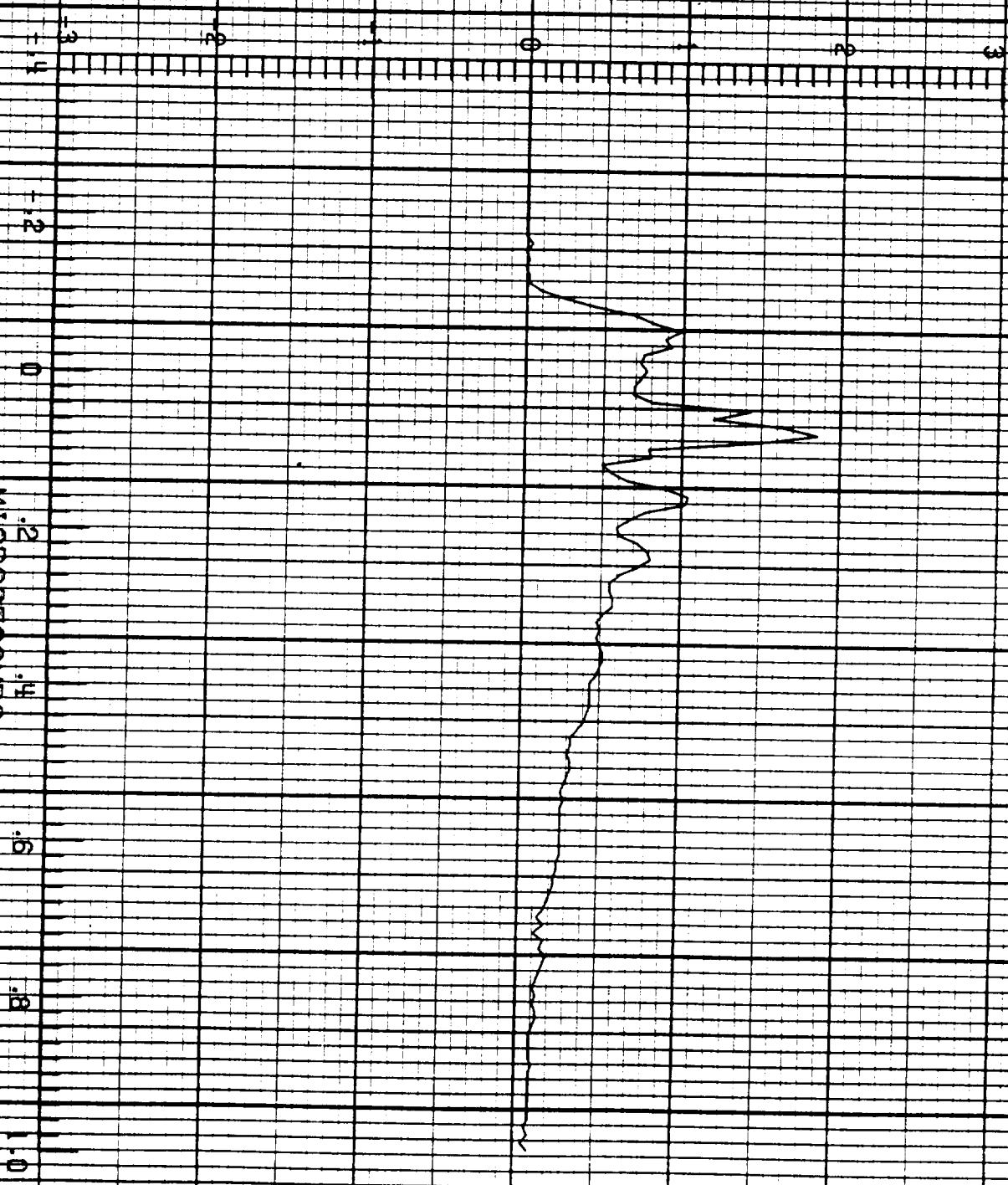
LEC 2 RUN NO. 1

5.001

\dot{D}_t A/m²

21:21:21.1
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-019

REC 2 RUN NO. 1

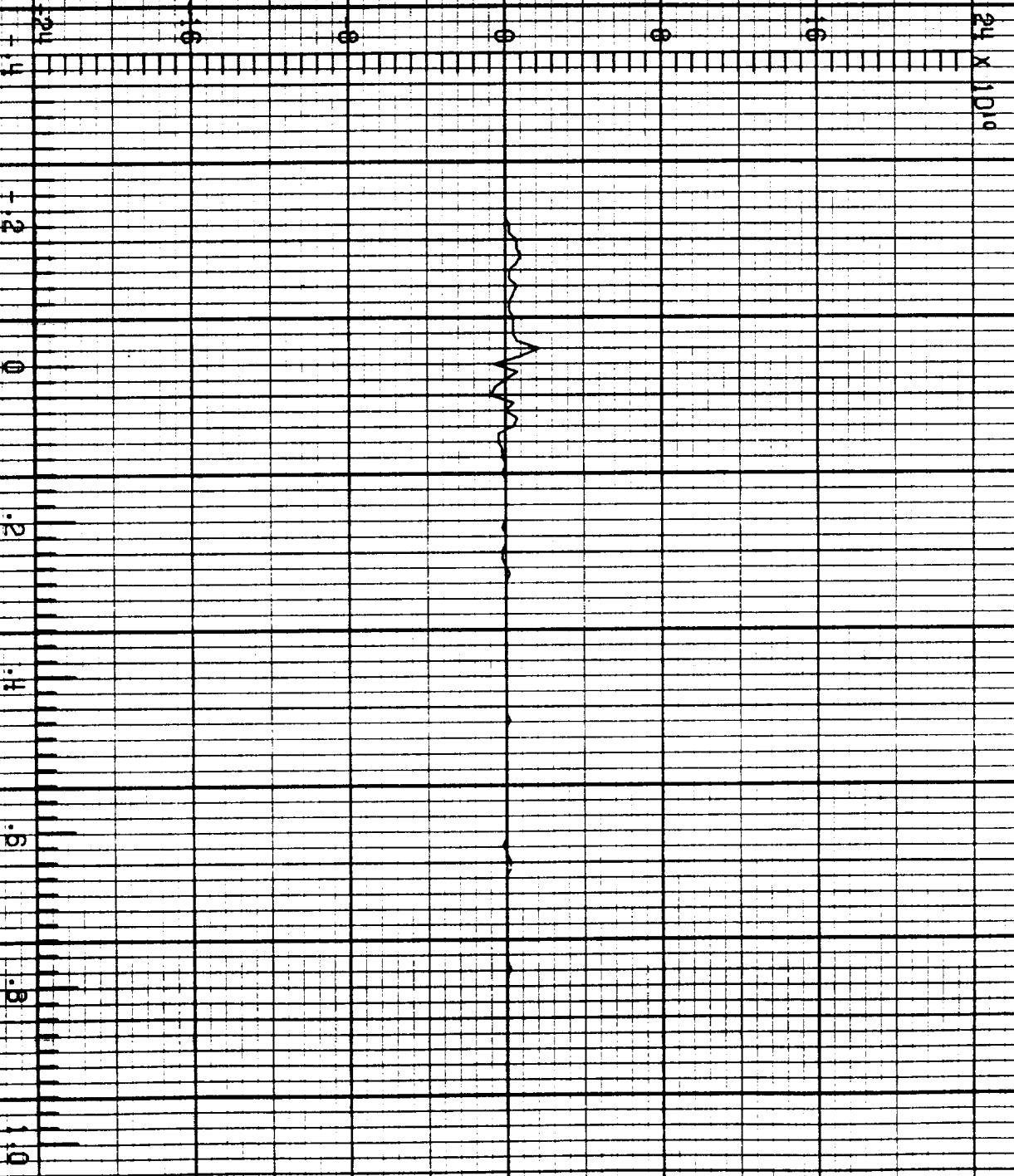
5.001

I A/s

21:21:21.1
CHANNEL NO: 2.1

24 X 10¹⁰

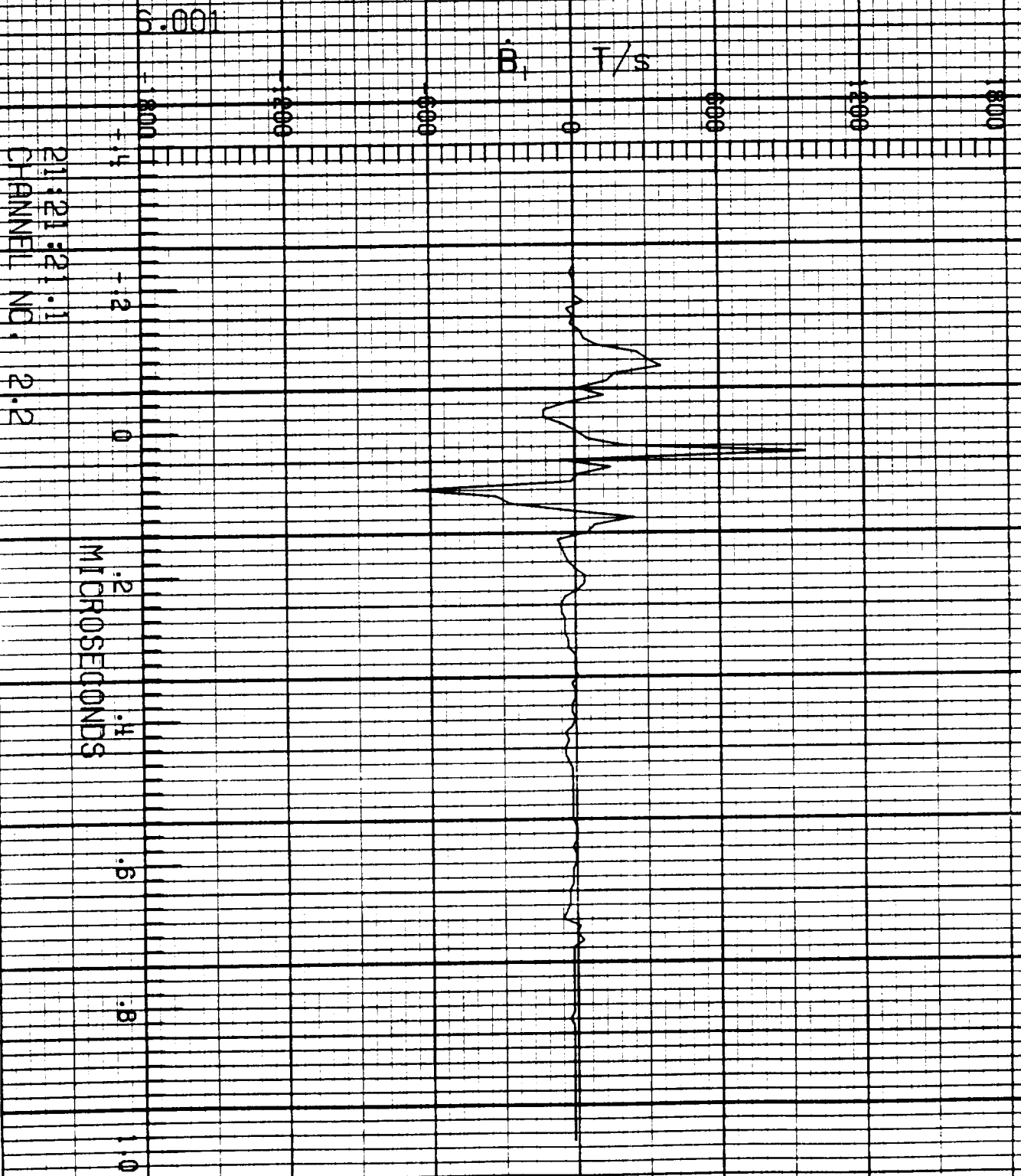
MICROSECONDS



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OF POOR QUALITY

F-106 LIGHTNING/ 84-019

FC2 RUN NO. 1



21:21:21.1
CHANNEL NO. 2.2

F=106 LIGHTNING/84-019

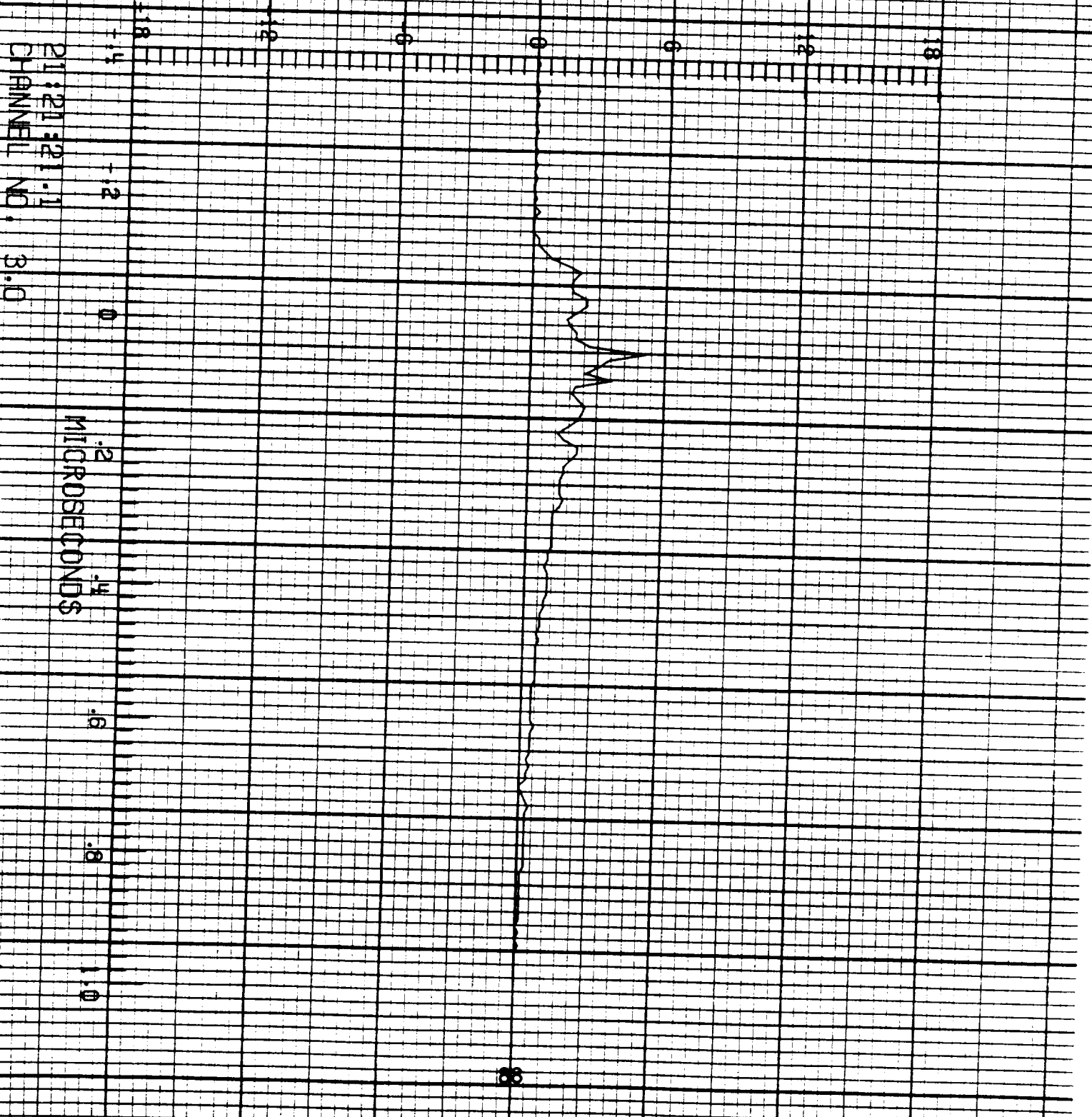
LEC 3 RUN NO. 1

6.001

D_{wr} A/m²

21:21:21.1
CHANNEL NO. 3.0

MICROSECONDS



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OF POOR QUALITY

F-106 LIGHTNING/ 84-019

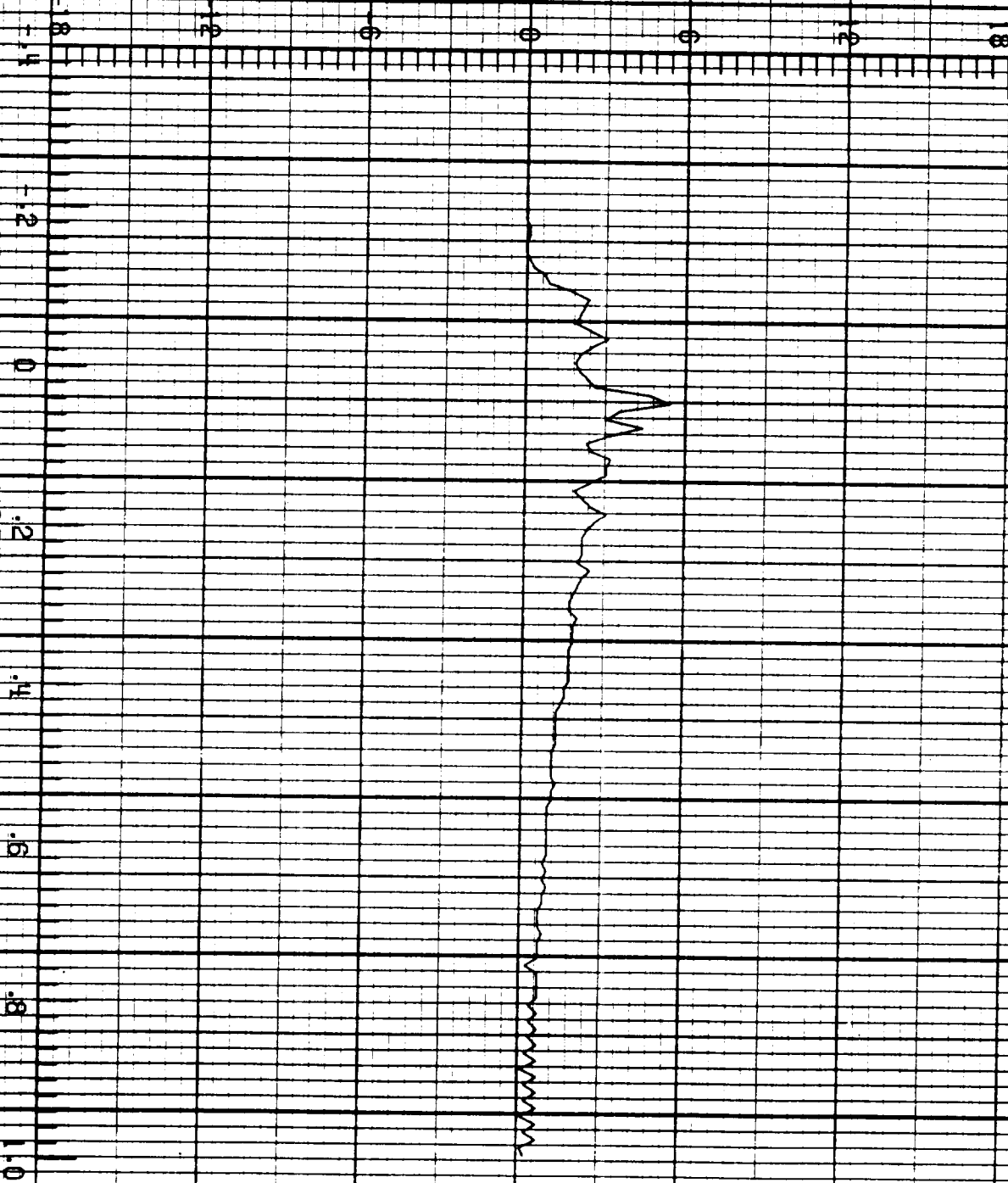
LEC 3 RUN NO. 1

5.001

D_{wl} A/m²

21:21:21.1
CHANNEL NO. 3.1

MICROSECONDS



F=106 LIGHTNING/ 84-019

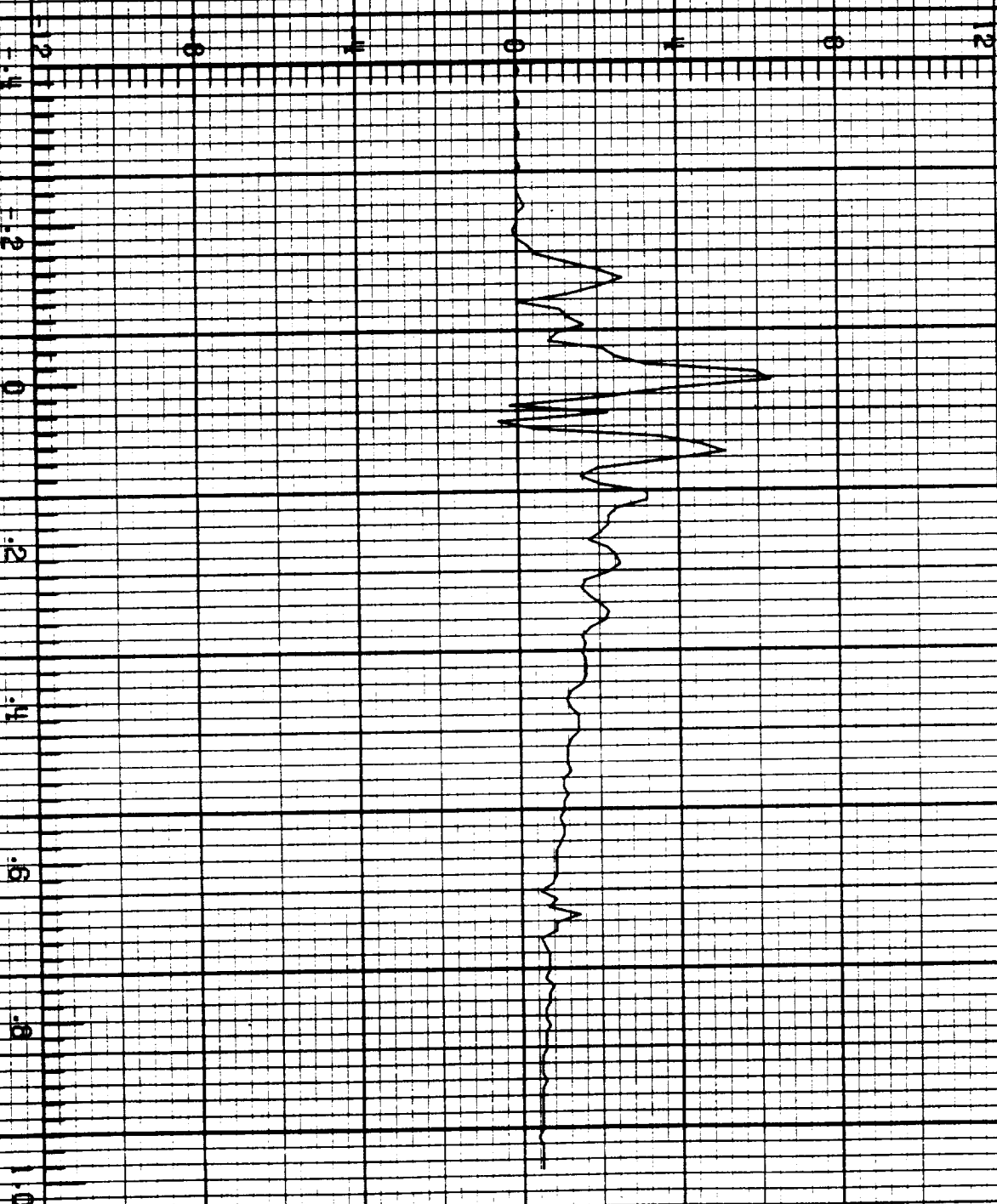
LEC 3 RUN NO. 1

5.001

D_r A/m²

21:21:21.1
CHANNEL NO. 3.2

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-019

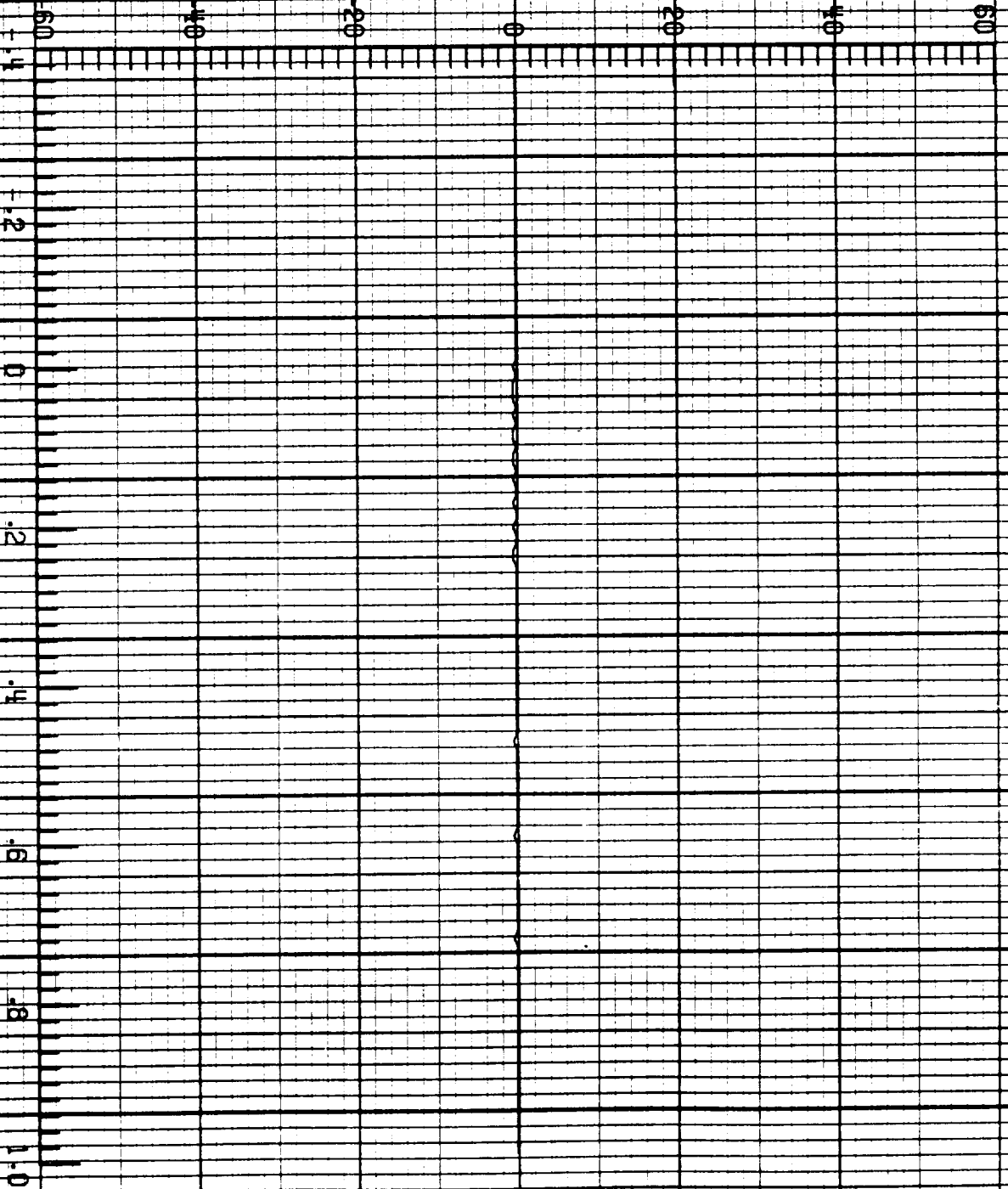
LECH RUN NO. 1

5.001

V_{fa} V

21:21:21.1
CHANNEL NO. 4.0

MICROSECONDS



=106 LIGHTNING/84-019

LEC 4 RUN NO. 1

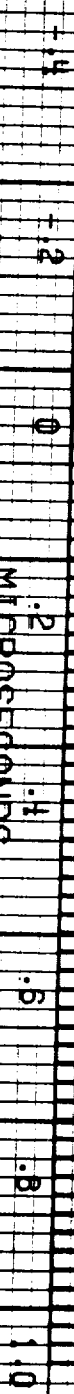
5.001

T_n A

2 X 10³

21:21:21.1
CHANNEL NO. #.1

MICROSECONDS



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OF POOR QUALITY

F-106 LIGHTNING/ 84-019

TECH RUN NO. 1

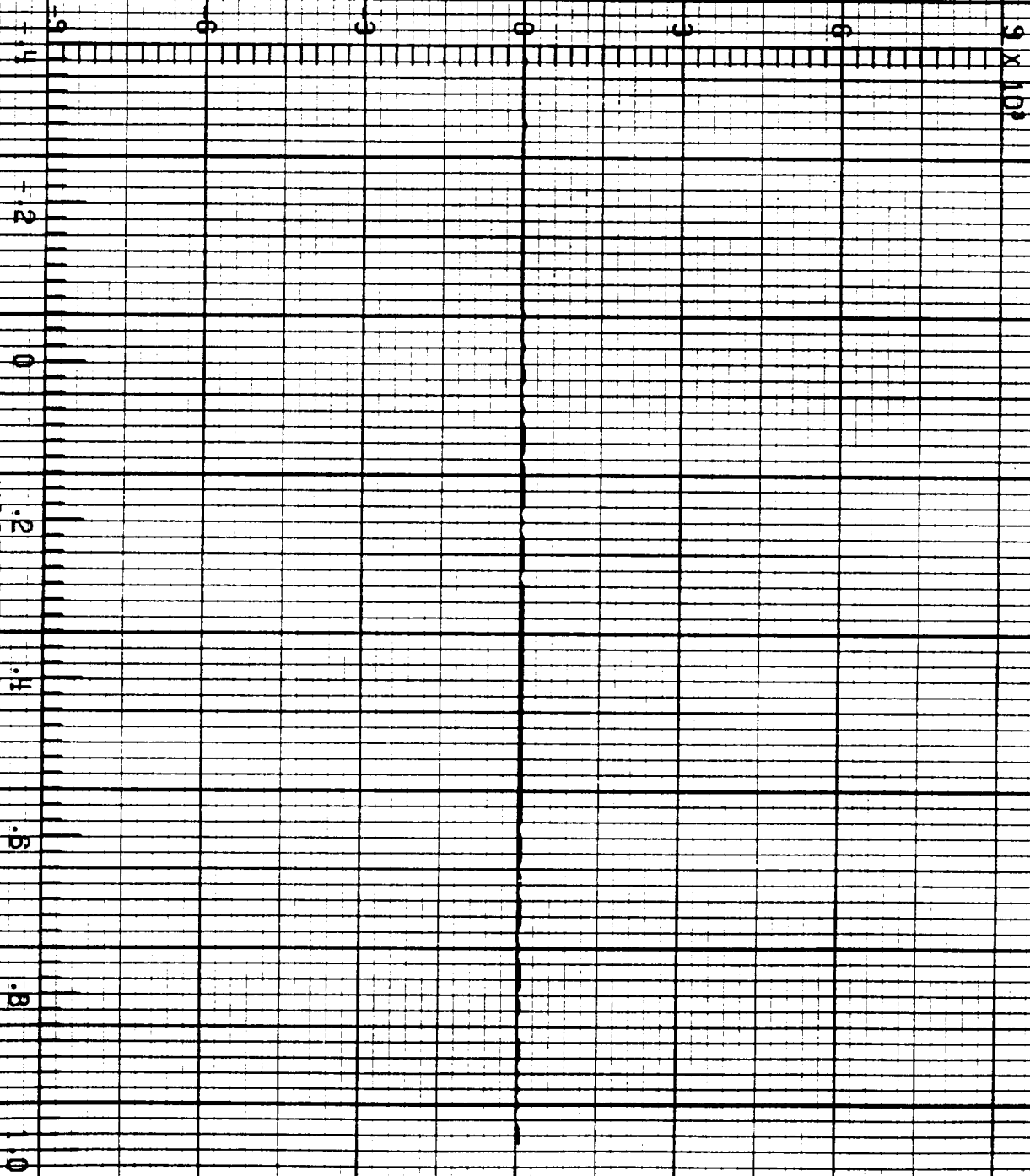
6.001

I, A

21:21:21.1
CHANNEL NO. 4.2

9×10^3

MICROSECONDS



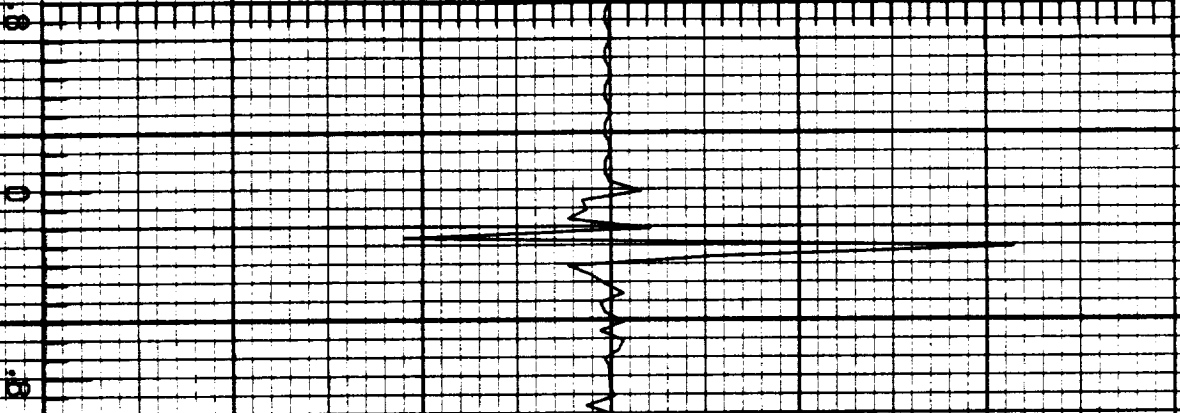
F=106 LIGHTNING/ 84=019

LFC 1 RUN NO. 2

5.003

$\frac{E}{T/s}$

9000
6000
3000
0
3000
6000
9000



21:36:55.0
CHANNEL NO. 1.1

MICROSECONDS

1.6
2.4
3.2
4.0
4.8

52

ORIGINAL PAGES
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

LED1 RUN NO. 2

5.003

B_{VT} T/s

21:36:56.10
CHANNEL NO. 1.2

MICROSECONDS

G2

106 LIGHTNING/ 84-019

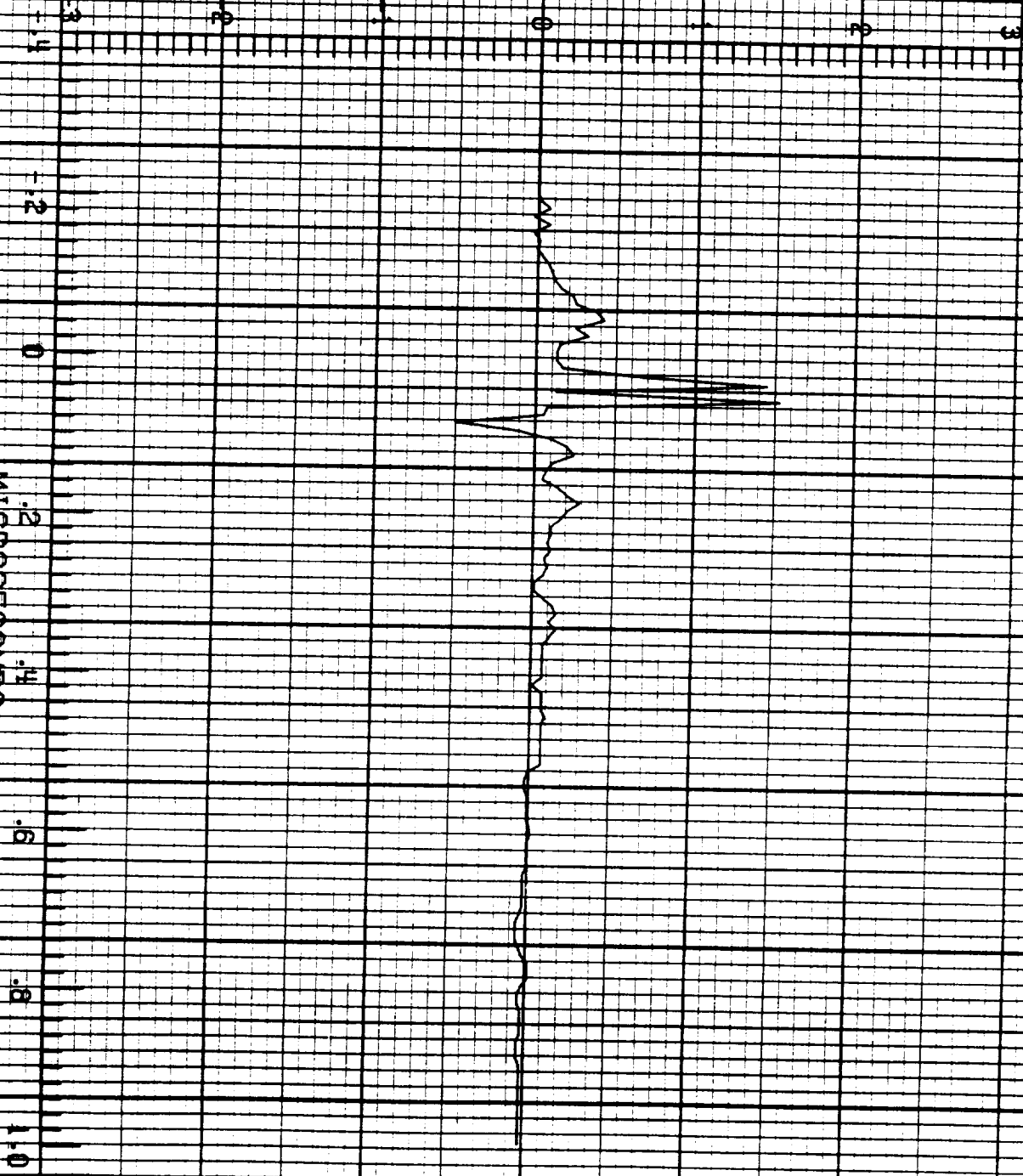
LEC 2 RUN NO. 2

5.008

D_t A/m²

21:36:56.0
CHANNEL NO. 2.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-019

LEC 2 RUN NO. 2

5.003

I A/s

21:35:56.0
CHANNEL NO. 2.1

24 X 10¹⁰

MICROSECONDS

F=106 LIGHTNING/ 84=019

1 FC 2 RUN NO. 2

5.008

B, T/s

1800
1600
1400
1200
1000
800
600
400
200
0

21:36:56.0
CHANNEL NO. 2.2

MICROSECONDS

1.4
1.2
1.0
.8
.6
.4
.2
0

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

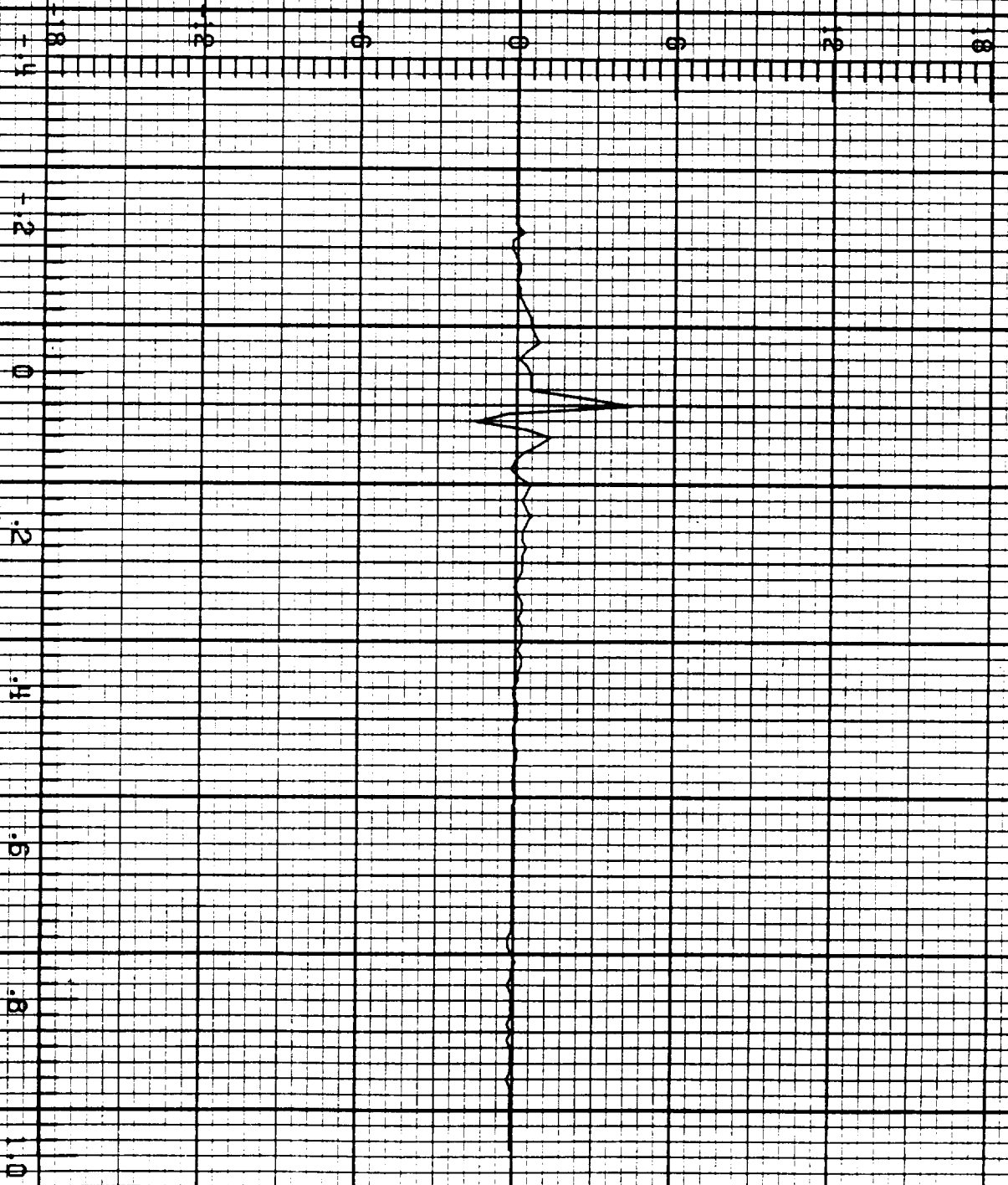
LECS RUN NO. 2

6.003

\hat{D}_{wr} A/m²

21:39:56.0
CHANNEL NO. 3.0

MICROSECONDS



F-106 LIGHTNING/ 84-019

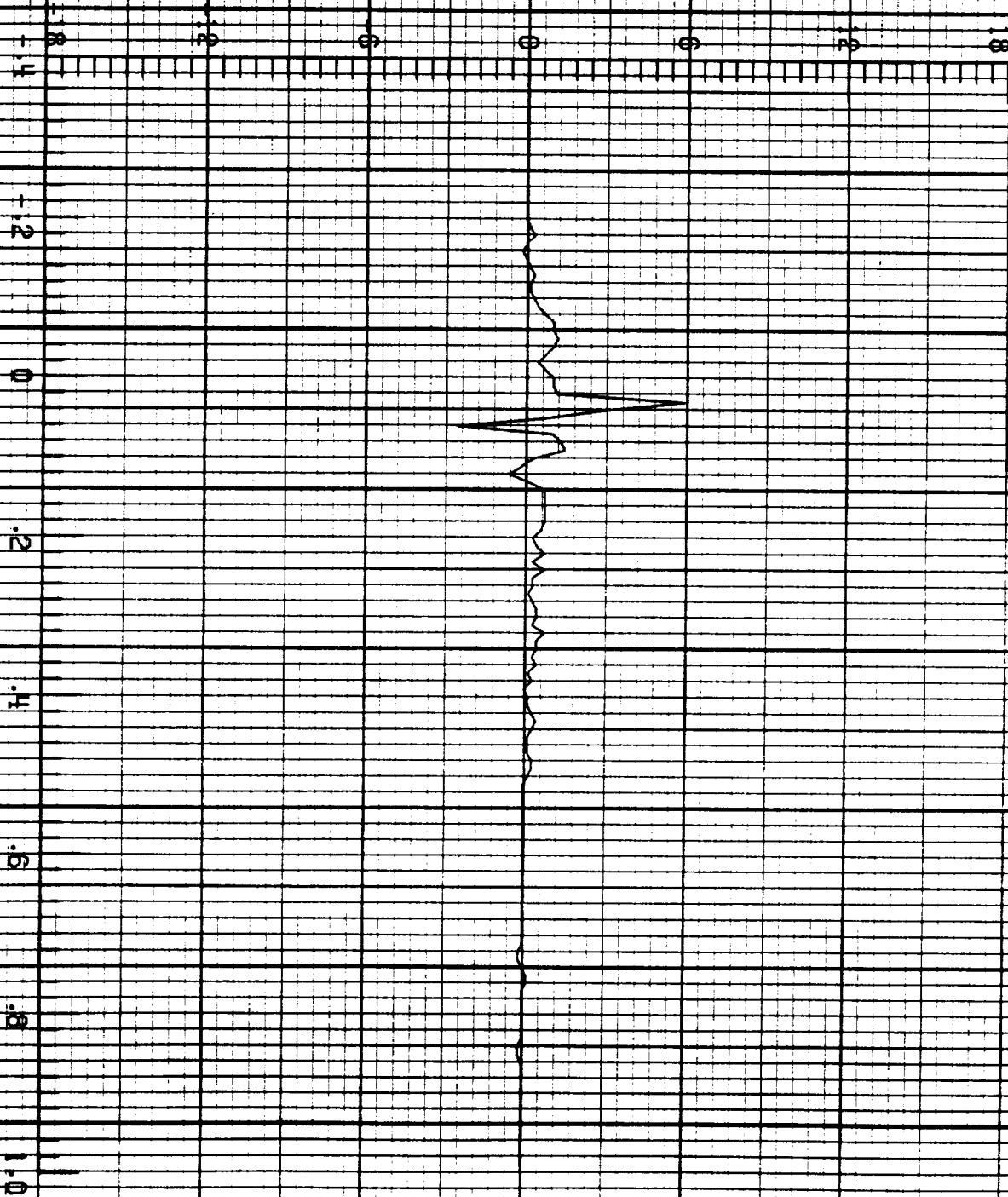
LEO3 RUN NO. 2

3.003

D_{wt} A/m²

21:35:56.0
CHANNEL NO. 3.1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-019

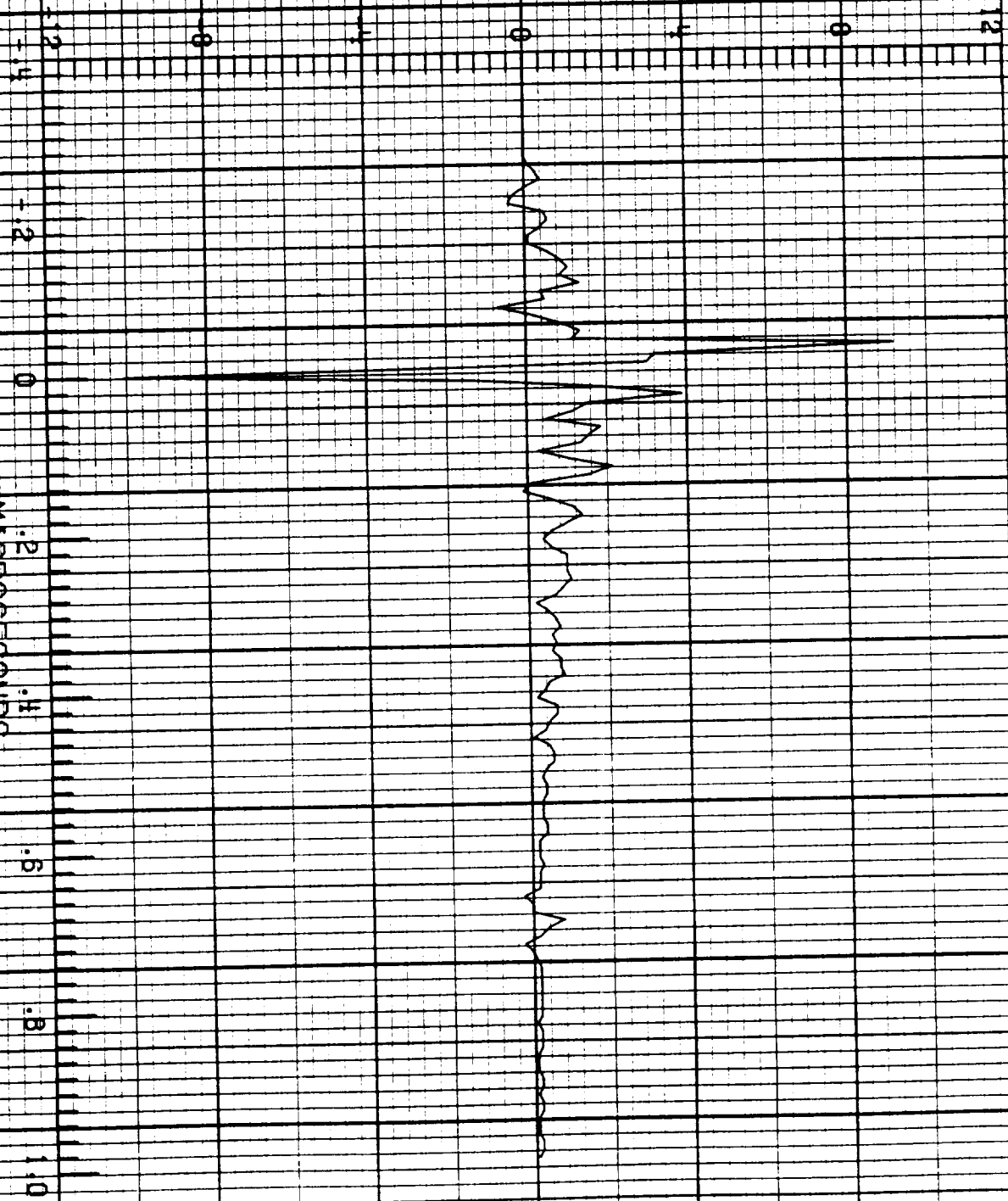
LEC 3 RUN NO. 2

5.003

\dot{D}_r A/m²

21:36:56.0
CHANNEL NO. 3.2

MICROSECONDS



F-106 LIGHTNING/ 84-019

LEC 4 RUN NO. 2

6.003

V_{fd} V

-60 -40 -20 0 20 40 60

-1.2

0

.2

.4

.6

.8

1.0

21:35:56.0
CHANNEL NO. 4.D

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

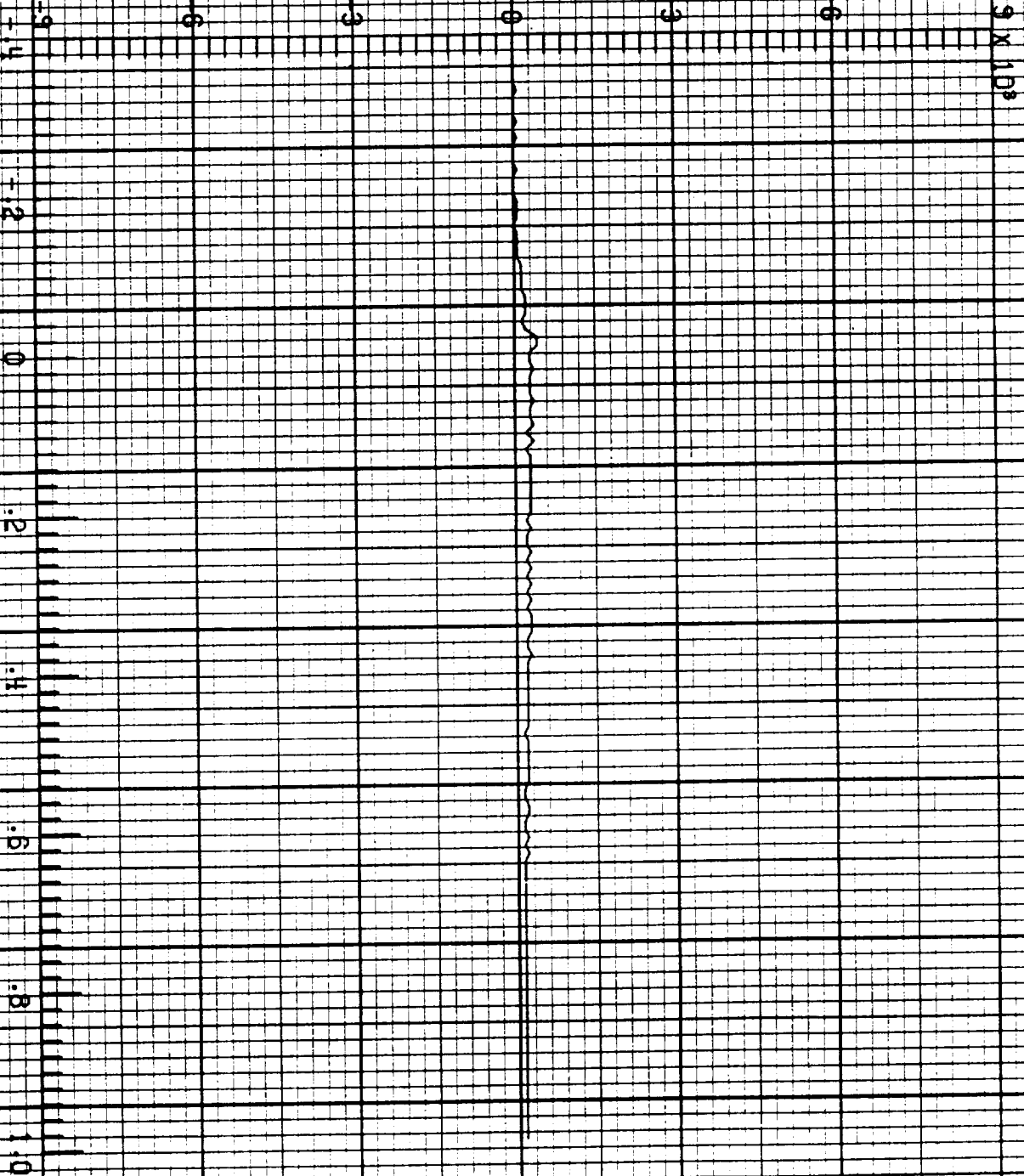
LECH# RUN NO. 2

5.005

I_n A

21:36:56.0
CHANNEL NO. 4.1

MICROSECONDS



9 X 10³

F-106 LIGHTNING/ 84-019

REF # RIN NO. 2

5.008

T_r A

21:38:56.0
CHANNEL NO. 4.2

9 X 10⁹

MICROSECONDS

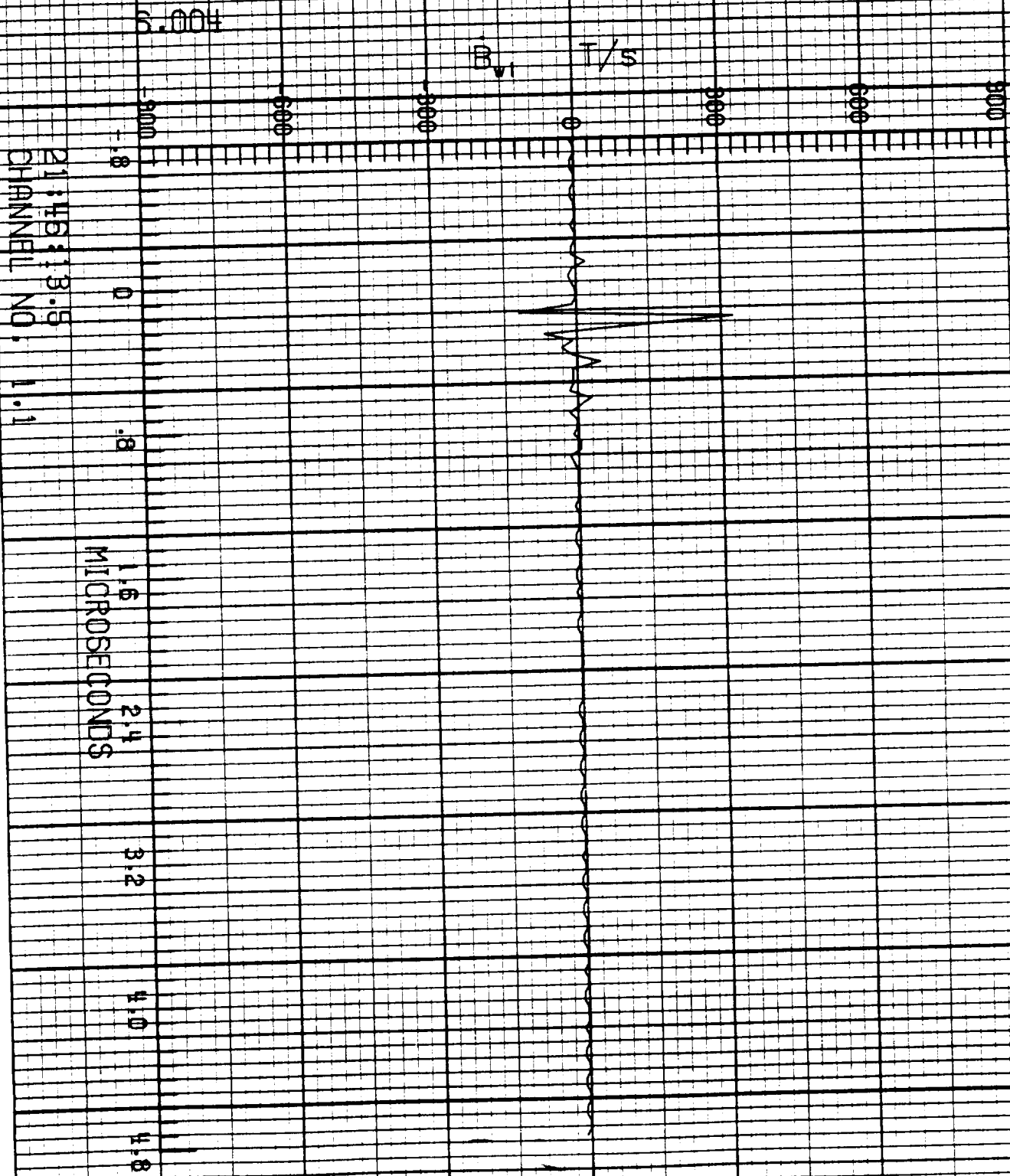
ORIGINAL PAGE IS
OF POOR QUALITY

2

ORIGINAL PAGE IS
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F=106 LIGHTNING/ 84-019

LEC 1 RIN NO. 3



21:45:13.5
CHANNEL NO. 1.1

F=106 LIGHTNING/ 84=019

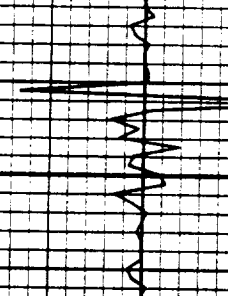
LEC 1 RUN NO. 3

5.004

$\frac{dB}{T/s}$

9000
6000
3000
0
3000
6000
9000

21:45:13.5
CHANNEL NO. 1.2



MICROSECONDS

1.8
0
.8
1.6
2.4
3.2
4.0
4.8

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

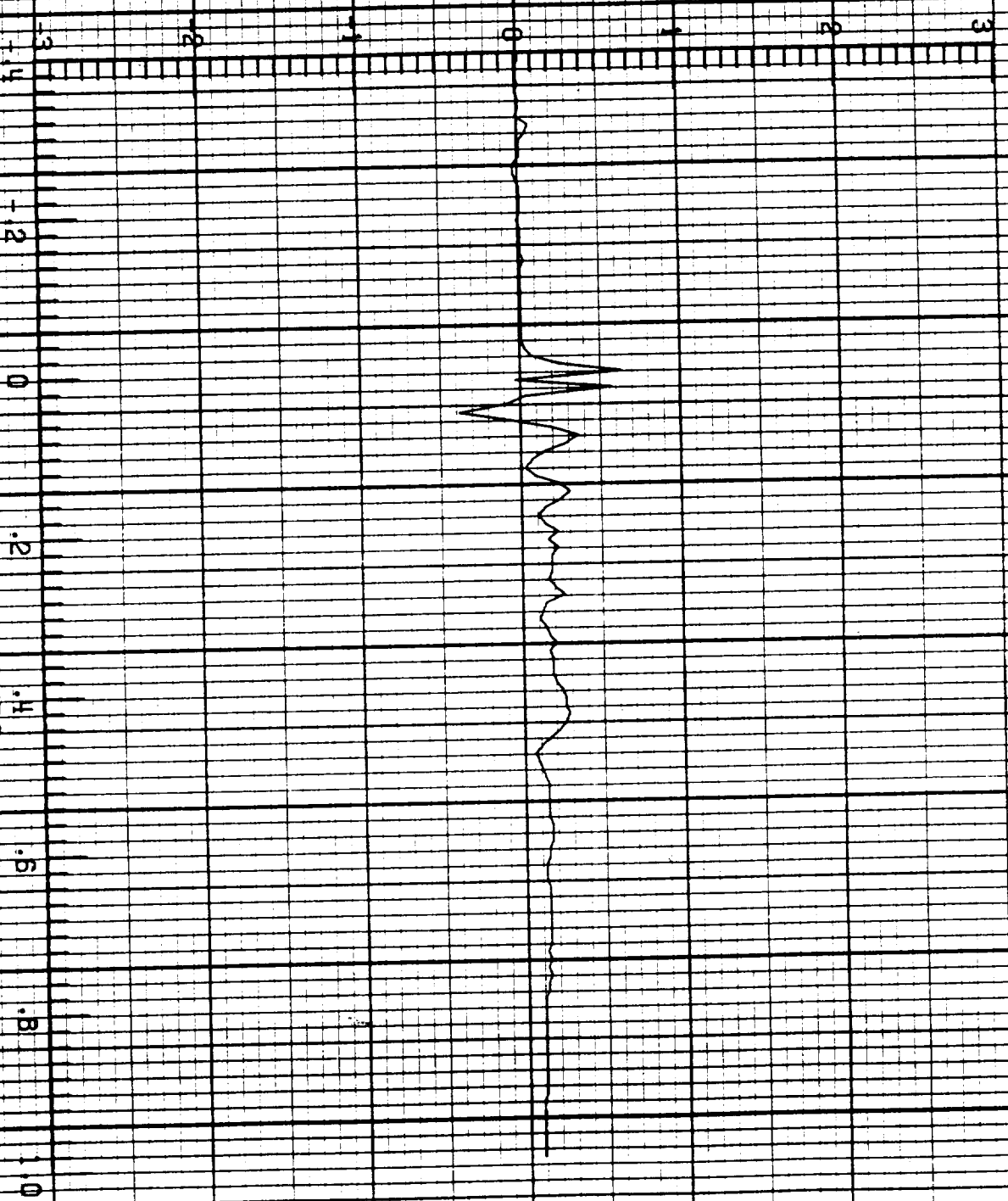
LEC 2 RUN NO. 3

S.004

\dot{D}_t A/m²

21:46:13.8
CHANNEL NO. 2.0

MICROSECONDS



F=106 LIGHTNING/ 84-019

LEC 2 RUN NO. 3

5.00H

\dot{T} A/s

20

15

10

5

0

5

10

24×10^{10}

14

12

0

2

4

.5

.8

1.0

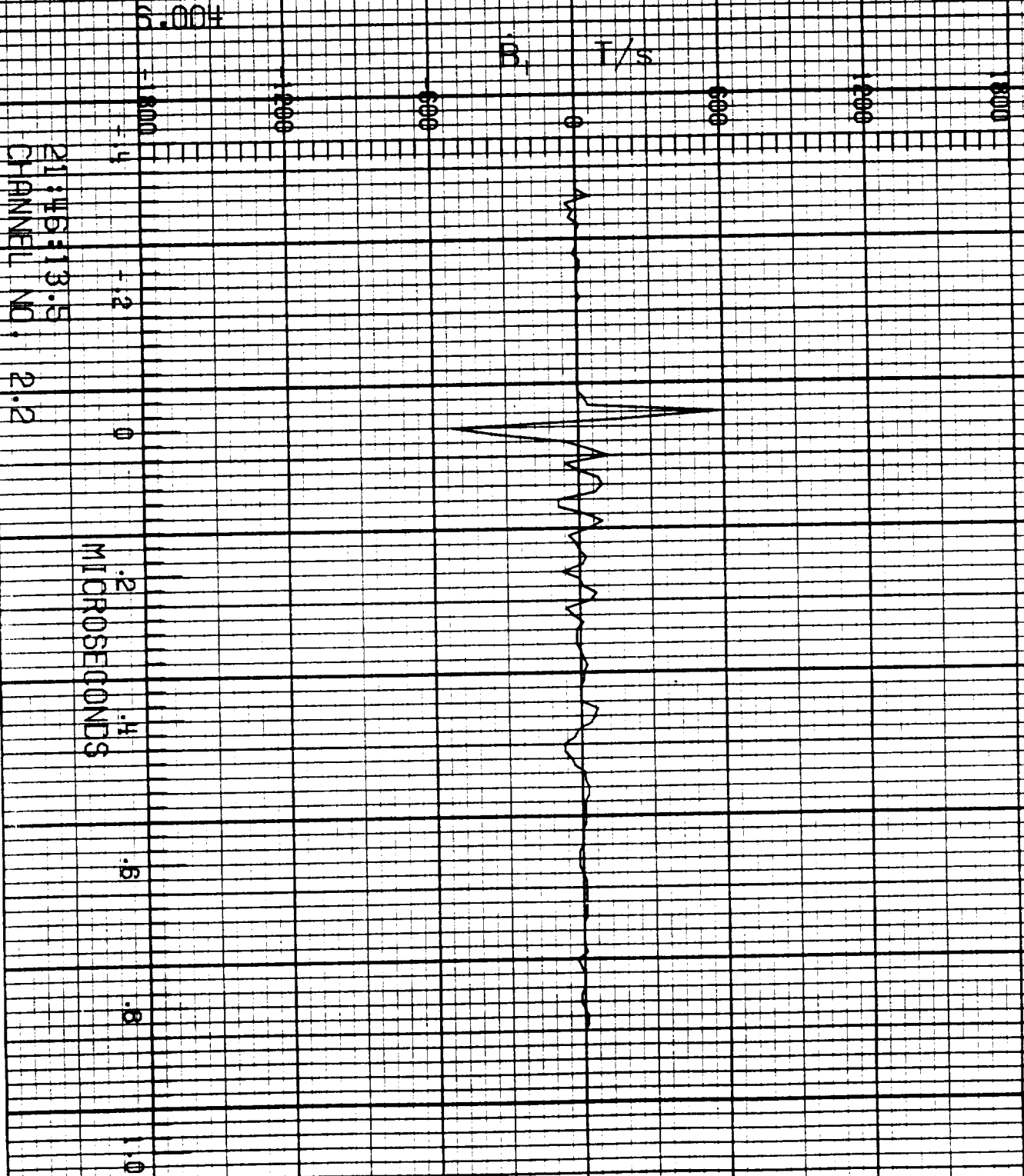
21:16:13.5
CHANNEL NO. 2.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

=106 LIGHTNING/ 84-019

LEG 2 RUN NO. 3



21:46:13.5
CHANNEL NO. 2.2

F=106 LIGHTNING/ 84=019

LECS RUN NO. 3

5.004

D_{wr} A/m²

1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0

1.2

0

.2

.4

.6

.8

1.0

21:46:13.5
CHANNEL NO. 3.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-019

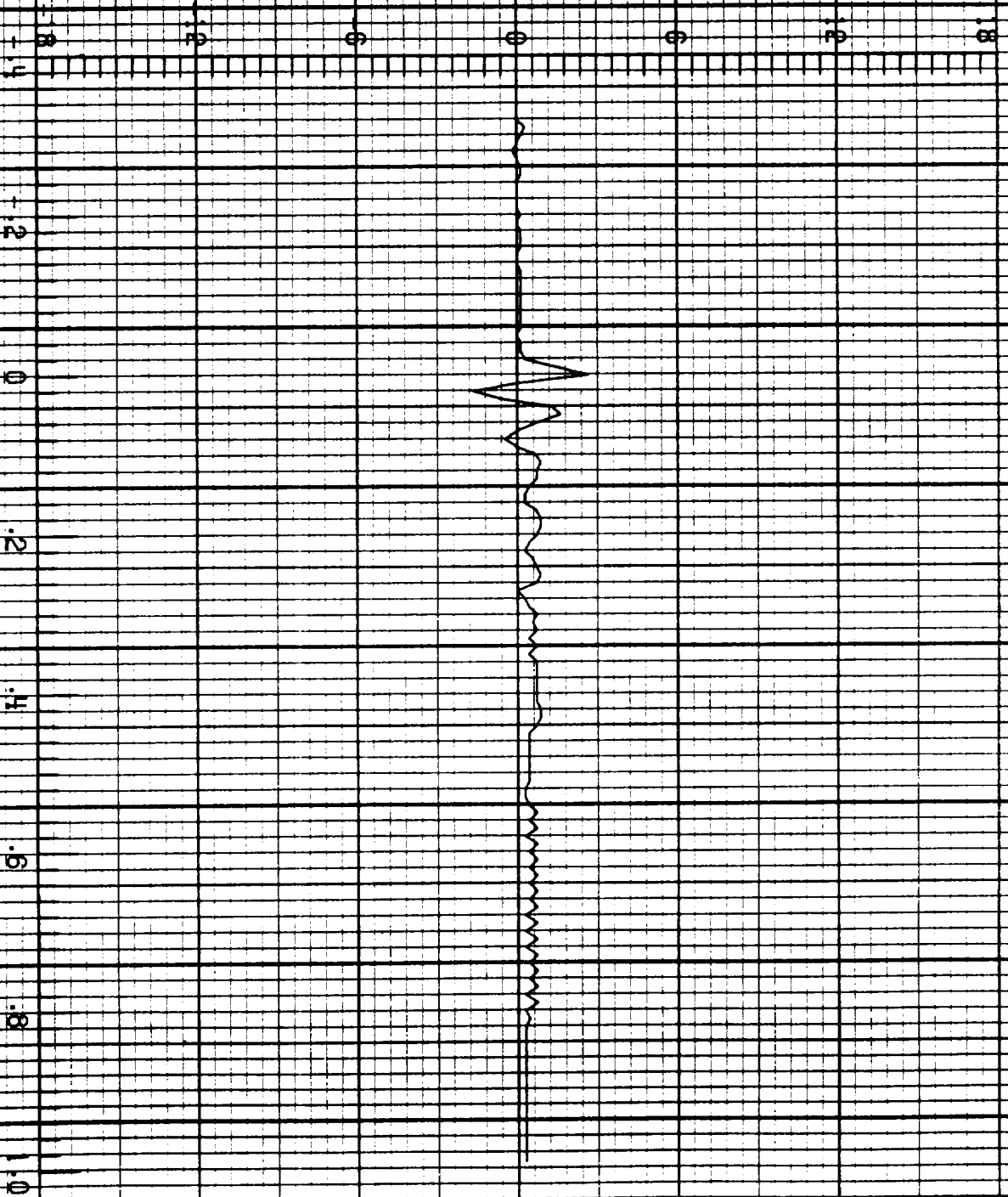
LEG 3 RUN NO. 3

5.00H

D_{wl} A/m²

21:46:13.5
CHANNEL NO. 3-1

MICROSECONDS



F-106 LIGHTNING/ 84-019

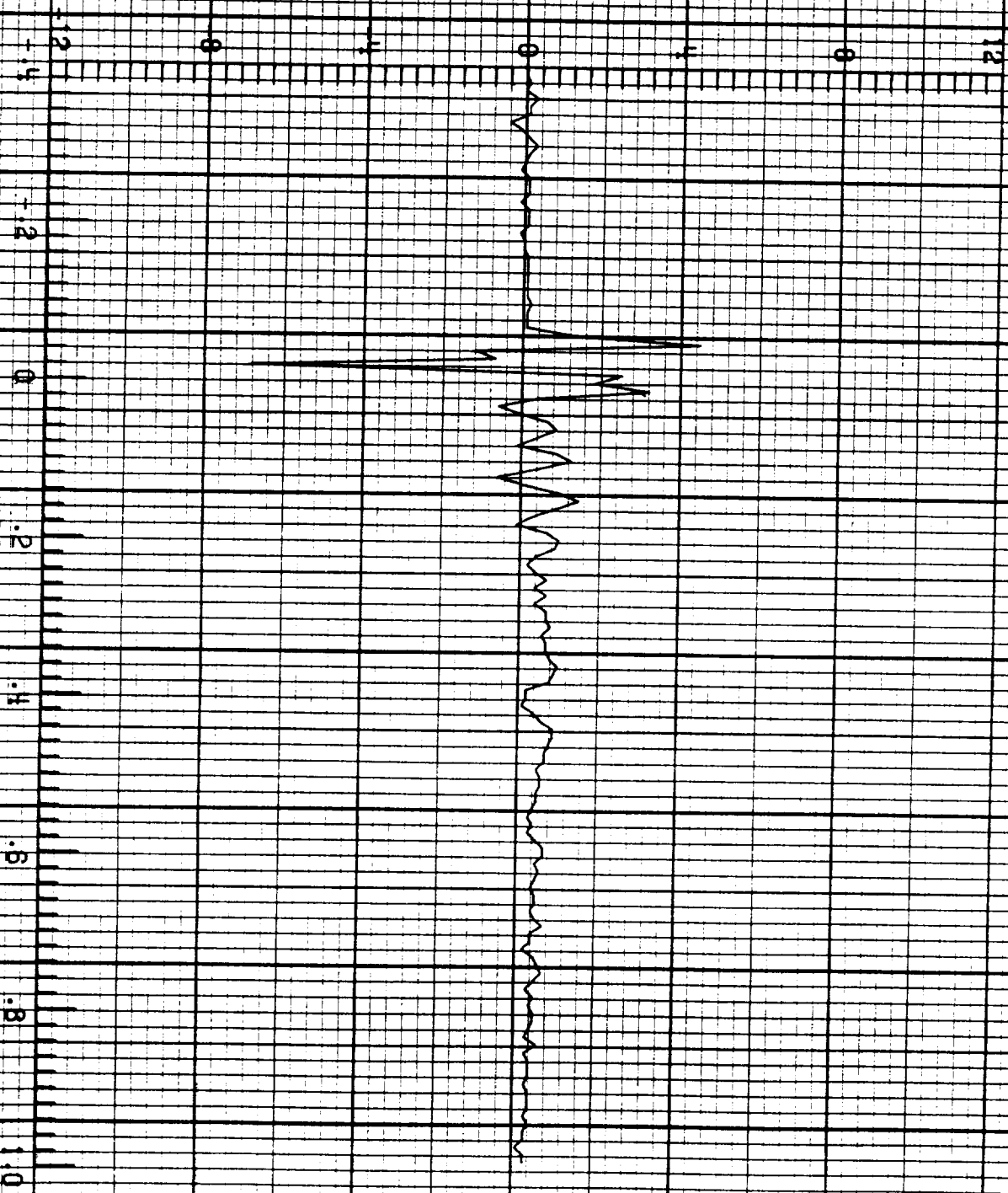
LFC3 RUN NO. 3

6.00#

\bar{D}_r A/m²

21:46:13.5
CHANNEL NO. 3.2

MICROSECONDS



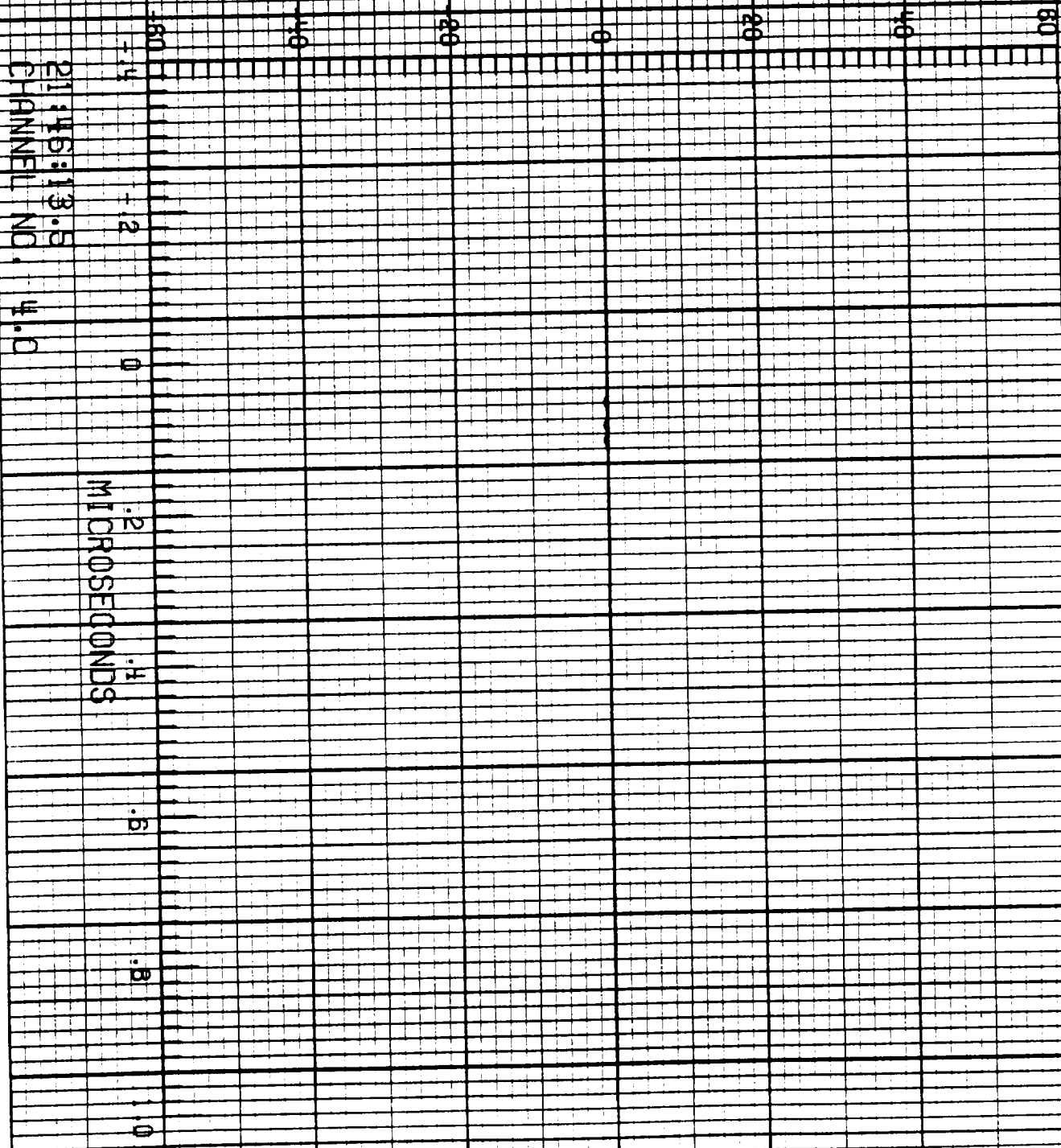
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F-106 LIGHTNING/ 84-019

LECH RUN NO. 3

5.00H

V_{Tc} V



21:46:13.5
CHANNEL NO. 4.C

F=106 LIGHTNING/ 84-019

LEC 4 RUN NO. 3

5.004

T_n A

21:46:13.5
CHANNEL NO. 4.1

9 X 10³

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

LECH RUN NO. 3

5.00μ

T, A

21:46:13.5
CHANNEL NO. 4.2

9 X 10⁹

MICROSECONDS

F=106 LIGHTNING/ 84-019

1 FC 1 RUN NO. 4

3.006

5000

6000

7000

0

8000

9000

10000

.8

0

.8

1.6

2.4

3.2

4.0

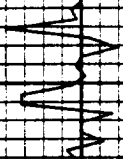
4.8

21:53:03.4
CHANNEL NO. 1.1

MICROSECONDS

T/s

0.5



F=106 LIGHTNING/ 84-019

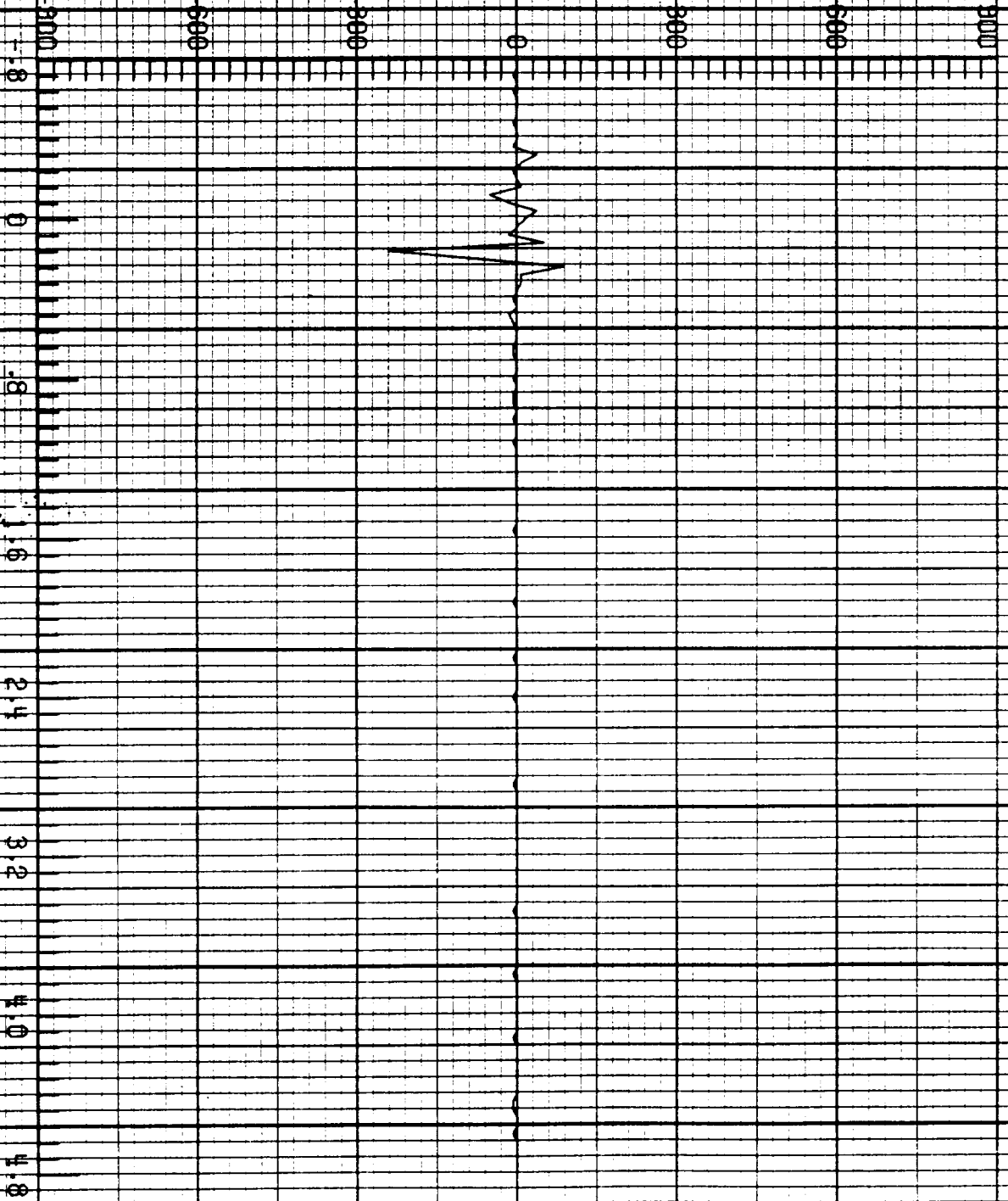
LFC 1 RUN NO. 4

5.006

B_{vr} T/s

21:53:03.4
CHANNEL NO. 1.2

MICROSECONDS



F=105 LIGHTNING/ 84-019

REC'D RIN NO. 4

5.006

D_t A/m²

0 10 20 30 40 50 60 70 80 90

21:53:03.14

CHANNEL NO. 2.0

0.2

0.4

0

0.2

0.4

0.6

0.8

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

REC 2 RUN NO. 4

5.006

I A/s

21:53:03.1
CHANNEL NO. 2.1

24 X 10¹⁰

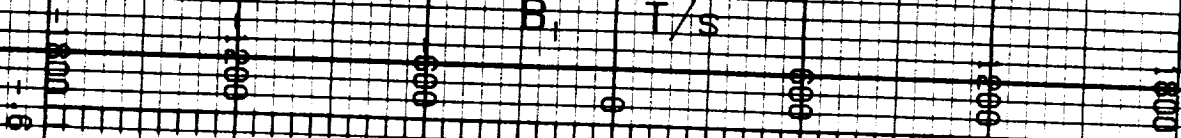
MICROSECONDS

F-106 LIGHTNING/ 84-019

1 EC 2 RUN NO. 4

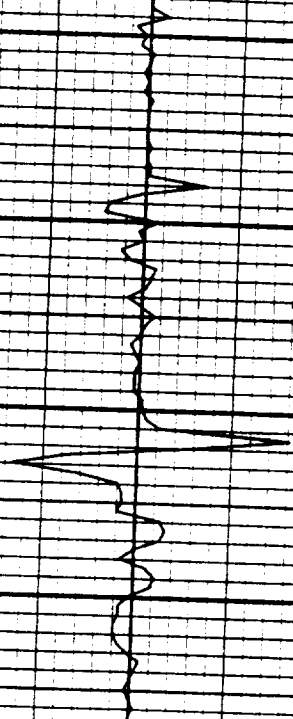
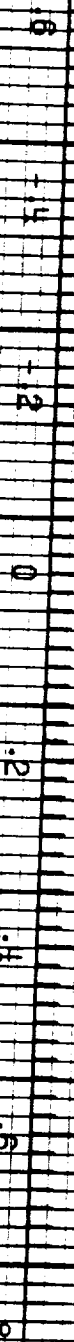
3.005

B, T/s



21:53:03.4
CHANNEL NO. 2.2

MICROSECONDS



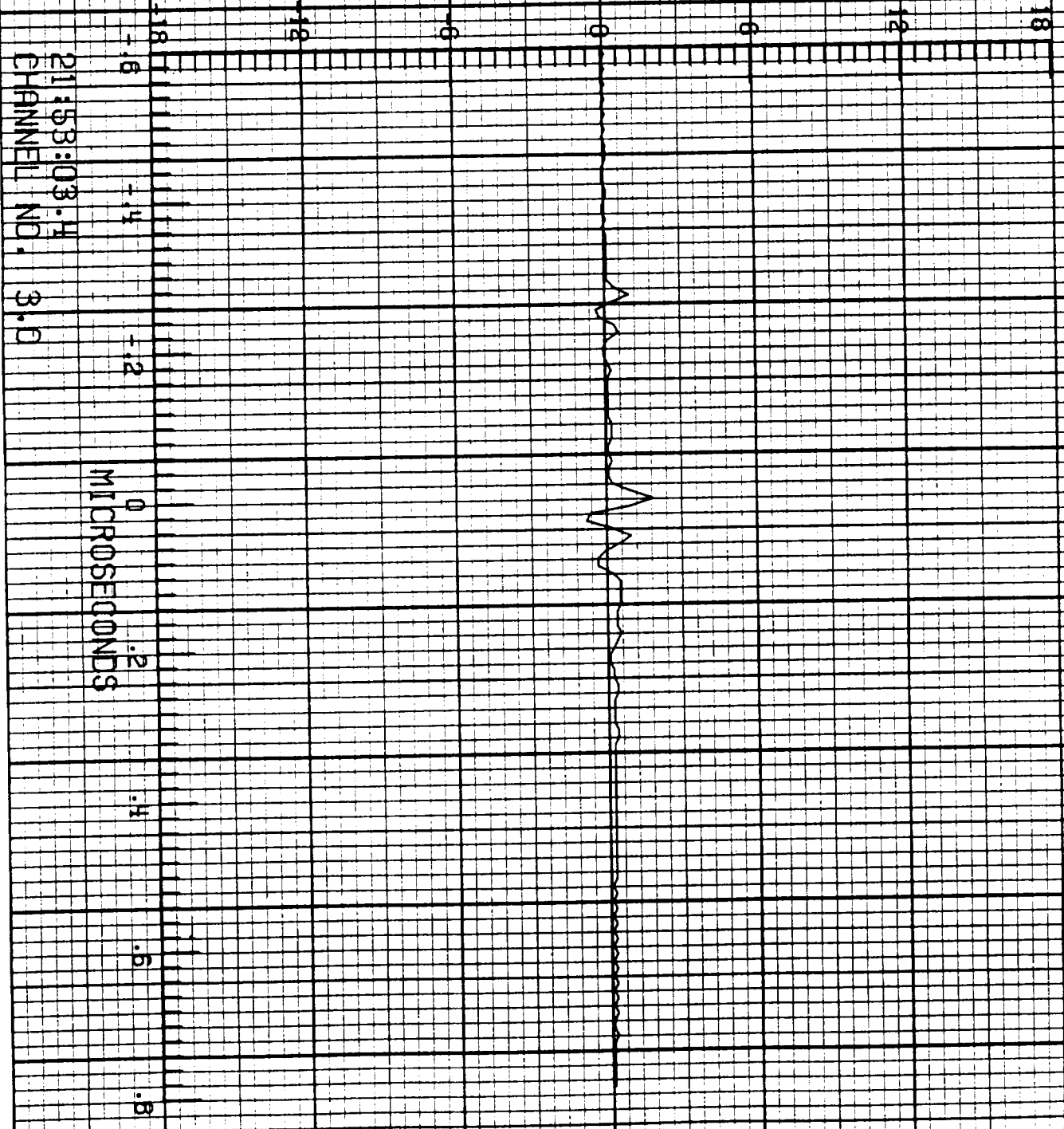
ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

LEC 3 RUN NO. 4

0.006

D_{wr} A/m²



21:53:03.4
CHANNEL NO. 3.D

F-106 LIGHTNING/ 84-019

EC 3 RUN NO. 4

5.006

D_w A/m²

1.8 3.6 5.4 7.2 9.0 10.8 12.6 14.4 16.2 18.0

-1.4

-1.2

0

.2

.4

.6

.8

21:53:03.4
CHANNEL NO. 3.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

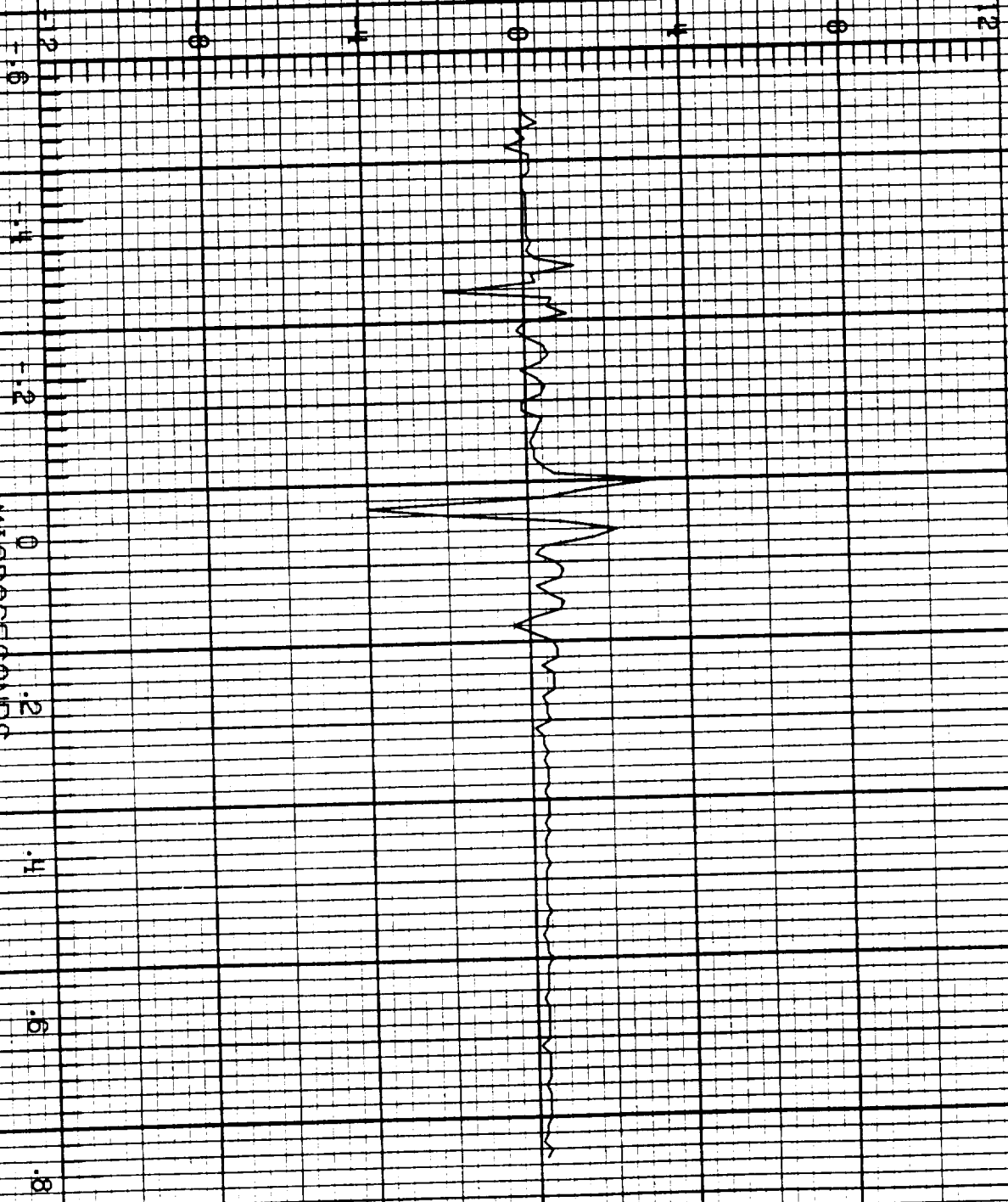
LF03 RUN NO. 4

5.006

D_r A/m²

21:53:03.1
CHANNEL NO. 3.2

MICROSECONDS



F-106 LIGHTNING/ 84-019

LECH RUN NO. 4

5.006

V_{fd} V



21:53:03.1
CHANNEL NO. 4.0

1.6
1.4
1.2

0
MICROSECONDS
2
4
6
8

106 LIGHTNING 84-019

LEG 4 RUN NO. 4

009

I_n A

21:53:03.11
CHANNEL NO. 4

9 x 10³

ORIGINAL PAGE IS
OF POOR QUALITY

MICROSECONDS

F-106 LIGHTNING/ 84-019

LFC H RUN NO. 4

5.006

I₁ A

9 X 10⁸

21:53:03.4
CHANNEL NO. 4.2

MICROSECONDS

ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-019

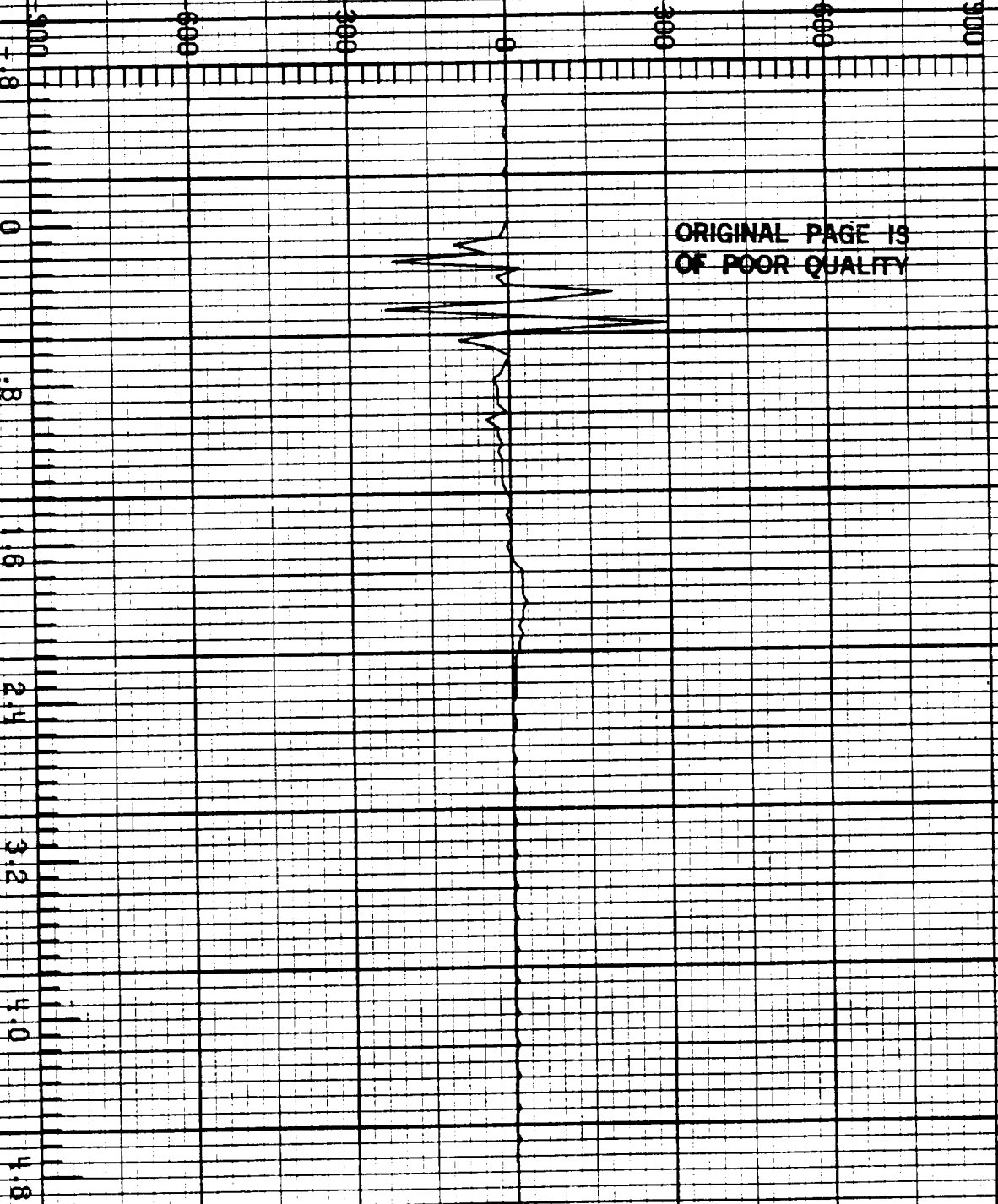
LEC 1 RUN NO. 5

S.007

B_{v1} T/s

21:55:34.9
CHANNEL NO. 1.1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

LEC1 RUN NO. 5

6.007

B_{vr} T/s

-5000
-3000
-1000
0
1000
3000
5000

21:55:34.9
CHANNEL NO. 1

1.2

.8

1.6
2.4
MICROSECONDS

3.2

4.0

4.8

F-106 LIGHTNING/ 84-019

LEC2 RUN NO. 5

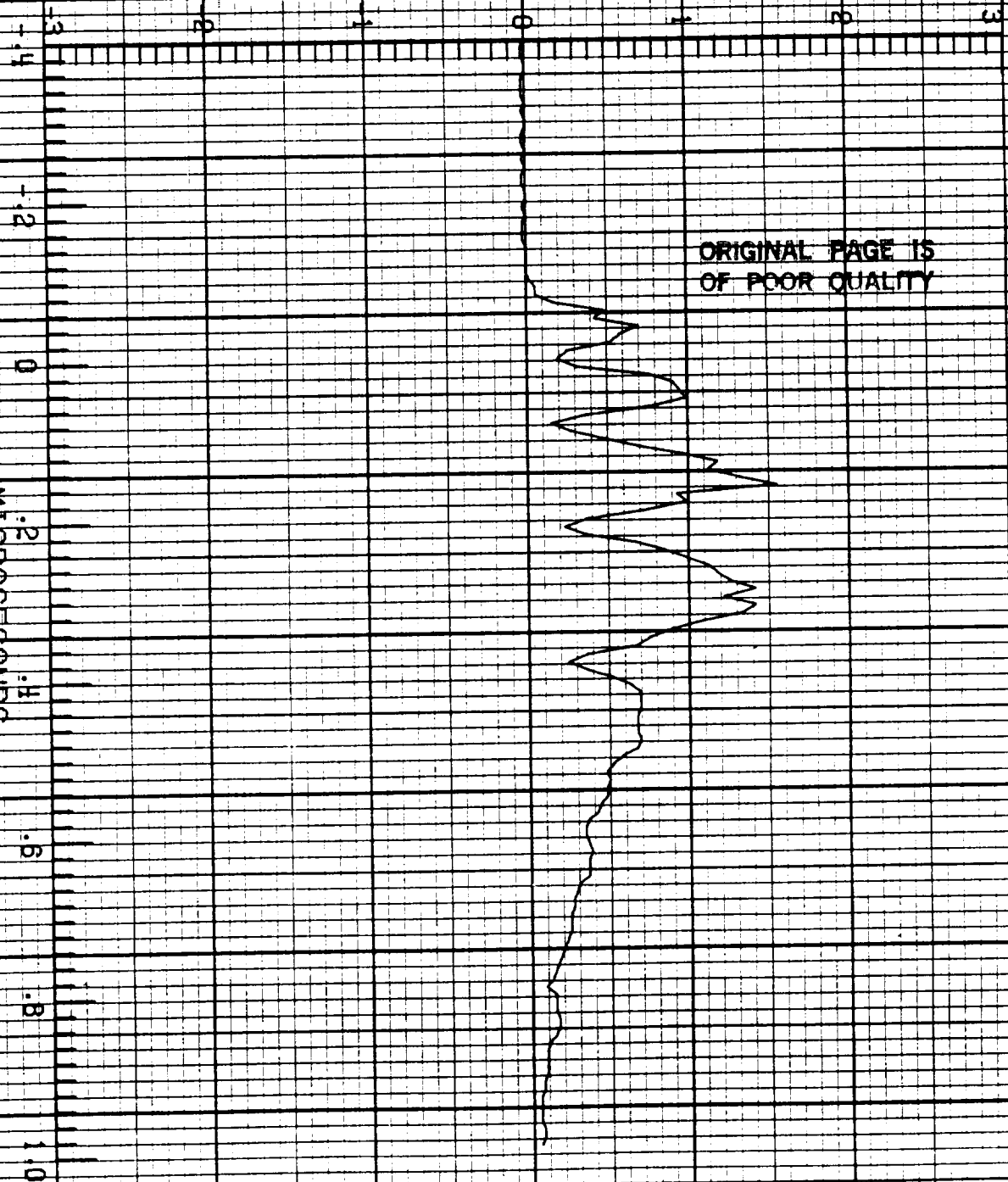
6.007

\dot{D}_t A/m²

21:55:34.9
CHANNEL NO. 2.0

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY



F-106 LIGHTNING/ 84-019

LEC 2 RUN NO. 5

5.007

\dot{I} A/s

24 X 10¹⁰

-.2

0

.2

.4

.6

.8

1.0

21:55:34.9
CHANNEL NO. 2.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

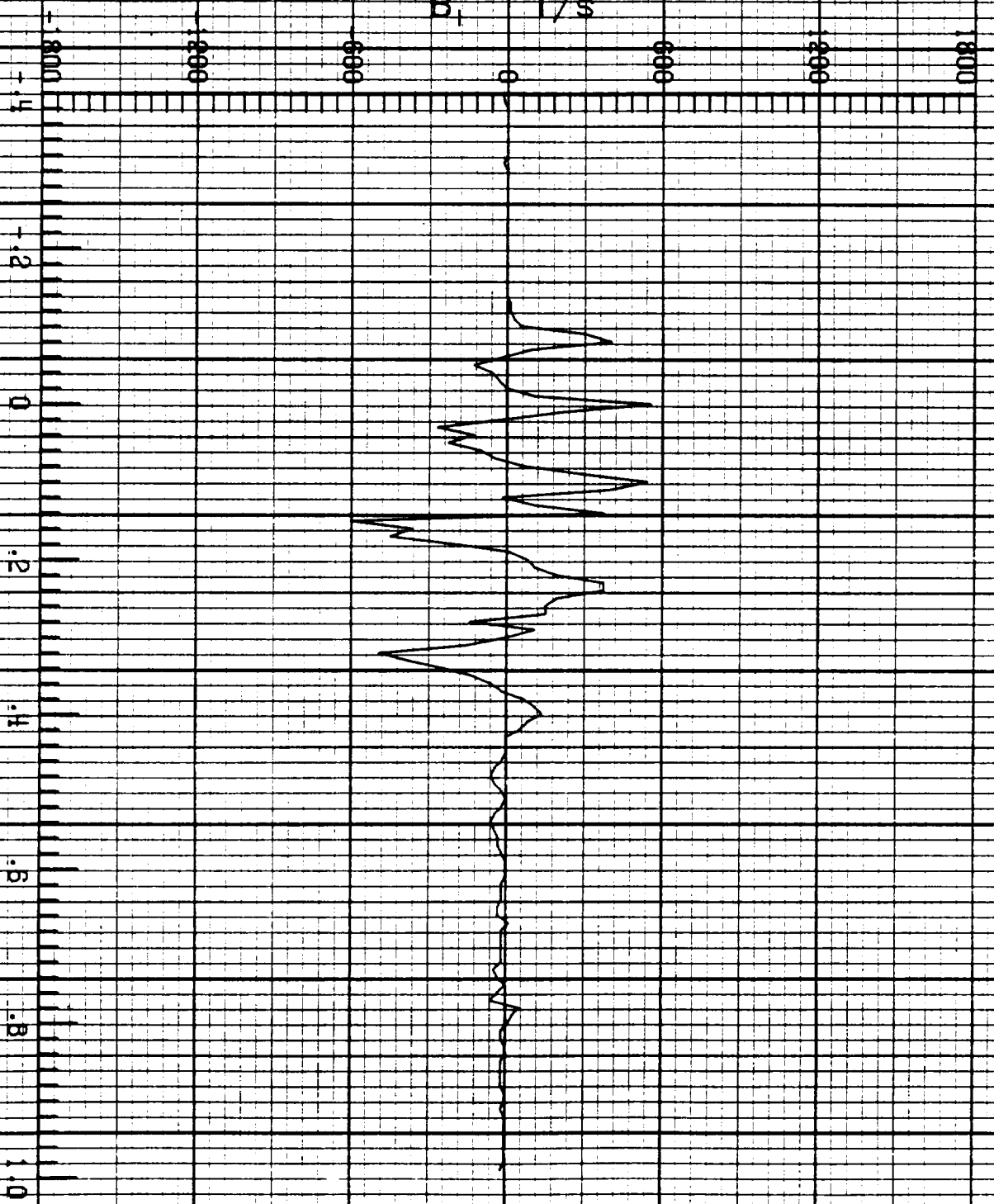
LEC 2 RUN NO. 5

S.007

\dot{B}_1 T/s

21:55:34.9
CHANNEL NO. 2.2

MICROSECONDS



F=106 LIGHTNING/84=019

LECB RUN NO. 5

3.007

\bar{D}_w A/m²



-1.8
-1.4
-1.0
-0.6
-0.2
0

MICROSECONDS

.2
.4
.6
.8
1.0

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

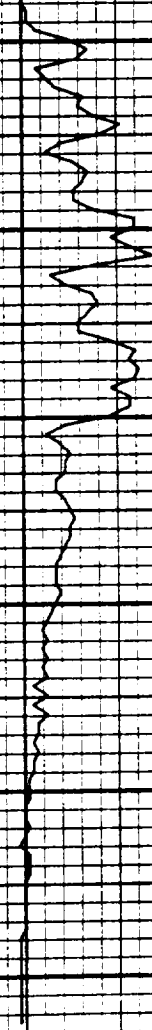
LFC 3 RUN NO. 5

S.007

D_w A/m²

21:55:34.9
CHANNEL NO. 3.1

MICROSECONDS

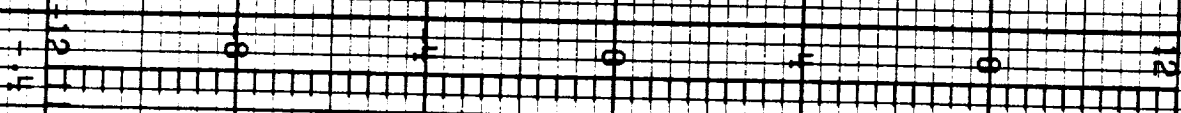


F-106 LIGHTNING/ 84-019

IFC 3 RUN NO. 5

6.007

\dot{D}_r A/m²



+1.2

0

.2

.4

.6

.8

1.0

21:55:34.9

CHANNEL NO. 3.2

MICROSECONDS

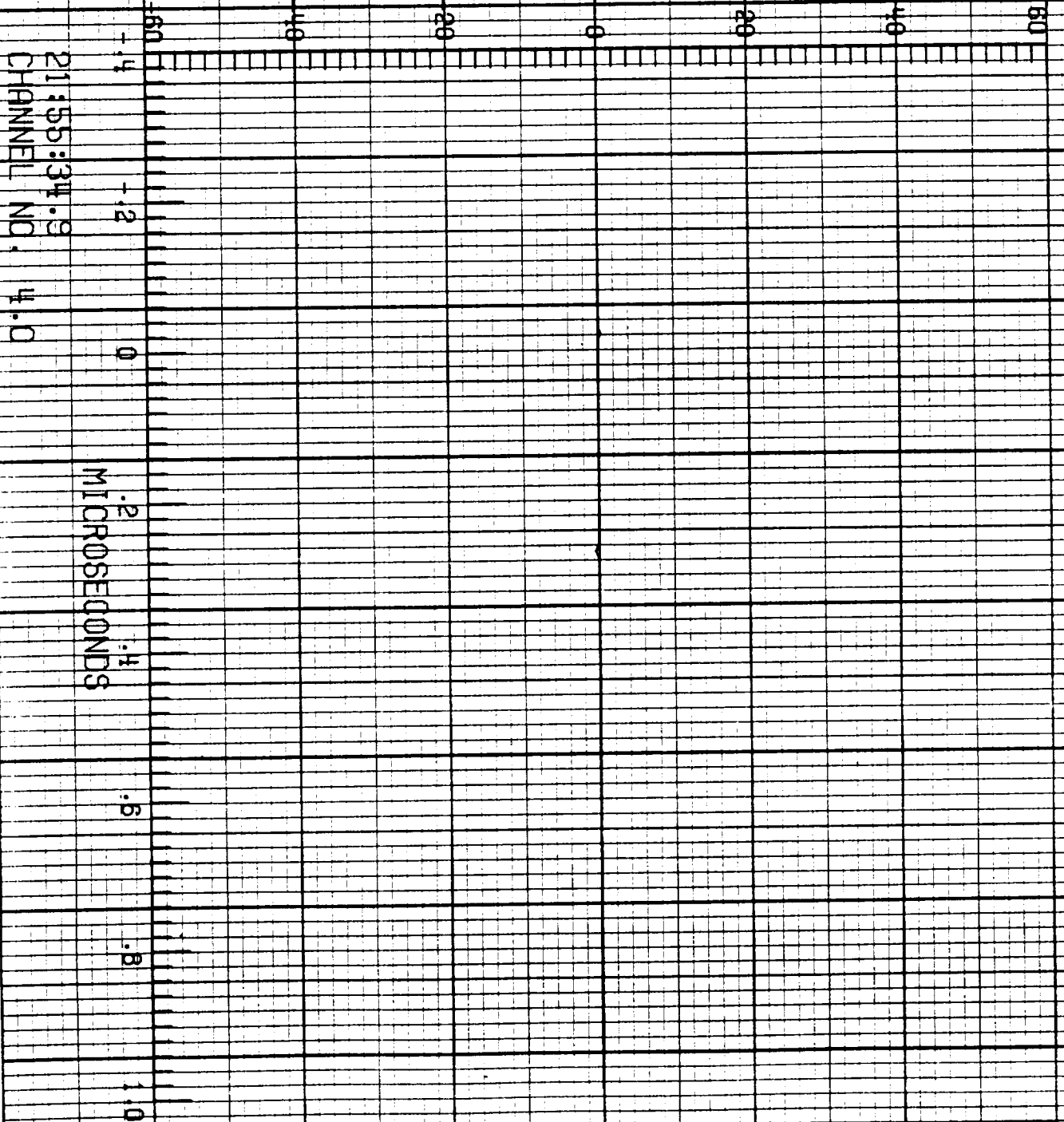
ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

LECH RUN NO. 5

S.007

V_{fo} V



F-106 LIGHTNING/ 84-019

LFC# RUN NO. 5

5.007

I_n A

9 x 10²

21:55:34.9
CHANNEL NO. 4.1

MICROSECONDS

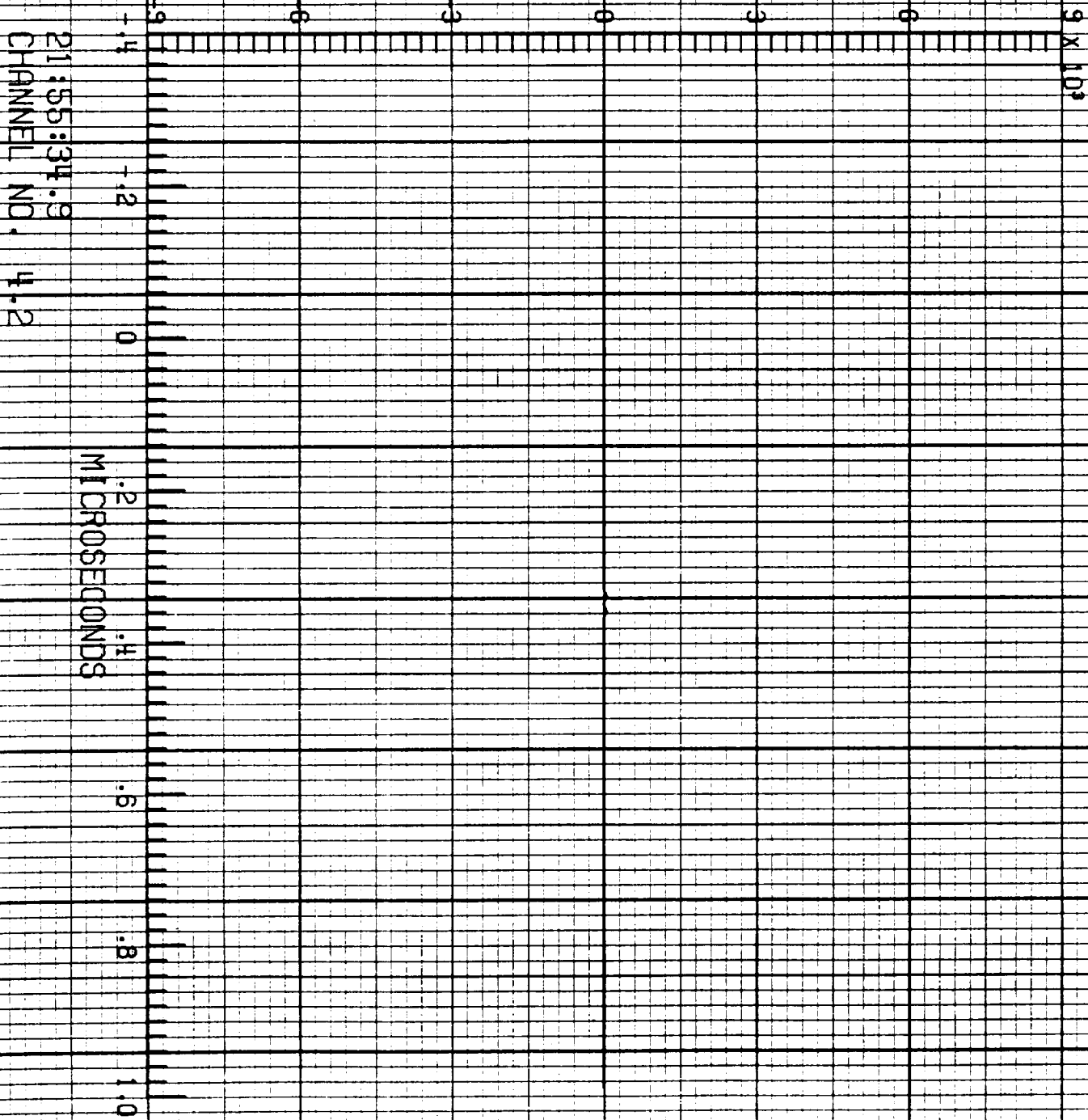
ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

LEC# RUN NO. 5

6.007

I_t A



F-106 LIGHTNING/ 84-019

LEC1 RUN NO. 6

6.000

B_{v1} T/s

-500 0 500 1000 1500

22:00:05.8

CHANNEL NO. 1.1

.8

0

.8

MICROSECONDS

1.6

2.4

3.2

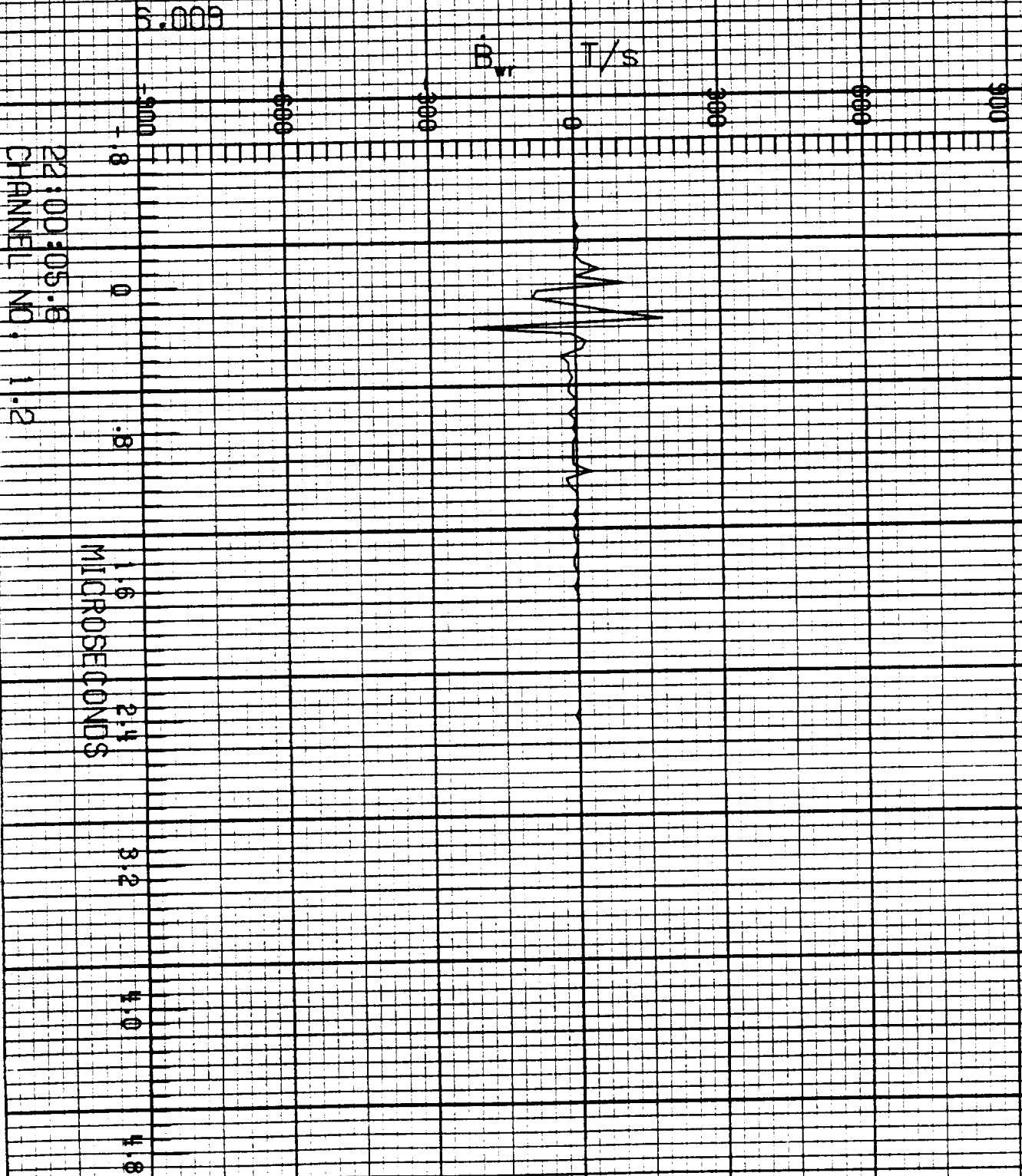
4.0

4.8

ORIGINAL PAGE 28
OF POOR QUALITY

F=106 LIGHTNING/ 84-019

LEC 1 RUN NO. 6



F-106 LIGHTNING/ 84-019

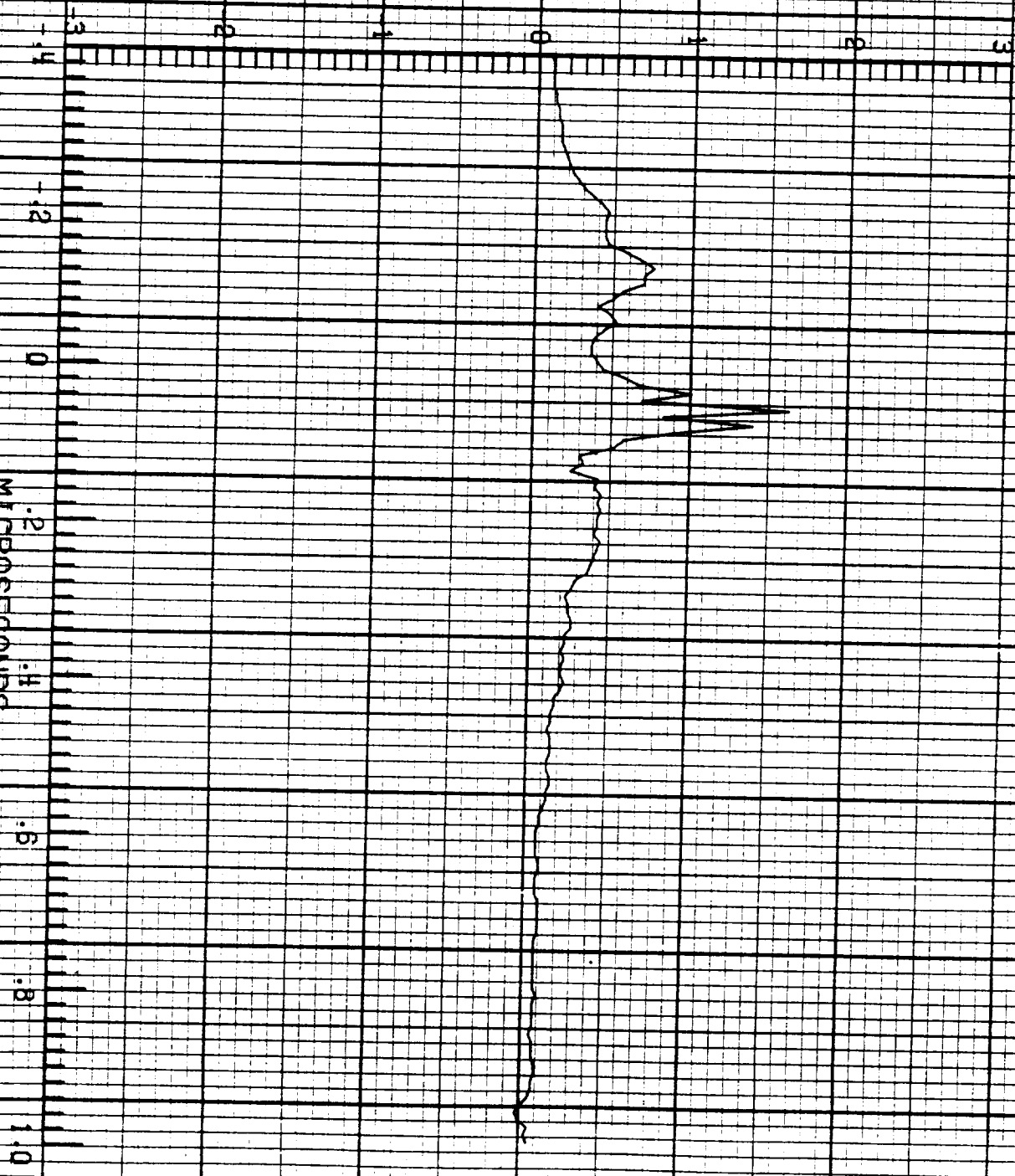
LEC 2 RUN NO. 6

S.009

\dot{D}_t A/m²

22:00:05.9
CHANNEL NO. 2.D

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

1 EC.2 RUN NO. 6

5.009

\dot{I} A/s

22:00:05.8
CHANNEL NO. 2.1

25×10^{10}

MICROSECONDS

F-106 LIGHTNING/ 84-019

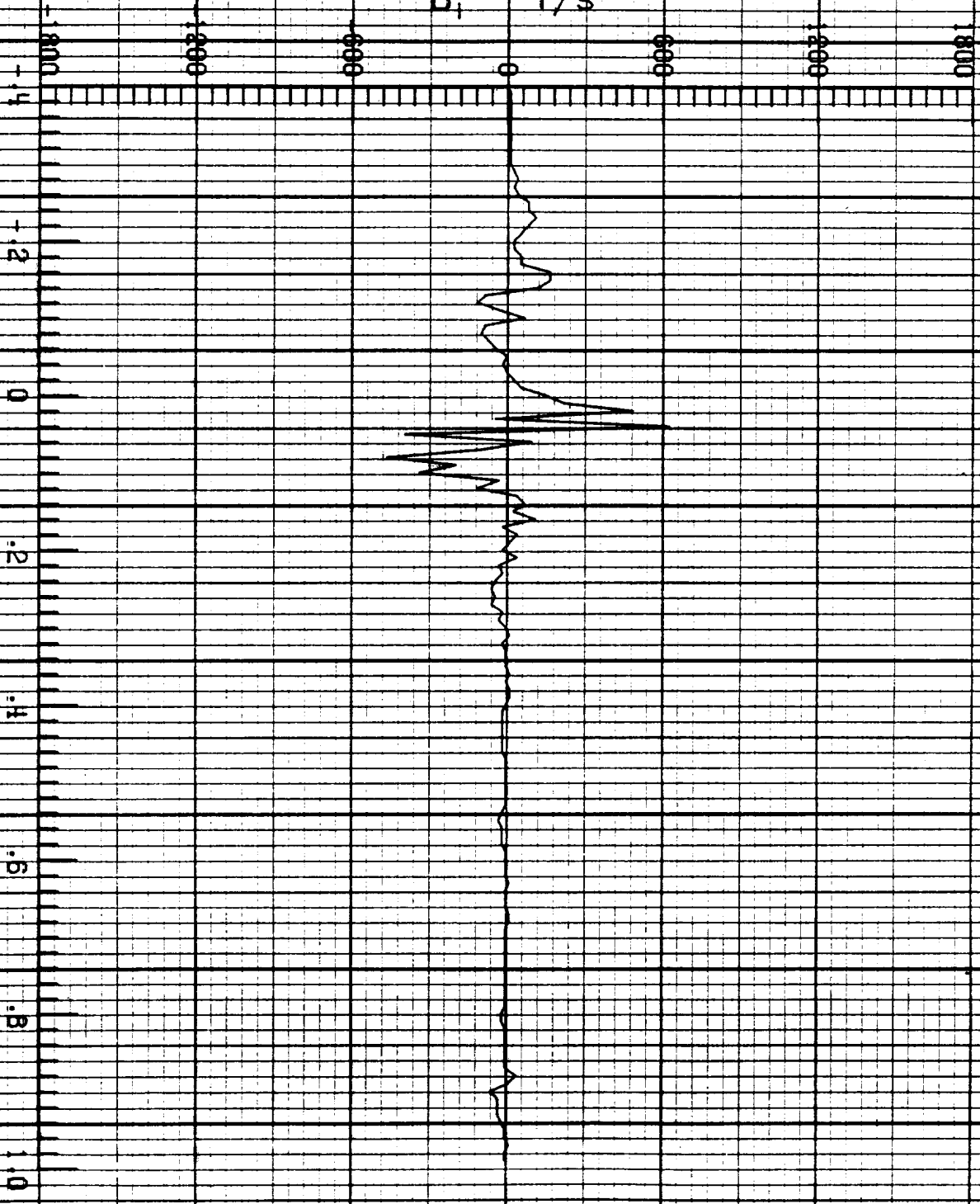
LFC2 RUN NO. 6

6.009

\dot{B}_1 T/s

22:00:05.6
CHANNEL NO. 2.2

MICROSECONDS



ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-019

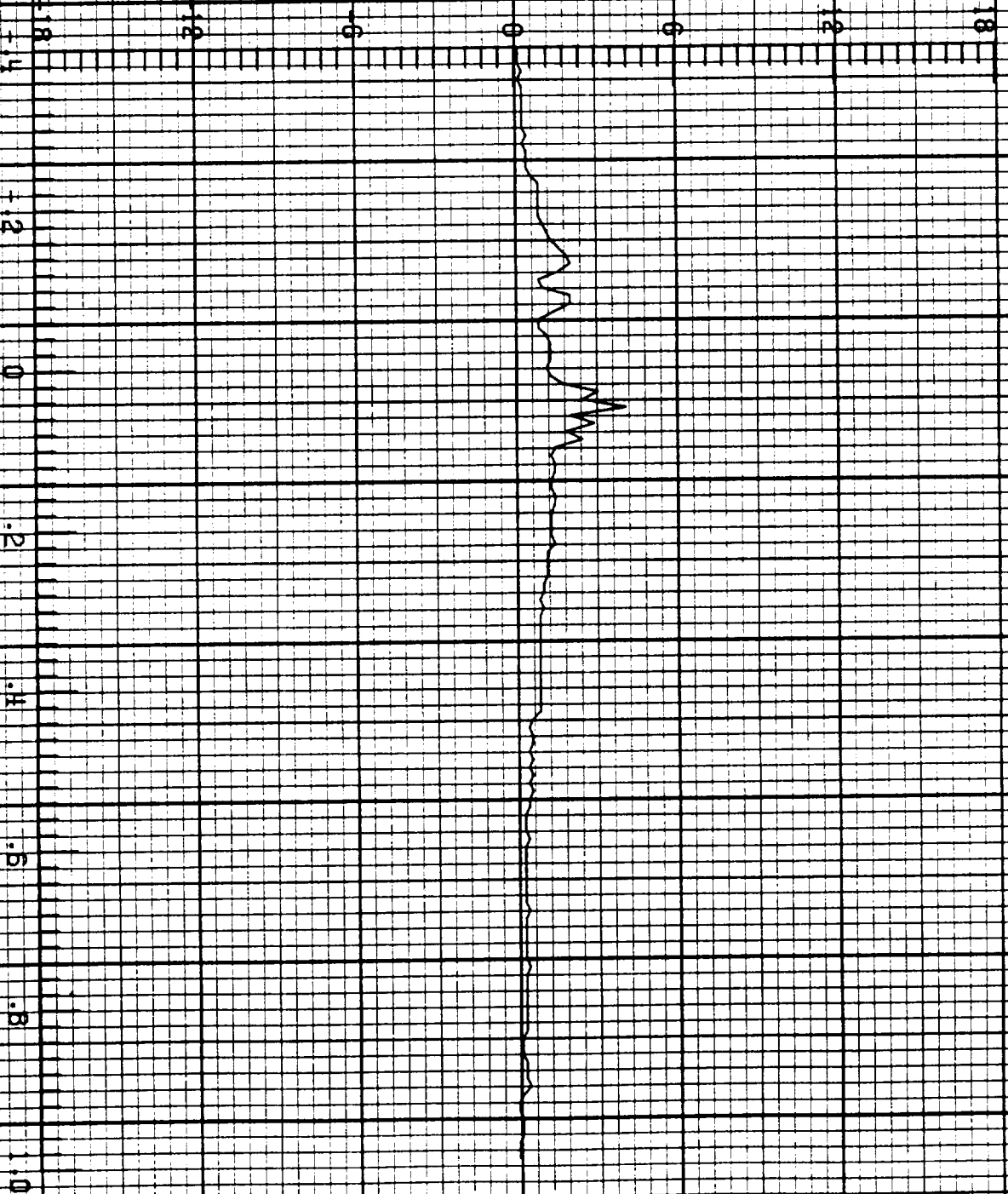
LECS RUN NO. 6

5.009

D_{wr} A/m^2

22:00:05.9
CHANNEL NO. 3.0

MICROSECONDS



F-105 LIGHTNING/ 84-019

LEC 3 RUN NO. 6

3.009

D_{wt} A/m²

18 12 6 0 6 12 18

0.14 0.18

0.2

0

0.2

0.4

0.6

0.8

1.0

MICROSECONDS

22:00:05.8
CHANNEL NO. 3.11

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

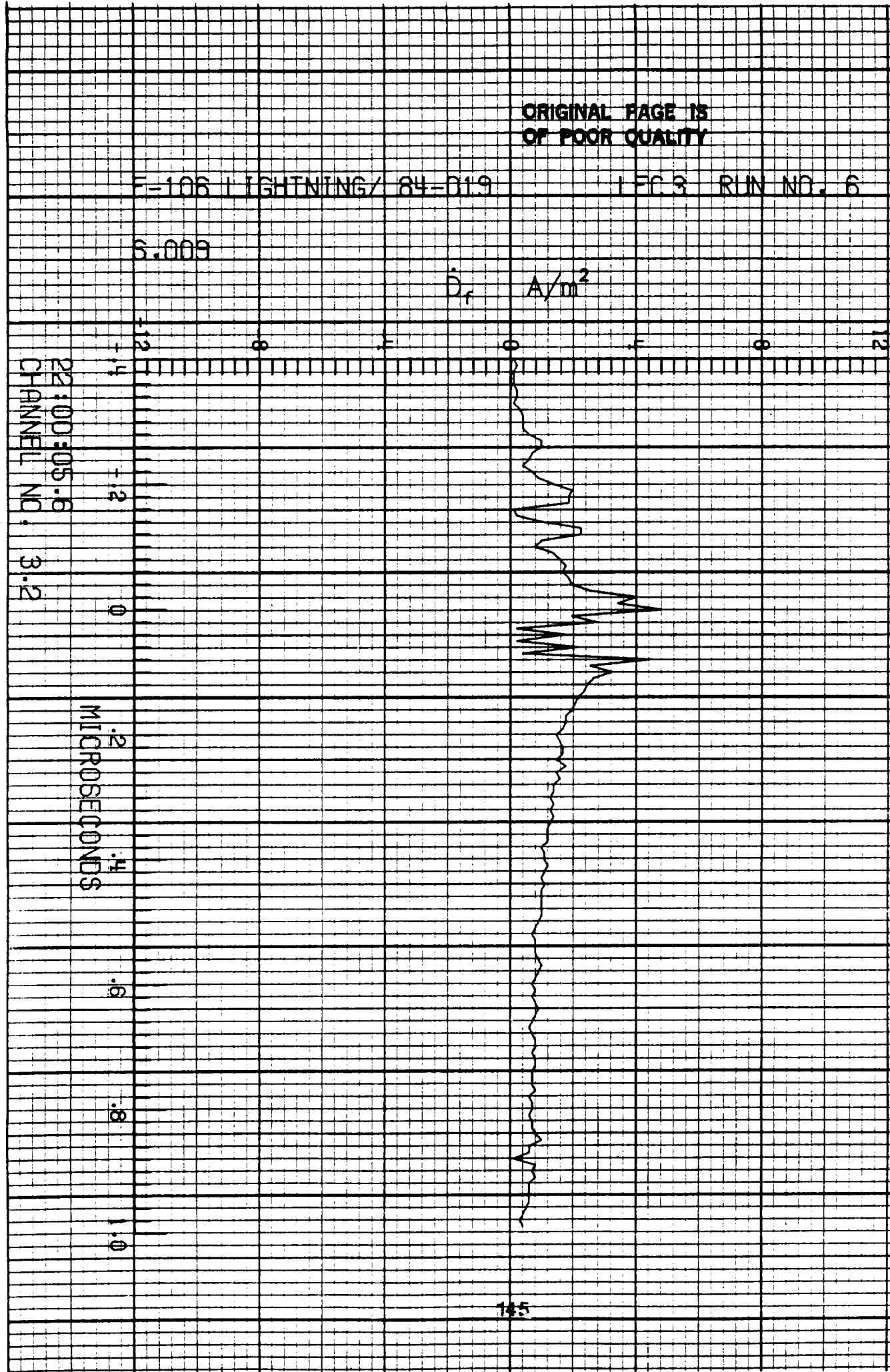
IFC 3 RUN NO. 6

6.000

\dot{D}_r A/m²

22:00:05.6
CHANNEL NO. 3.2

MICROSECONDS



F-106 LIGHTNING/ 84-019

LEC 4 RUN NO. 6

6.009

V_{fd} V

160 140 120 100 80

22:00:05.6
CHANNEL NO. 4.D

14

12

0

MICROSECONDS
0.2
0.4

0.6

0.8

1.0

F-106 LIGHTNING/ 84-019

LEC4 RUN NO. 6

6.009

T_n A

22:00:05.6
CHANNEL NO. #.1

MICROSECONDS

9 x 10³

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-019

LECH RUN NO. 6

S.009

I_t A

22:00:05.6
CHANNEL NO. 4.2

9 X 10³

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

105 LIGHTNING/ 84-020

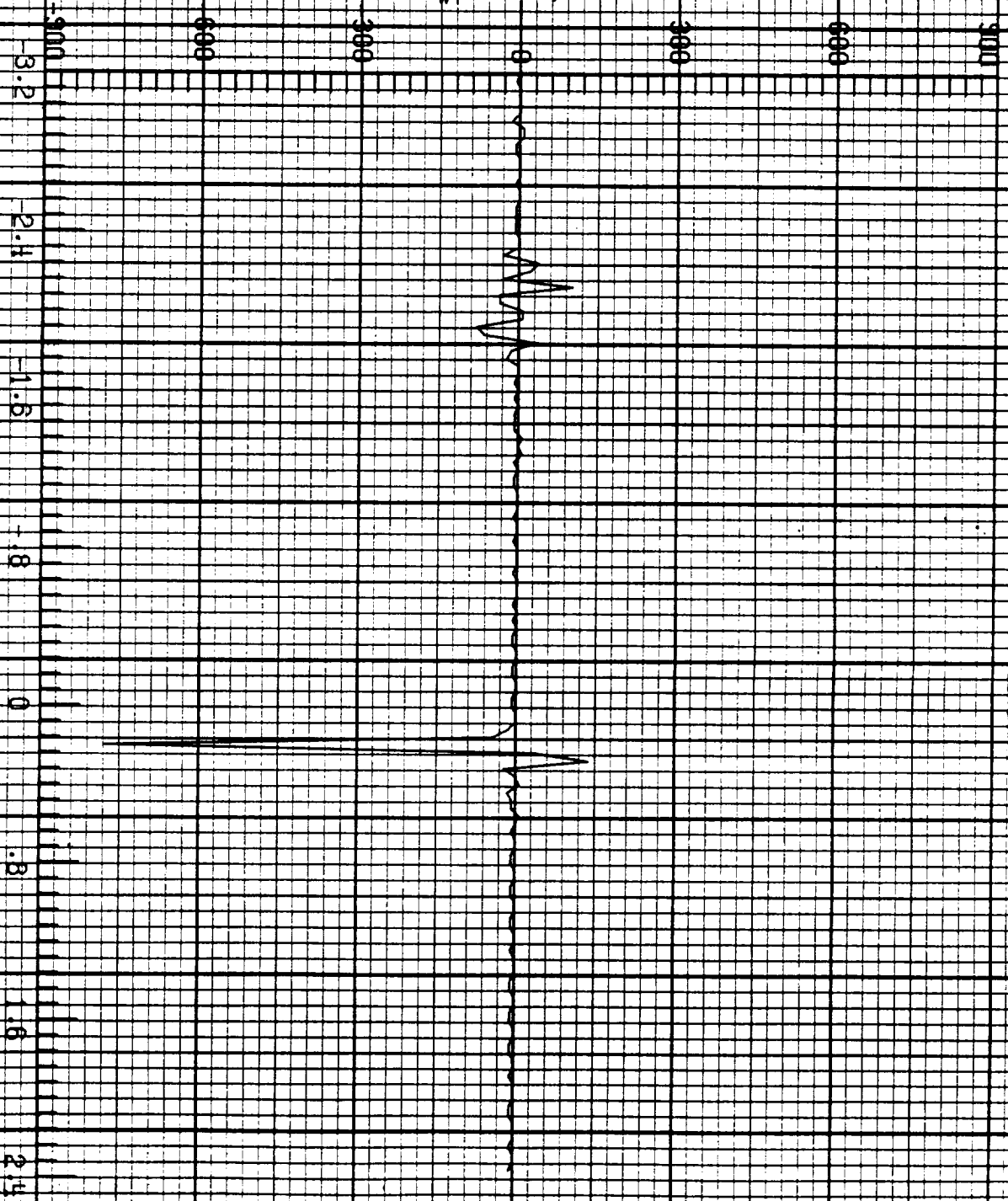
LEC:1 RUN NO. 1

0.001

B_v T/s

19:43:25.2
CHANNEL NO. 1.1

MICROSECONDS



F-106 LIGHTNING/ 84-020

IFC.1 RUN NO. 1

0.001

B_{VT} T/s

-3000 -2000 -1000 0 1000 2000 3000

19:43:25.2
CHANNEL NO. 1.2

-3.2

-2.4

-1.6

MICROSECONDS

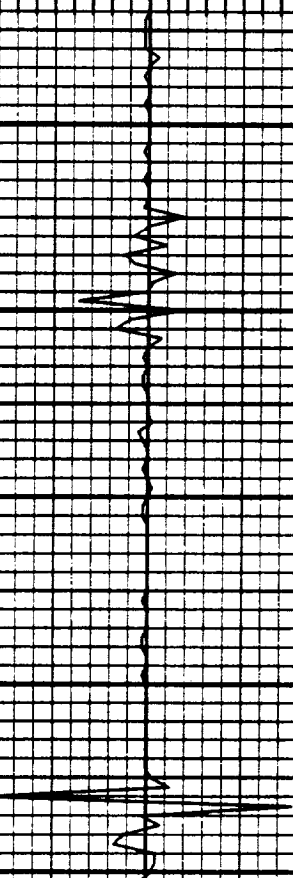
-0.8

0

.8

1.6

2.4

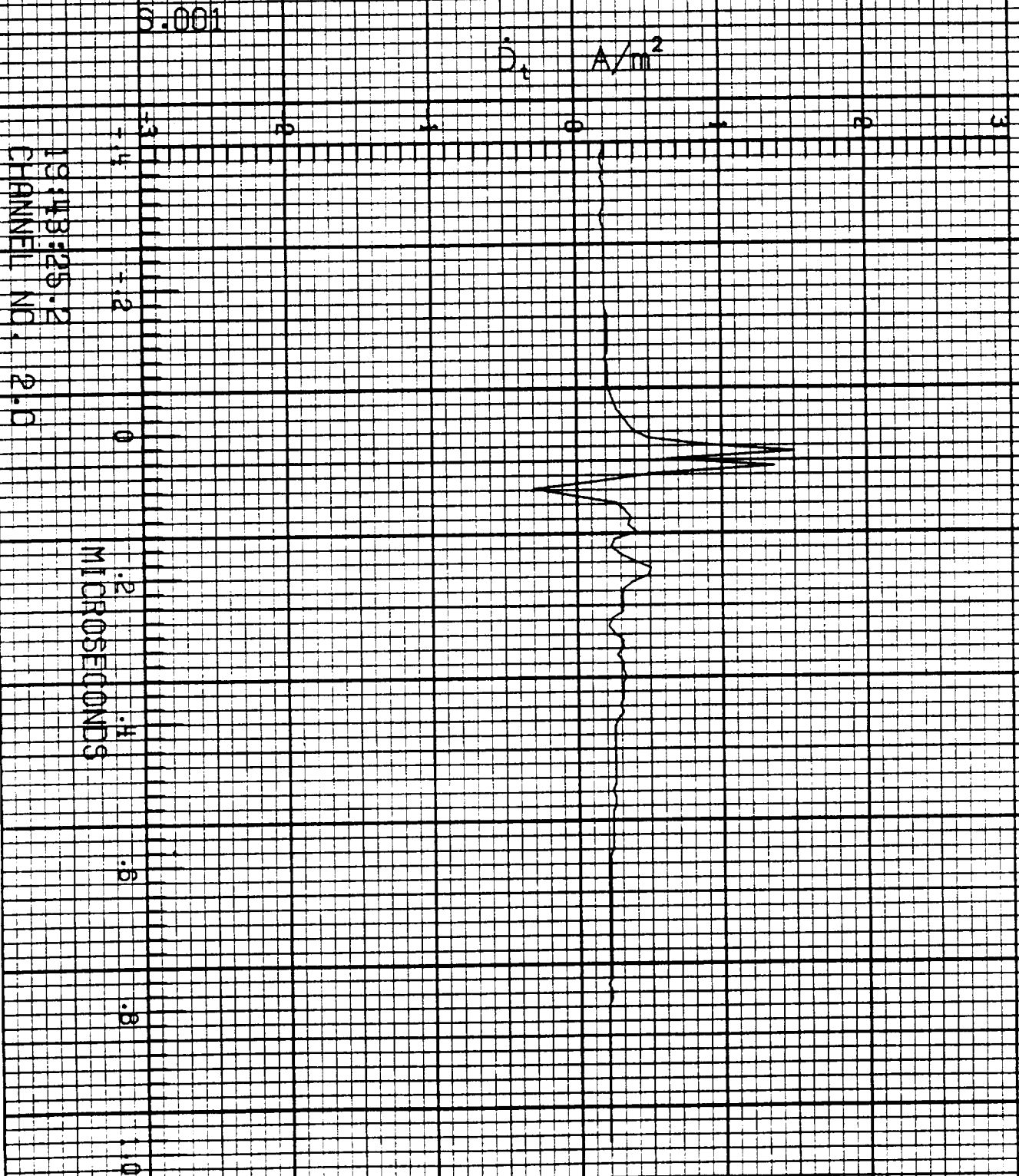


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ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-020

LEC 2 RUN NO. 1



F-106 LIGHTNING/ 84-020

REC 2 RUN NO. 1

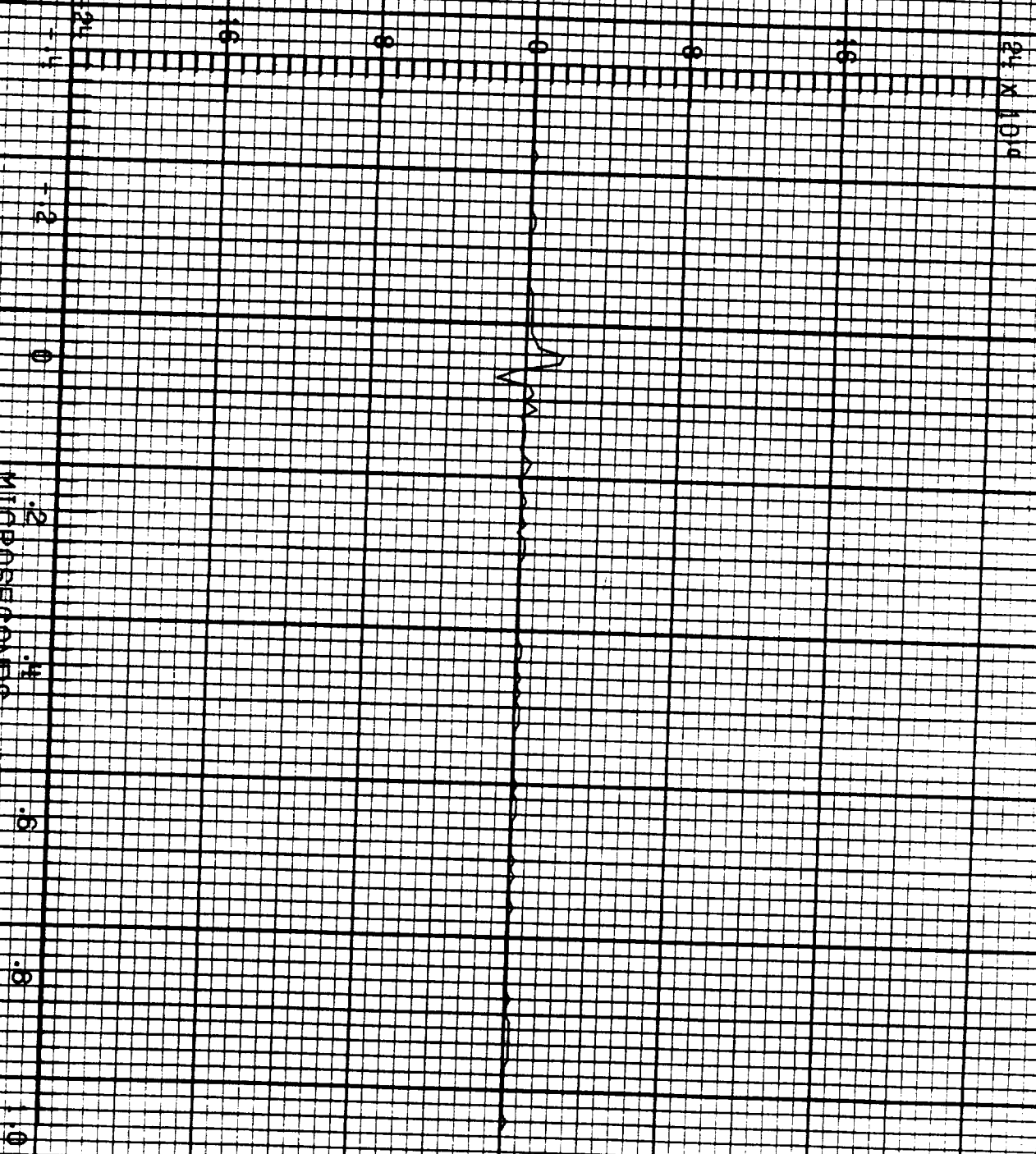
5.001

\dot{I} A/s

19:43:25.2
CHANNEL NO. 2.1

24 X 10⁴

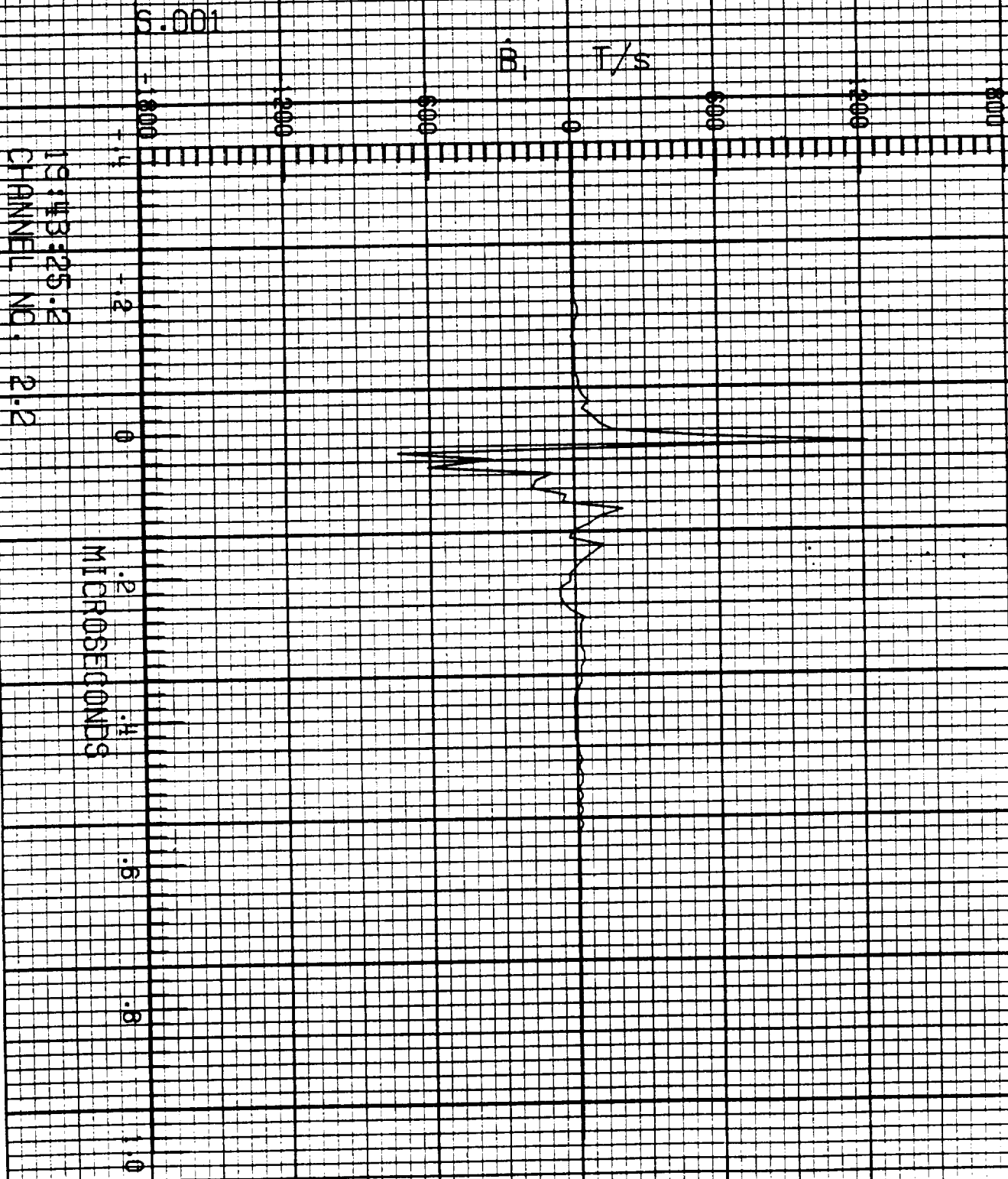
MICROSECONDS



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F-106 LIGHTNING/ 84-020

LEC 2 RUN NO. 1



19:43:25.2
CHANNEL NO. 2.2

F=106 LIGHTNING/84=020

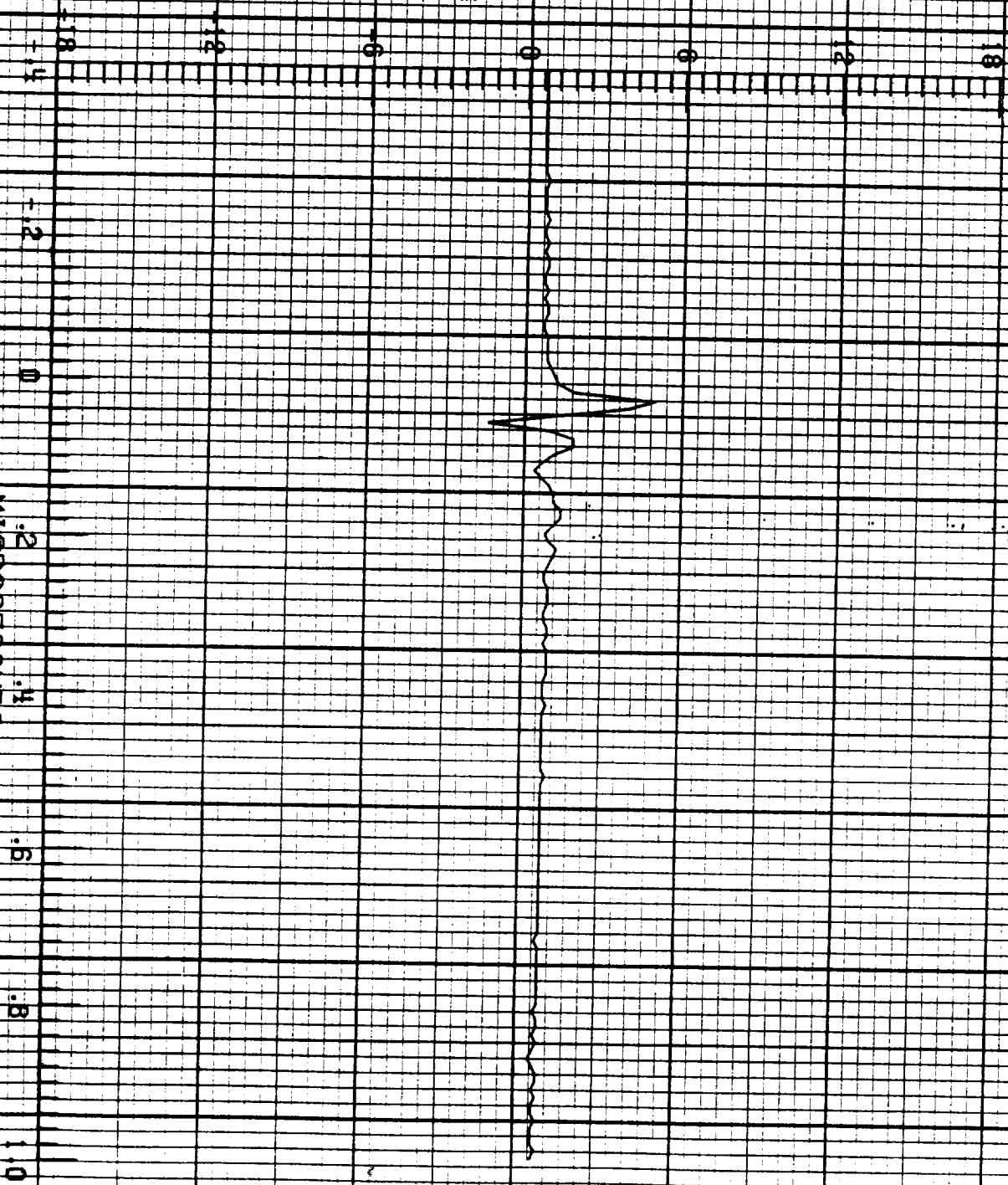
LEC 3 RUN NO. 1

5.001

\dot{D}_{wr} A/m²

19:48:25.2
CHANNEL NO. 3.0

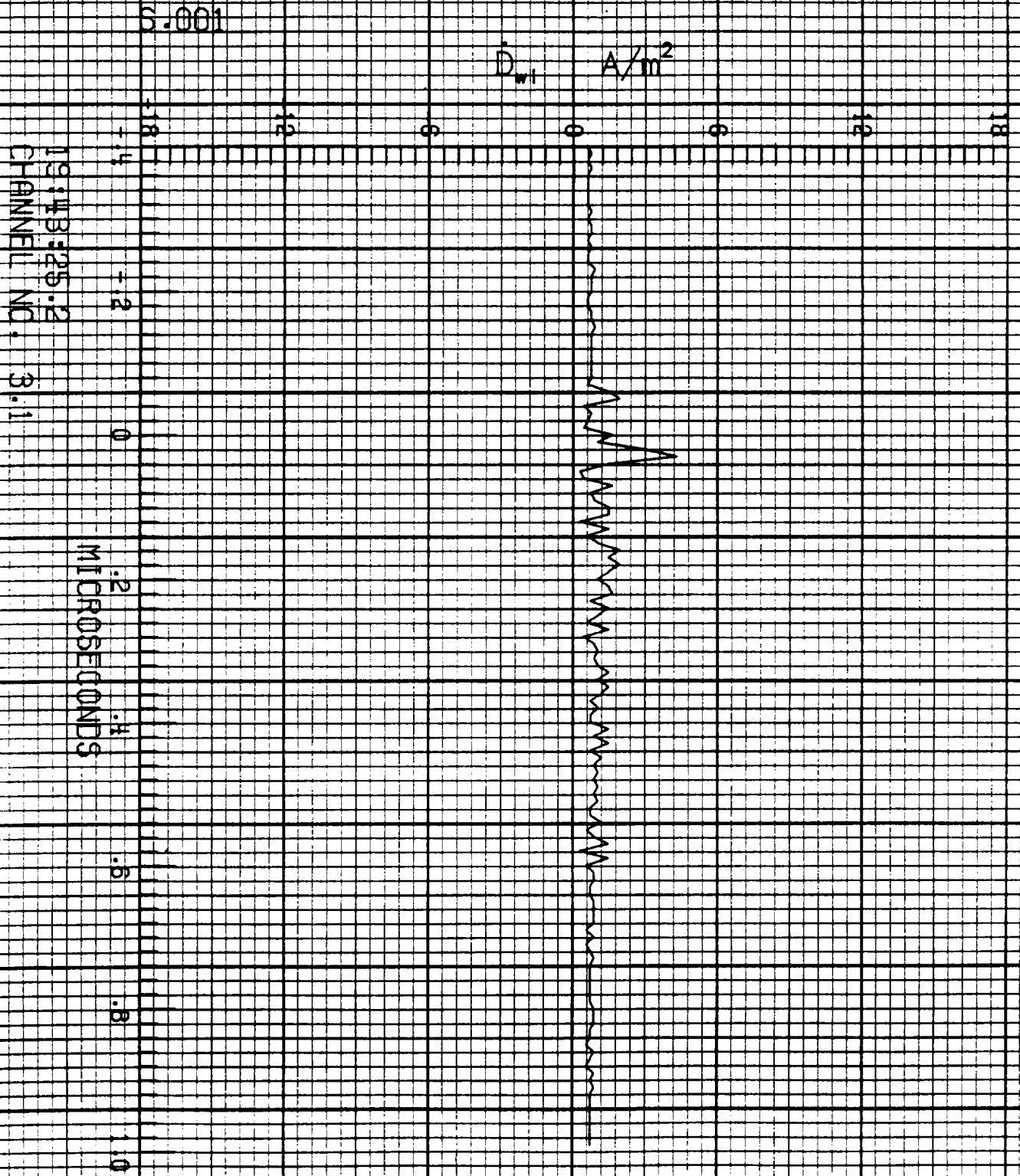
MICROSECONDS



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F-106 LIGHTNING/ 84-020

LEC 3 RUN NO. 1



F=106 LIGHTNING/84=020

LEC3 RUN NO. 1

5.001

\bar{D}_r A/m²

19:43:25.2
CHANNEL NO. 3.2

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-020

FC# RUN NO. 1

6.001

V_{fo} V

60 10 20 30 40 50

19:43:25.2
CHANNEL NO. 4.0

14

12

0

2
MICROSECONDS
4
5
8
1.0

F-106 LIGHTNING/84-020

IFC# RUN NO. 1

6.001

I_n A

19:43:25.2
CHANNEL NO. 4.1

9×10^3

MICROSECONDS

-.4
-.2
0
.2
.4
.6
.8
1.0

ORIGINAL PAGE IS
OF POOR QUALITY

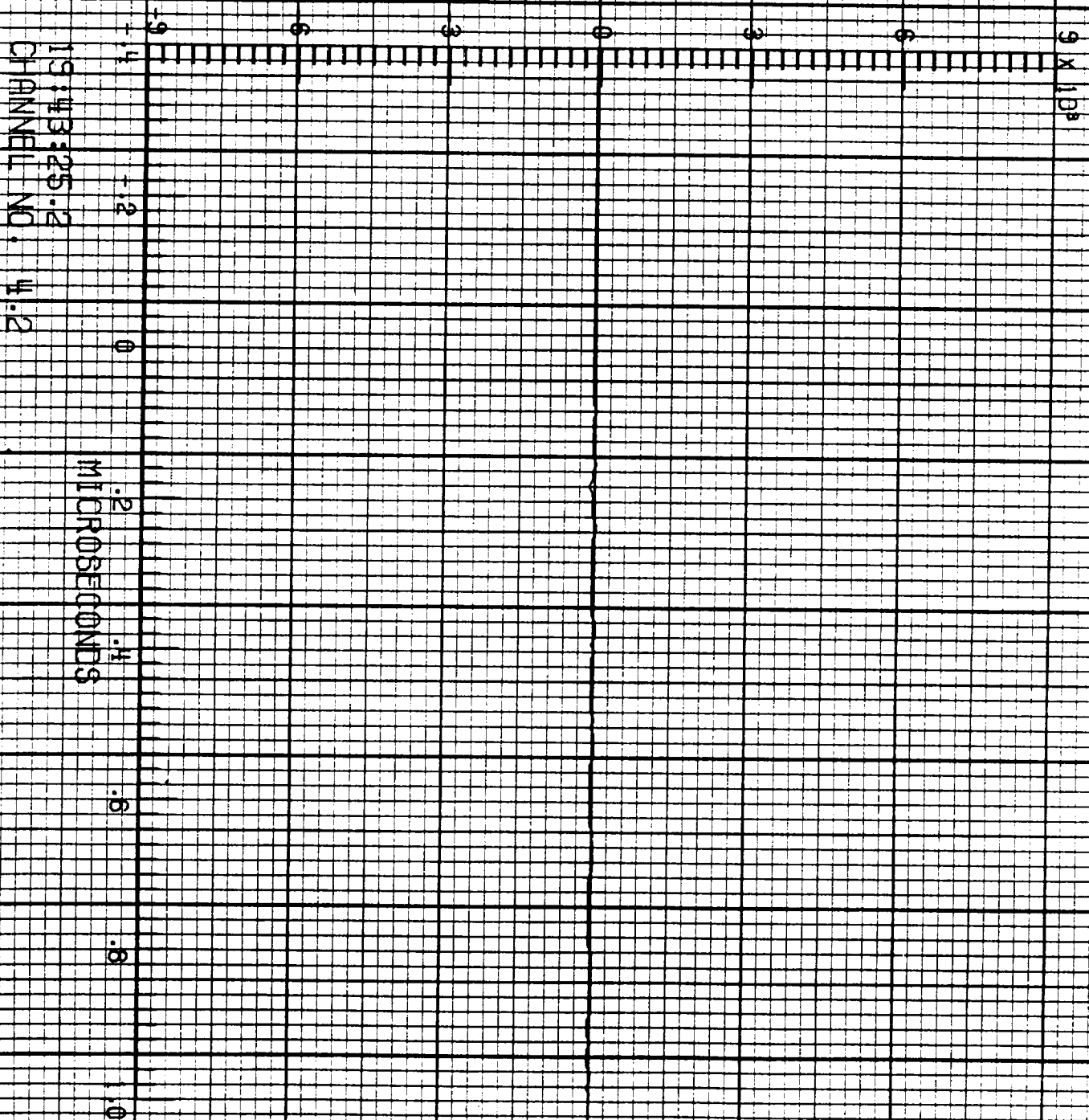
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E-106 LIGHTNING/ 84-020

EC4 RUN NO. 1

5.001

T_i A



F-106 LIGHTNING/ 84-020

LEC1 RUN NO. 3

5.003

\dot{B}_v T/s

-500 0 500 1000

19:52:45.3
CHANNEL NO. 1

-1.8

-1.8

0

.8

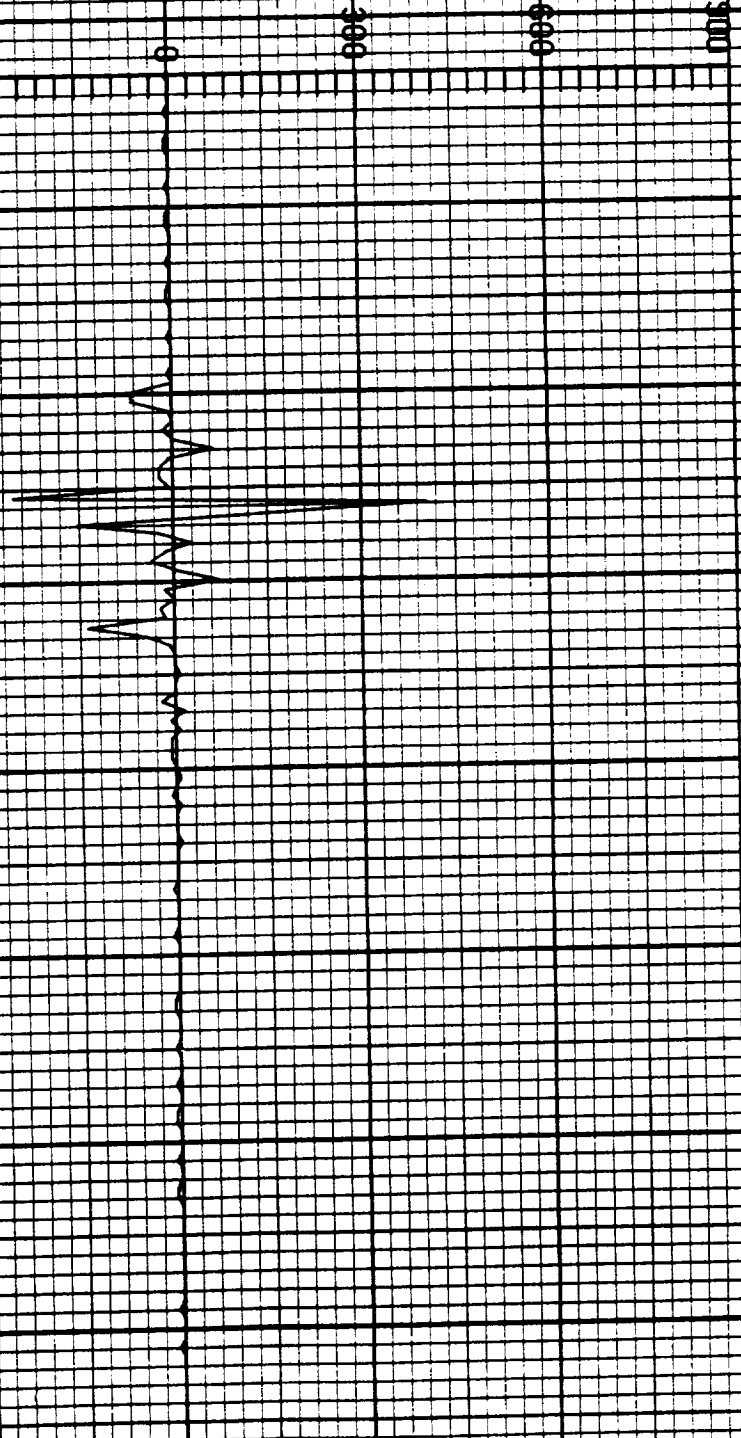
0

2.4

3.2

4.0

MICROSECONDS



ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-020

LEC1 RUN NO. 3

5.003

$\frac{dB}{T/s}$

19:5245.3
CHANNEL NO. 1.2

MICROSECONDS



F-106 LIGHTNING/ 84-020

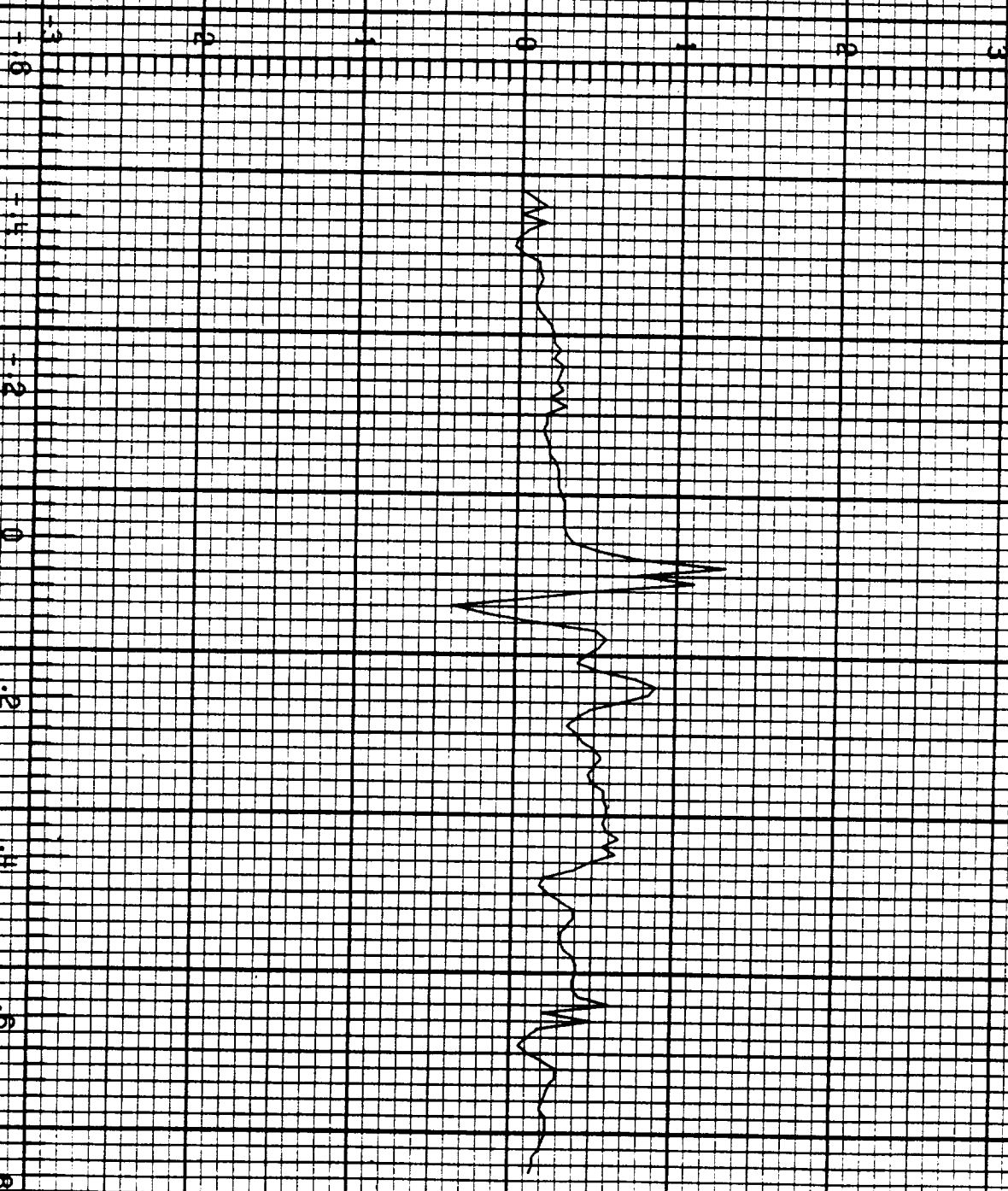
LEC 2 RUN NO. 3

6.003

\dot{D}_t A/m²

19:52:45.3
CHANNEL NO. 2.D

MICROSECONDS



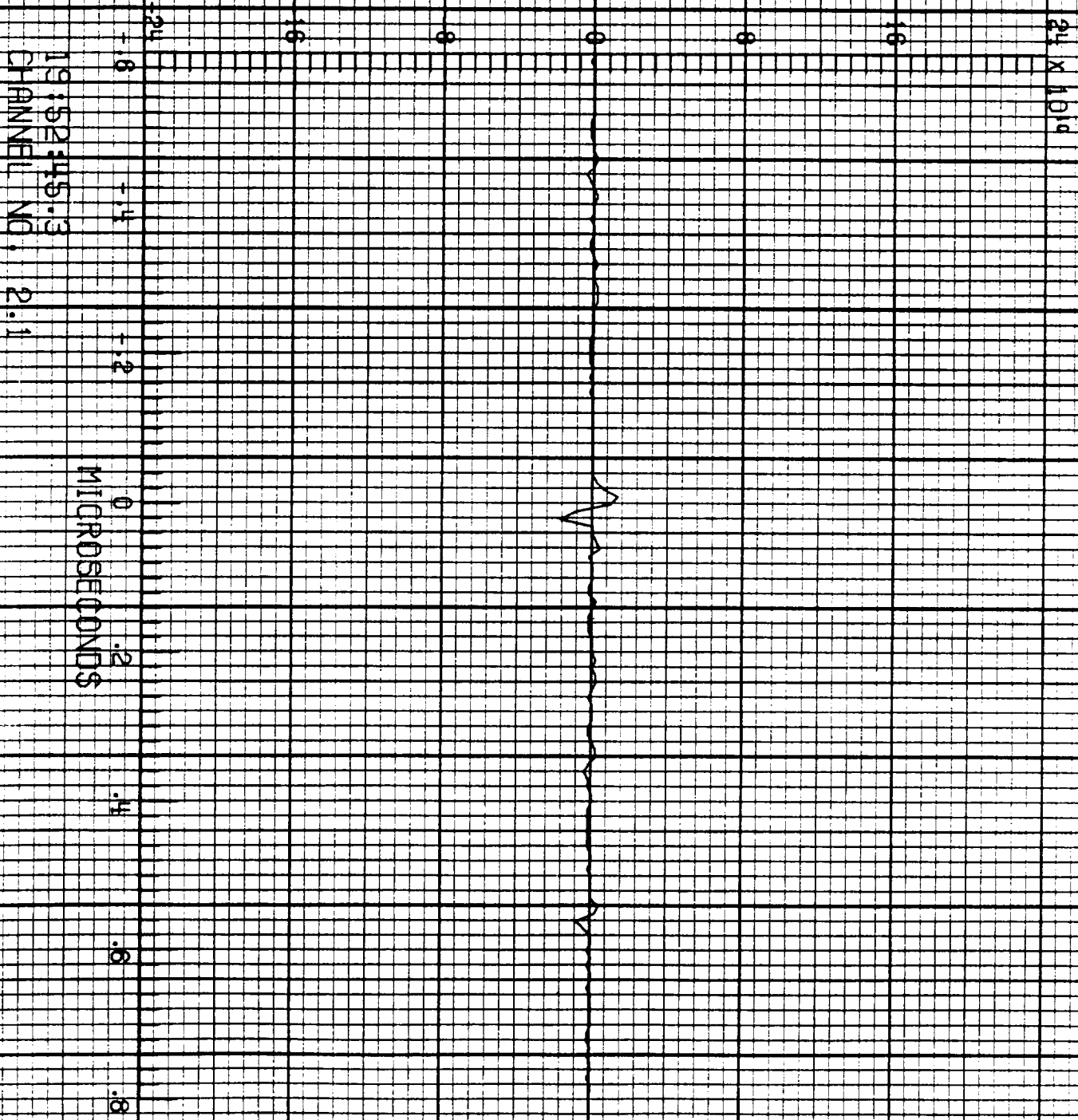
ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-020

REC 2 RUN NO. 3

5.003

$\frac{1}{1}$ A/s

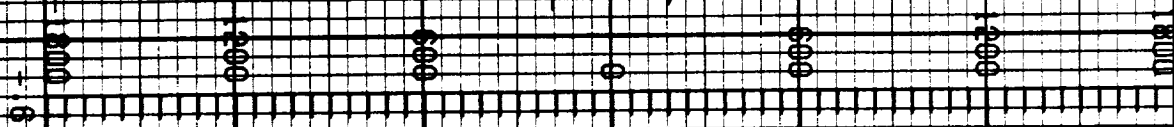


F=106 LIGHTNING/84-020

IFC 2 RUN NO. 3

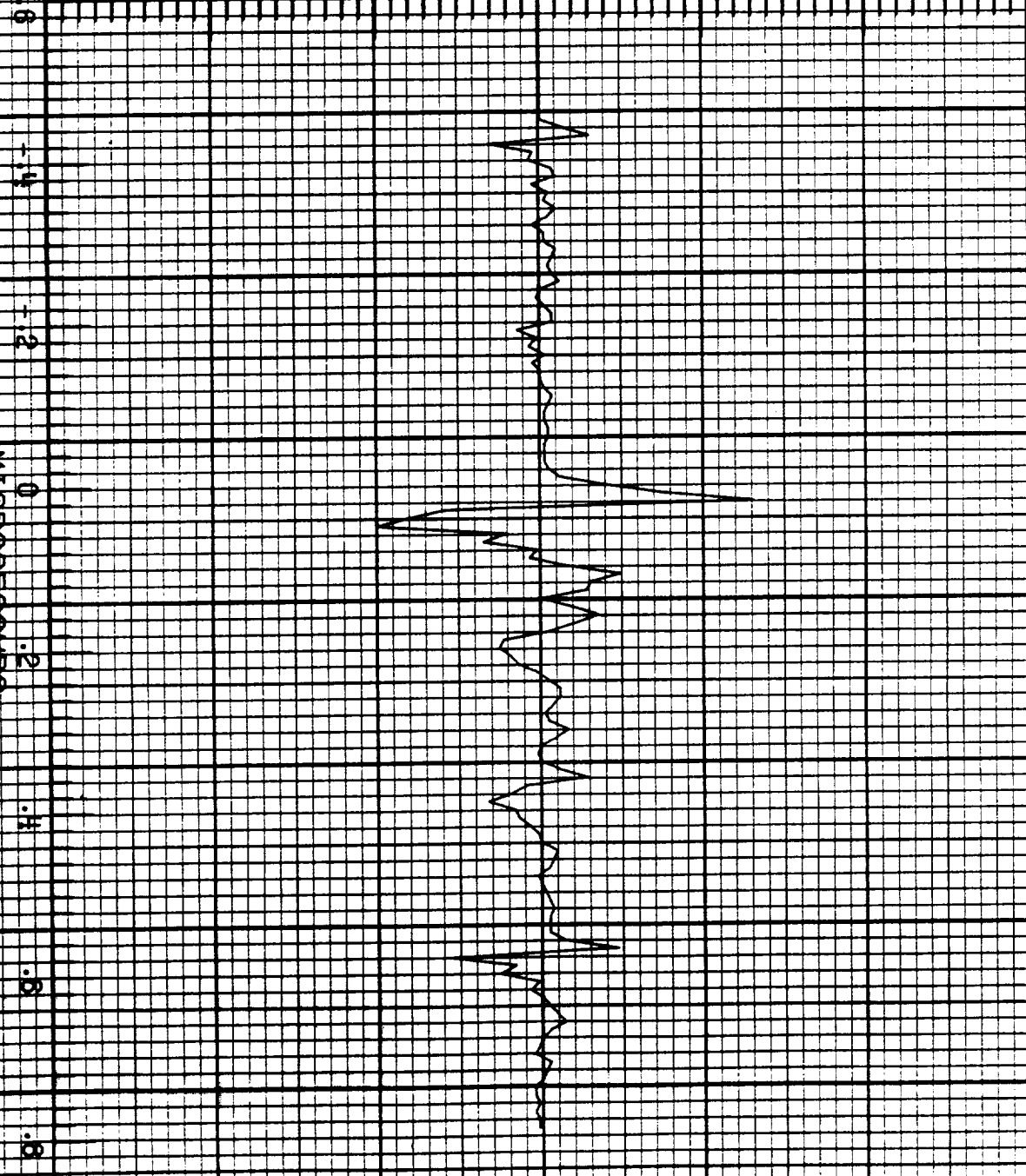
5.00S

B, T/s



19:52:45.3
CHANNEL NO: 2.2

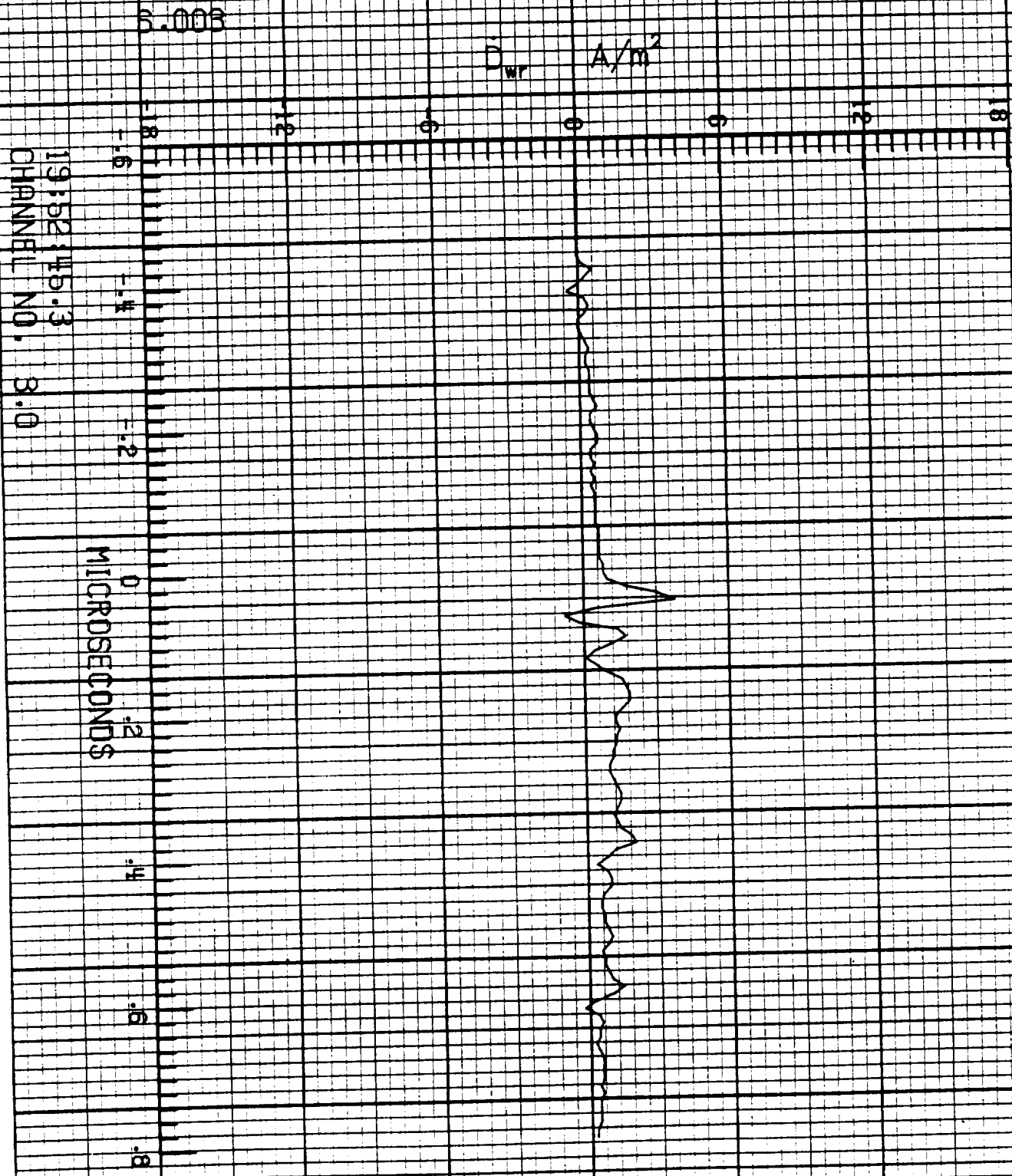
MICROSECONDS



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F=106 LIGHTNING/ 84-020

LEO3 RUN NO. 3



F-106 LIGHTNING/ 84-020

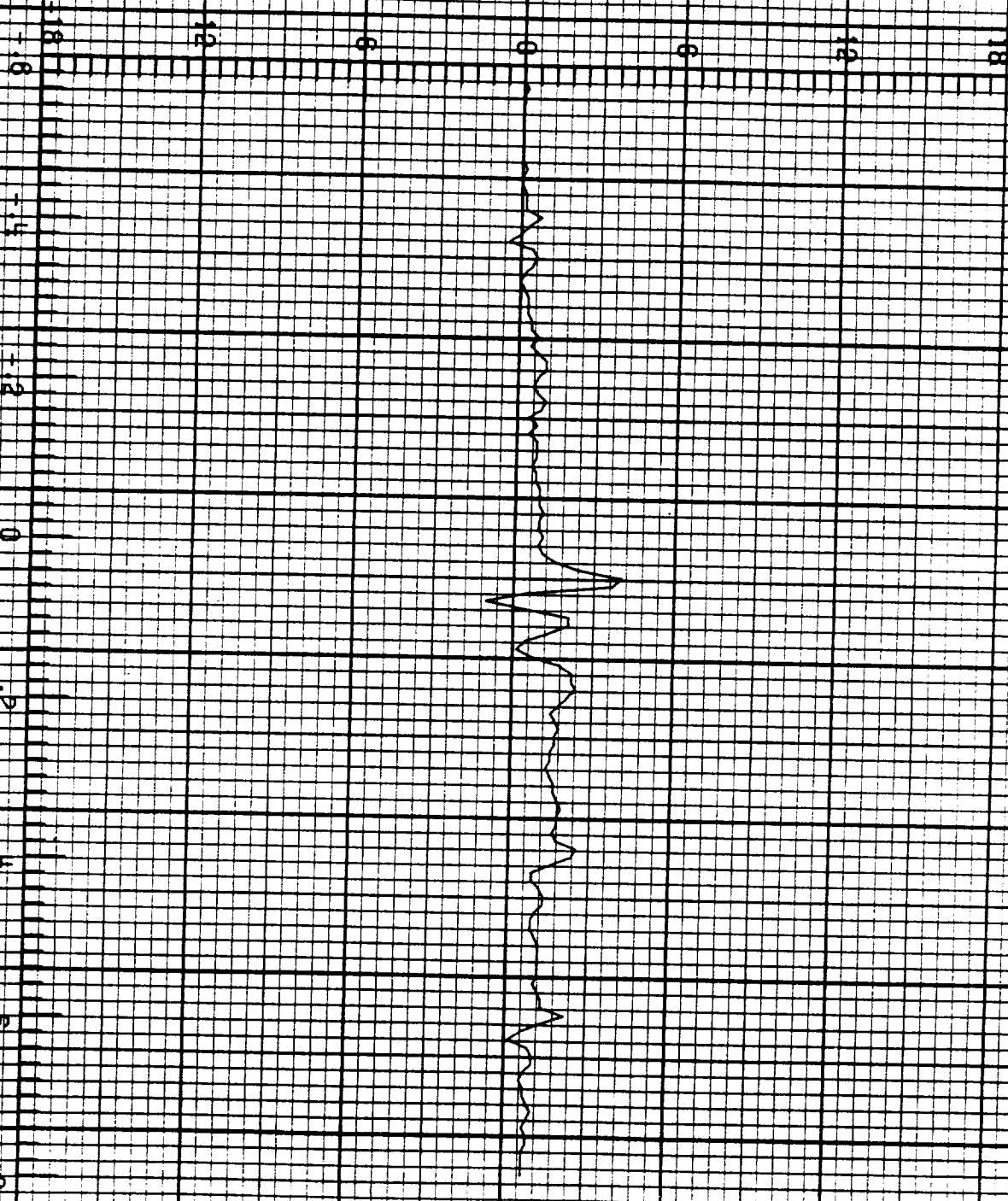
LEG 3 RUN NO. 3

5.003

D_{wl} A/m²

1915245.3
CHANNEL NO. 3.1

MICROSECONDS



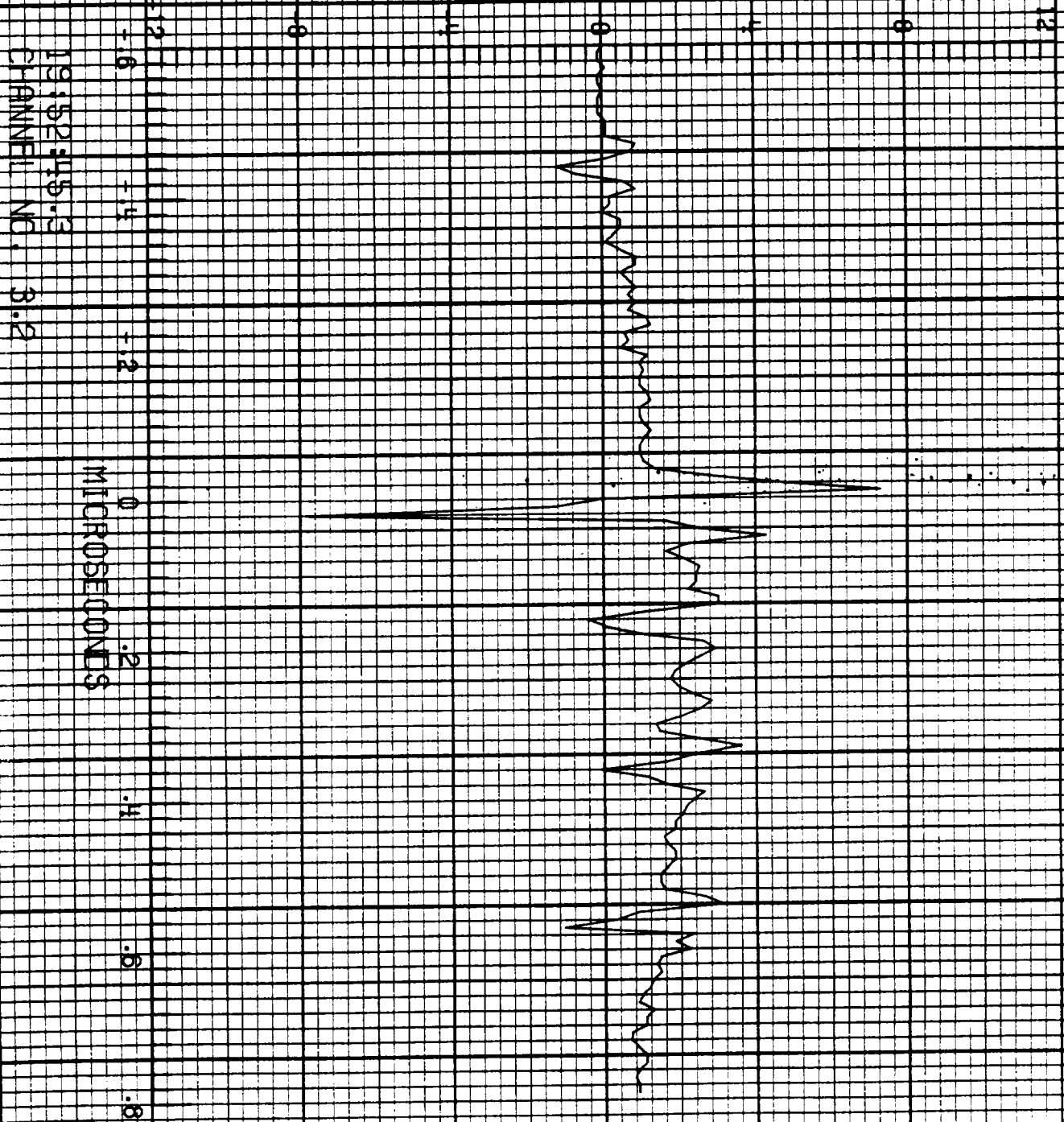
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F=106 LIGHTNING/84=020

LECS RUN NO. 3

5.003

D_r A/m^2



F-106 LIGHTNING/ 84-020

LFC 4 RUN NO. 3

S.003

V_{fc} V

60 40 20 0 20 40 60 80

19:52:45.3
CHANNEL NO. 4.0

.60
.4
.2
0
.2
.4
.6
.8

MICROSECONDS

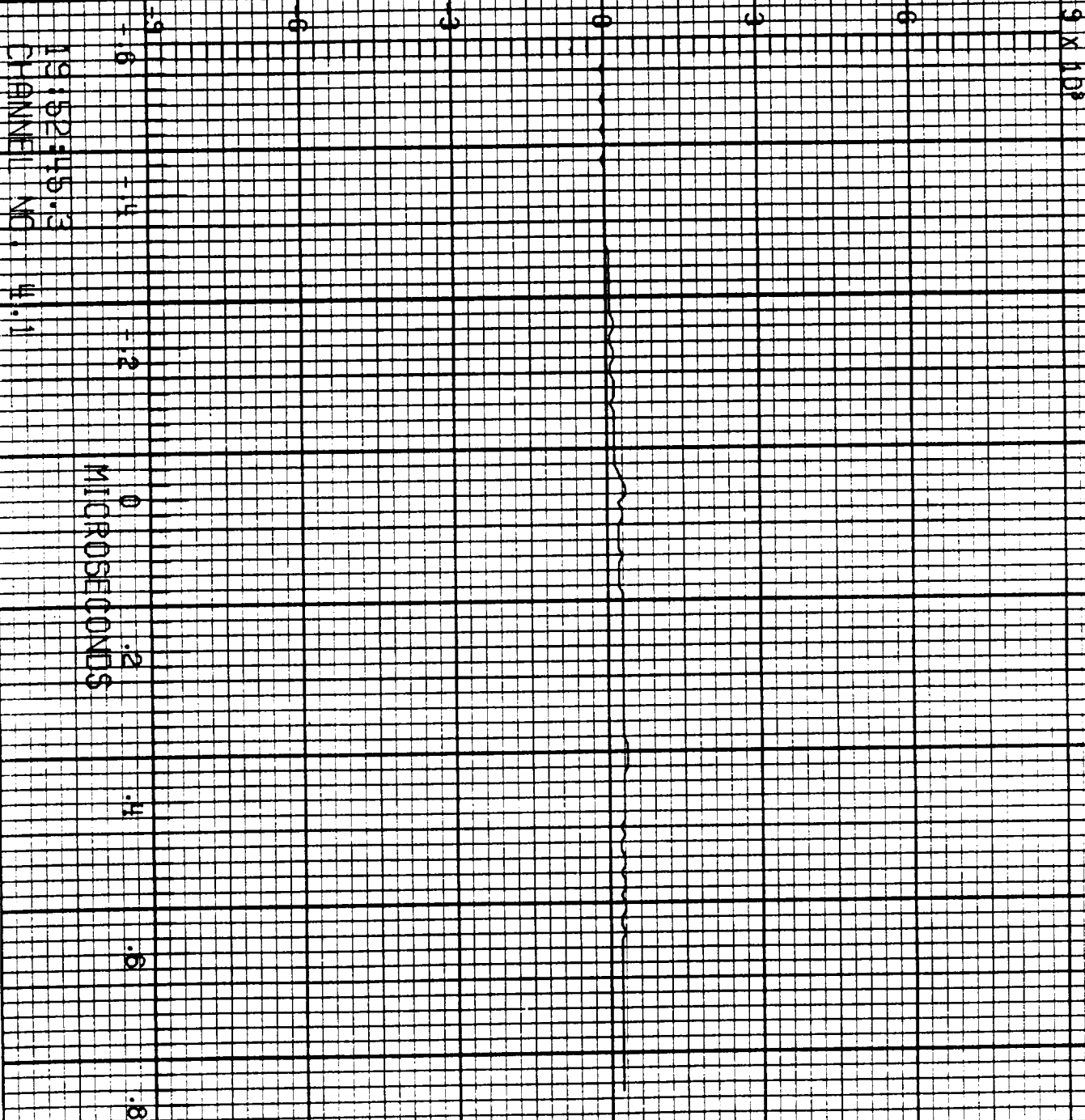
ORIGINAL PAGE IS
OF POOR QUALITY

E-106 LIGHTNING/ 84-020

LEC 4 RUN NO. 3

3.003

T, A



MICROSECONDS

19152445.3
CHANNEL NO. 4.1

9 X 10²

F-106 LIGHTNING/ 84-020

1 FC # RUN NO. 3

6.003

I, A

19152415.3
CHANNEL NO. 4.2

9×10^2

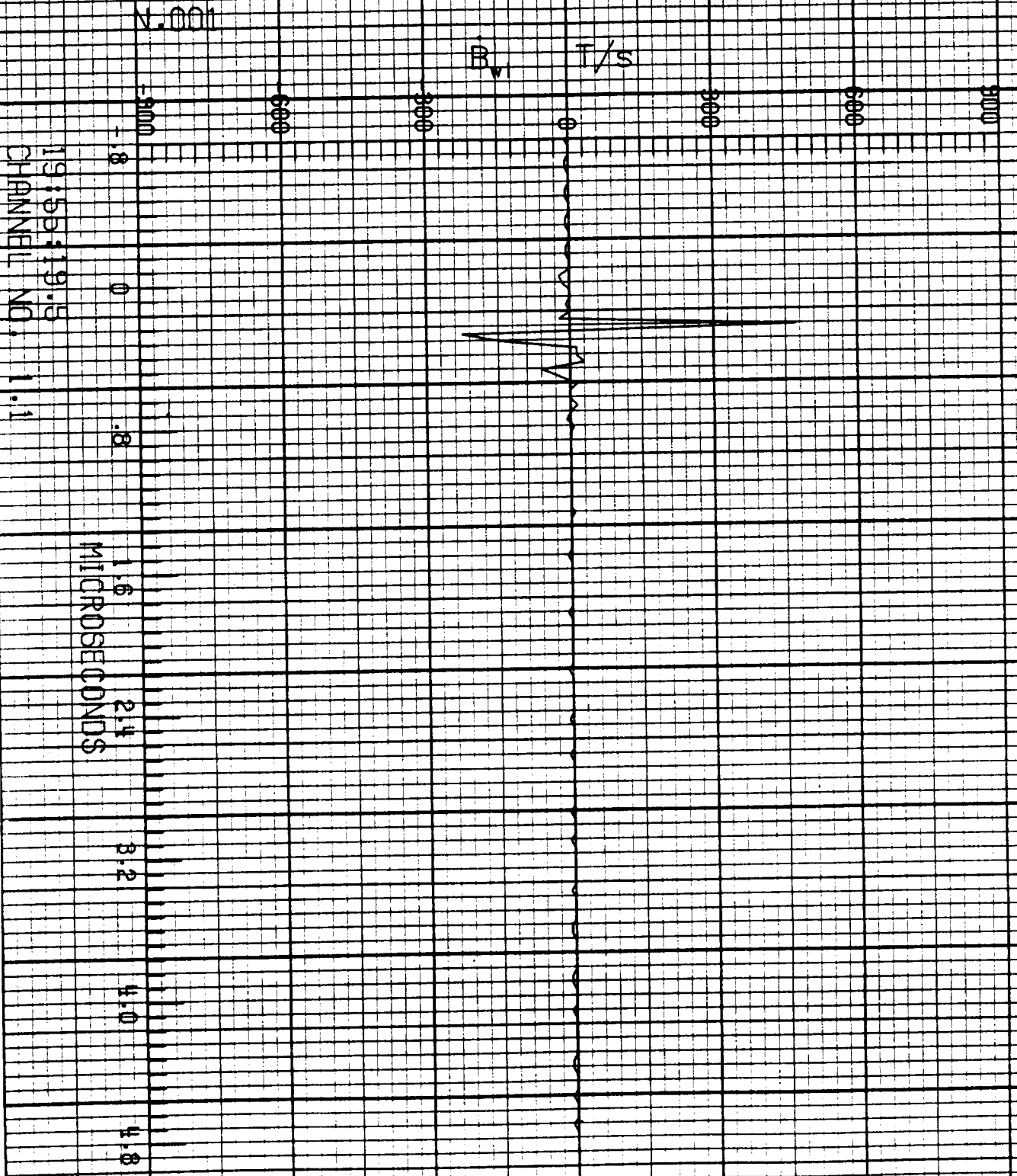
MICROSECONDS

-.8
-.6
-.4
-.2
0
.2
.4
.6
.8

ORIGINAL PAGE IS
OF POOR QUALITY

E-106 LIGHTNING/ 84-020

LEC1 RUN NO. 4



19:58:19.5
CHANNEL NO. 1.1

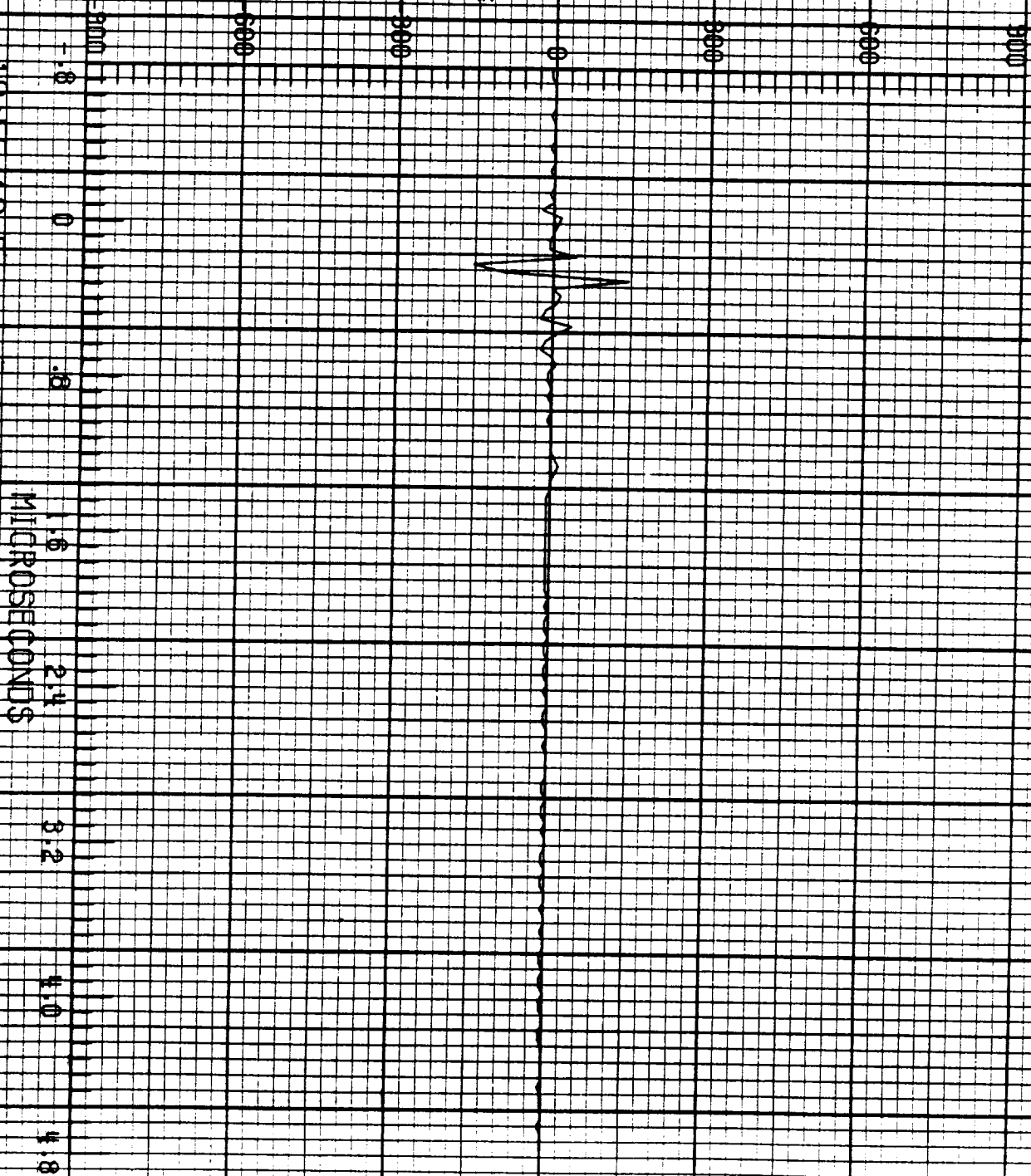
F=106 LIGHTNING/ 84-020

1 FC 1 RIN NO. 4

N.001

B_{wr} T/s

119:58:19.5
CHANNEL NO. 1:2



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OF POOR QUALITY

F=106 LIGHTNING/ 84-020

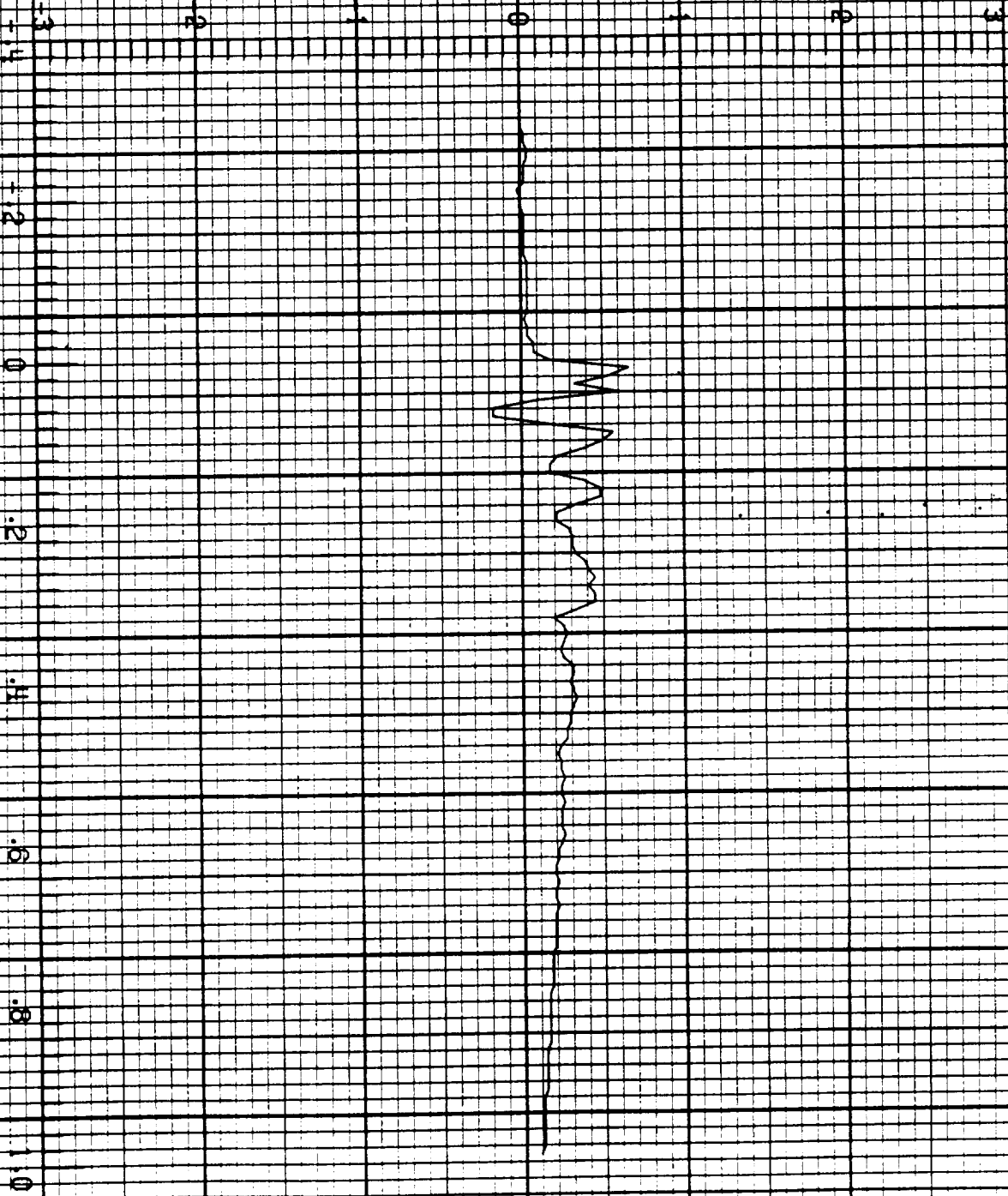
REC 2 RUN NO. 4

N.001

D_t A/m²

19:55:19.5
CHANNEL NO. 2.0

MICROSECONDS

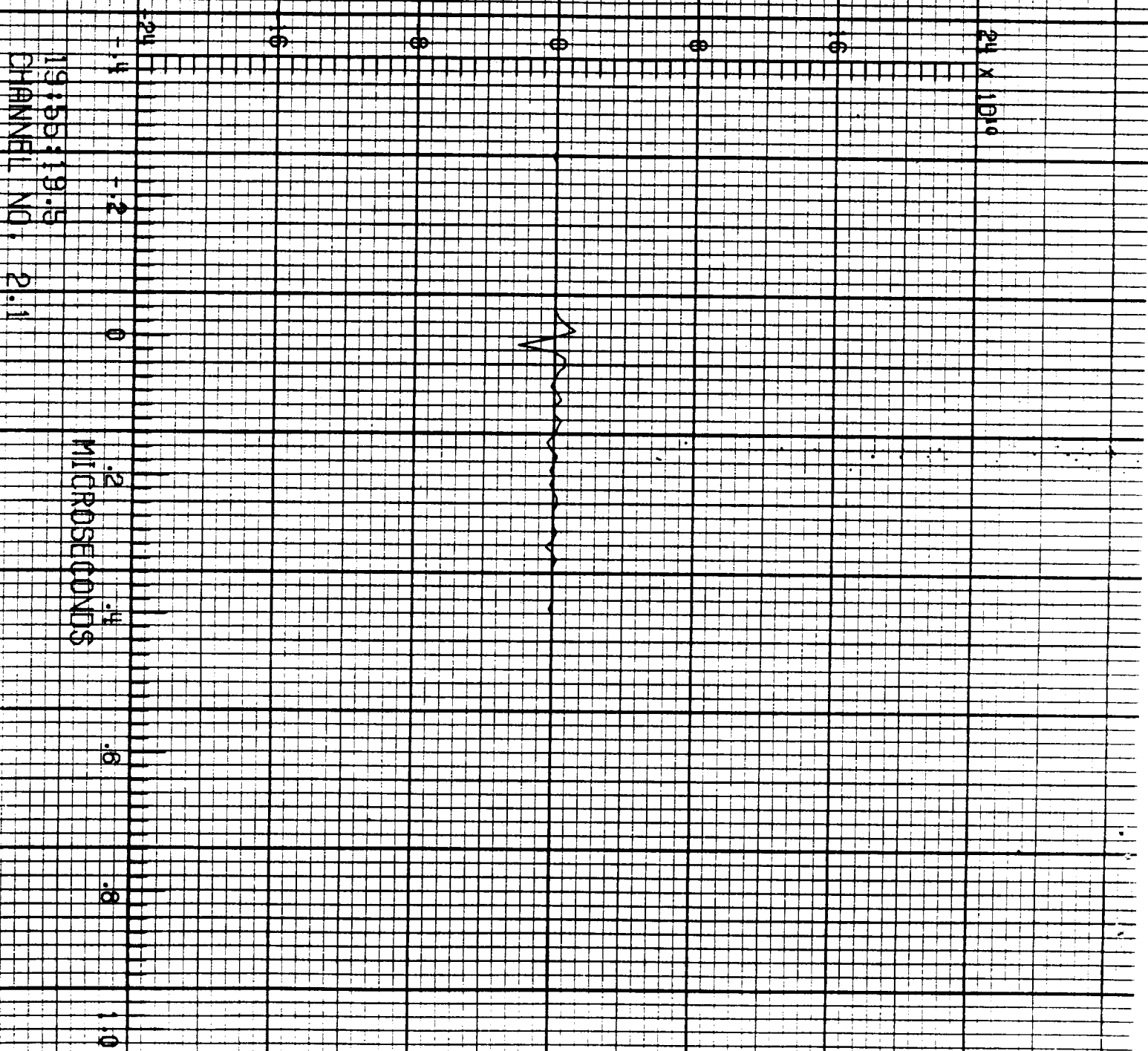


F=106 LIGHTNING/84=020

REC 2 RUN NO. 4

V.001

f A/s



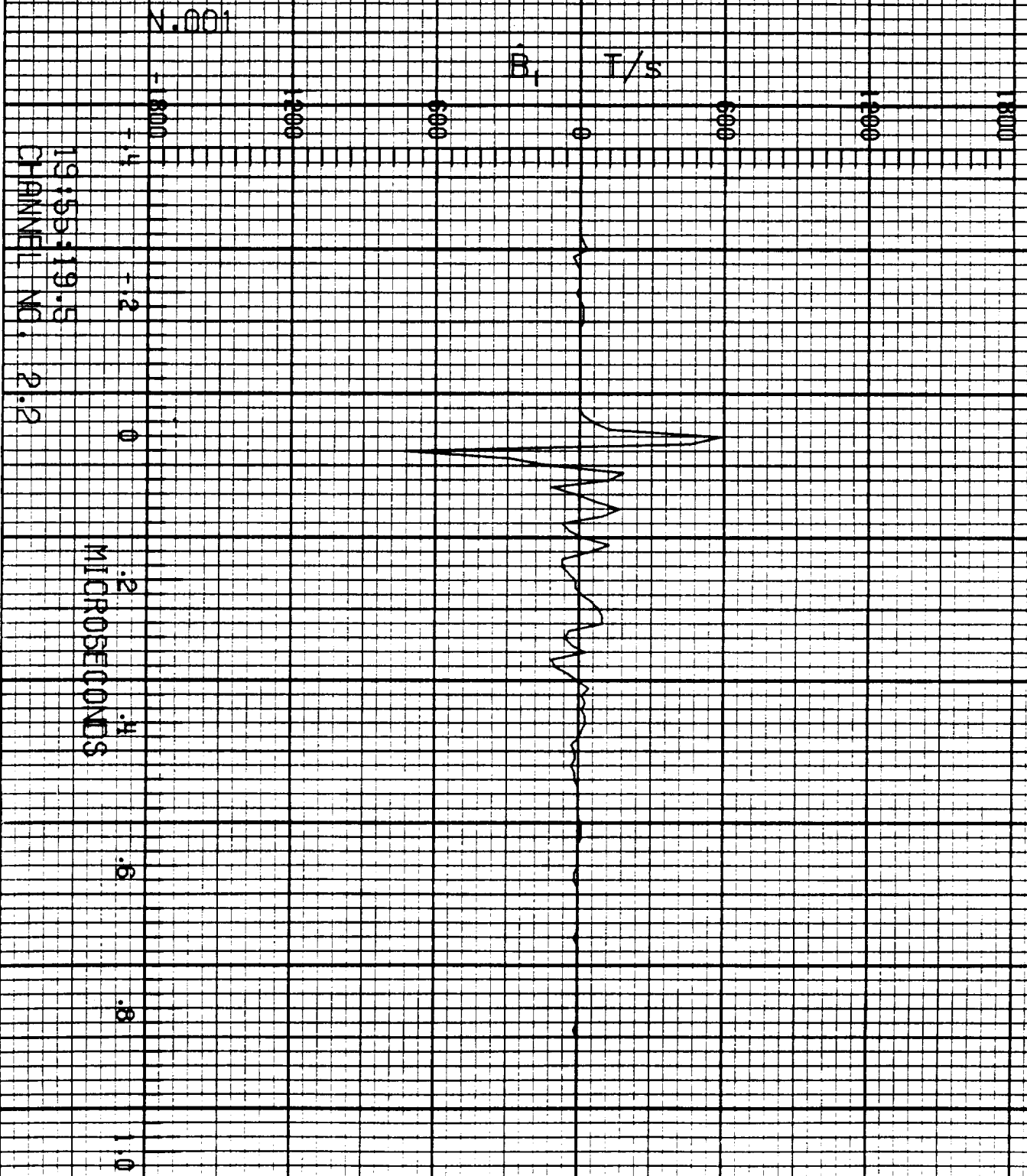
19.95:19.5
CHANNEL NO. 2.1

24 x 19.0

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OF POOR QUALITY

F-106 LIGHTNING/ 84-020

LFC 2 RUN NO. 4



19:55:19.5
CHANNEL NO. 2.2

F-106 LIGHTNING/ 84-020

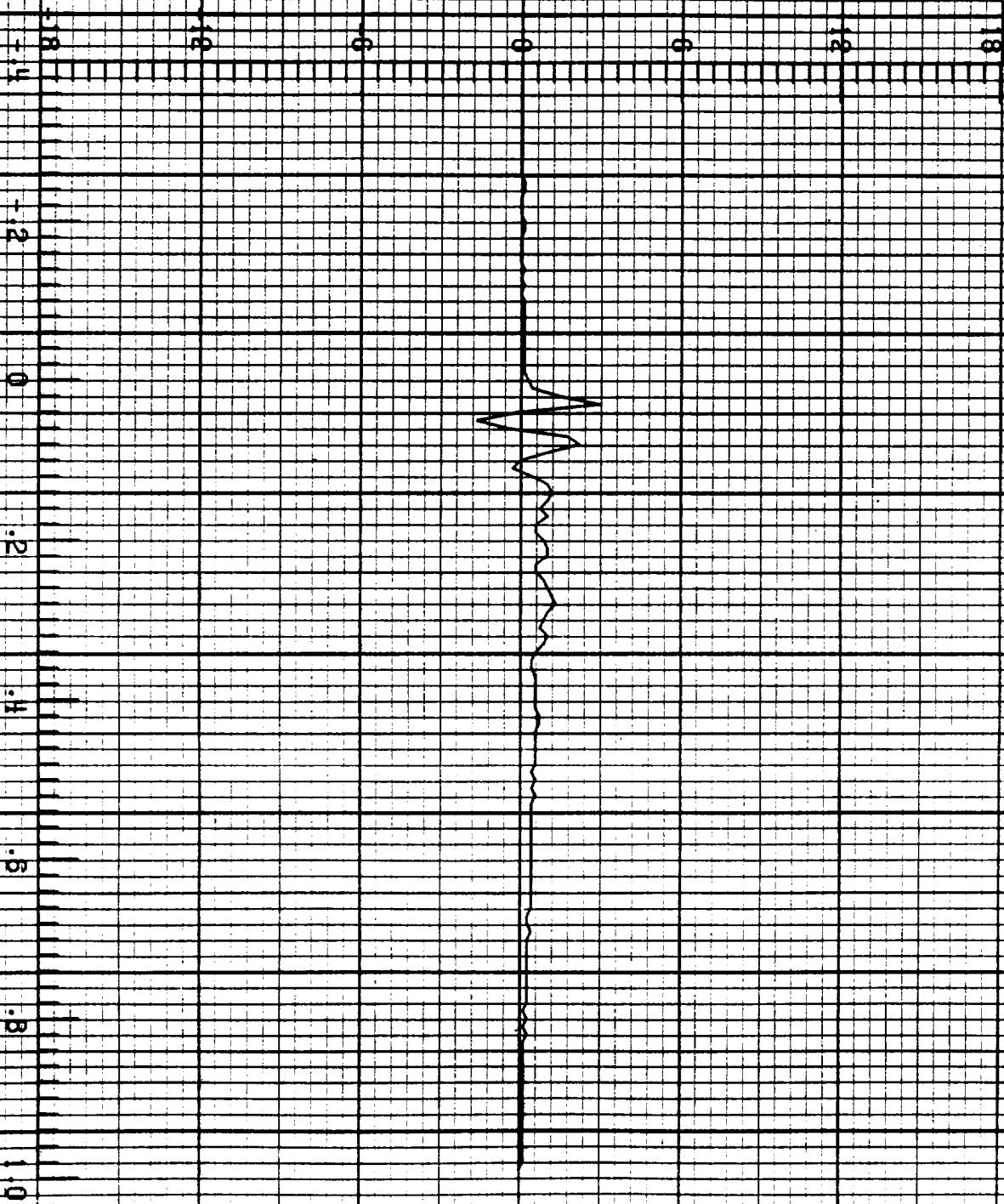
LEC 3 RUN NO. 4

N.001

\dot{D}_{wr} A/m²

19:55:19.5
CHANNEL NO. 3.0

MICROSECONDS



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F-106 LIGHTNING/ 84-020

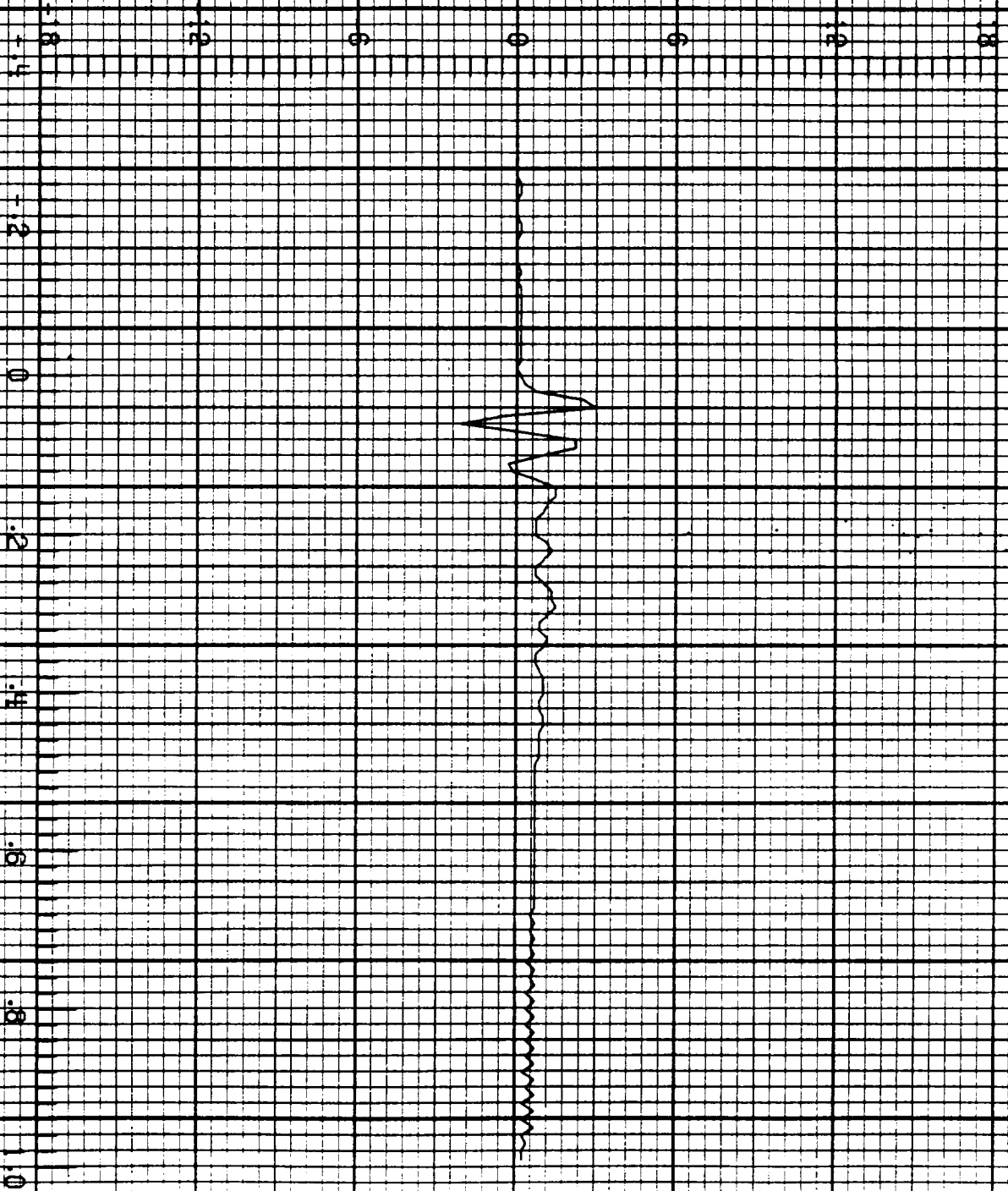
LEF 3 RUN NO. 4

N.001

D_{wt} A/m²

19159:19.5
CHANNEL NO. 3.1

MICROSECONDS



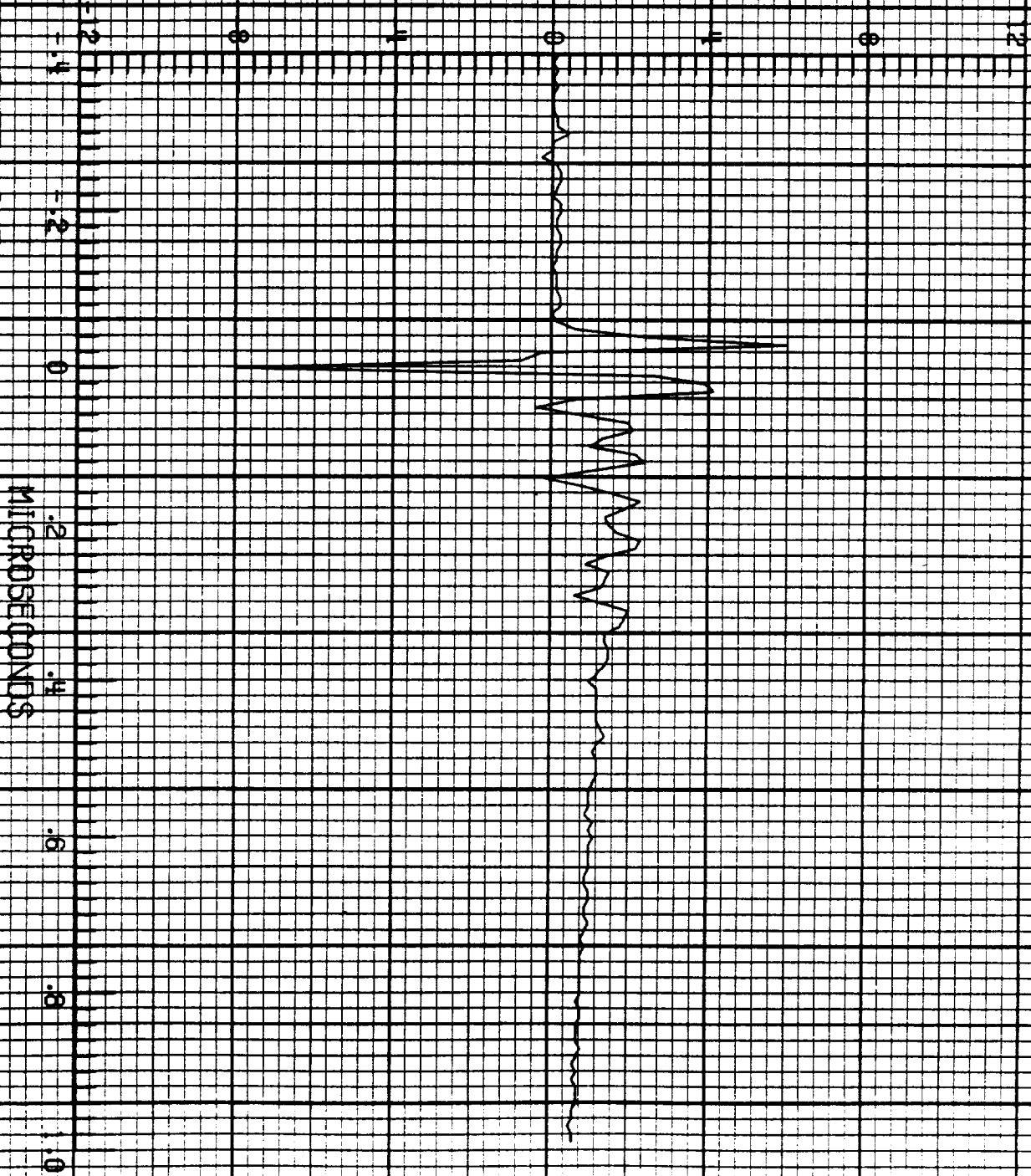
F=108 LIGHTNING/ 84=020

1 FC 3 RUN NO. 4

N.001

\bar{D}_r A/m²

19:55:19.8
CHANNEL NO. 3.2



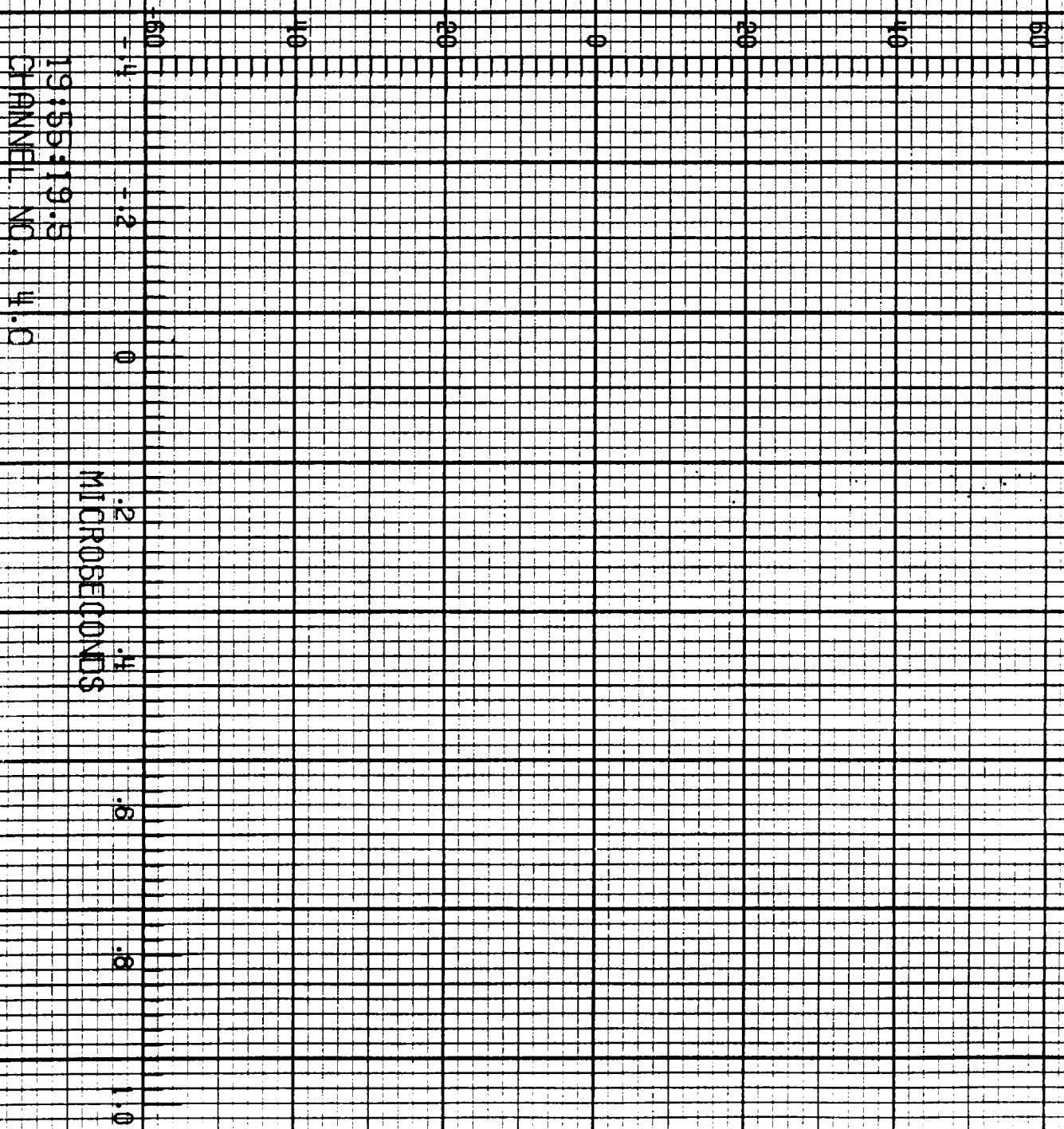
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F-106 LIGHTNING/ 84-020

LEC# RUN NO. 4

N.001

V_{ro} V



E=106 LIGHTNING/ 84=720

LEF 4 RUN NO. #

N.001

I_n A

9 x 10³

19:55:19.8
CHANNEL NO. 4.1

MICROSECONDS

-.4
-.2
0
.2
.4
.6
.8
1.0

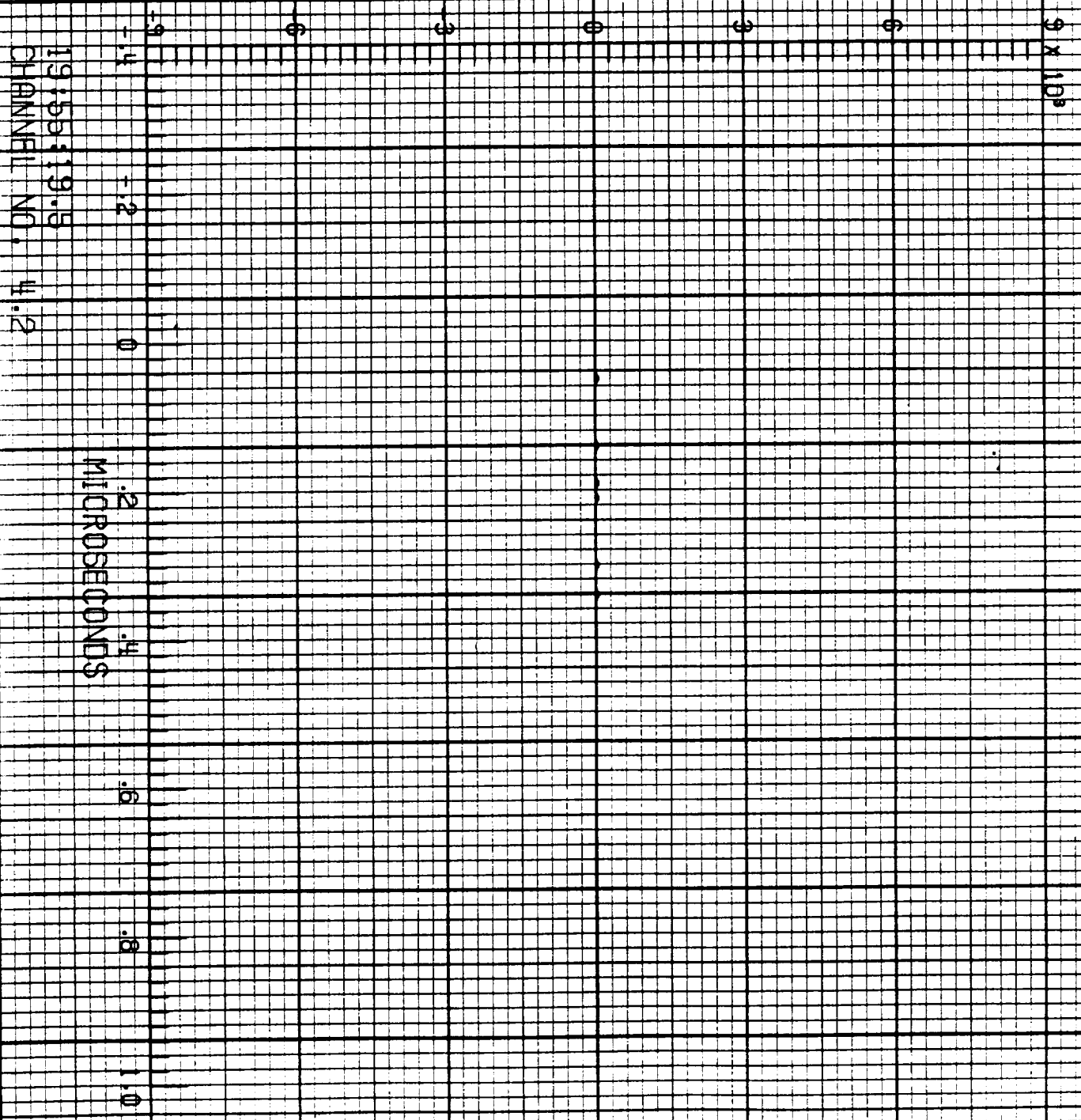
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F-106 LIGHTNING / 84-020

LEO 4 RUN NO. 4

N.001

T_t A

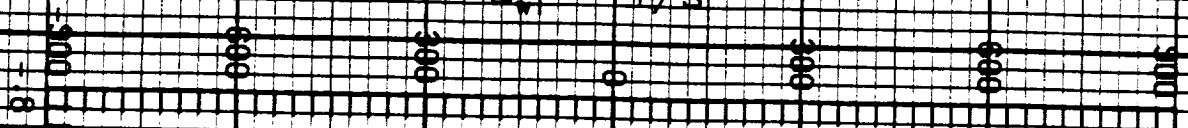


F-106 LIGHTNING/ 84-020

LEC 1 RUN NO. 5

6.00H

B_v T/s



19:59:38.2
CHANNEL NO. 1.1

0

.8

MICROSECONDS

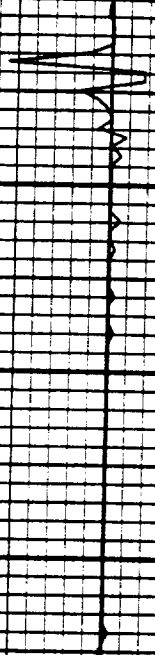
1.6

2.4

3.2

4.0

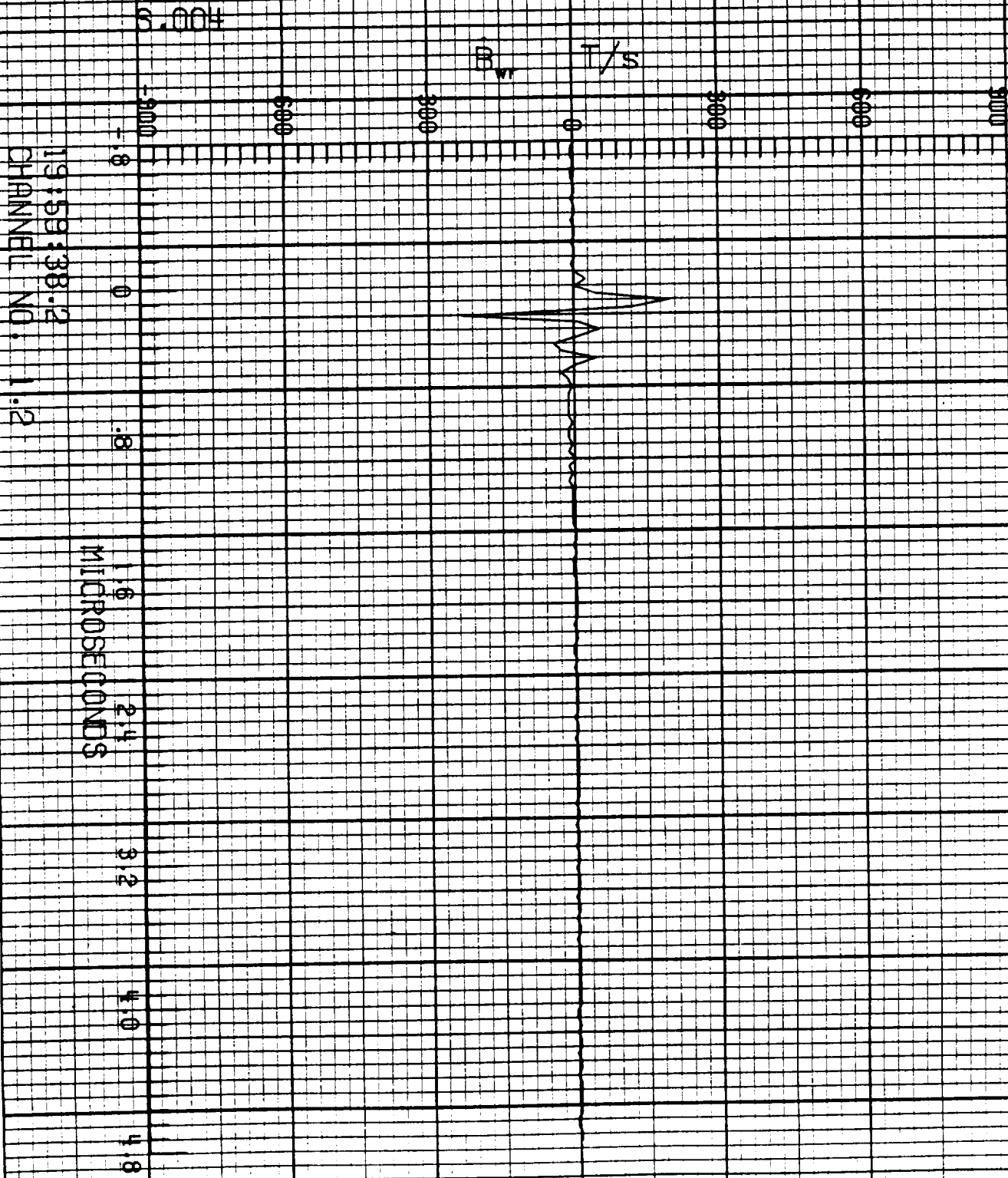
4.8



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F-106 LIGHTNING/ 84-020

LEC 1 RUN NO. 5



119:59:38.2
CHANNEL NO: 1.2

F-106 LIGHTNING/84-020

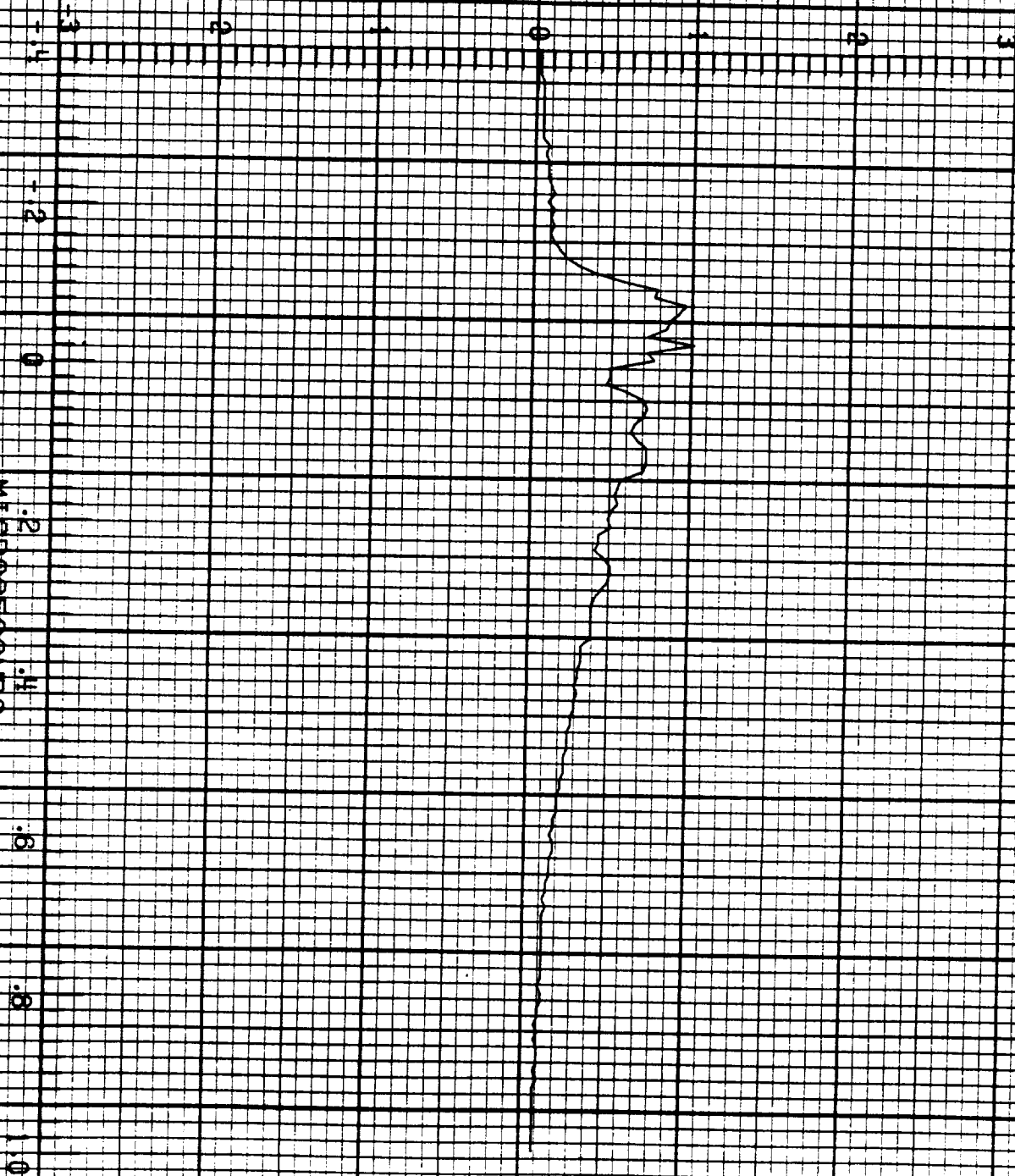
IFC2 RUN NO. 5

5.004

\dot{D}_t A/m²

19159138.2
CHANNEL NO. 2.0

MICROSECONDS



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F-106 LIGHTNING/ 84-020

FC 2 RUN NO. 5

5.00#

A/s

19:59:38.2
CHANNEL NO. 2:1

MICROSECONDS

24 X 10¹⁰

F-106 LIGHTNING/ 84-020

LEG 2 RUN NO. 5

5.004

B, T/s

1500

1200

900

0

900

1200

1500

19:59:38.2

CHANNEL NO. 2.2

1.4

1.2

0

MICROSECONDS

.2

.4

.6

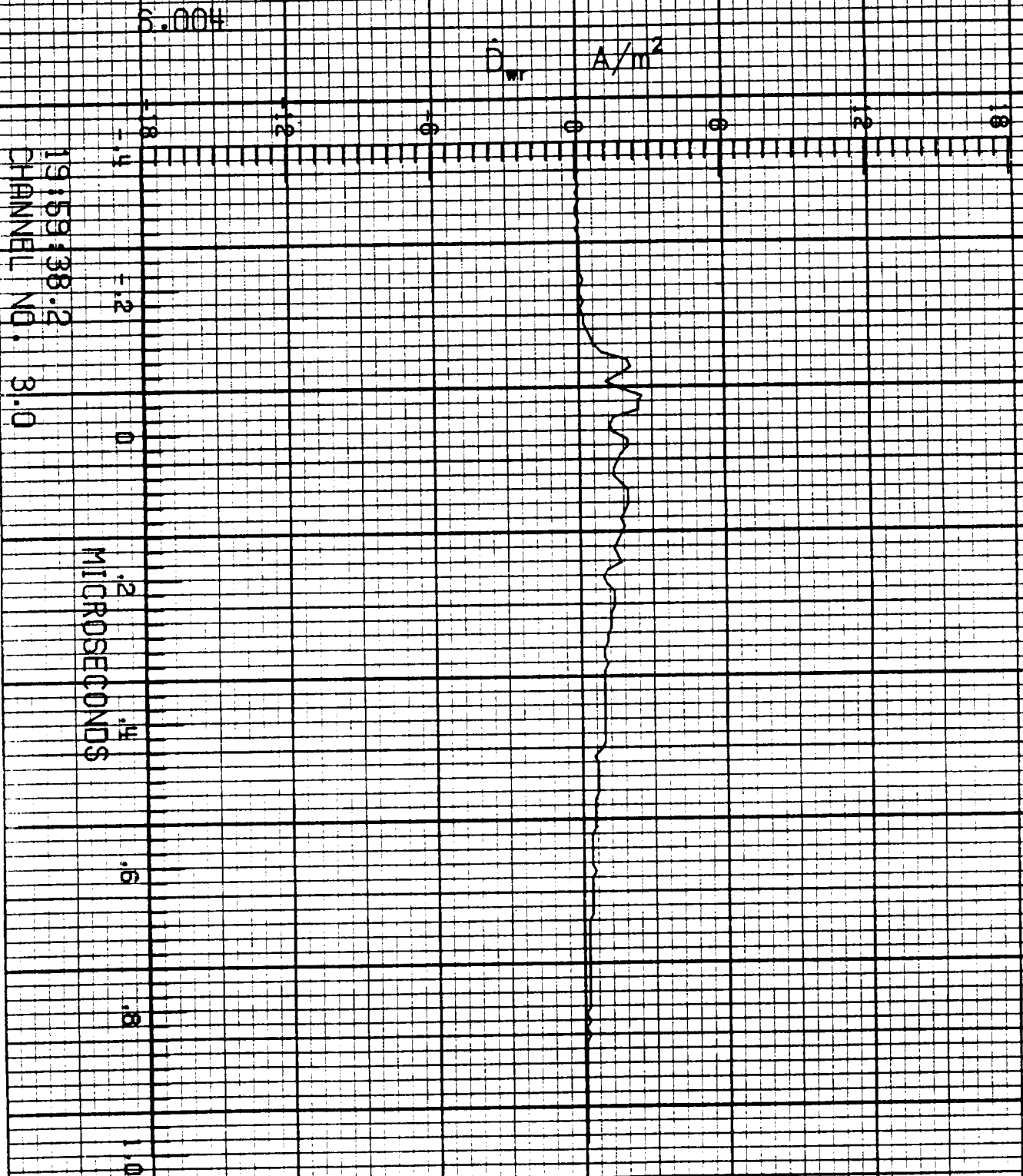
.8

1.0

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F-106 LIGHTNING/ 84-020

LEC 3 RUN NO. 5



F=106 LIGHTNING/84=020

LFC3 RUN NO. 5

5.00H

D_{wt} A/m²

19:59:38.2
CHANNEL NO. 3.1

MICROSECONDS



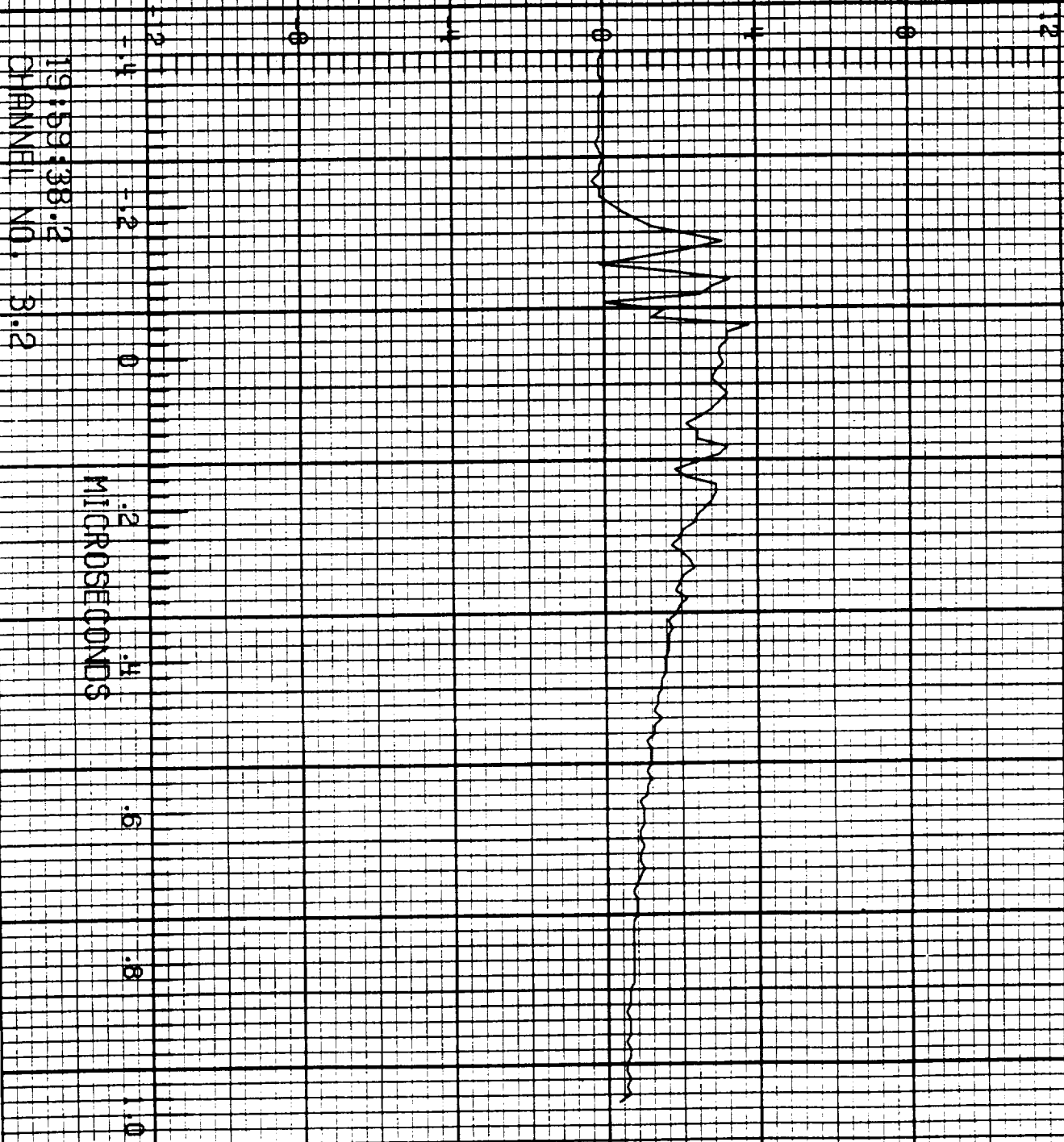
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F-106 LIGHTNING/ 84-020

LEGB RIN NO. 5

5.004

D_r A/m²



F-106 LIGHTNING/ 84-020

LECH RUN NO. 5

5.004

V_{fd} V

60 40 20 0 20 40 60

1.1

1.2

0

.2

.4

.6

.8

1.0

MICROSECONDS

19159138.2
CHANNEL NO. 4.0

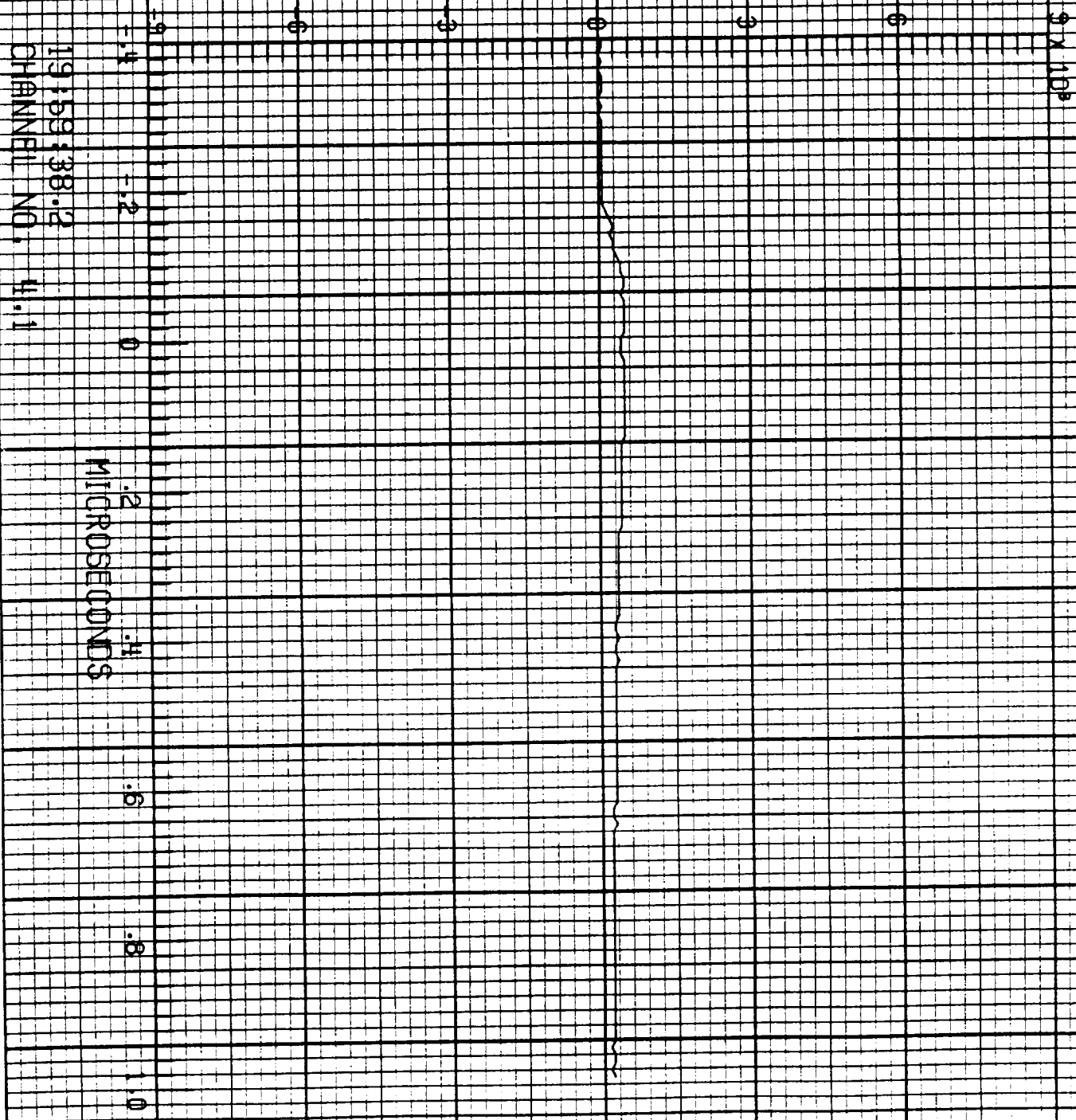
ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-020

LEO# RIN NO. 5

5.00#

T_r A



19159:38.2
CHANNEL NO. 4.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/84=020

1 FC 4 RIN NO. 5

5.004

T₁ A

19:59:38.2
CHANNEL NO. 4.2

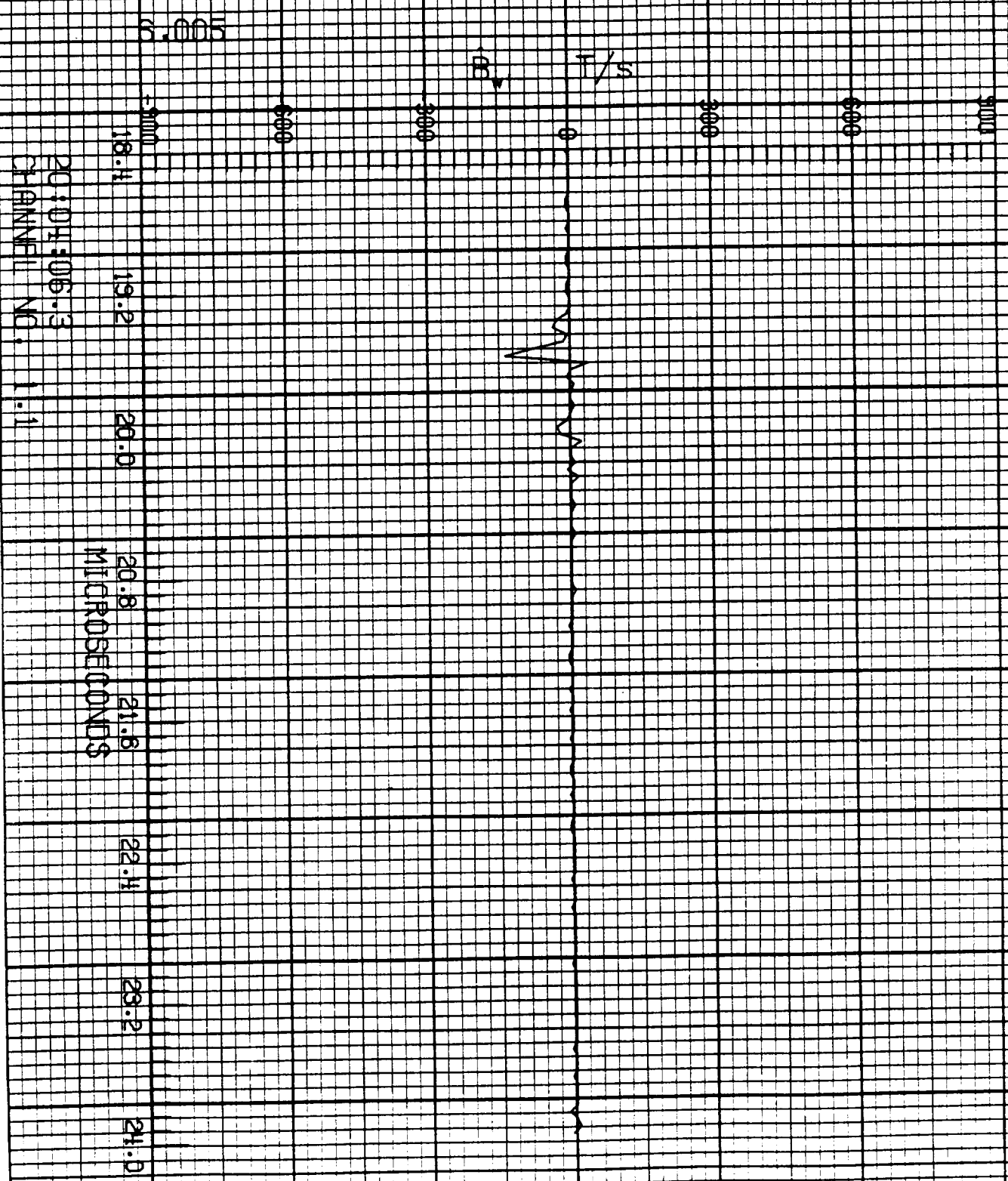
9 X 10³

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84=020

FC1 RUN NO. 6



DC:04:05.3
CHANNEL NO. 1.1

F-106 LIGHTNING/ 84-020

IFC 1 RUN NO. 6

3.005

B_v T/s

-3000
-600
300
600
900

18.4

19.2

20.0

20.8

21.5

22.4

23.2

24.0

20:04:506.3
CHANNEL NO. 1.2

MICROSECONDS

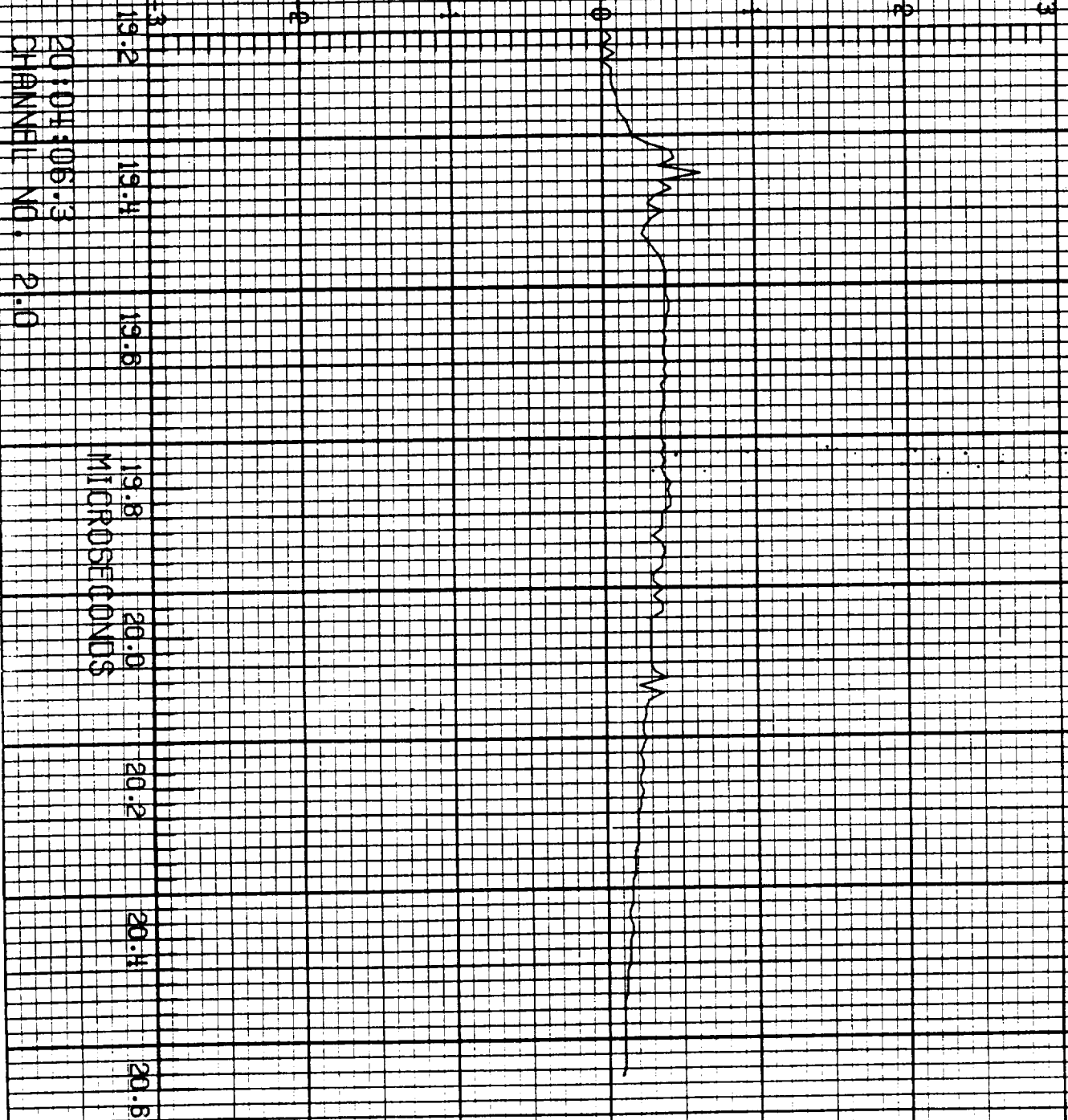
ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/84-020

LEO 2 RUN NO. 6

5.005

\bar{D}_t A/m²



F-106 LIGHTNING/ 84-020

LEG 2 RUN NO. 6

5.005

\ddot{z} A/s



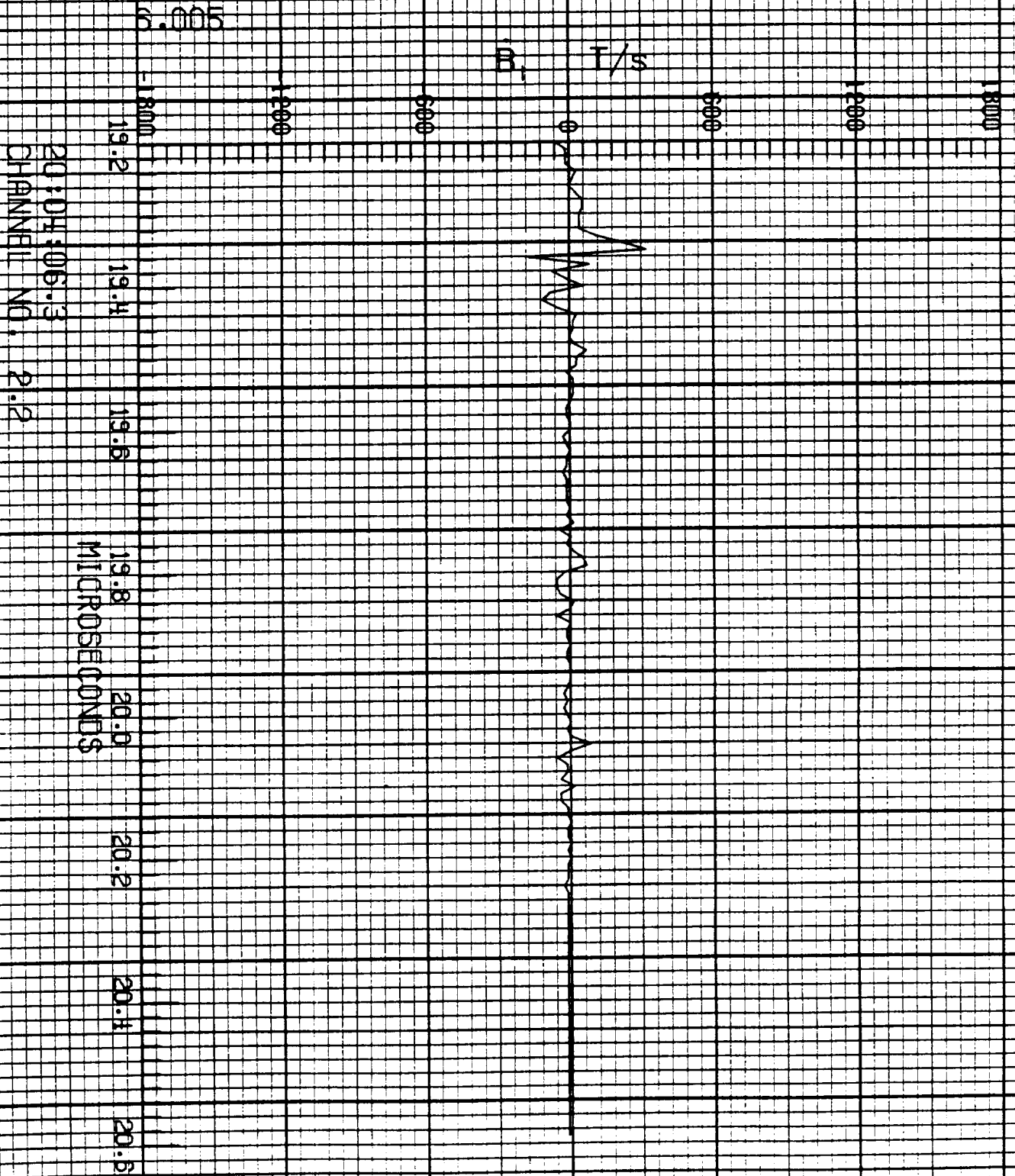
20:04:06.3
CHANNEL NO. 2.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-020

LEO 2 RUN NO. 6



F=106 LIGHTNING/ 84-020

LFC 3 RUN NO. 6

5.005

\bar{D}_{wr} A/m²

20:04:06.3
CHANNEL NO. 3.0

19.8
20.0
MICROSECONDS

19.2
19.4
19.6
19.8
20.0
20.2
20.4
20.6

ORIGINAL PAGE IS
OF POOR QUALITY

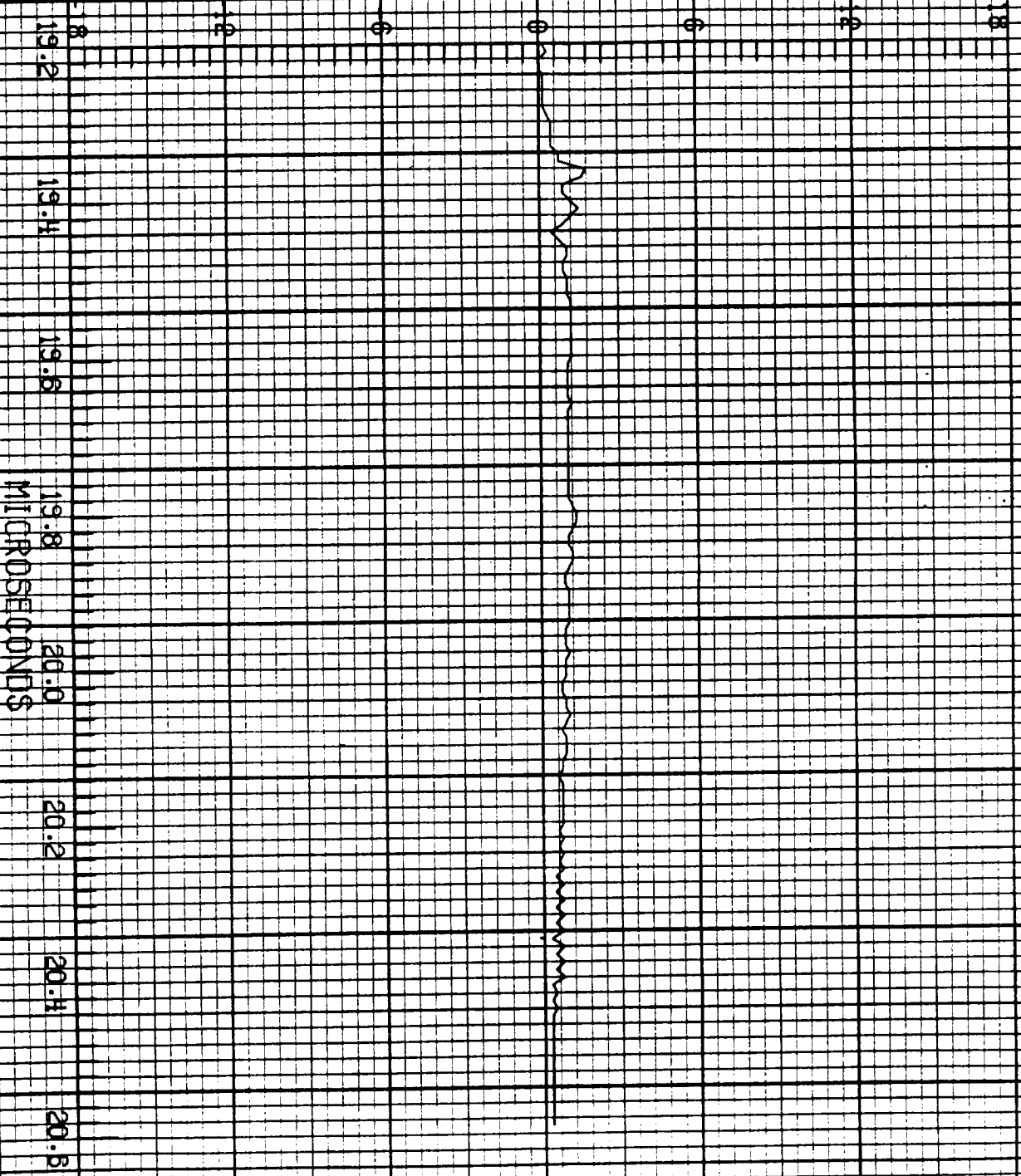
F=105 LIGHTNING/84-920

LEF 3 RUN NO. 6

3.005

D_{w1} A/m²

20:04:05.3
CHANNEL NO. 3.1



F-106 LIGHTNING/ 84-020

LEC3 RUN NO. 6

6.005

D_r A/m²

20:04:06.3
CHANNEL NO. 3.2

19.2
19.4
19.6
19.8
20.0
20.2
20.4
20.6
MICROSECONDS



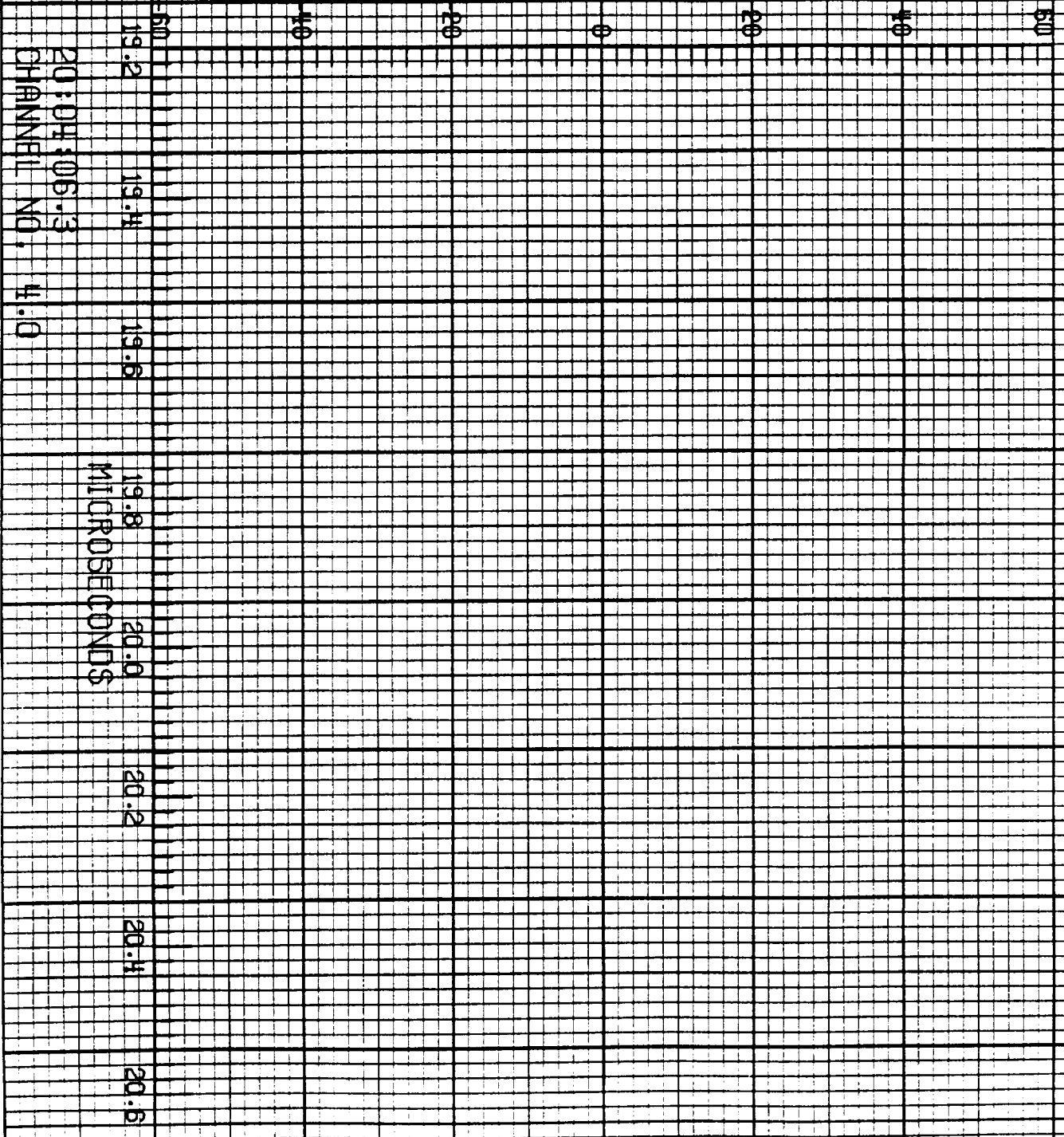
ORIGINAL PAGE IS
OF POOR QUALITY

E=106 LIGHTNING/ 84-020

LECH RIN NO. 6

0.005

V_{pd} V



20:04:05.3
CHANNEL NO. 4.0

MICROSECONDS

3

F-105 LIGHTNING/ 84-020

LEG# RUN NO. 6

5.005

T_r A

9 x 10⁹

19.2 19.4 19.6 19.8 20.0 20.2 20.4 20.6

20:04:06.3
CHANNEL NO. 4.1

MICROSECONDS

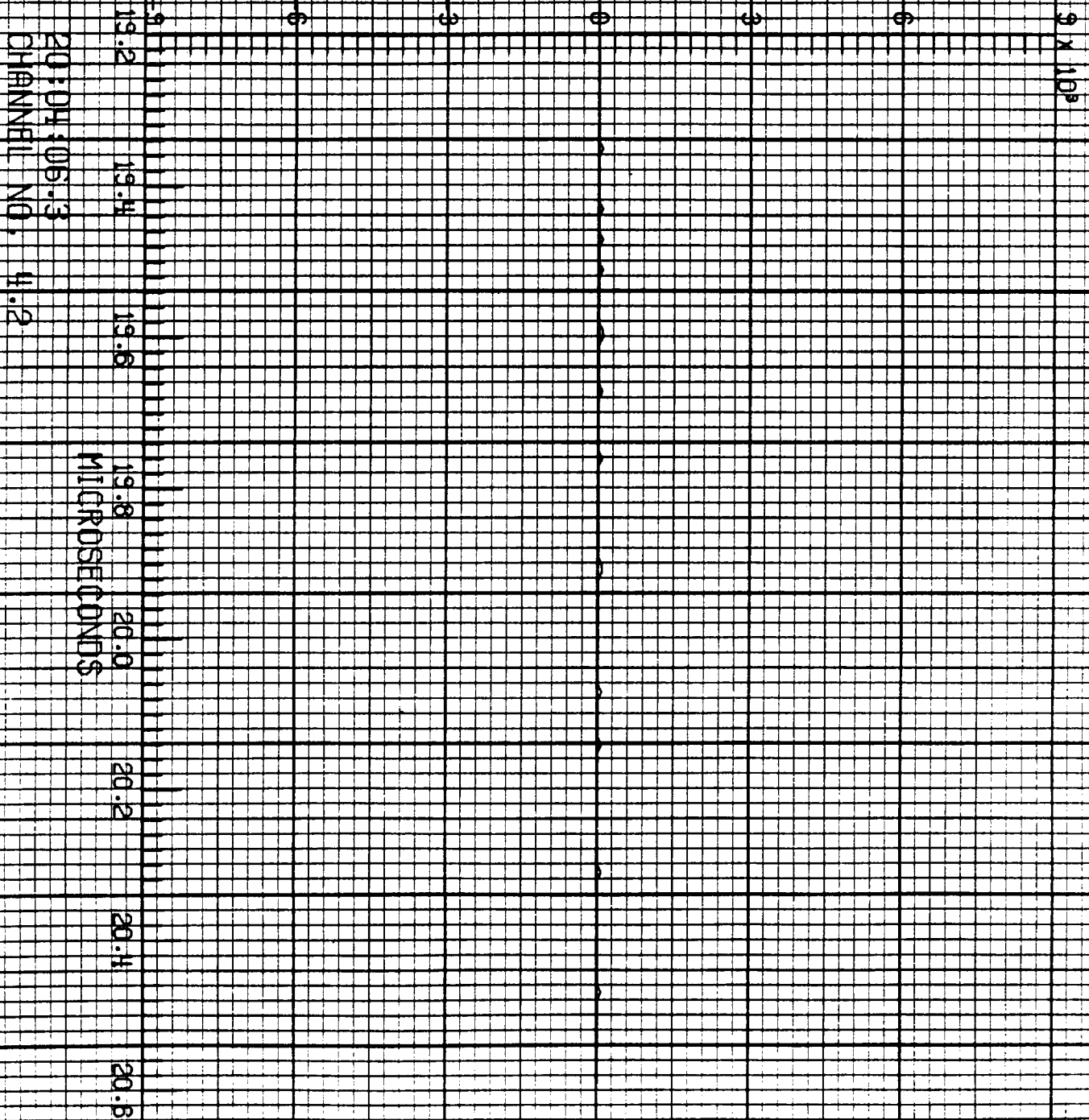
ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84=020

LEC# RUN NO. 6

5.005

T_r A



F=106 LIGHTNING/ 84=020

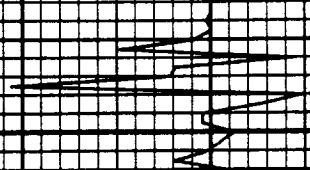
IFC1 RUN NO. 7

2.006

BT
T/s

9000
6000
3000
0
3000
6000
9000

20:03:29.13
CHANNEL NO. 1:1



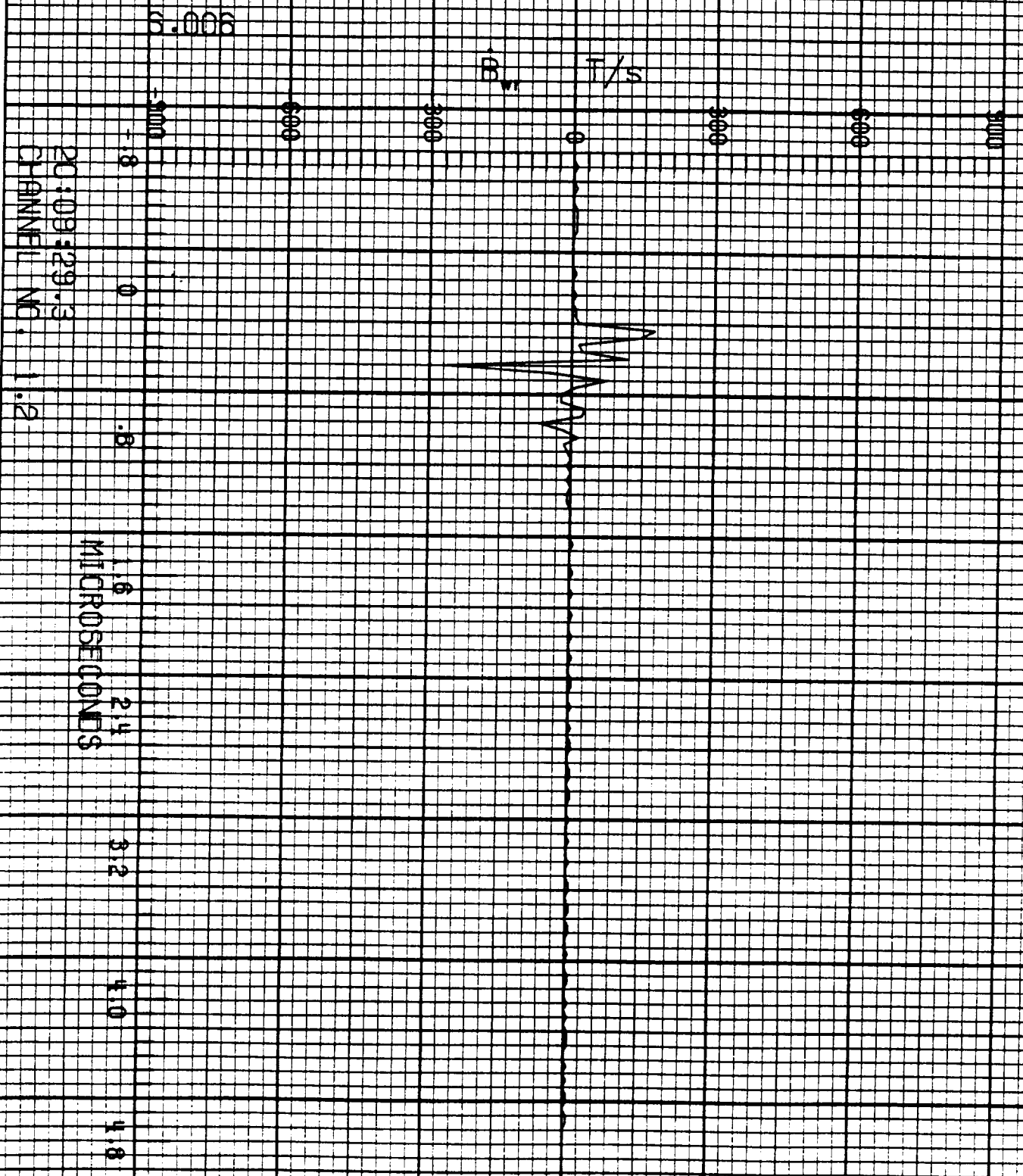
MICROSECONDS

0
.8
1.6
2.4
3.2
4.0
4.8

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-020

JFC1 RUN NO. 7



F-108 LIGHTNING/ 84-020

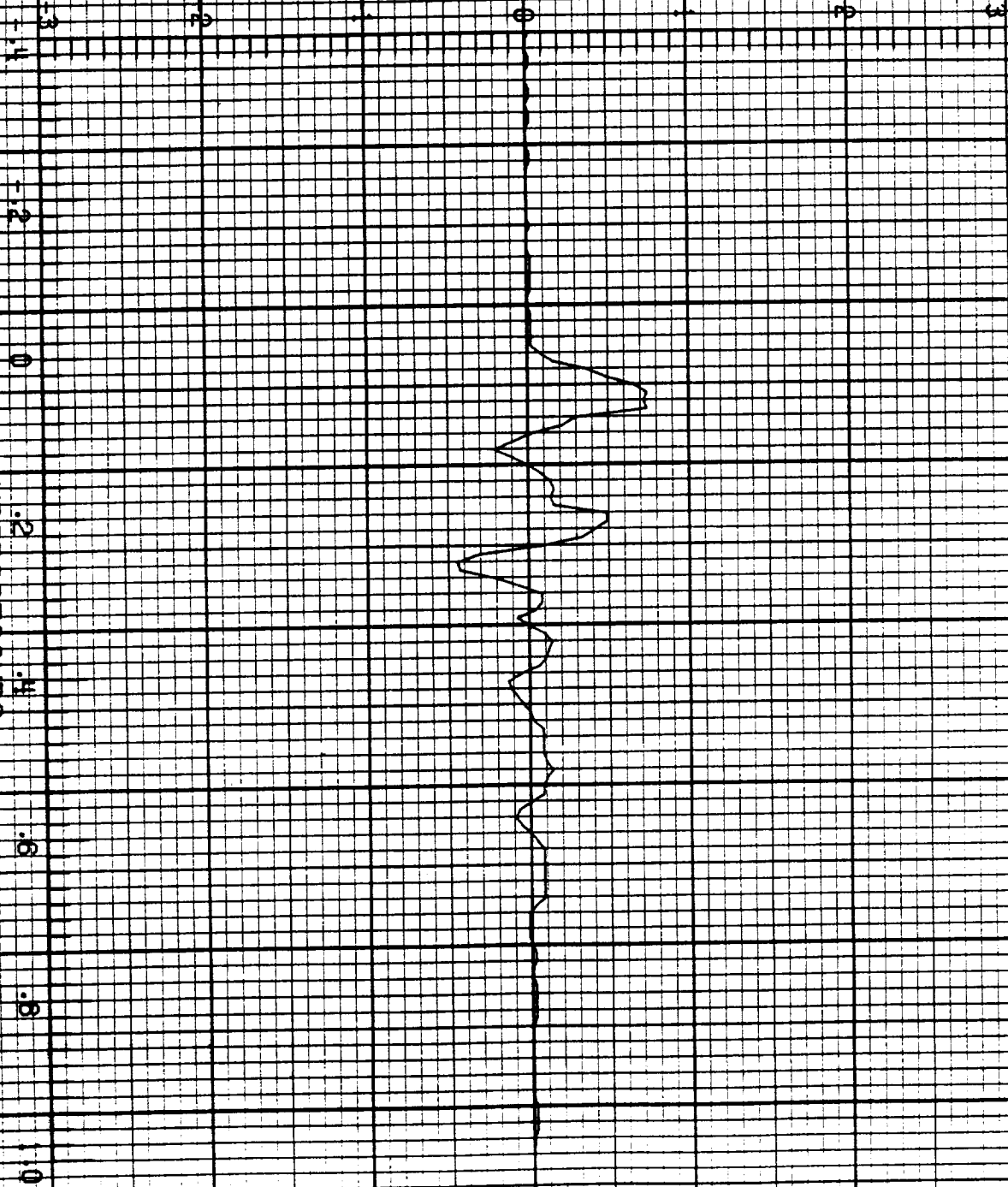
LEO 2 RUN NO. 7

5.006

D_t A/m²

20:08:29.3
CHANNEL NO. 2:0

MICROSECONDS



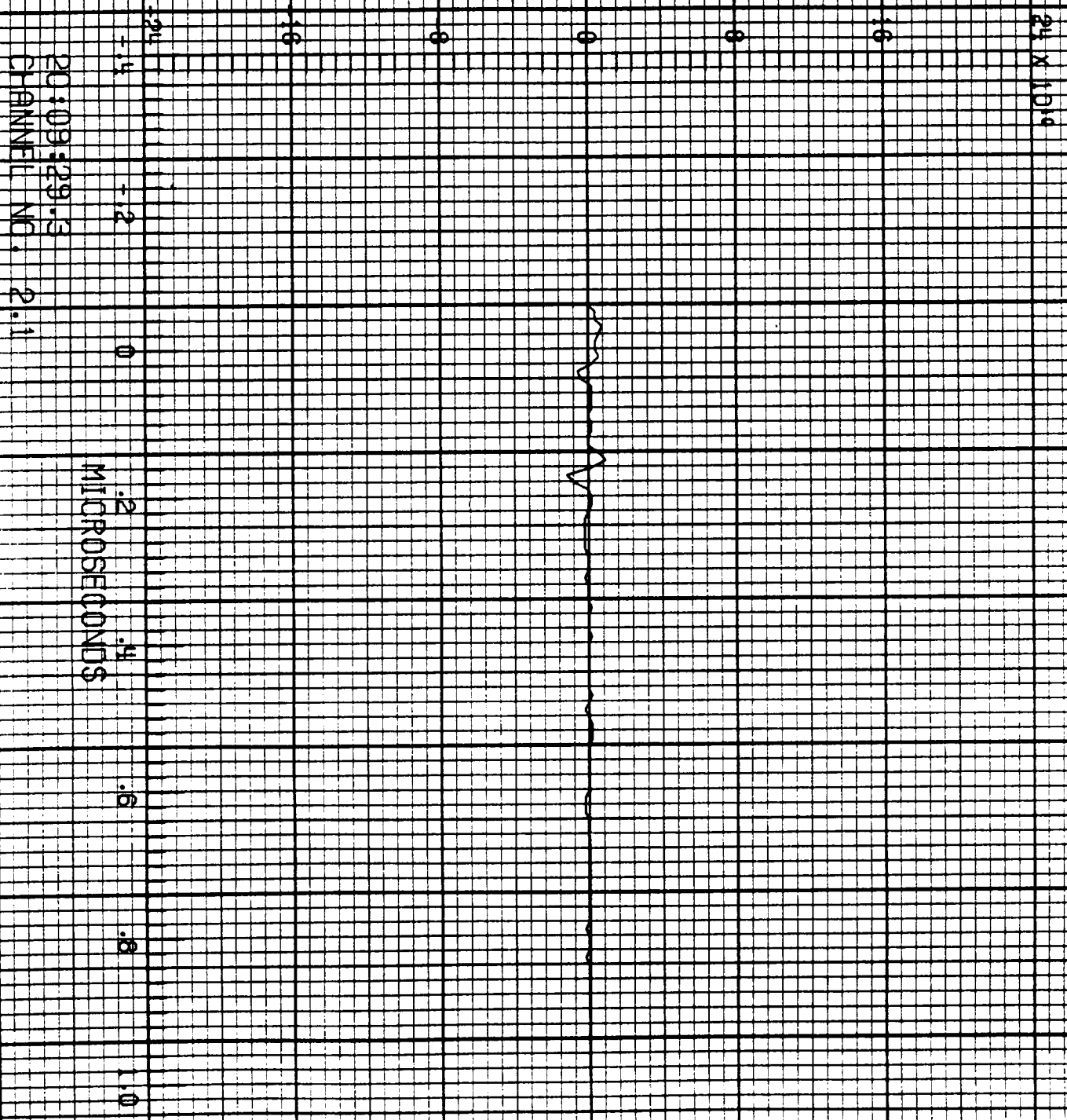
ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84=020

FCP RUN NO. 7

6.006

f A/s



20:09:29.3
CHANNEL NO. 2.1

25 X 1019

F-106 LIGHTNING/84-020

1 FC 2 RUN NO. 7

3.006

B₁ T/s

1800 1200 600 0 600 1200 1800

20:09:29.3
CHANNEL NO. 2.2

MICROSECONDS

1.0
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1.0

F=106 LIGHTNING/ 84=020

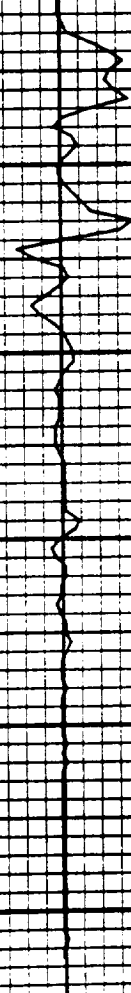
IFC 3 RUN NO. 7

3.006

\bar{D}_{wr} A/m²

20:09:29.3
CHANNEL NO. 3.0

MICROSECONDS



F=106 LIGHTNING/ 84=020

LEG 3 RUN NO. 7

5.006

\hat{D}_{wt} A/m²



20:08:29.13
CHANNEL NO. 3.1

MICROSECONDS

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OF POOR QUALITY

F-106 LIGHTNING/ 84-020

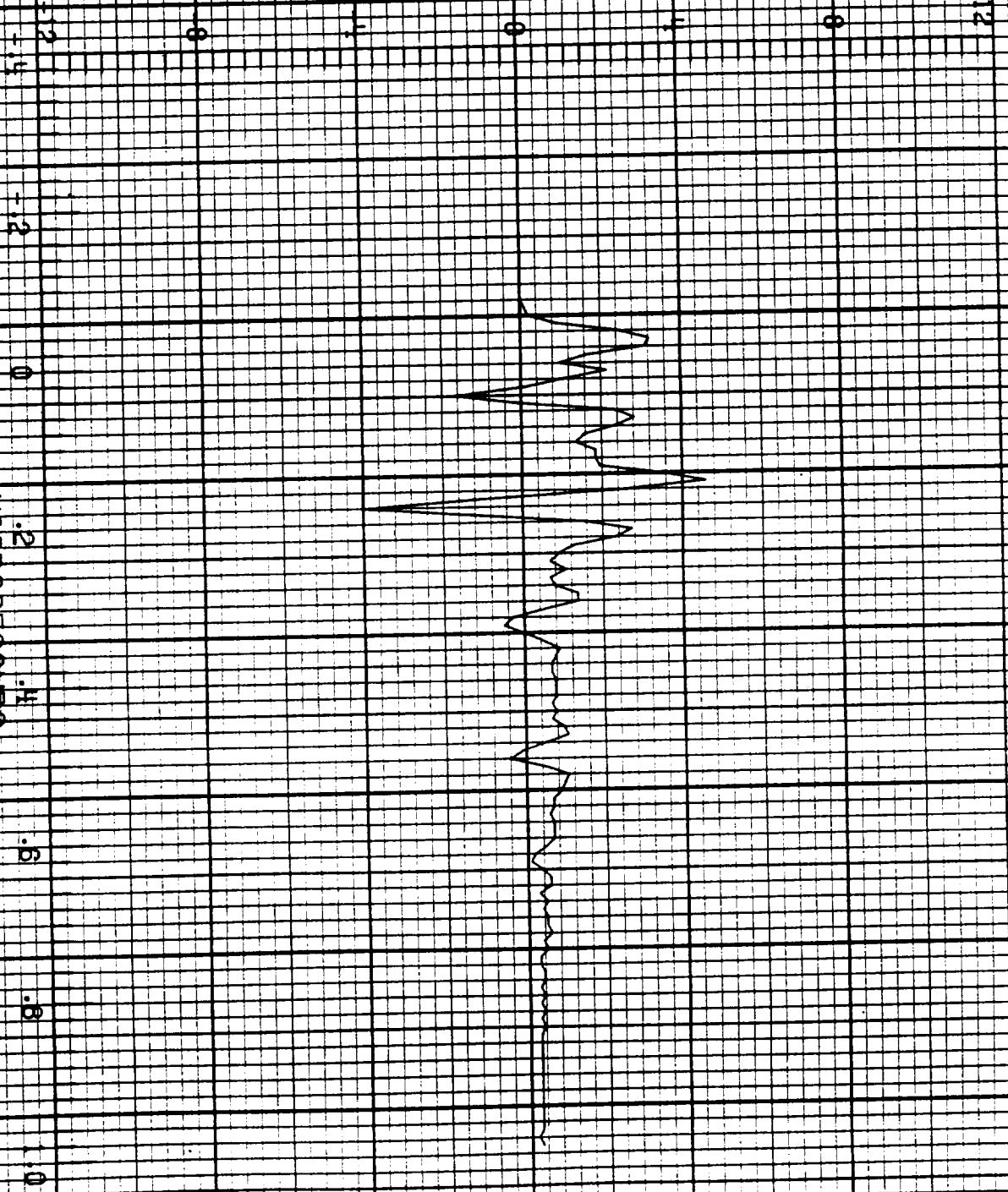
LEG 3 RUN NO. 7

5.006

\dot{D}_r A/m²

20:09:29.3
CHANNEL NO. 3.2

MICROSECONDS



F-106 LIGHTNING / 84-020

LEO4 RUN NO. 7

3.003

V_{TC} V

50 40 30 20 10 0

20:09:29.13
CHANNEL NO. 4.0

MICROSECONDS

1.0 .5 .2 .1 0

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-020

LECH RUN NO. 7

3.006

T_r A

9 x 10³

20:09:29.3
CHANNEL NO. #.1

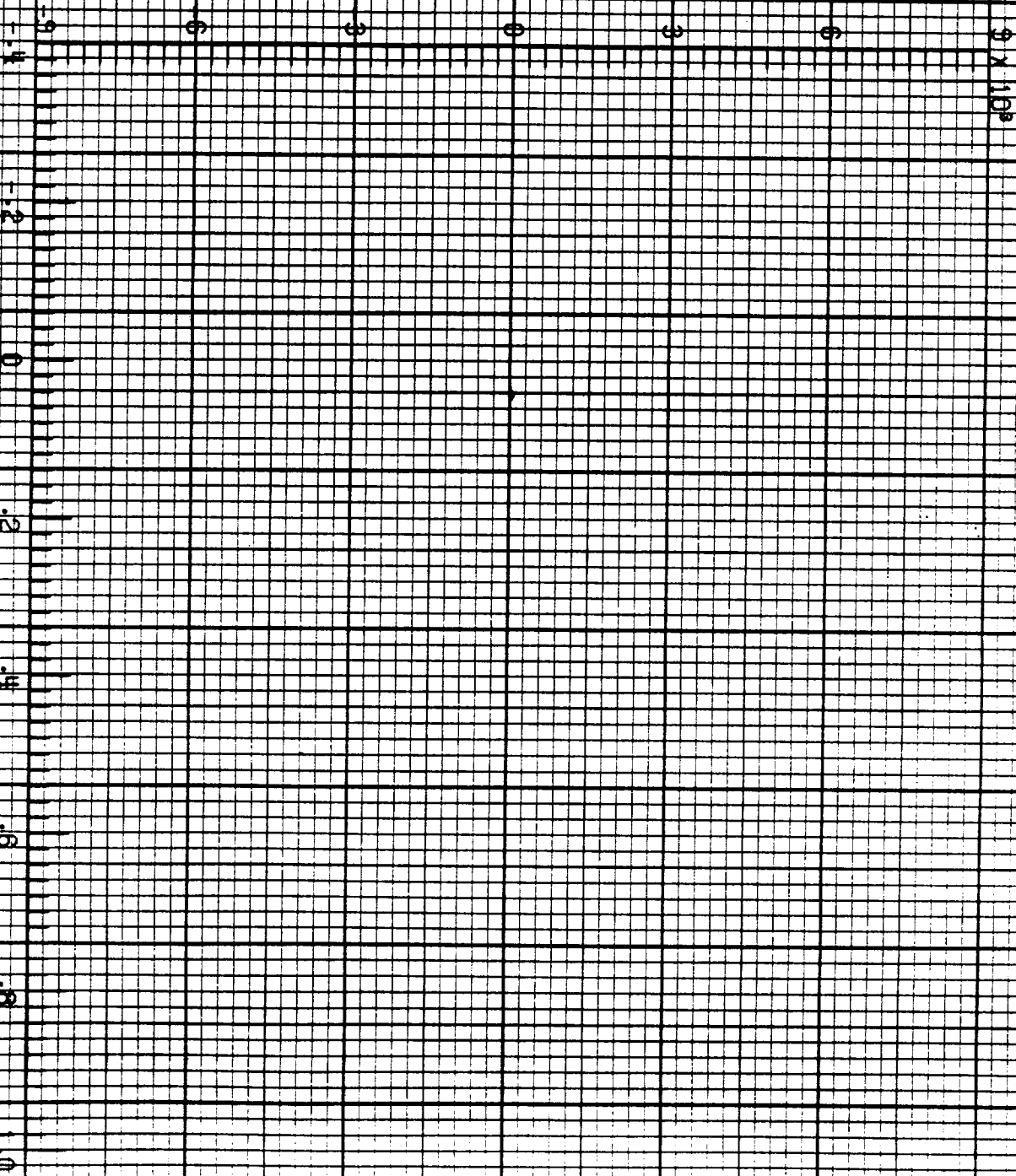
MICROSECONDS

F=106 LIGHTNING/84=020

LEO 4 RUN NO. 7

5.006

I_r A

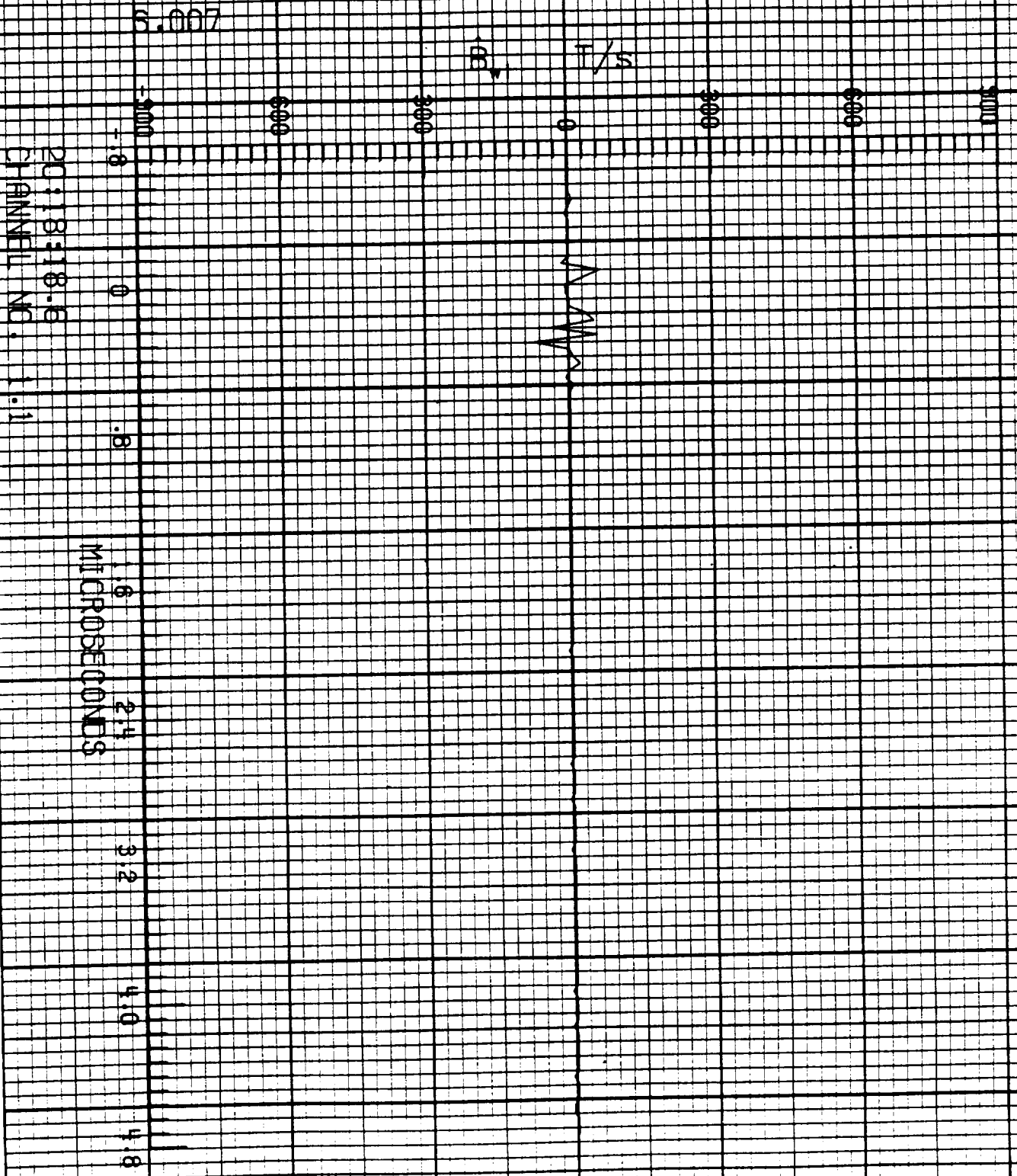


20:08:29.3
CHANNEL NO. 4.2

ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-020

LEC 1 RUN NO. 8



20:18:18.8
CHANNEL NO. 1:1

F=106 LIGHTNING/ 84-820

LEC 1 RUN NO. 8

6.007

BT
T/s

5000
3000
1000
0
-1000
-3000
-5000

20:19:18.8
CHANNEL NO. 1.2

MICROSECONDS
1.6
2.4
3.2
4.0
4.8

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-020

1 EC 2 RUN NO. 8

6.007

D_t A/m²

20:13:18.8
CHANNEL NO. 2.0

MICROSECONDS



F=106 LIGHTNING/ 84=020

LEO 2 RUN NO. 8

5.007

F A/s

24×10^9

20:19:18.8
CHANNEL NO. 2.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 184-020

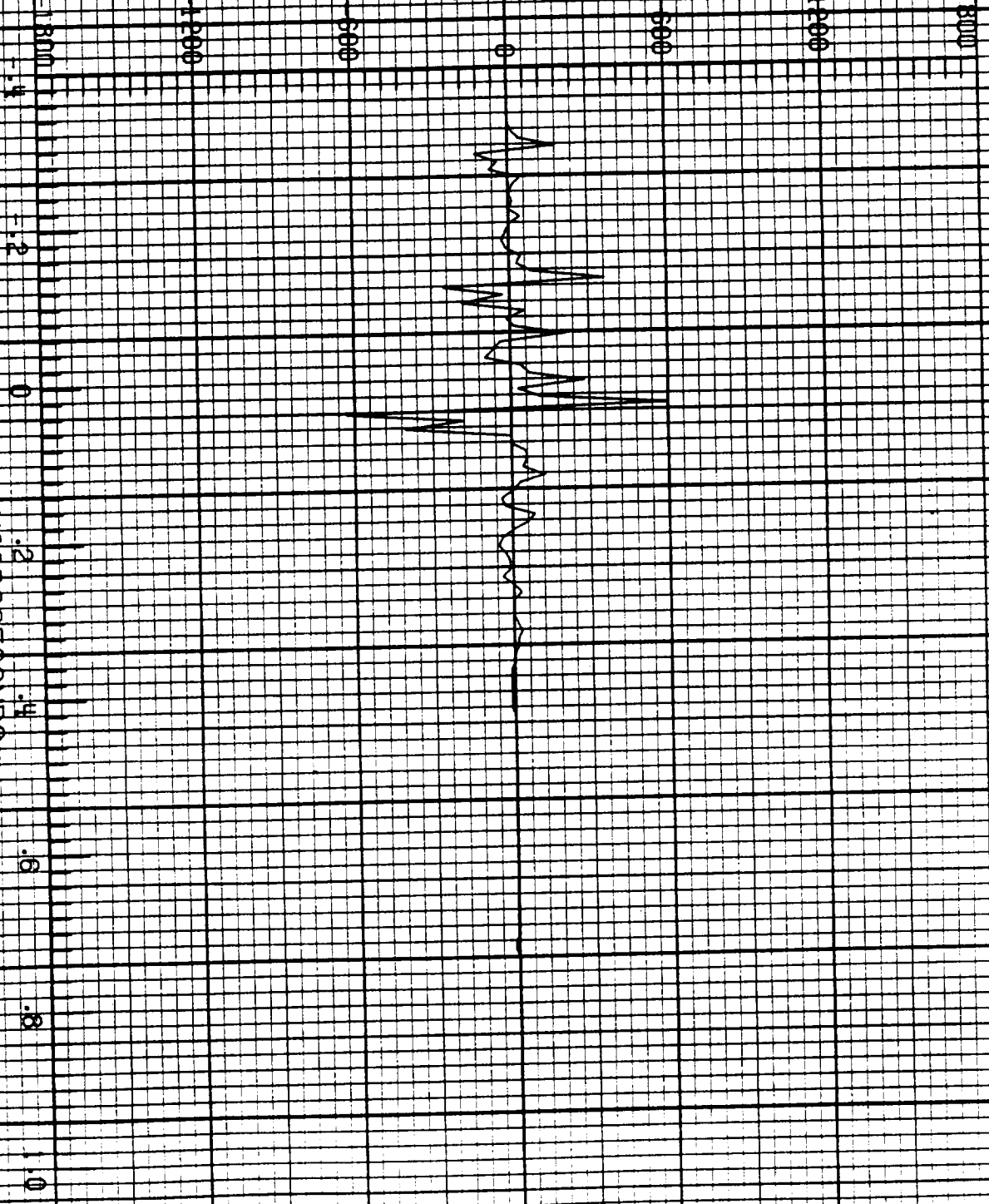
LEC2 RUN NO. 8

5.007

B, T/s

20:18:18.6
CHANNEL NO. 2:2

MICROSECONDS



F=106 LIGHTNING/84=020

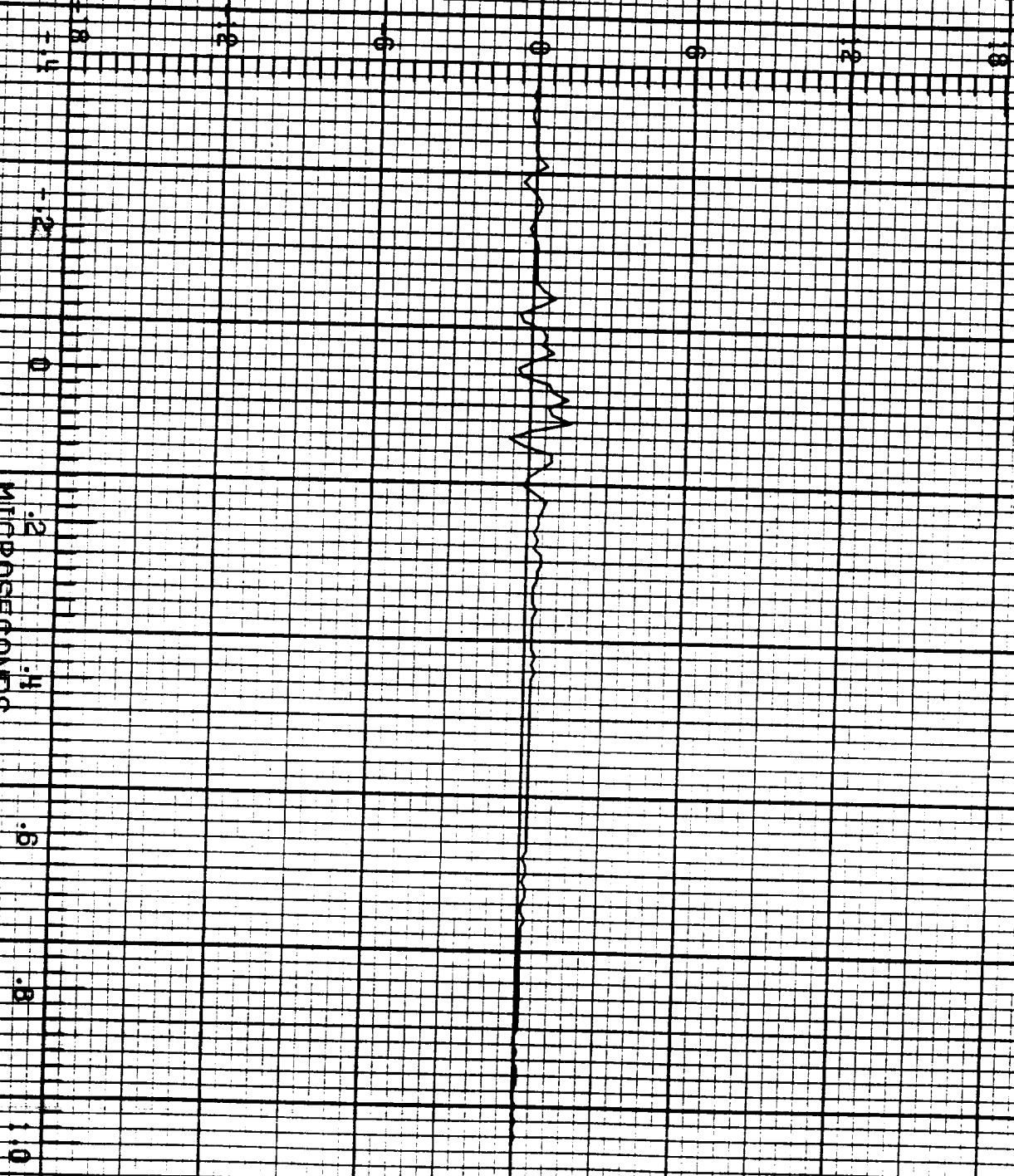
REC 3 RUN NO. 8

5.007

\dot{D}_{wr} A/m²

20:18:18.8
CHANNEL NO. 3.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-020

FC 3 RUN NO. 8

5.007

D_{wt} A/m²

20:13:18.8
CHANNEL NO. 3.1

MICROSECONDS



F-106 LIGHTNING/ 84-020

FC3 RUN NO. 8

6.007

\bar{D}_r A/m²

2011941818
CHANNEL NO. 3:2

MICROSECONDS



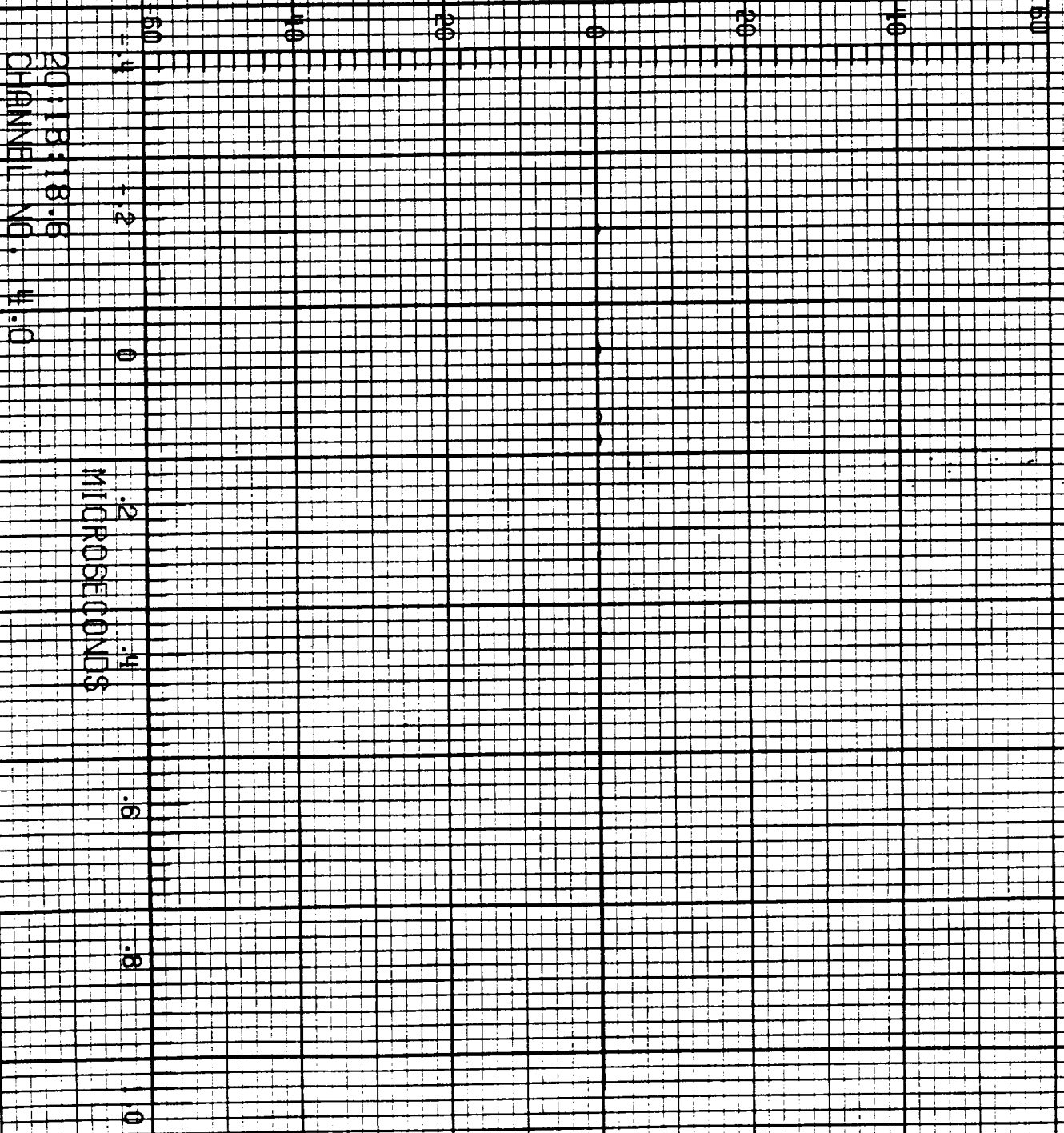
ORIGINAL PAGE IS
OF POOR QUALITY

E-106 LIGHTNING/ 84-020

LEC# RUN NO. 8

6.007

V_{rc} V



20:18318.6

CHANNEL NO. 41.0

MICROSECONDS

F=105 LIGHTNING/84=020

TECH RUN NO. 8

3.007

T_{11} A

9×10^2

20:18:18.6
CHANNEL NO. #.1

9
-14
-12
0
.2
#.4
.6
.8
1.0

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-020

LEC 4 RUN NO. 8

5.007

I_r A

20:18:18.8
CHANNEL NO. 4:2

MICROSECONDS

9 x 10³

F=106 LIGHTNING/ 84=021

LEF 1 RUN NO. 1

3.001

B
T/s

5000
5000
5000
0
5000
5000
5000

.8

0

.8

1.6

2.4

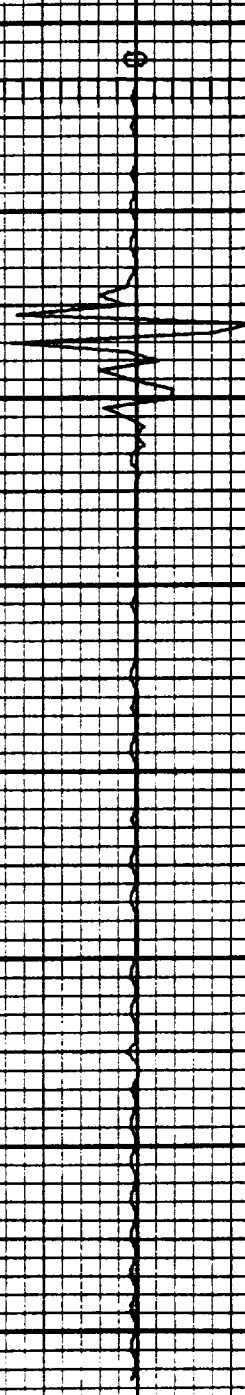
3.2

4.0

4.8

20:118354.10
CHANNEL NO. 1.1

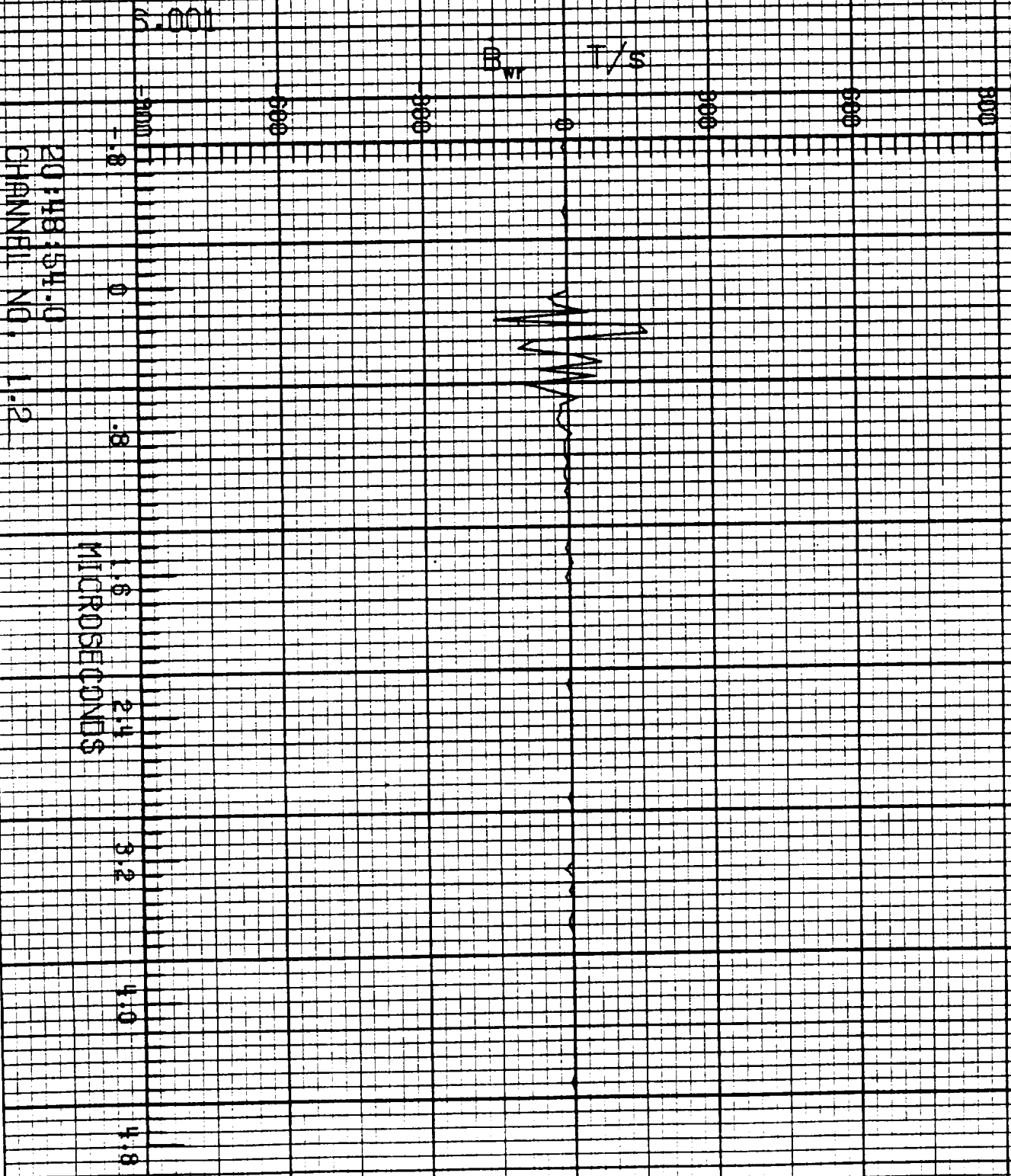
MICROSECONDS



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OF POOR QUALITY

F-106 LIGHTNING/ 84-021

LEC 1 RUN NO. 1



20:48:54.0
CHANNEL NO. 1.2

F=106 LIGHTNING/ 84-021

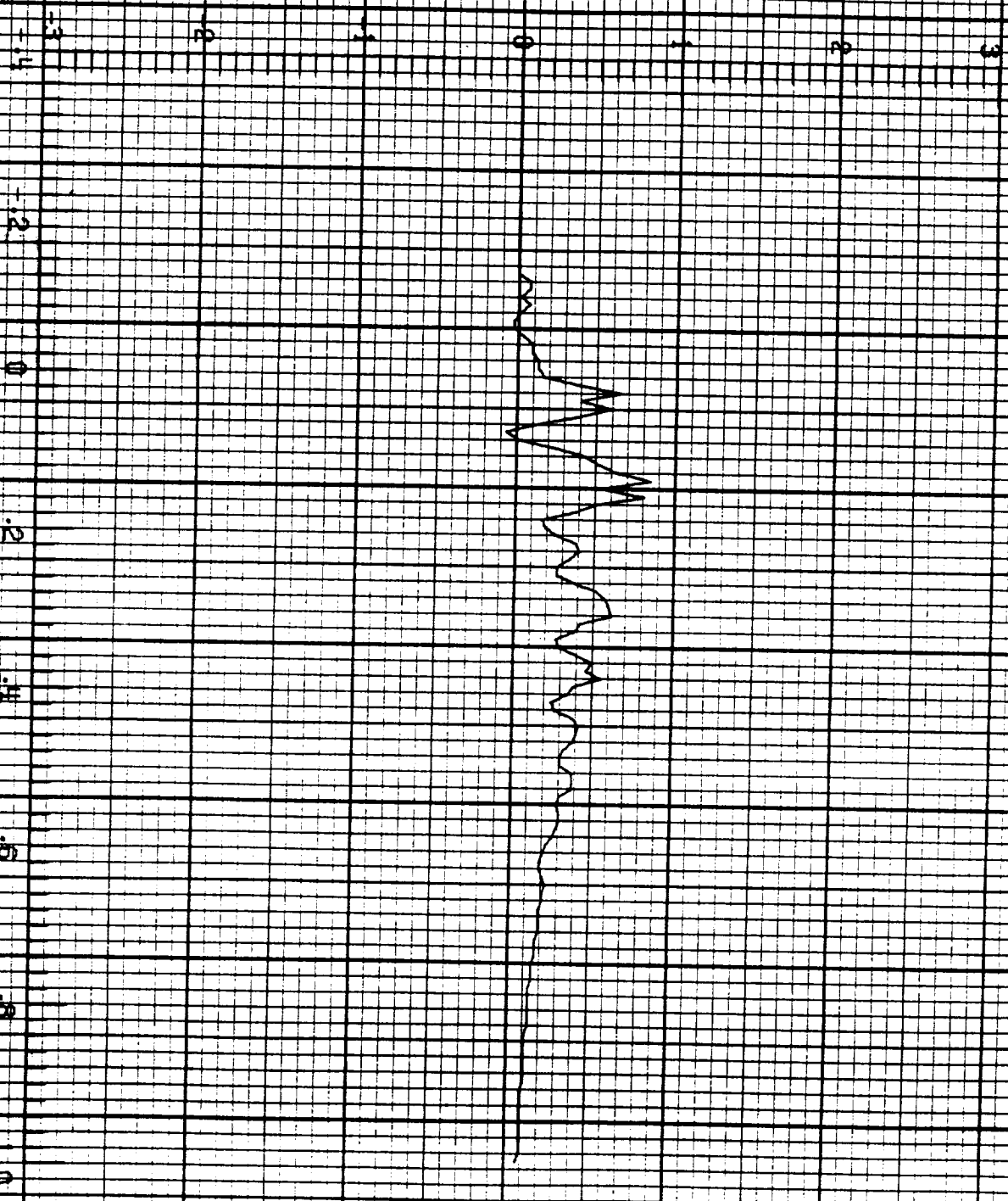
LECD RUN NO. 1

5.001

D_t A/m²

20:48:54.10
CHANNEL NO. 2.0

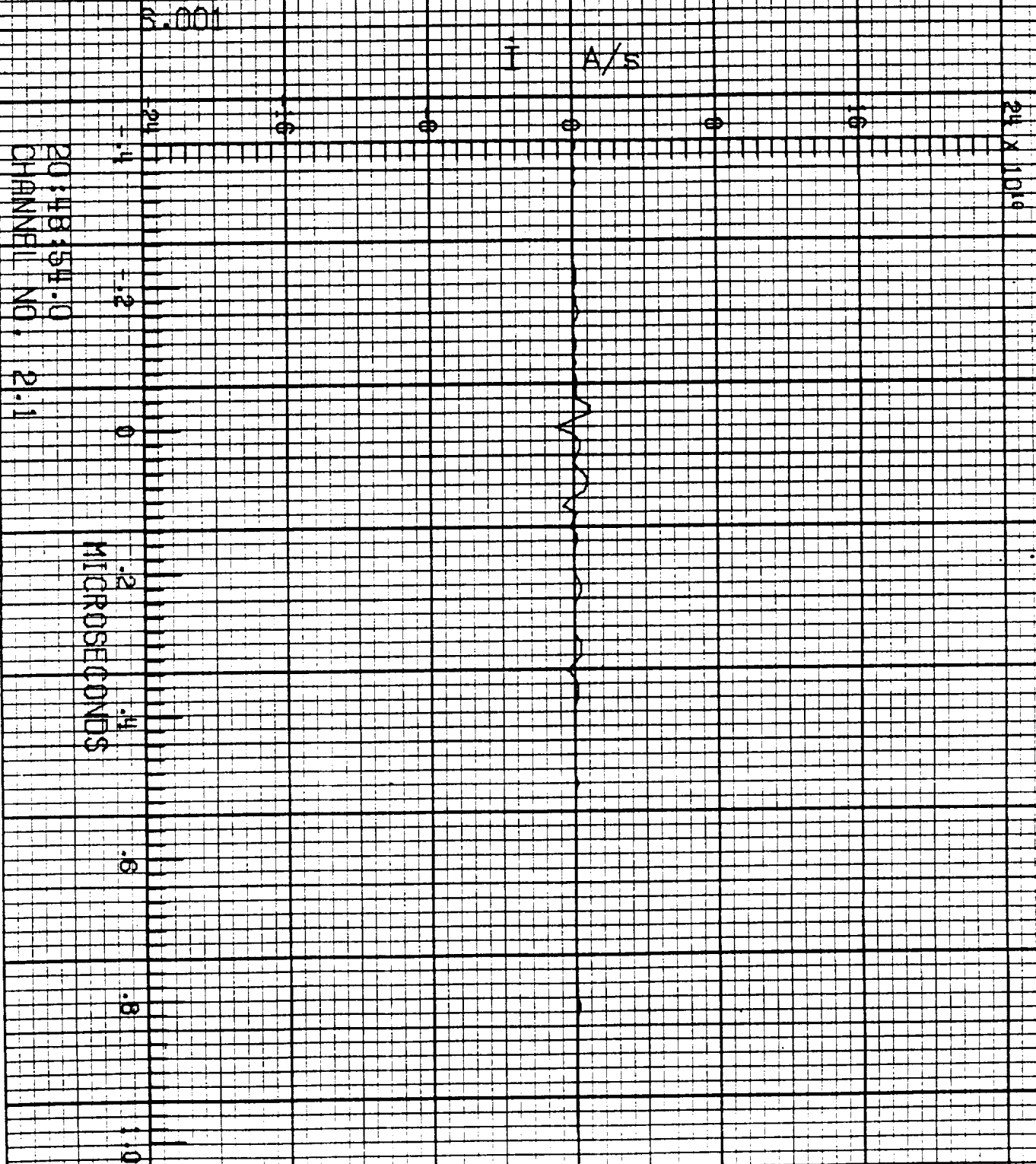
MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-021

LEC 2 RIN NO. 1



F-106 LIGHTNING/ 84-021

1 FC 2 RUN NO. 1

3.001

$\frac{E}{s}$ T/s

2000

1000

500

0

500

1000

1500

1.1

1.2

0

.2

.4

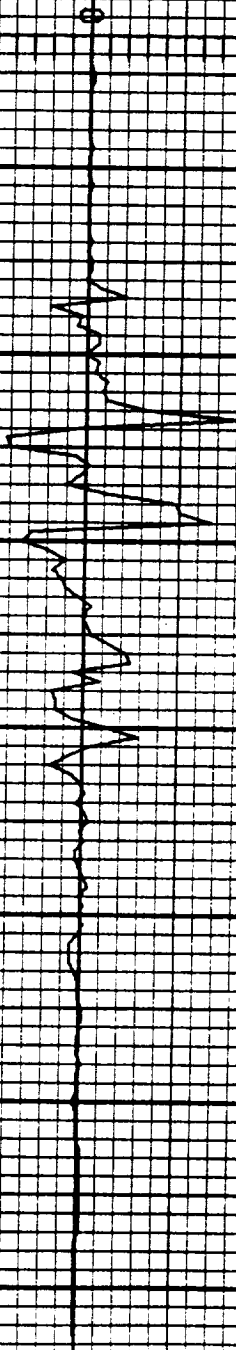
.5

.8

1.0

20418511.0
CHANNEL NO. 2.2

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

E=106 LIGHTNING/ 84-021

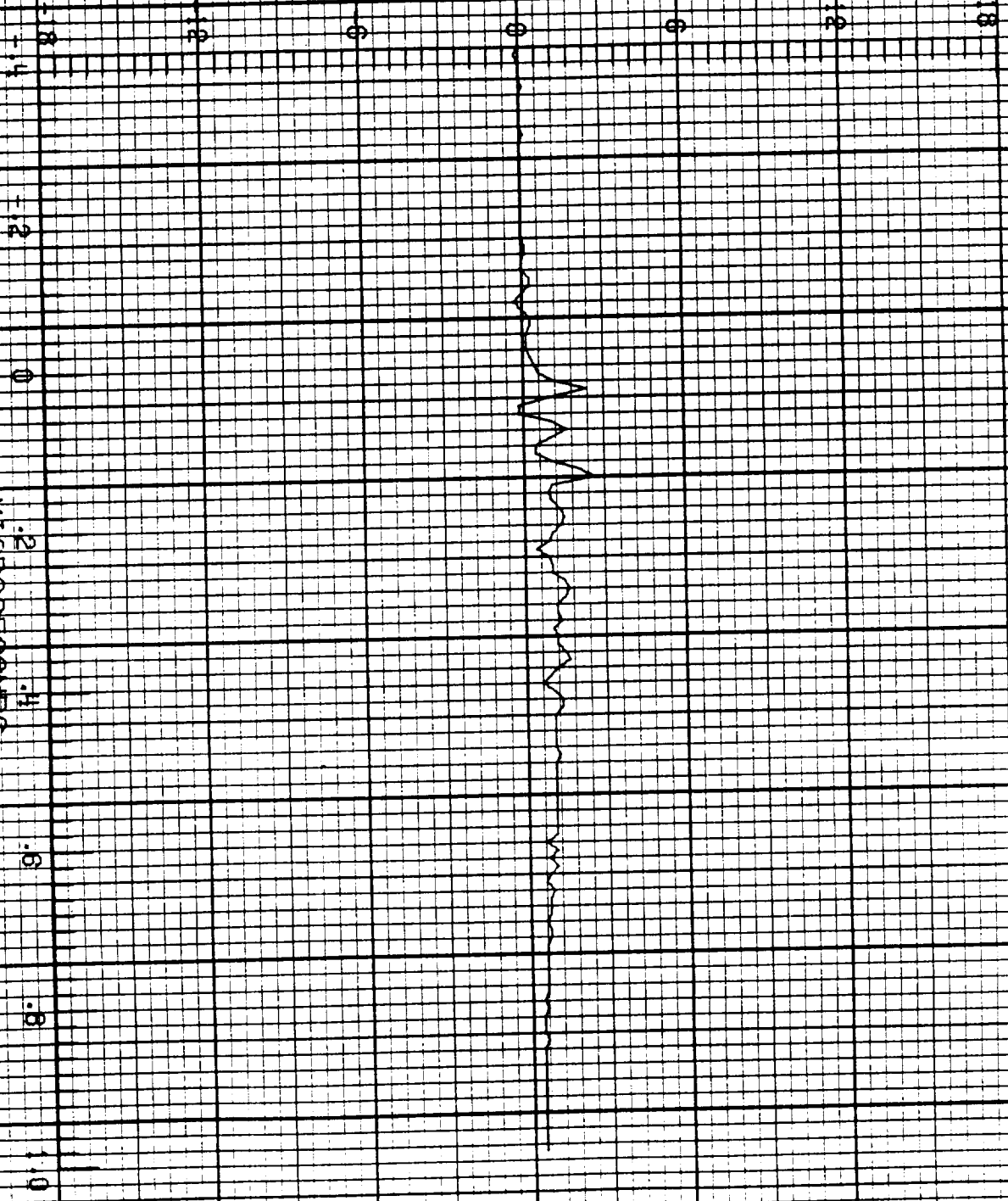
LFC 3 RUN NO. 1

3.001

\bar{D}_{wr} A/m²

20:19:54.0
CHANNEL NO. 3.0

MICROSECONDS



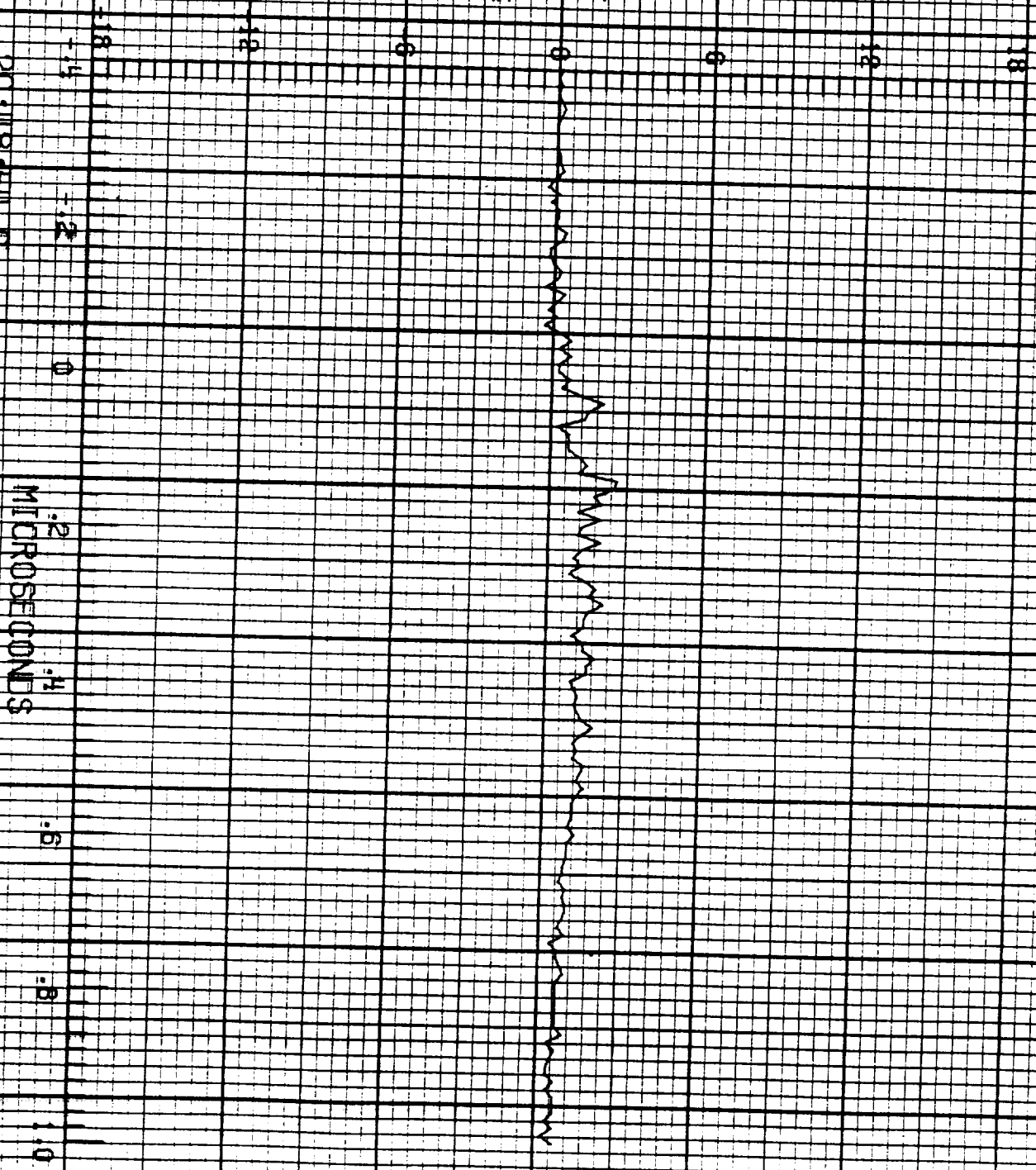
F-106 LIGHTNING/ 64-021

LEC 3 RUN NO. 1

5.001

\hat{D}_{wl} A/m²

20:19:54.0
CHANNEL NO. 3.1



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OF POOR QUALITY

F=106 LIGHTNING/ 84=021

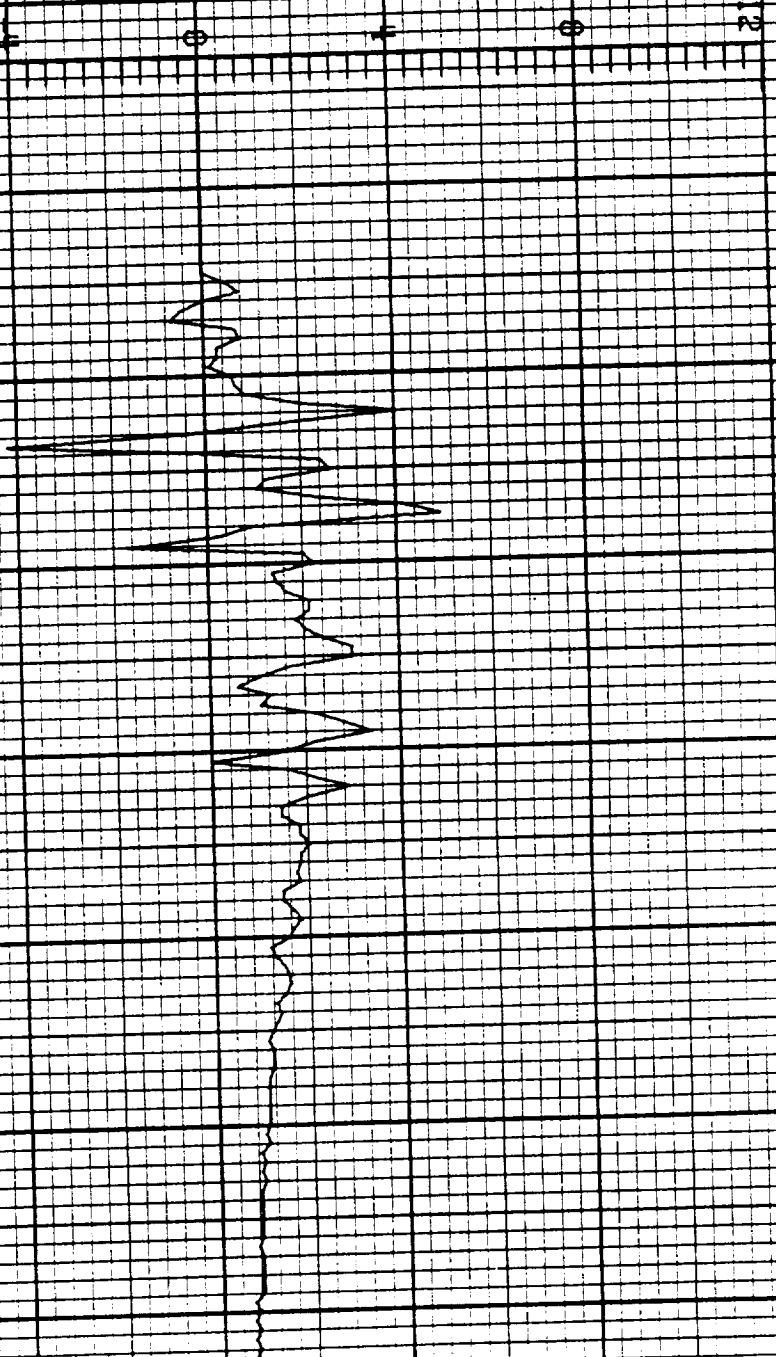
LEO 3 RUN NO. 1

5.001

$D, A/m^2$

20:48:54.0
CHANNEL NO. 3:2

MICROSECONDS



F-106 LIGHTNING/ 84-021

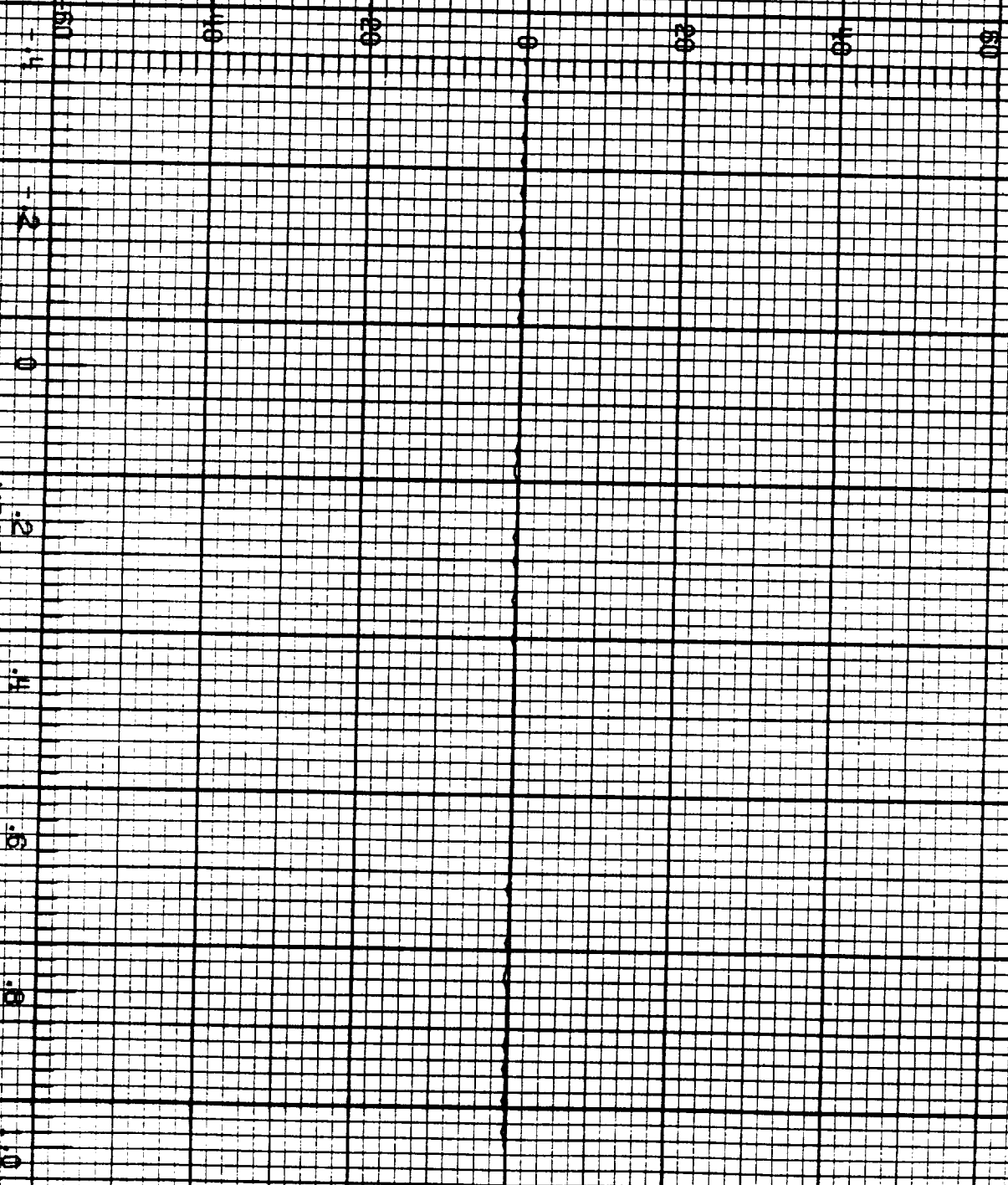
FC 4 RUN NO. 1

6.001

V_{fo} V

20 MB SEC 1.0
CHANNEL NO. 4.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-021 1 FC# RIN NO. 1

5.001

T_r A

20:48:54.0
CHANNEL NO. 4.1

MICROSECONDS



F-106 LIGHTNING 84-021

LECH RUN NO. 1

5.001

I₁ A



9 X 10⁹

20:48:54.0
CHANNEL NO. 4.2

MICROSECONDS

-.1
-.2
0
.2
.4
.6
.8
1.0

ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-021

FC1 RUN NO. 2



F-106 LIGHTNING/ 84-021

LFC1 RUN NO. 2

5.003

θ T/s

9000 6000 3000 0 3000 6000 9000

21:13:22.10
CHANNEL NO. 1.2

11.2 10.4 9.6 8.8 8.0 7.2 6.4 5.6

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/84-021

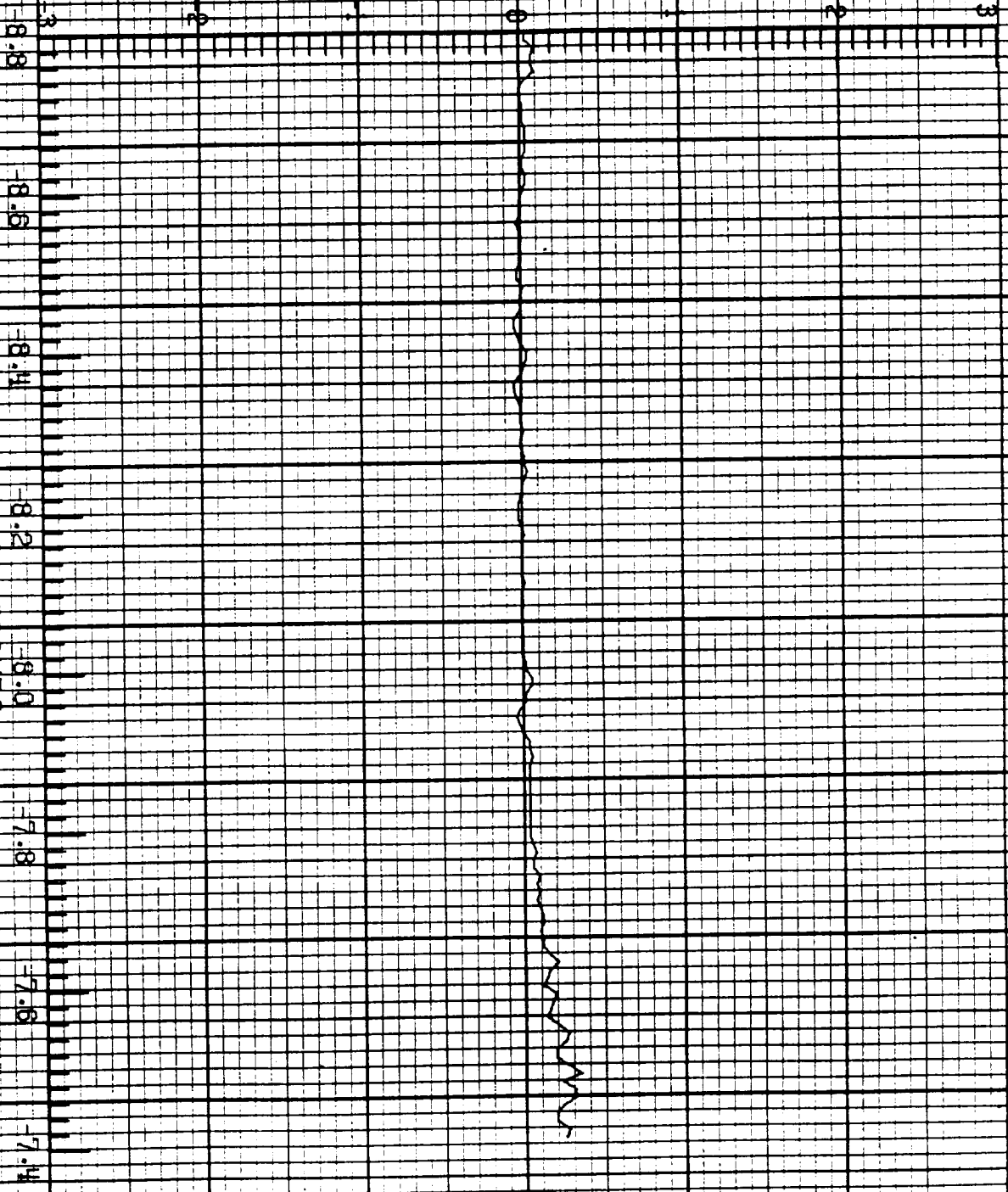
LFC 2 RUN NO. 2

3.008

D. A/m²

21:13:22.0
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-021

LEOP RUN NO. 2

6.003

i A/s

21:13:22.0
CHANNEL NO. 21.1

24 X 10¹⁰

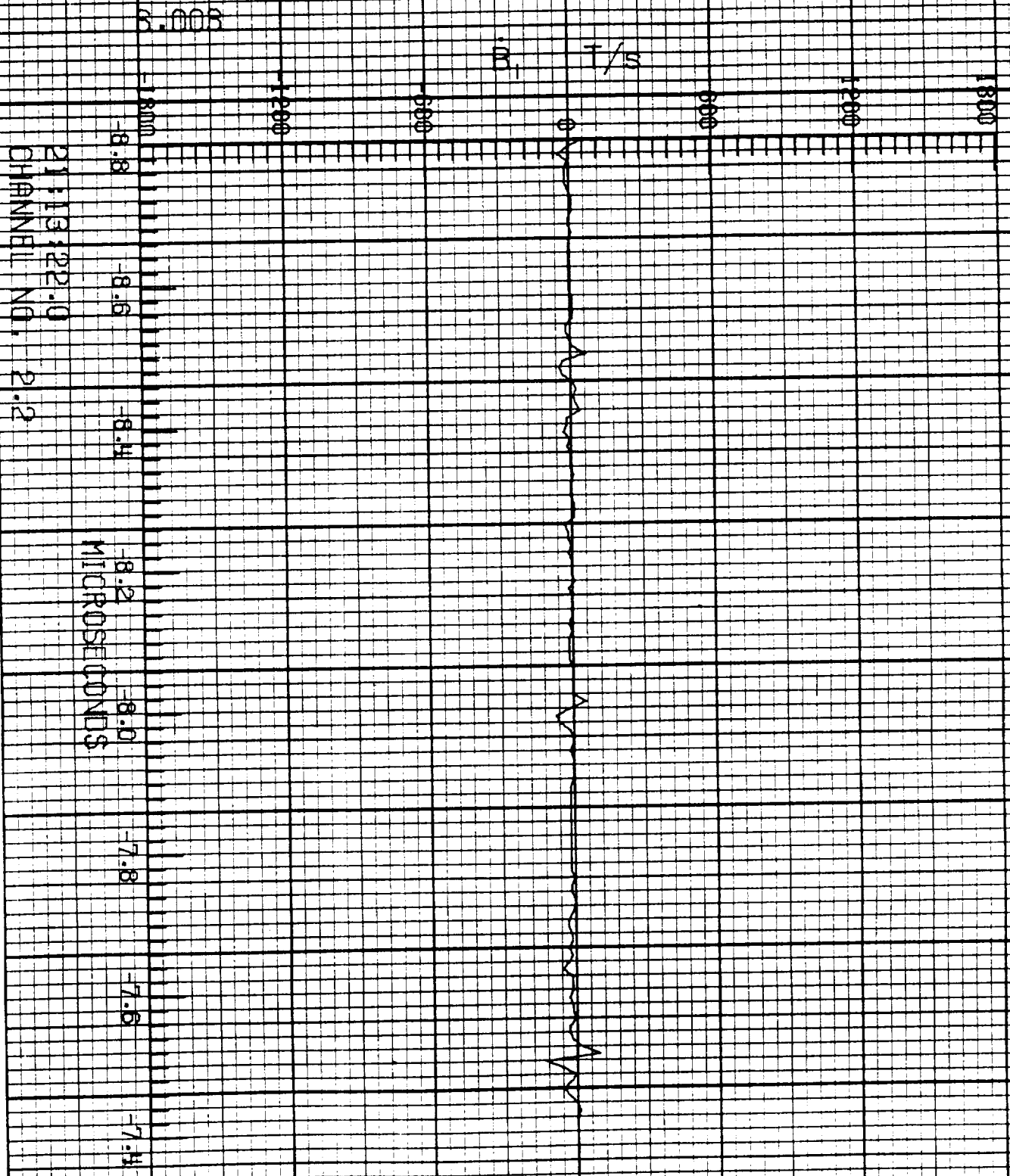
MICROSECONDS

-8.5
-8.6
-8.1
-8.2
-8.0
-7.8
-7.6
-7.4

ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-021

FCP RUN NO. 2



21:13:22.0
CHANNEL NO. 2.2

F-106 LIGHTNING/ 84-021

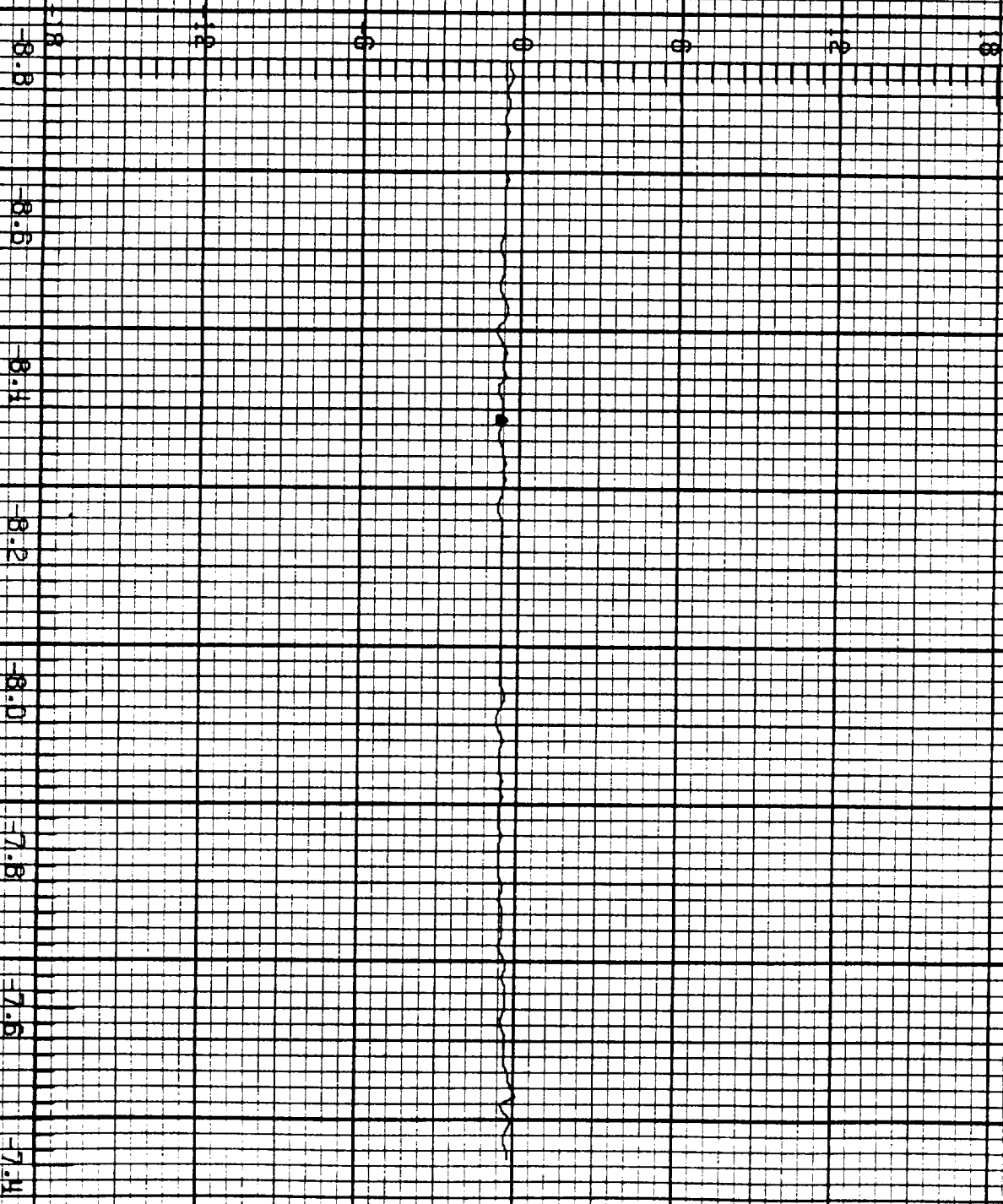
LEO3 RUN NO. 2

5.003

\dot{D}_{wr} A/m²

21113:22.0
CHANNEL NO. 3.0

MICROSECONDS



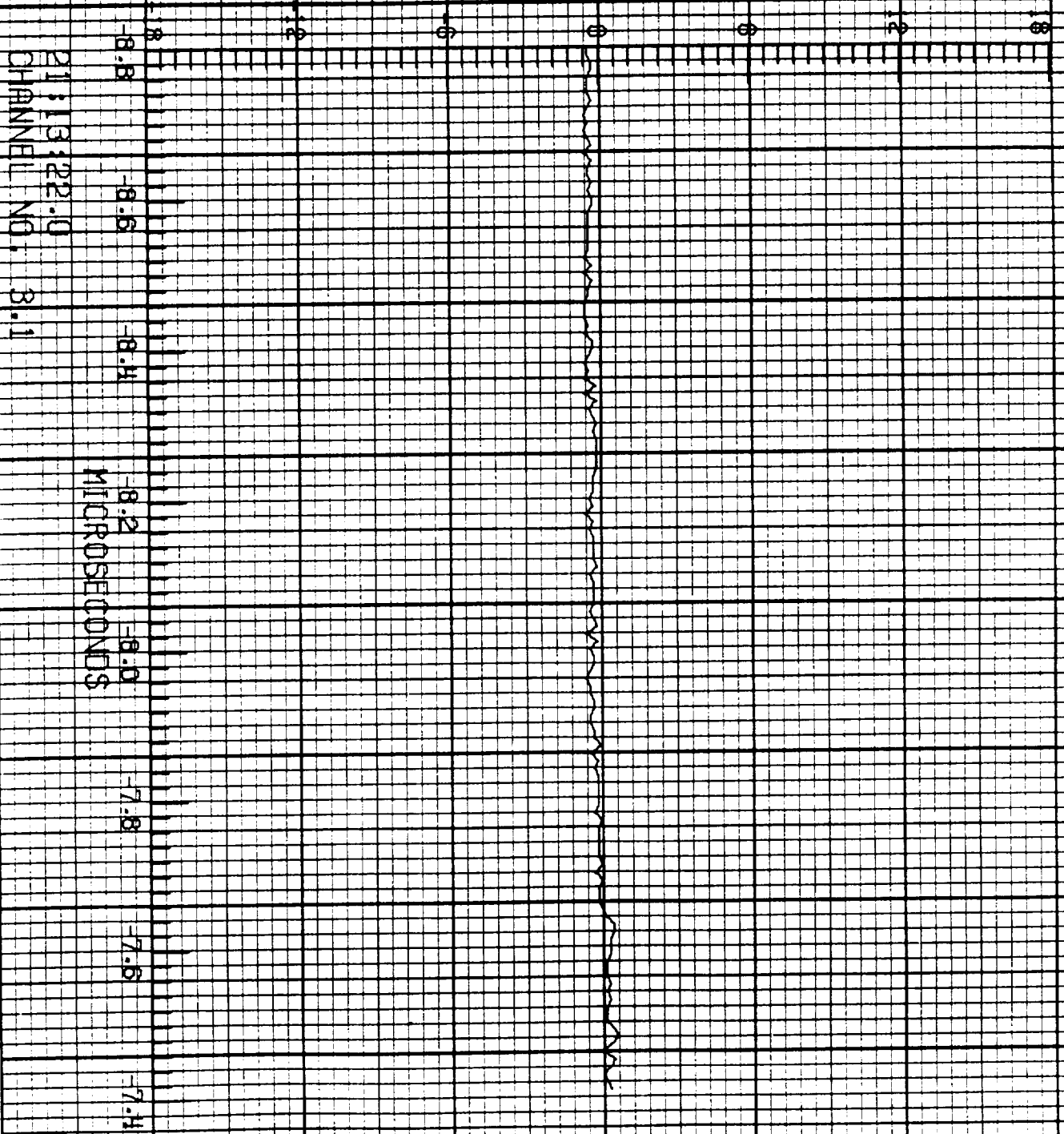
ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/84=021

IFCS RUN NO. 2

3.008

\bar{D}_w A/m²



F=106 LIGHTNING/ 84-021

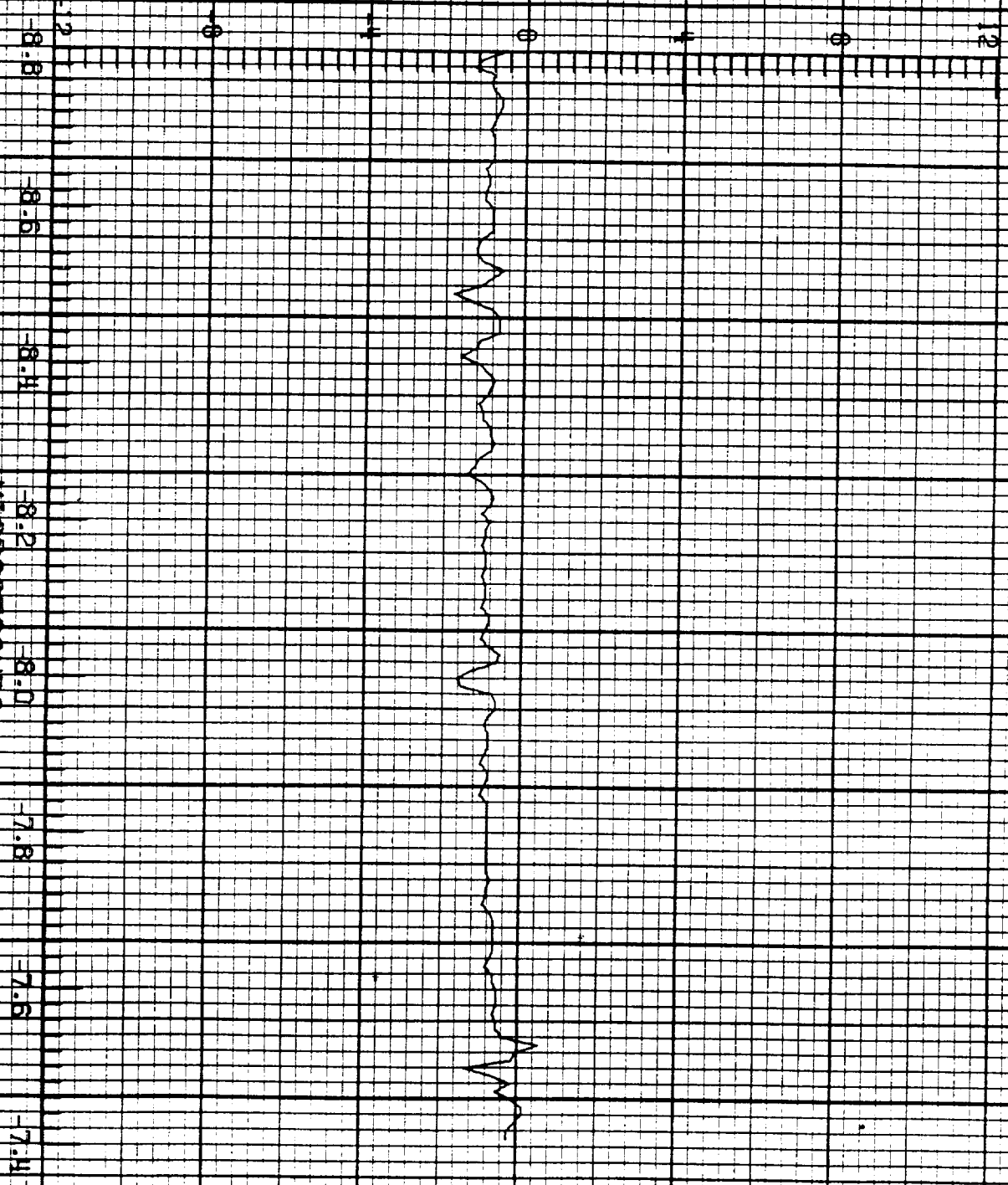
IFCS RUN NO. 2

6.008

D_r A/m²

21:13:22.0
CHANNEL NO. 3.2

MICROSECONDS



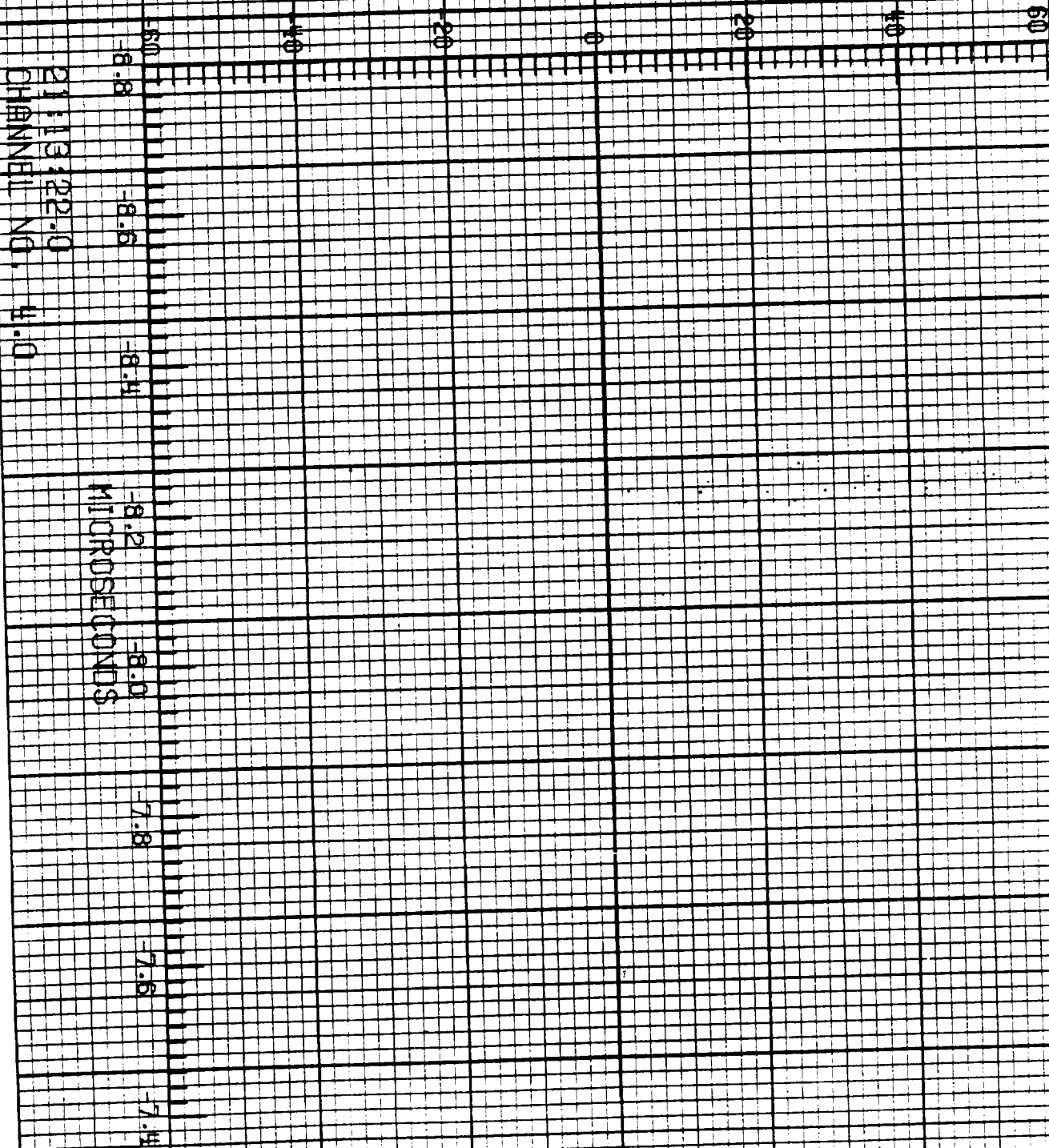
ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-021

LED# RUN NO. 2

2.005

V_{TP} V



21:13:22.0
CHANNEL NO. 4.0

MICROSECONDS

F-106 LIGHTNING/ 84-021

LECU RUN NO. 2

5.008

T_r A

21:19:22.0
CHANNEL NO. 4.1

5.008

-8.3
-8.6
-8.4
-8.2
-8.0
-7.8
-7.6
-7.4
MICROSECONDS

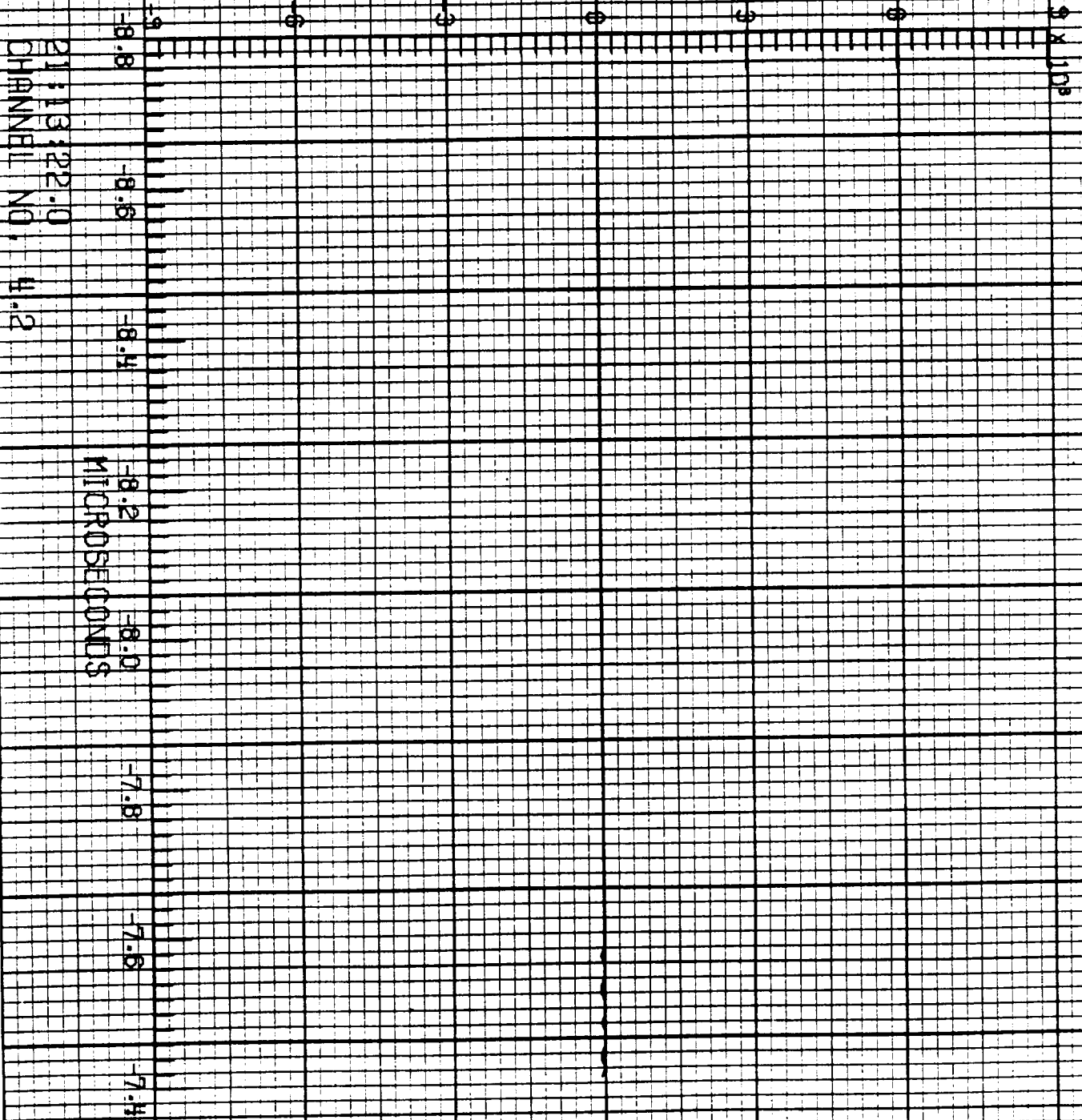
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OF POOR QUALITY

F=106 LIGHTNING/ 84-021

LEC4 RUN NO. 2

6.003

T_r A



F=106 LIGHTNING/ 84-021

REC 1 RUN NO. 3

N.001

R_v T/s

21:21:41.0
CHANNEL NO. 1.1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

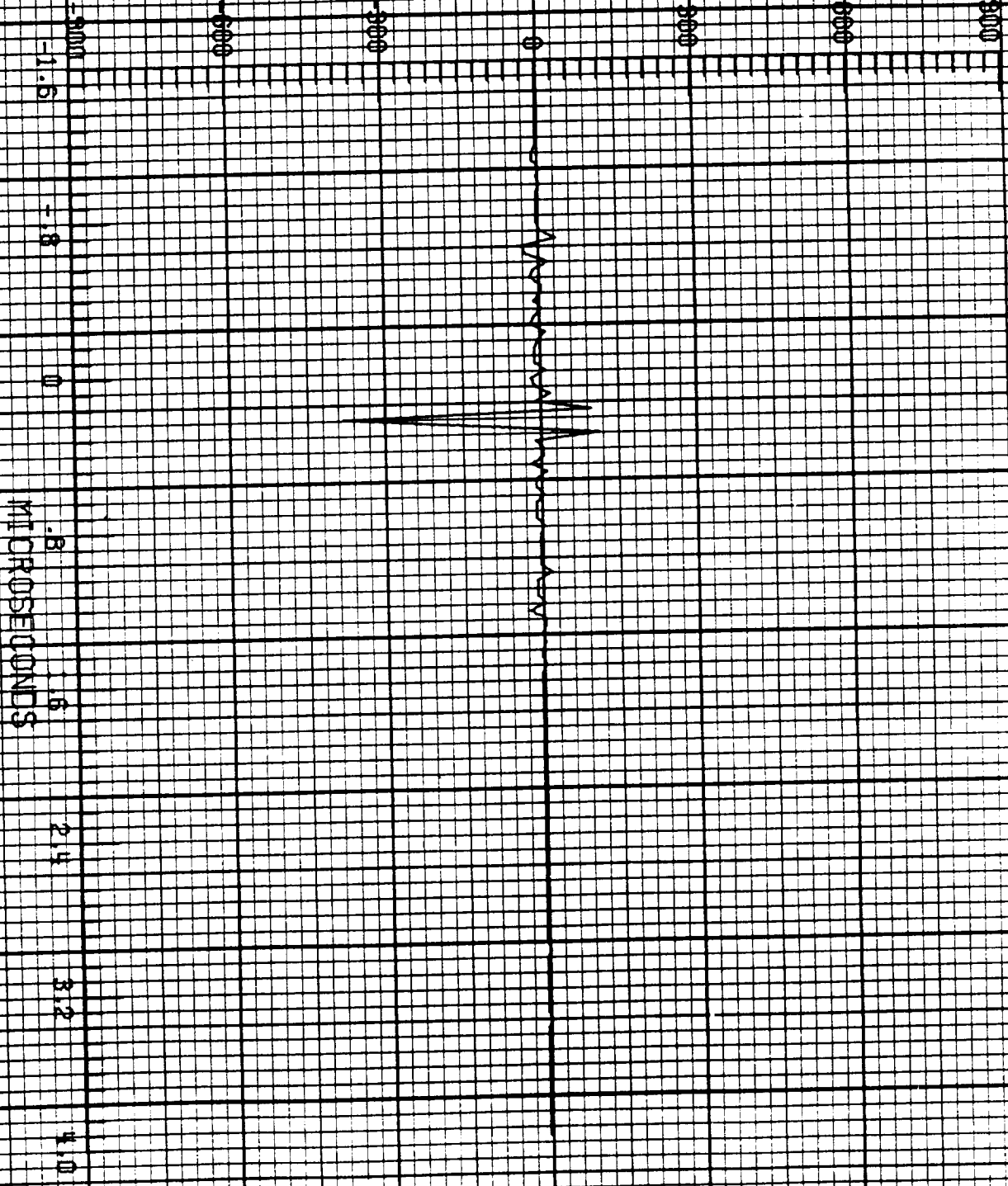
F-106 LIGHTNING/ 84-021

1 FC 1 RUN NO. 3

N.001

B_v T/s

21:21 41.0
CHANNEL NO. 1.2



F-106 LIGHTNING/ 84-021

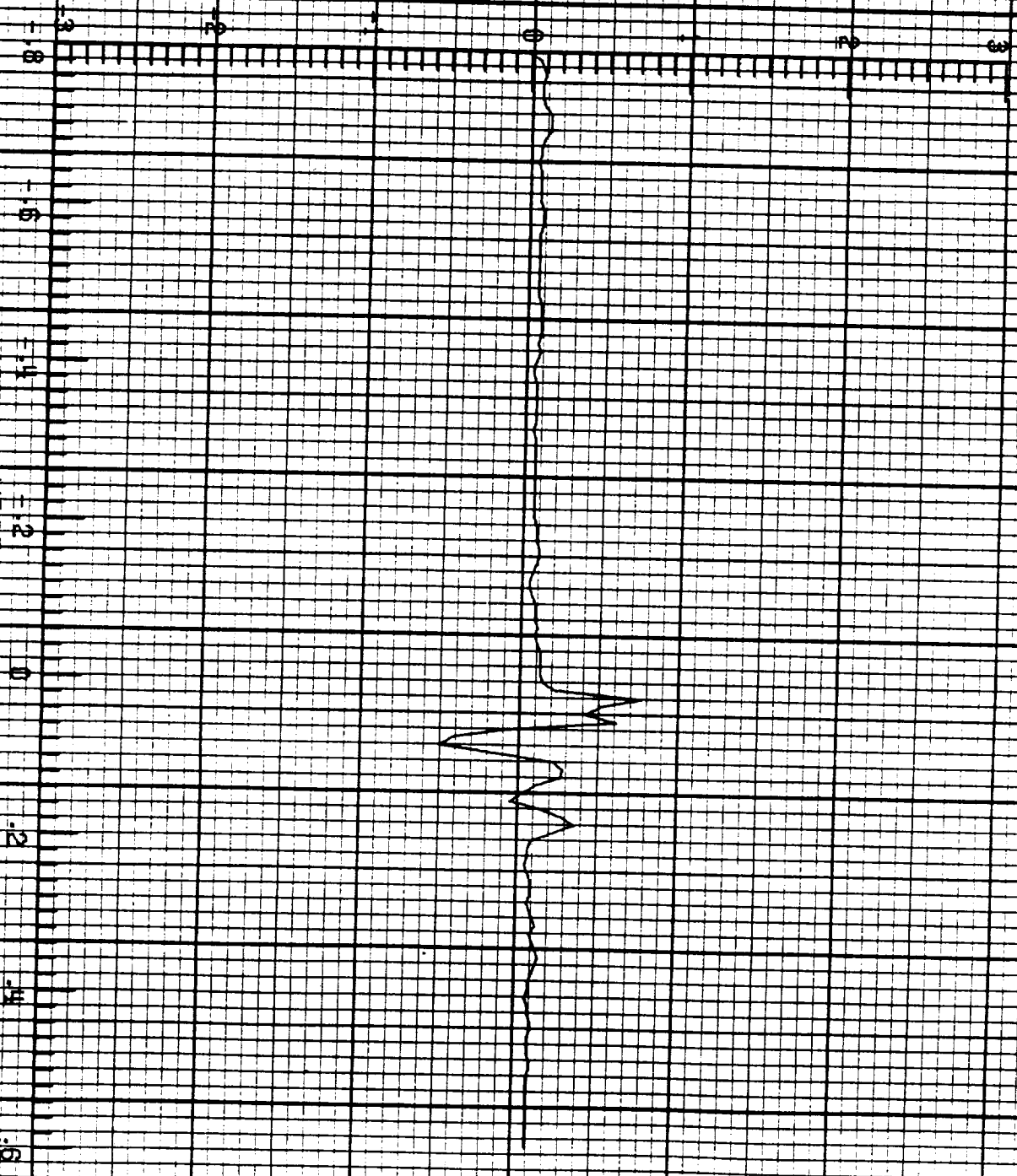
LFC 2 RUN NO. 3

N.001

\bar{D}_t A/m²

21:21:41.0
CHANNEL NO. 2.0

MICROSECONDS



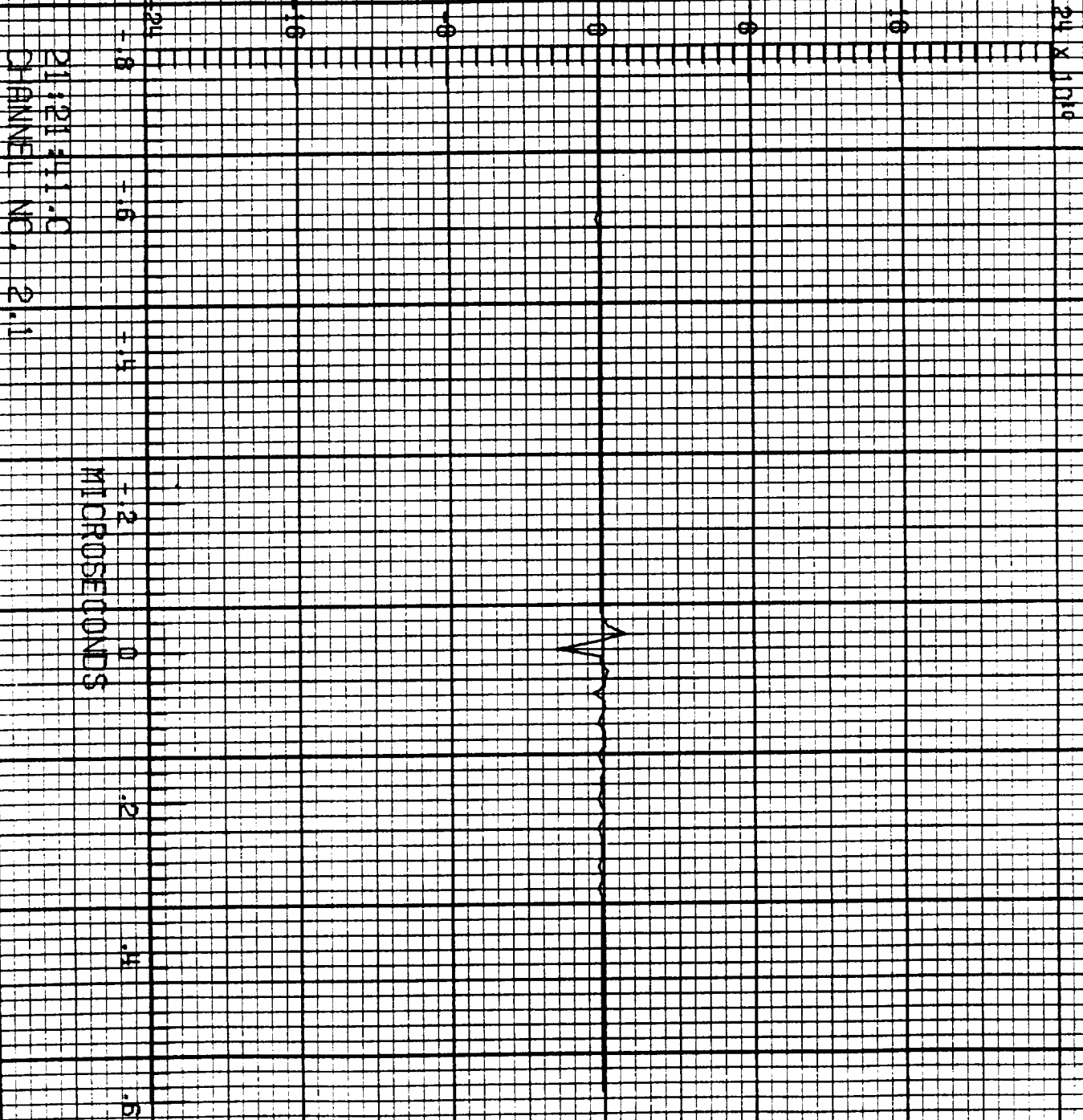
ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-021

LECP RUN NO. 3

N.001

\dot{I} A/s



F=106 LIGHTNING/ 84-021

FC 2 RUN NO. 3

V.001

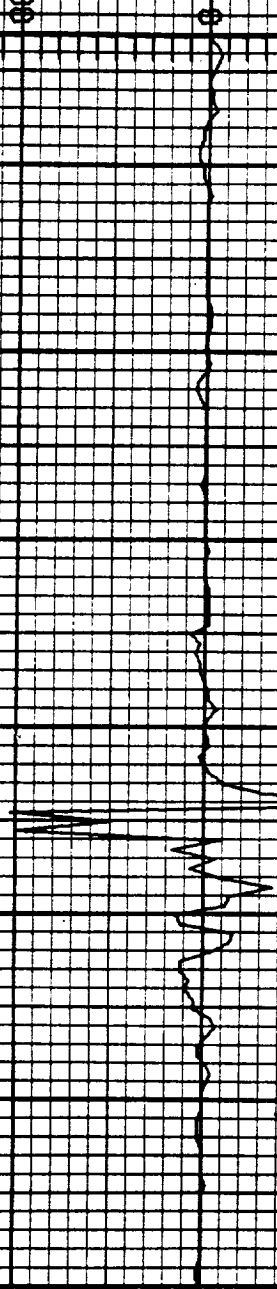
E_1 T/s

1800 1200 600 0 600 1200 1800

21:21:41.0
CHANNEL NO. 2.2

MICROSECONDS

.8
-.8
-.6
-.4
-.2
0
.2
.4
.6



ORIGINAL PAGE IS
OF POOR QUALITY

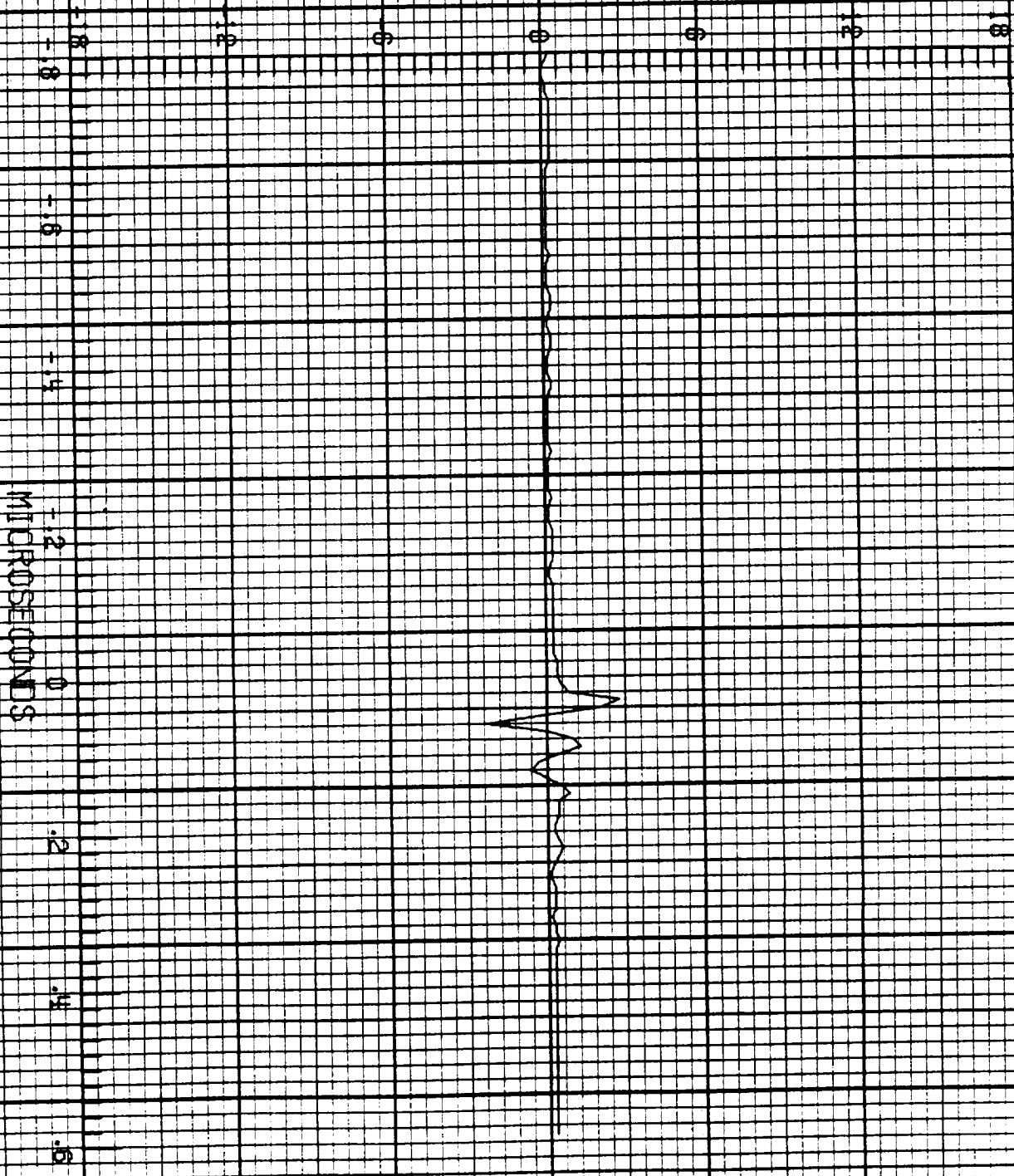
F=106 LIGHTNING/ 84-021

LFC 5 RUN NO. 3

N.001

D_{WT} A/m²

21:21:41.0
CHANNEL NO. 3.0



F=106 LIGHTNING/84=021

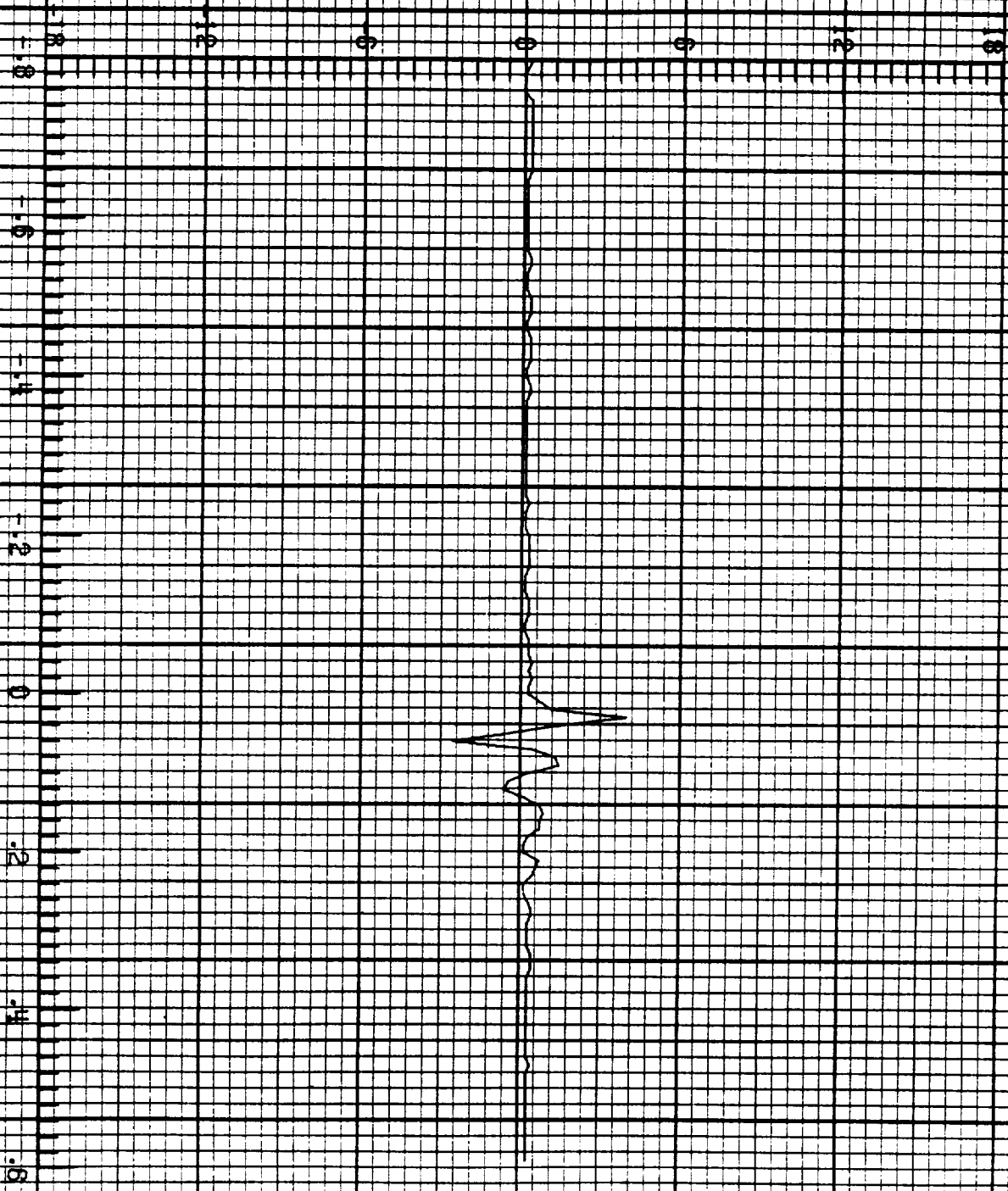
LECS RUN NO. 3

N.001

\bar{D}_w A/m²

21:21:41.0
CHANNEL NO. 3.1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-021

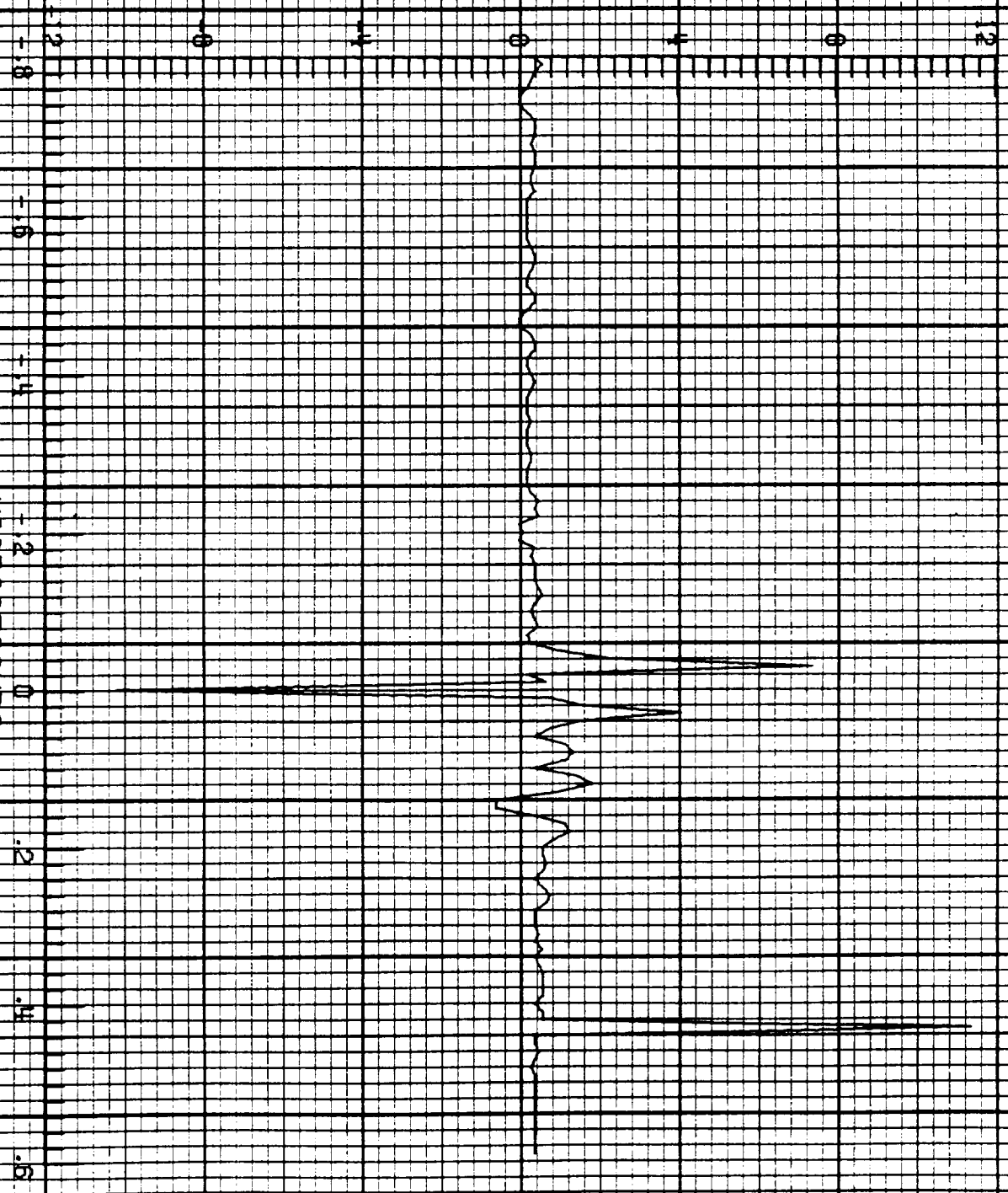
LEC 3 RUN NO. 3

N.001

D_r A/m²

21:21:41.0
CHANNEL NO. 3.2

MICROSECONDS

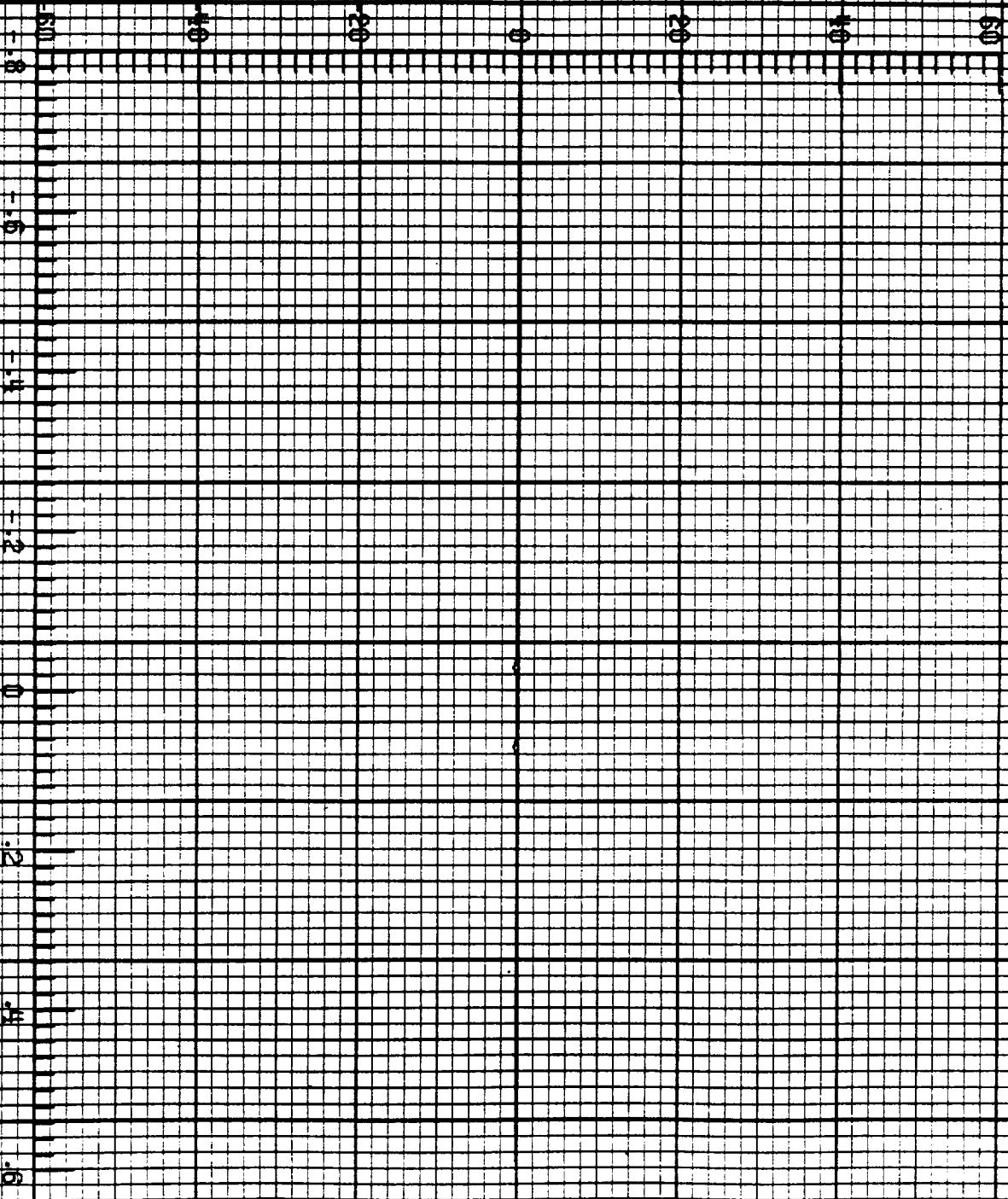


F=106 LIGHTNING/ 84-001

LECH RIN NO. 3

N.001

V_{rs} V



21:21:41.0
CHANNEL NO. 4.0

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-021

LECH RUN NO. 3

N.001

T_n A

21:21:41.0
CHANNEL NO. 4.1

MICROSECONDS



F-106 LIGHTNING 84-021

REF # RUN NO. 3

N.001

I₁ A

21:21:41.0
CHANNEL NO. 4.2

9 X 10⁹

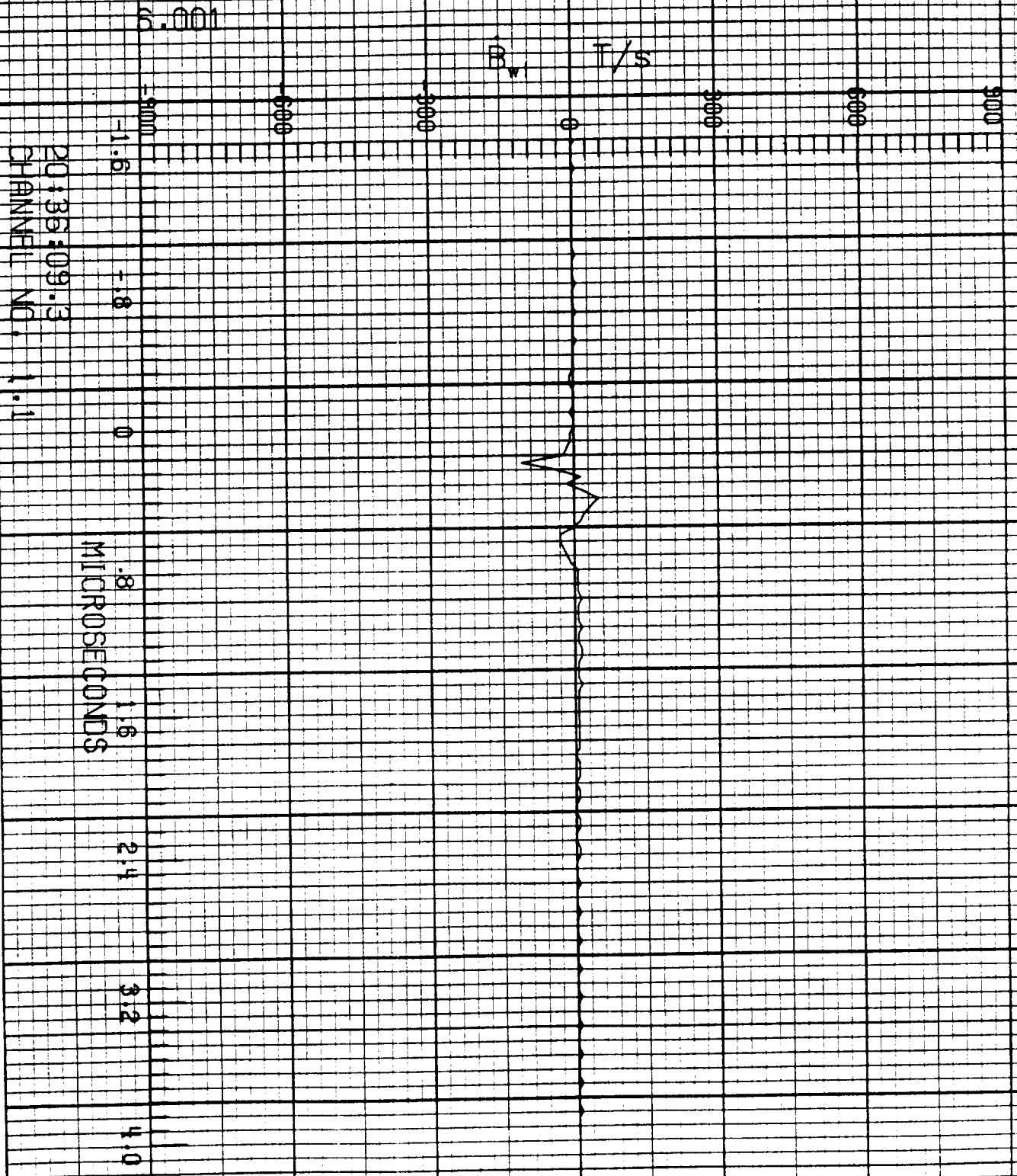
MICROSECONDS

-.8
-.6
-.4
-.2
0
.2
.4
.6

ORIGINAL PAGE IS
OF POOR QUALITY

W-106 LIGHTNING/ 84-023

LEC 1 RUN NO. 1



20:36:09.3
CHANNEL NO. 1.1

F-106 LIGHTNING/ 84-023

LEG 1 RUN NO. 1

5.001

B_w T/s

-900
-600
-300
0
300
600
900

20:36:09.3
CHANNEL NO. 1.2

1.5

1.8

0

MICROSECONDS
.8
1.6

2.4

3.2

4.0

ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-023

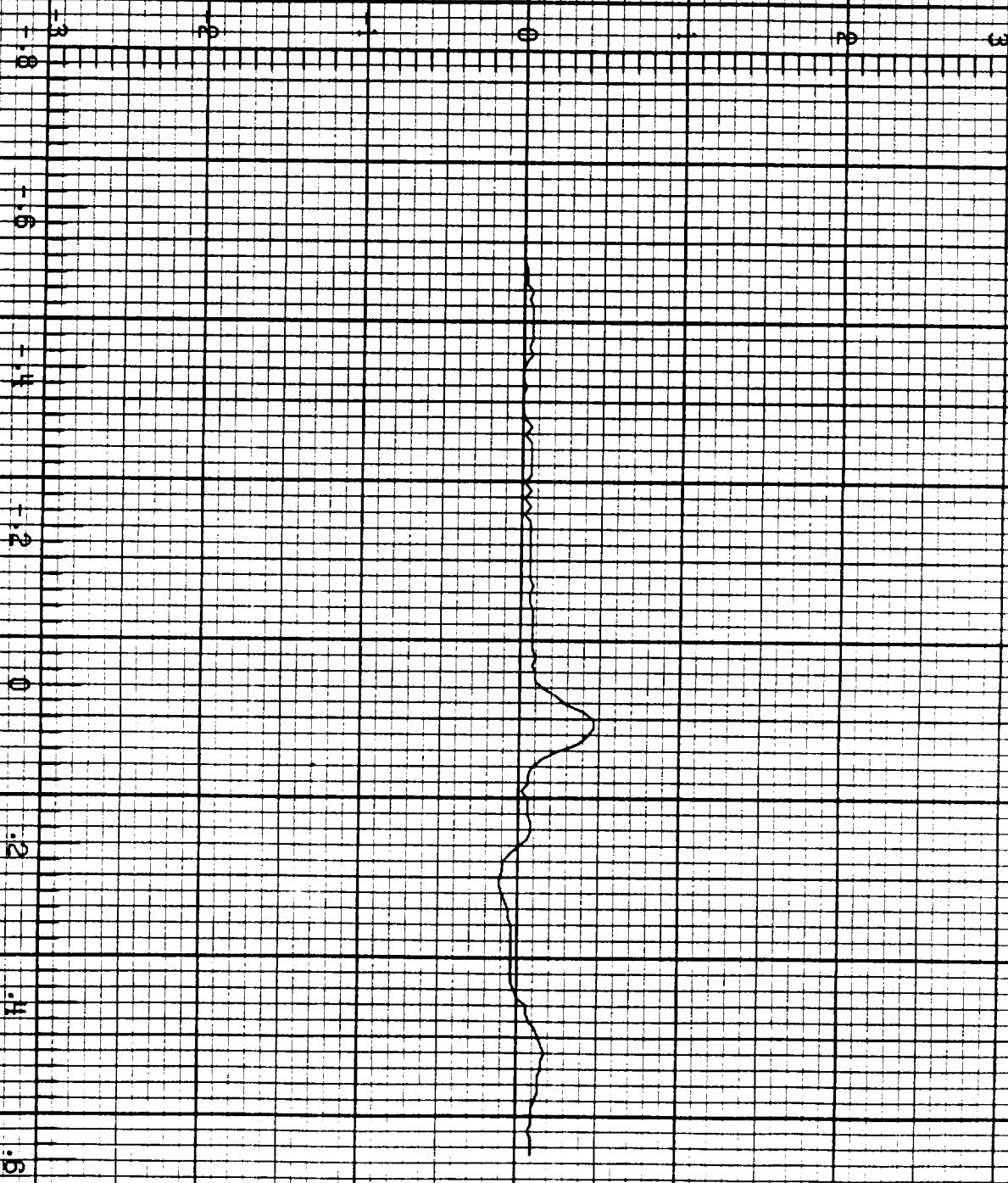
1 EC 2 RUN NO. 1

5.001

D, A/m²

20:35:09.3
CHANNEL NO. 2:0

MICROSECONDS



F-106 LIGHTNING/ 84-023

LECP RUN NO. 1

5.001

\dot{I} A/s

24×10^{14}

20
16
12

8
4

0

4
2

0

2
4

6

20:36:09.3
CHANNEL NO. 2.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-023

LEC 2 RUN NO. 1

5.001

B, T/s

1800
1200
600
0
600
1200
1800

20:39:09.3
CHANNEL NO. 2.2

1.8

1.6

1.4

1.2

0

.2

.4

.6

MICROSECONDS

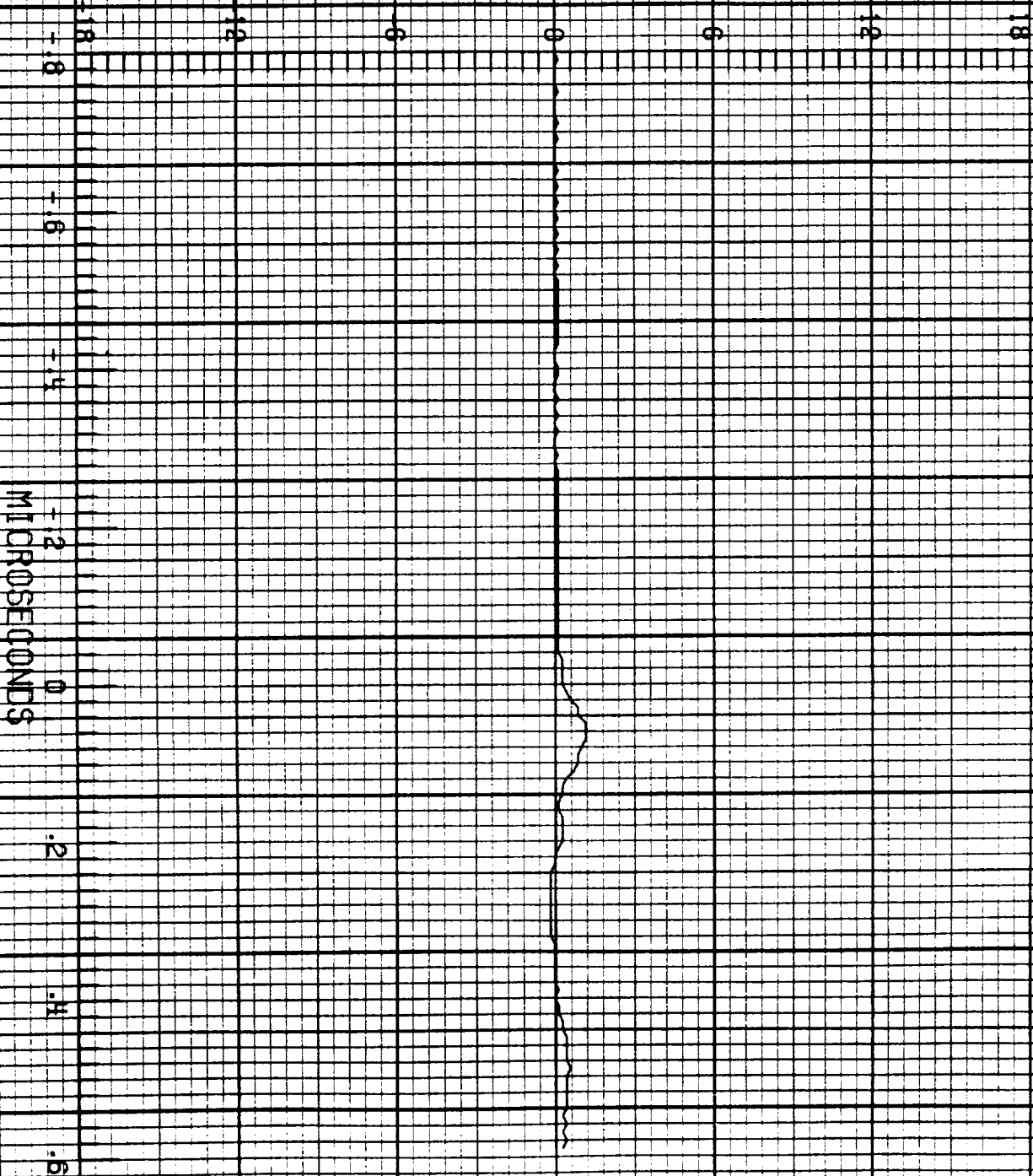
F-106 LIGHTNING/ 84-023

LEC 3 RUN NO. 1

5.001

\dot{D}_w A/m²

20:36:09.3
CHANNEL NO. 3.D



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OF POOR QUALITY

F=106 LIGHTNING/ 84-023

1 EC 3 RUN NO. 1

5.001

D_{w1} A/m²

20:36:09.3
CHANNEL NO. 3.1

MICROSECONDS

F-106 LIGHTNING/ 84-023

LEG 3 RUN NO. 1

5.001

D_f A/m²

-12 8 4 0 4 8 12

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

20:35:09.3
CHANNEL NO. 3.2

MICROSECONDS

-12 8 4 0 4 8 12

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

-.8 .8

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F-106 LIGHTNING/ 84-023

LEO 4 RUN NO. 1

3.001

V_{ro} V

20:38:09.3
CHANNEL NO. 4.0

MICROSECONDS

F-106 LIGHTNING/ 84-023

LECH RUN NO. 1

6.001

T_r A

9 X 10³

20:35:09.3
CHANNEL NO. 4.1

MICROSECONDS

ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-023

1FC4 RUN NO. 1

5.001

T₁ A

20:36:09.3
CHANNEL NO. 4.2

MICROSECONDS

9 X 10³

F-106 LIGHTNING/ 84-023

LEC 1 RUN NO. 2

5.002

B_v T/s

9000
6000
3000
0
3000
6000
9000

20:40:21.5
CHANNEL NO. 1.1

.8
1.6
2.4
3.2
4.0
4.8

MICROSECONDS



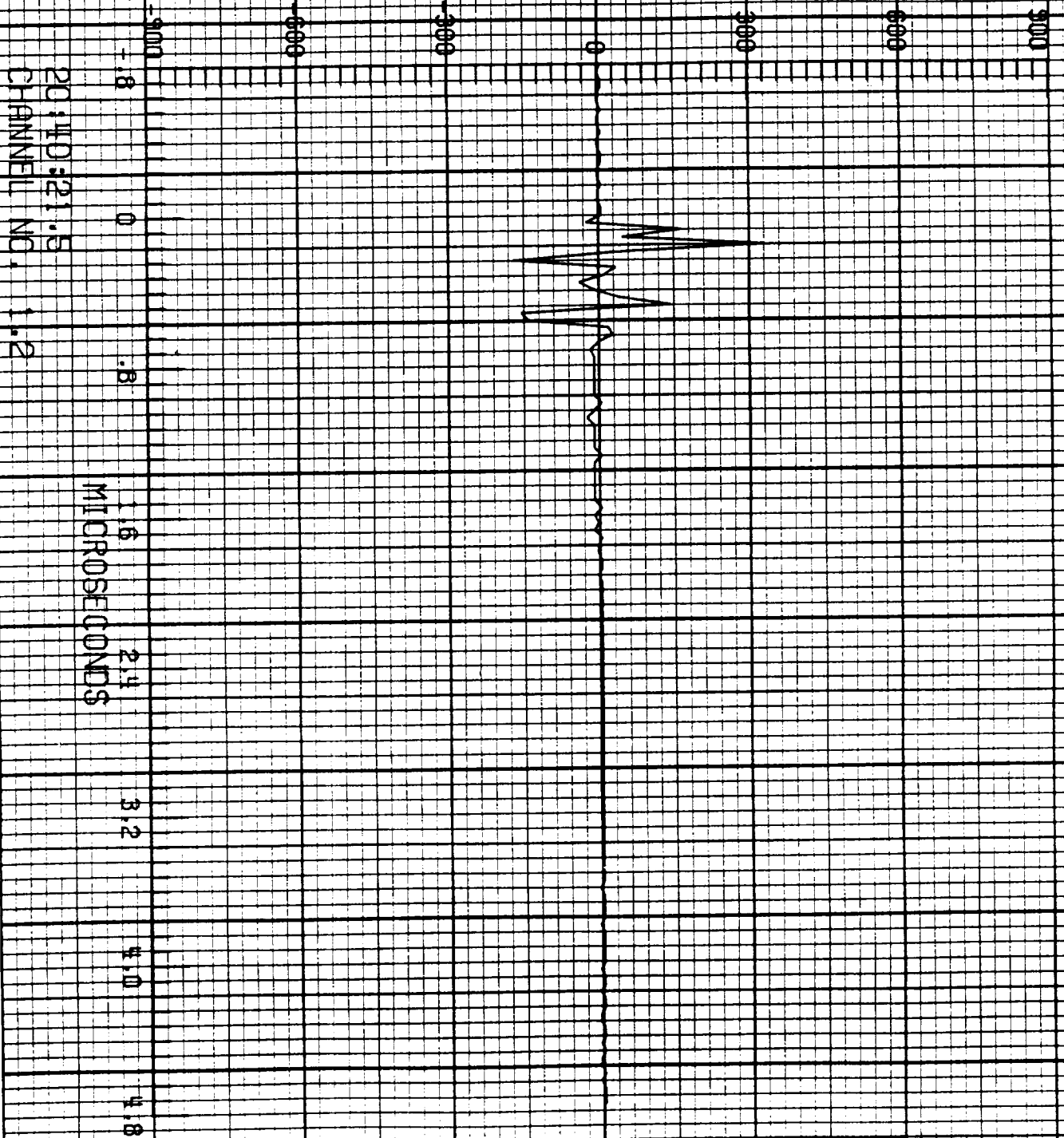
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F-106 LIGHTNING/ 84-023

IFC 1 RUN NO. 2

5.002

B_{WT} T/s



F-106 LIGHTNING/ 84-023

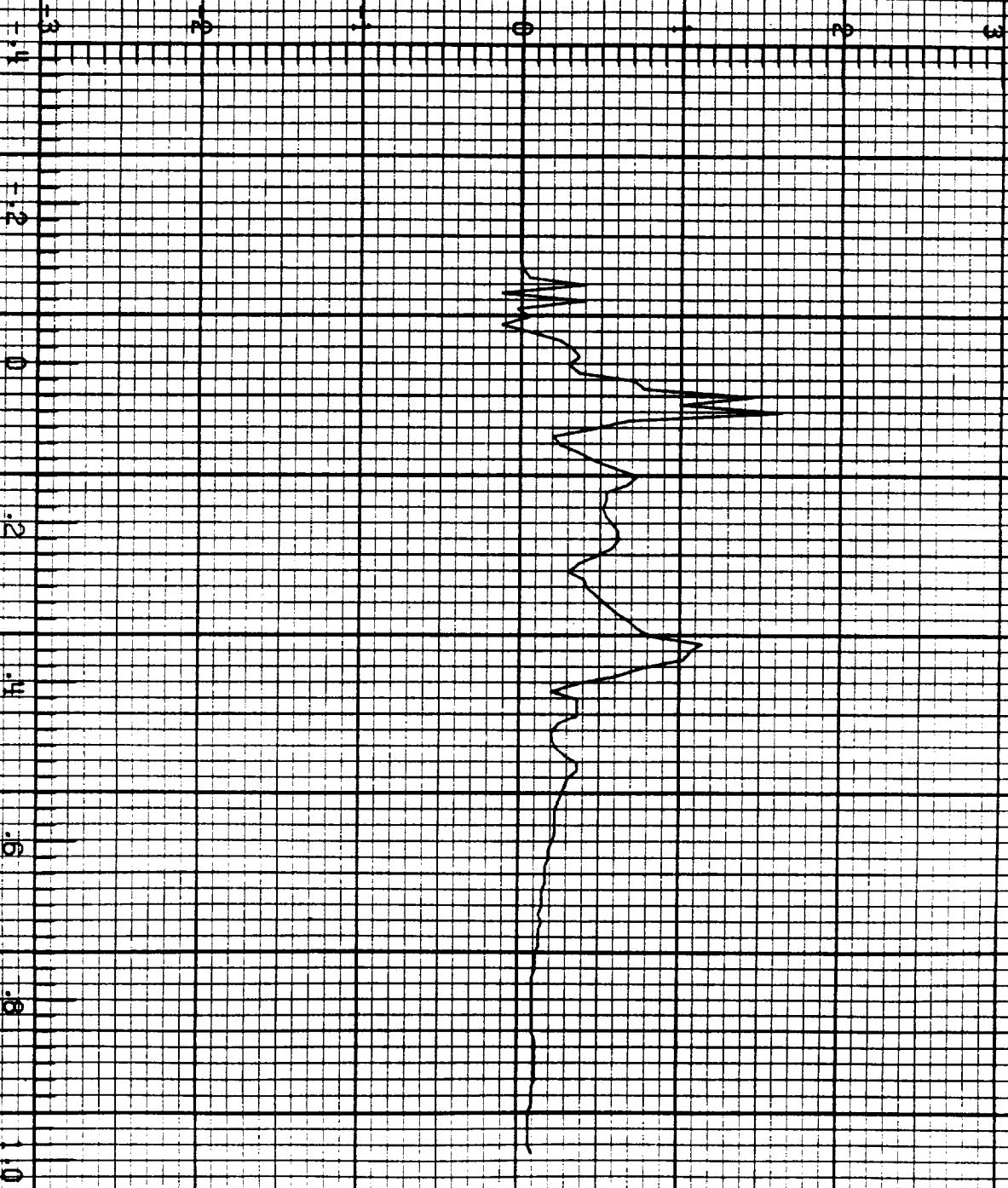
1 FC 2 RUN NO. 2

5.002

D₁ A/m²

20:10:21.5
CHANNEL NO. 2.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-023

EC-2 RUN NO. 2

6.002

I A/s

20:10:21.5
CHANNEL NO. 2.1

24 X 10¹⁸

MICROSECONDS

F-106 LIGHTNING/ 84-029

LEO 2 RUN NO. 2

5.002

B_1 T/s

-1800

-1200

0

0

600

1200

1800

20:40:21.5
CHANNEL NO. 2.2

-.2

0

.2

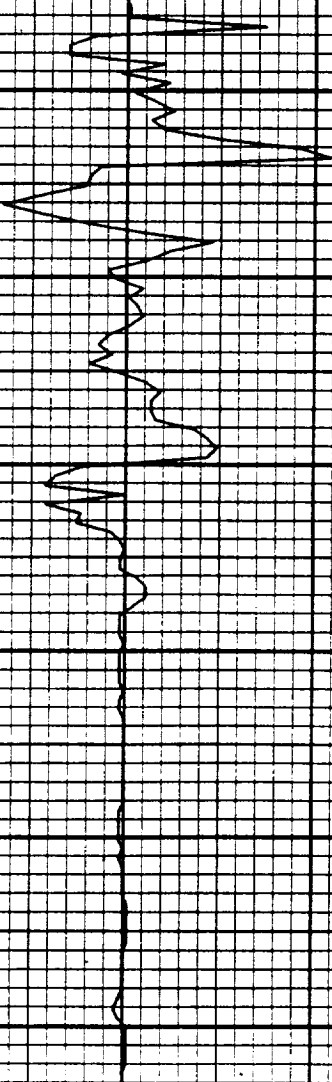
.4

.6

.8

1.0

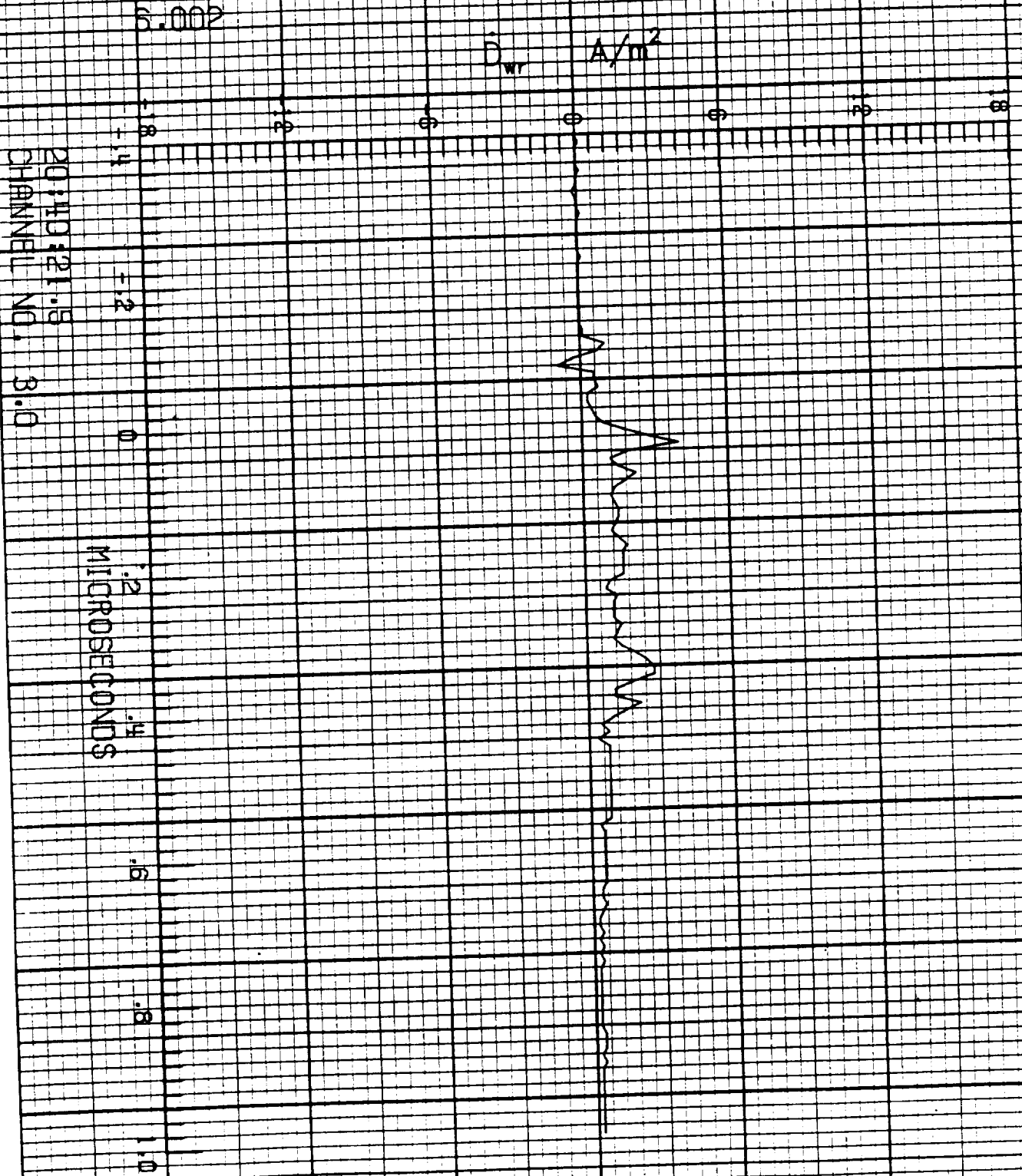
MICROSECONDS



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F-106 LIGHTNING/ 84-023

IFCS RUN NO. 2



F=106 LIGHTNING/84=023

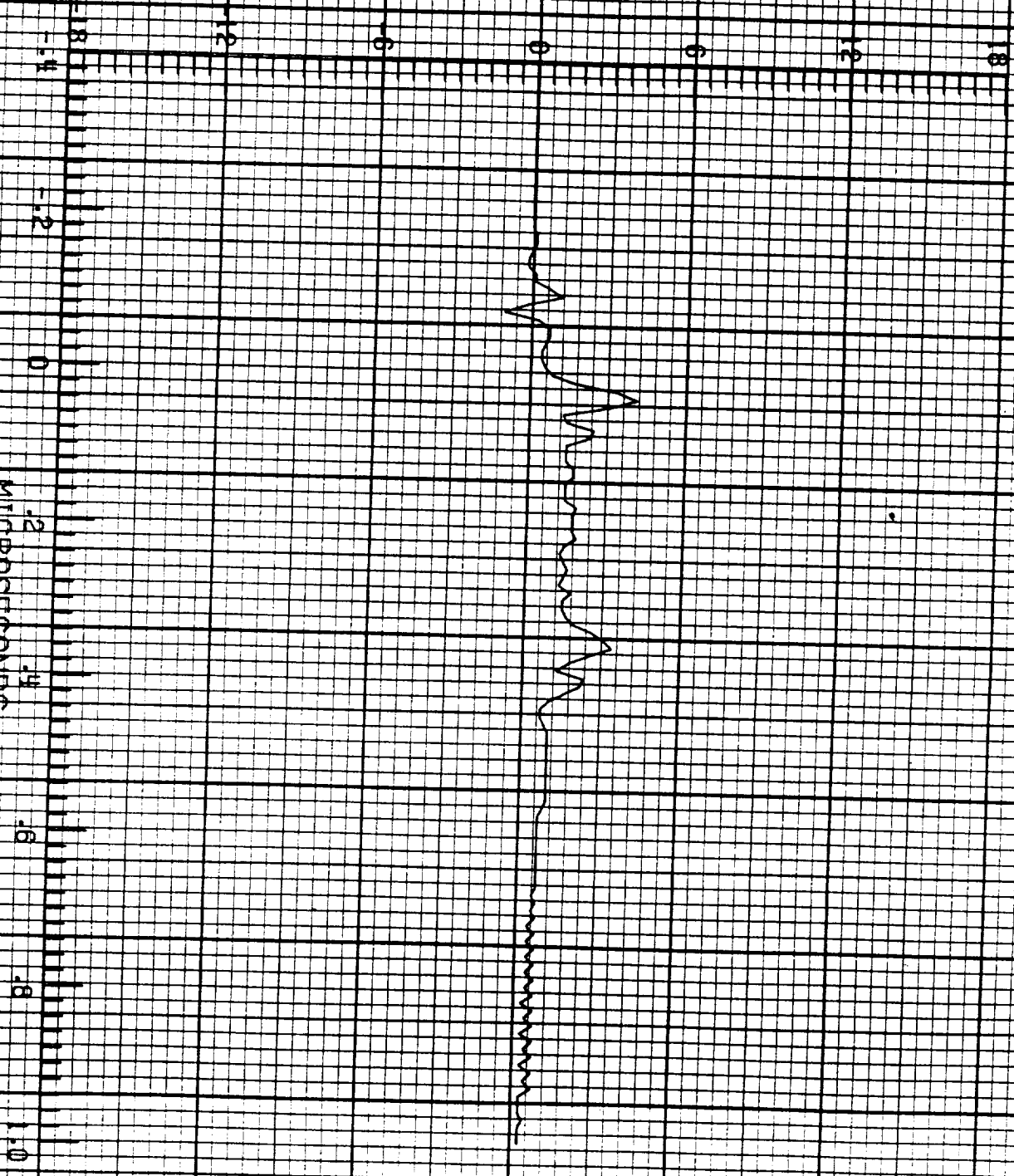
LEC 3 RUN NO. 2

5.002

D_w A/m²

20:40:21.5
CHANNEL NO. 3.1

MICROSECONDS



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F=106 LIGHTNING/ 84-029

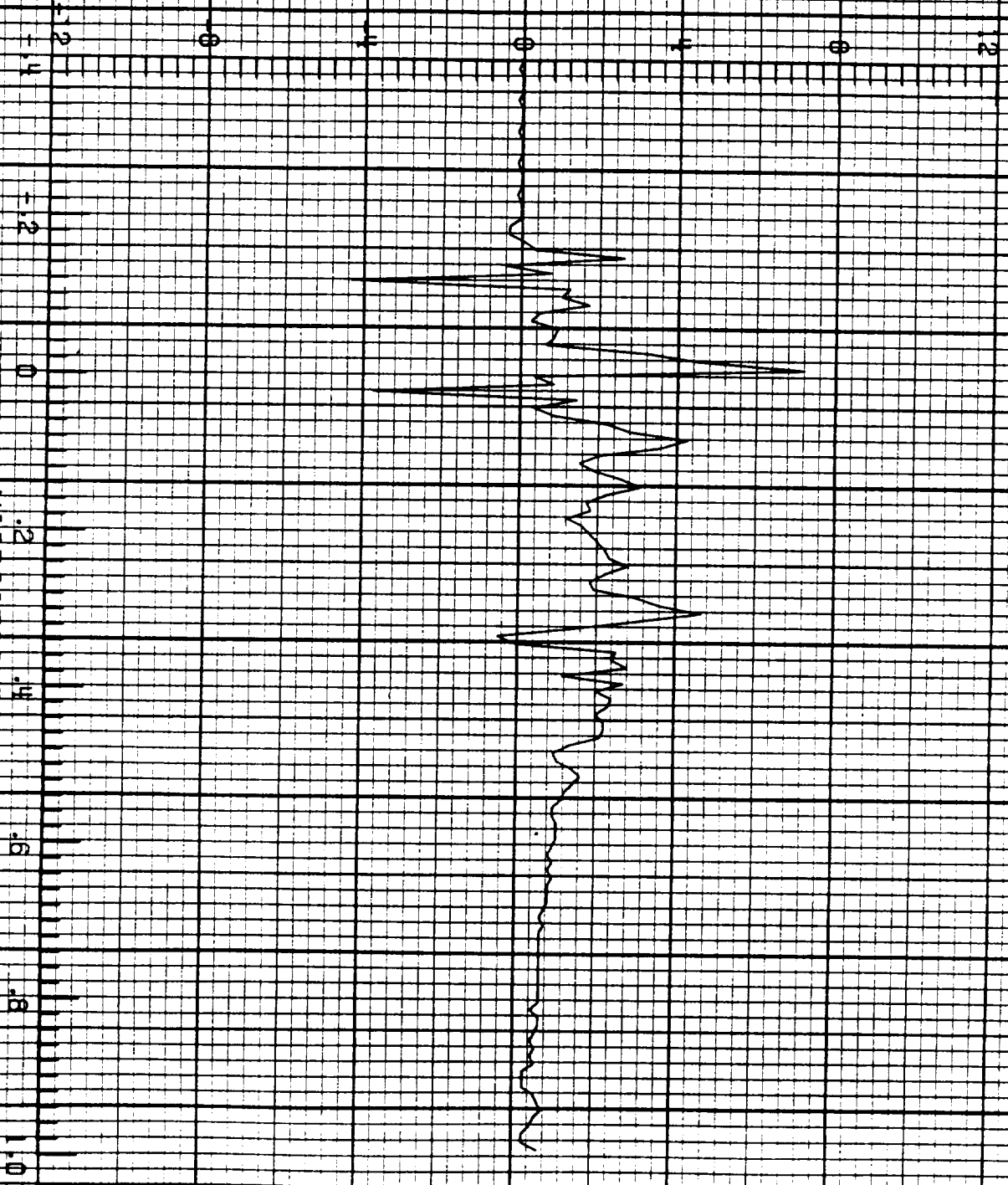
LFC 3 RUN NO. 2

5.002

D_r A/m²

20:40:21.5
CHANNEL NO. 3.2

MICROSECONDS



F-106 LIGHTNING 84-023

LECH RIN NO. 2

5.002

V_{TO} V

60 40 20 0 20 40 60

-1

-2

0

.2

.4

.6

.8

1.0

MICROSECONDS

20:10:21.5
CHANNEL NO. 4.0

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OF POOR QUALITY

F-106 LIGHTNING/ 84-023

LEC 4 RUN NO. 2

3.002

I_r A

20:40:21.8
CHANNEL NO. 4.1

9 X 10³
-9
-4
-2
0
.2
.4
.6
.8
1.0
MICROSECONDS

F=106 LIGHTNING 84-023

LEG 4 RUN NO. 2

5.002

T_r A

20:40:21.3
CHANNEL NO. 4.2

2 x 10⁸

MICROSECONDS

-9
-14
-12
0
.2
.4
.6
.8
1.0

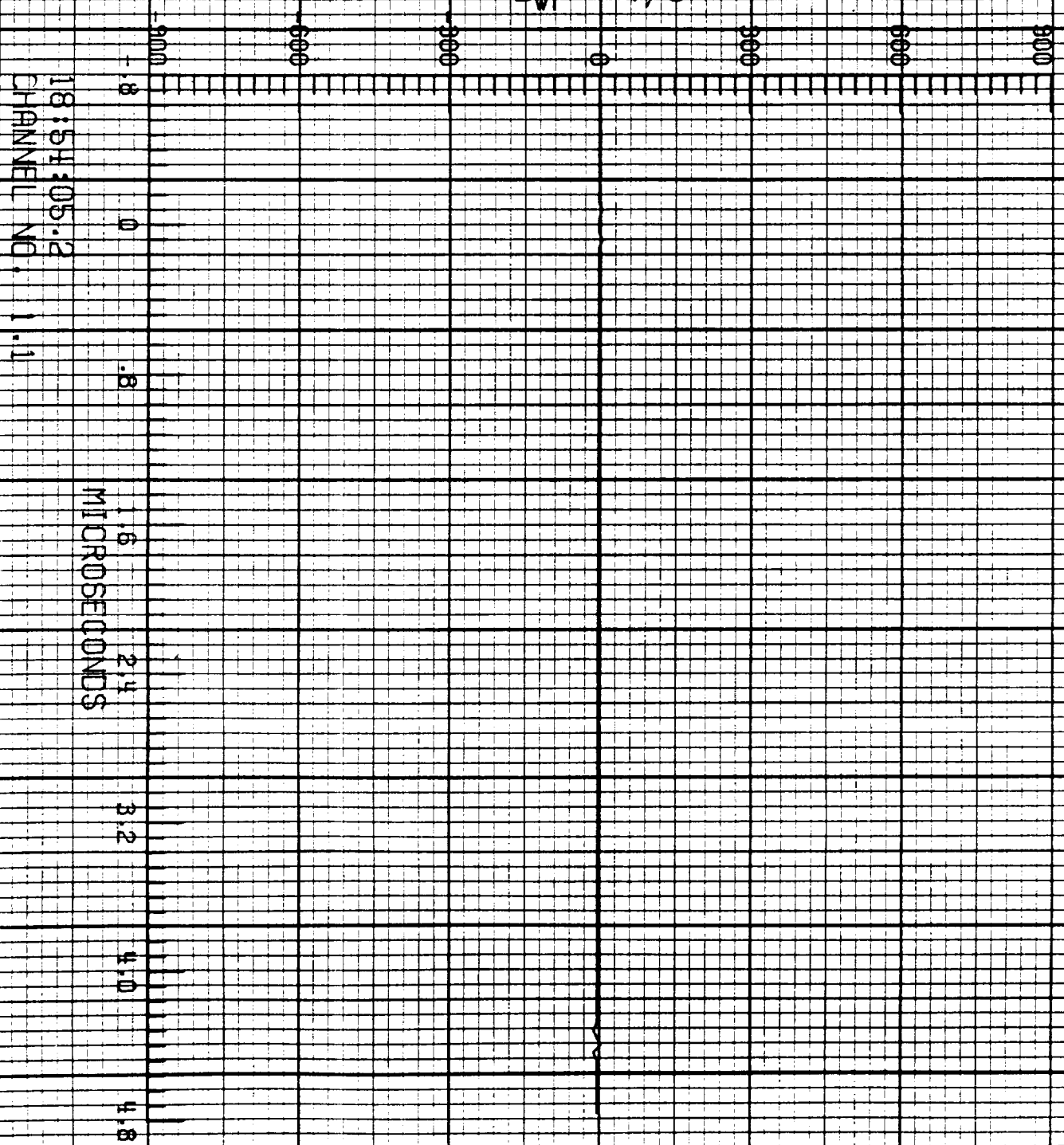
ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-024

LEC 1 RUN NO. 1

N.001

B_{VI} T/s



18:54:05.2
CHANNEL NO. 1.1

F-106 LIGHTNING/ 84-024

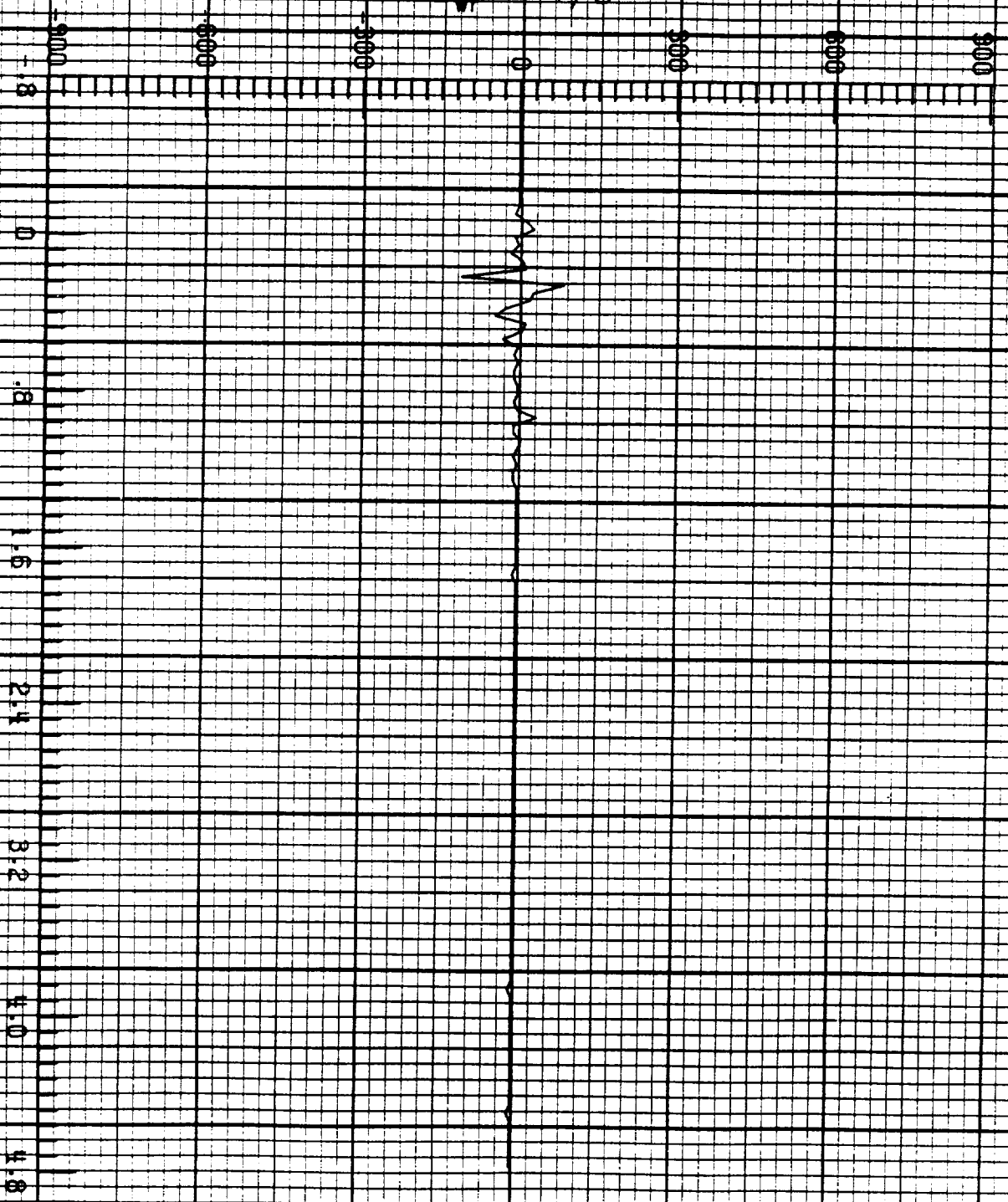
IFC 1 RUN NO. 1

N.001

B_v T/s

18154105.2
CHANNEL NO. 1.2

MICROSECONDS



ORIGINAL PAGE IS
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F=106 LIGHTNING/ 84-024

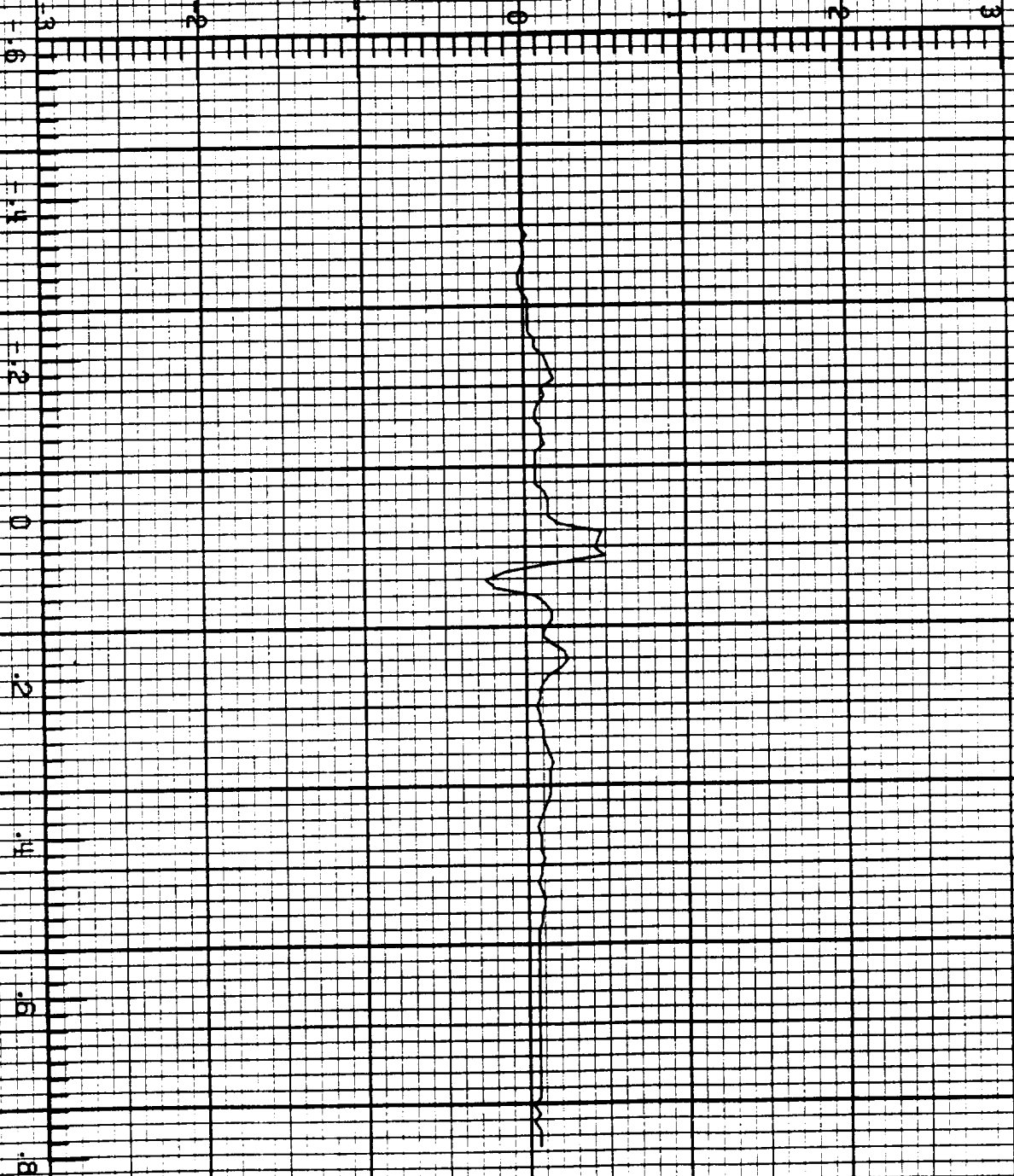
LEC 2 RUN NO. 1

N.001

D_r A/m²

18:54:05.2
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-024

1 FC 2 RUN NO. 1

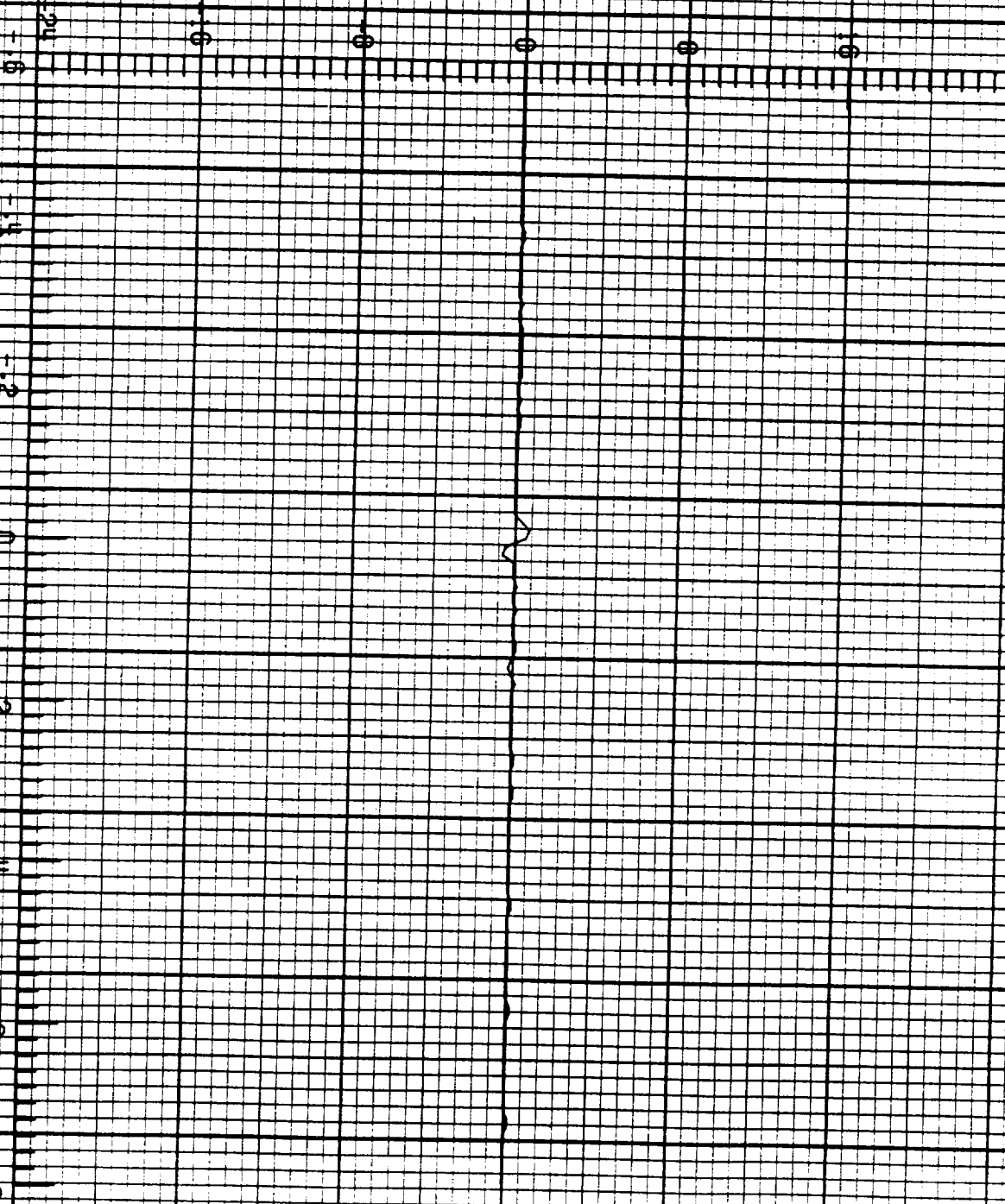
N.001

\dot{i} A/s

18:54:05.2
CHANNEL NO. 2.1

24×10^{16}

MICROSECONDS



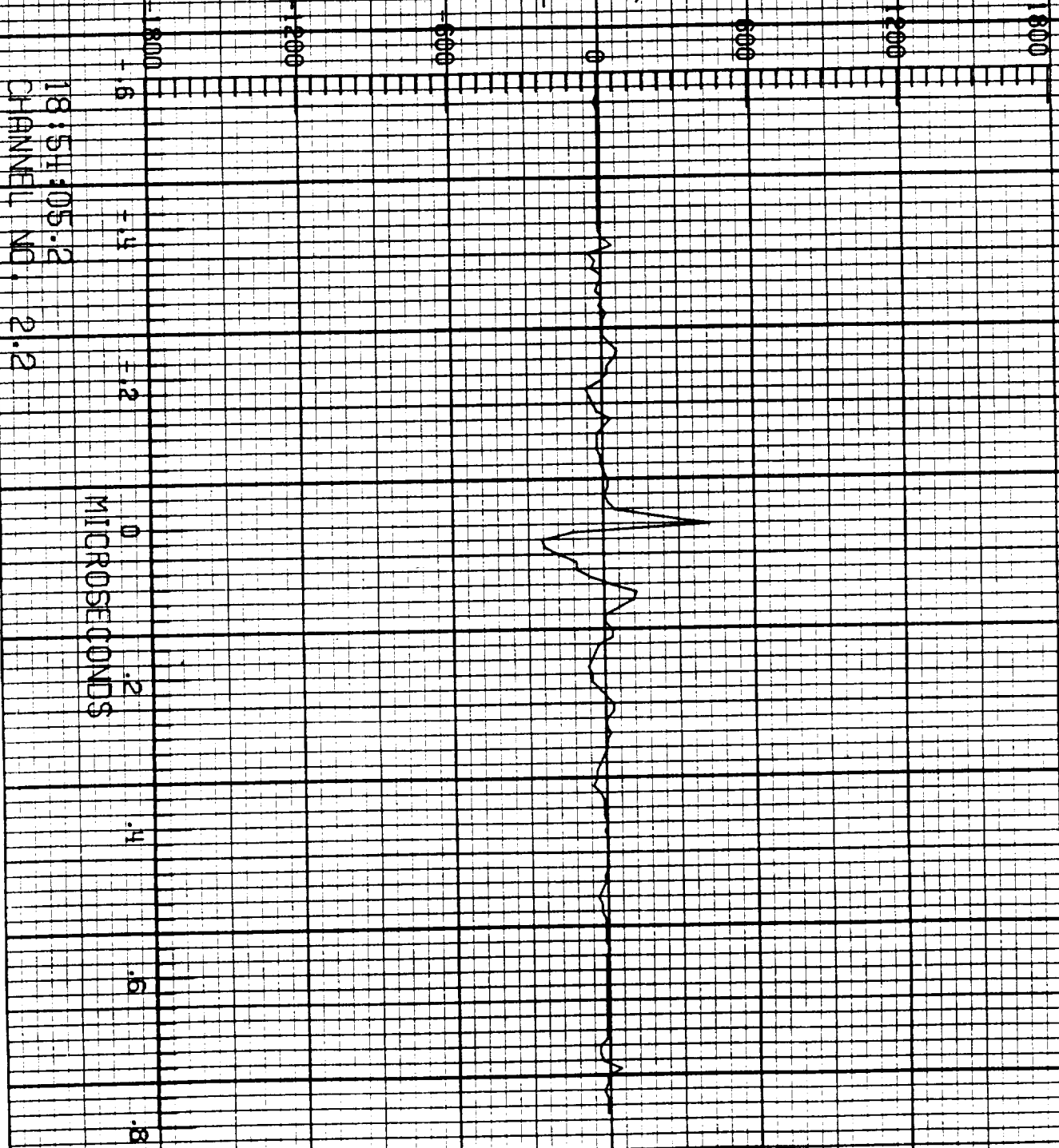
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F-106 LIGHTNING/ 84-024

LEC 2 RUN NO. 1

N.001

B_1 T/s



F-106 LIGHTNING/ 84-024

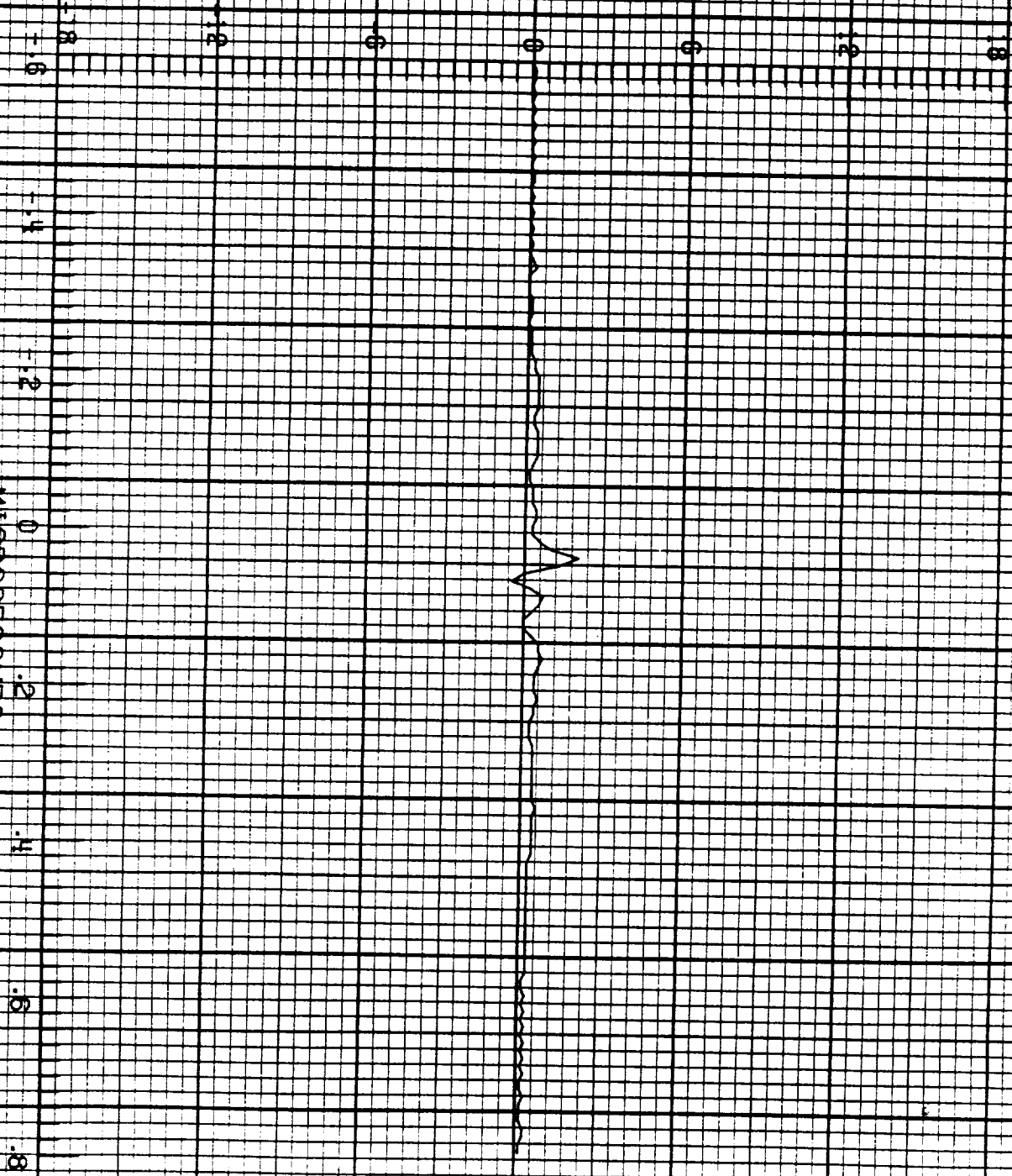
IFCS RUN NO. 1

N.001

\bar{D}_{wr} A/m²

18:54:05.2
CHANNEL NO. 3.0

MICROSECONDS



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F=106 LIGHTNING/ 84-024

1 FC.3 RUN NO. 1

N.001

D_{wl} A/m²

18:54:05.2
CHANNEL NO. 3.1

MICROSECONDS



F-106 LIGHTNING/ 84-024

EC3 RUN NO. 1

N.001

\dot{D}_r A/m²

18:54:05.2
CHANNEL NO. 3.2

MICROSECONDS



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F-106 LIGHTNING/ 84-024

LEC 4 RUN NO. 1

N.001

V_{TP} V

18:54:05.2
CHANNEL NO. 4.0

MICROSECONDS

F=106 LIGHTNING/ 84=024

LEF 4 RUN NO. 1

N.001

T_r A

18:54:05.2
CHANNEL NO. 1.1

9 X 10²

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-024

LEC 4 RUN NO. 1

N.001

T_c A

18:54:05.2
CHANNEL NO. #2

9 x 10³

MICROSECONDS

F-106 LIGHTNING/ 84-024

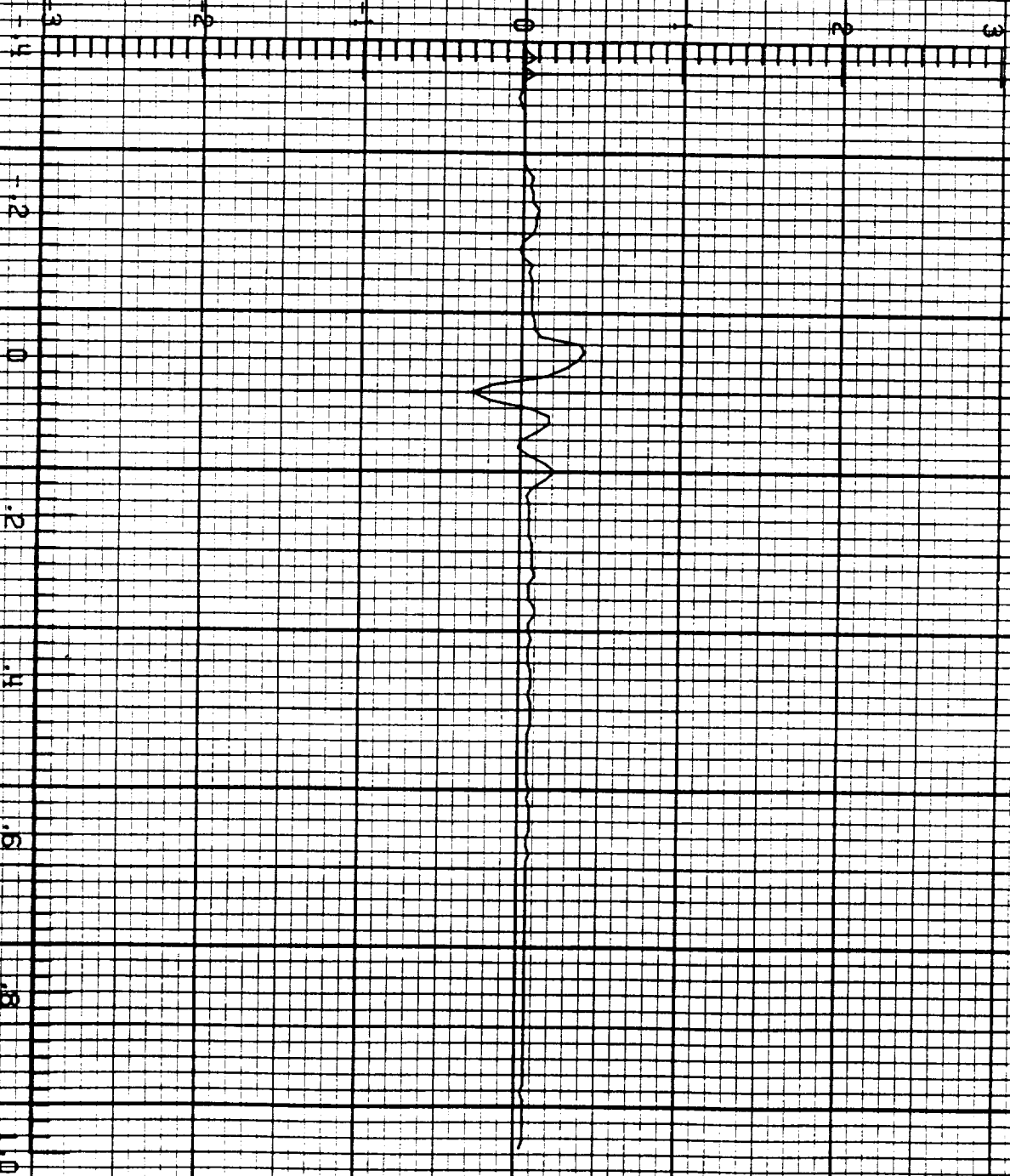
IFC2 RUN NO. 2

3.002

\bar{D}_t A/m²

18:58:41.1
CHANNEL NO. 2.0

MICROSECONDS



F=106 LIGHTNING/ 84-024

LFC 3 RUN NO. 2

5.002

\dot{D}_{wr} A/m²

18:58:41.1
CHANNEL NO. 3.0

ORIGINAL PAGE IS
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MICROSECONDS

F=106 LIGHTNING/ 84=024

LFC 4 RUN NO. 2

5.002

V_{ro} V

18:58:41.1
CHANNEL NO. 4.0



-14

-12

0

MICROSECONDS
2
1
0.5
0.2

0.5

0.2

1.0

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F=106 LIGHTNING/ 84-024

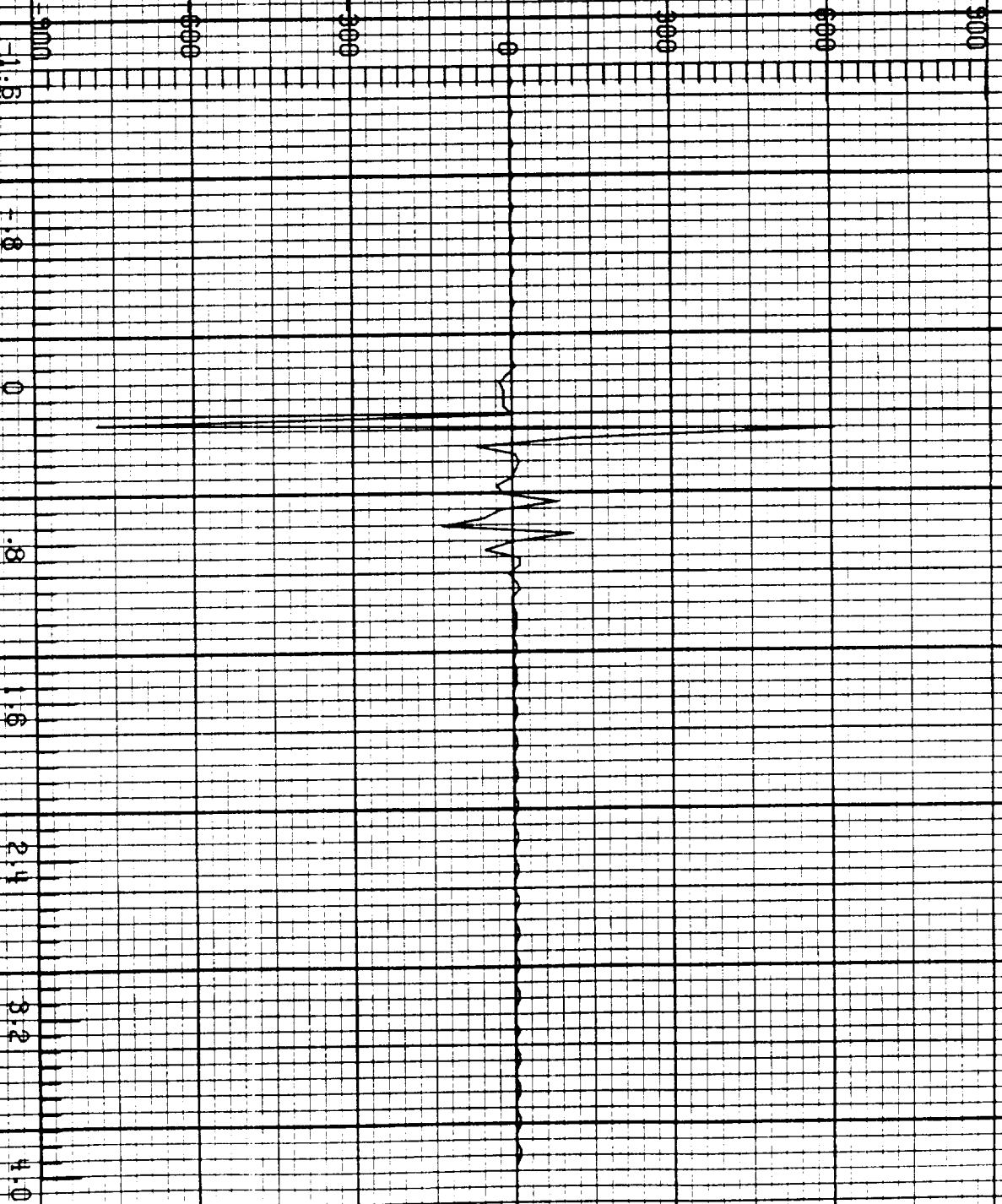
LEC 1 RUN NO. 3

5.008

B_{v1} T/s

19:04:44.7
CHANNEL NO. 1.1

MICROSECONDS



F-106 LIGHTNING/ 84-024

LFC 1 RUN NO. 3

5.003

B_{vr} T/s

19:04:14.7
CHANNEL NO. 1.2

MICROSECONDS

900
600
300
0
-300
-600
-900

11.5

1.8

0

.8

1.8

2.4

3.2

4.0

ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-024

LEC 2 RUN NO. 3

5.003

I A/S

19:04:44.7
CHANNEL NO. 2:1

MICROSECONDS

24 x 10¹⁰



F-106 LIGHTNING/ 84-024

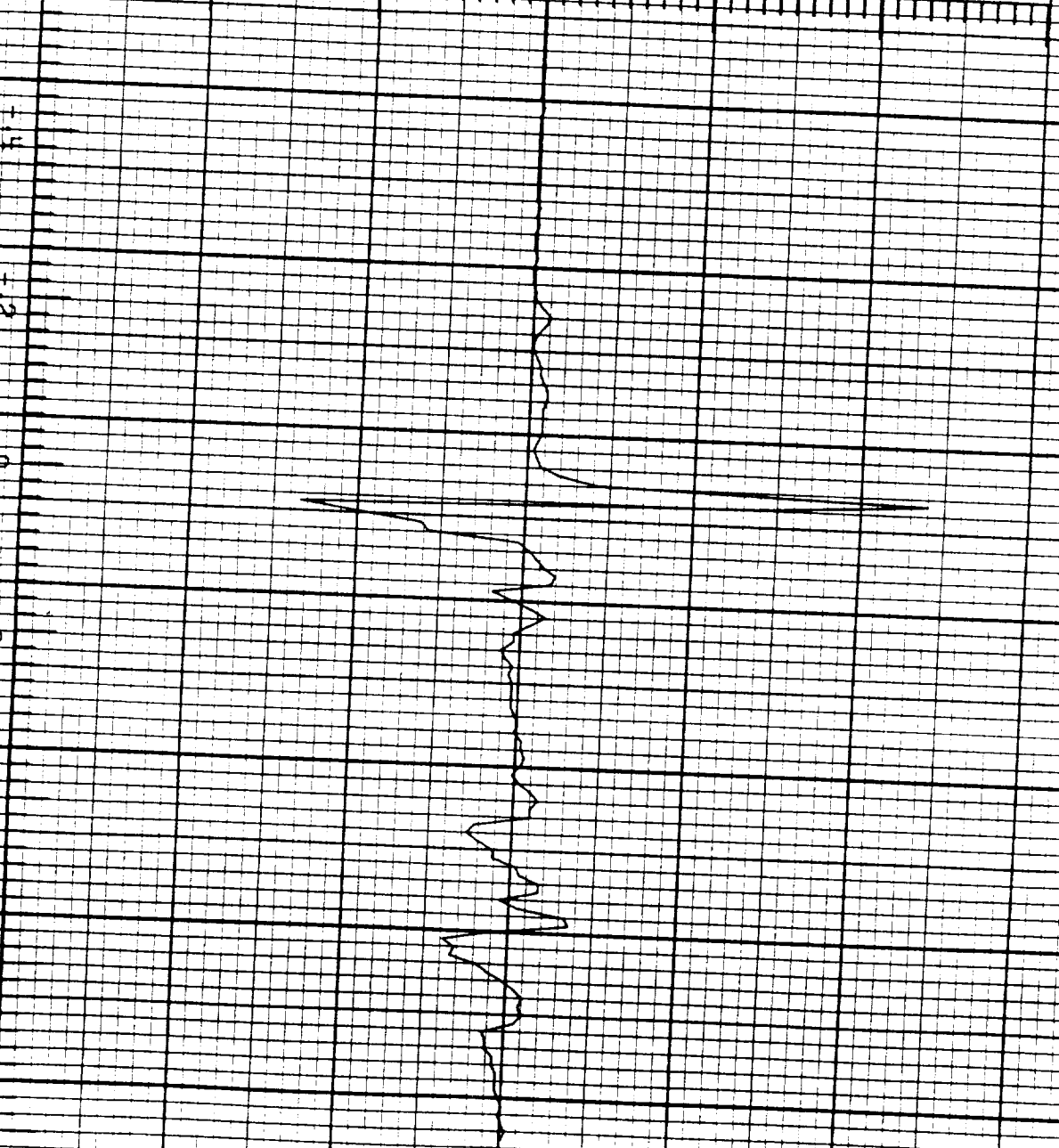
REC 2 RUN NO. 3

5.003

B₁ T/s

19:04:44.7
CHANNEL NO. 2.2

MICROSECONDS



C-4

F-106 LIGHTNING/ 84-024

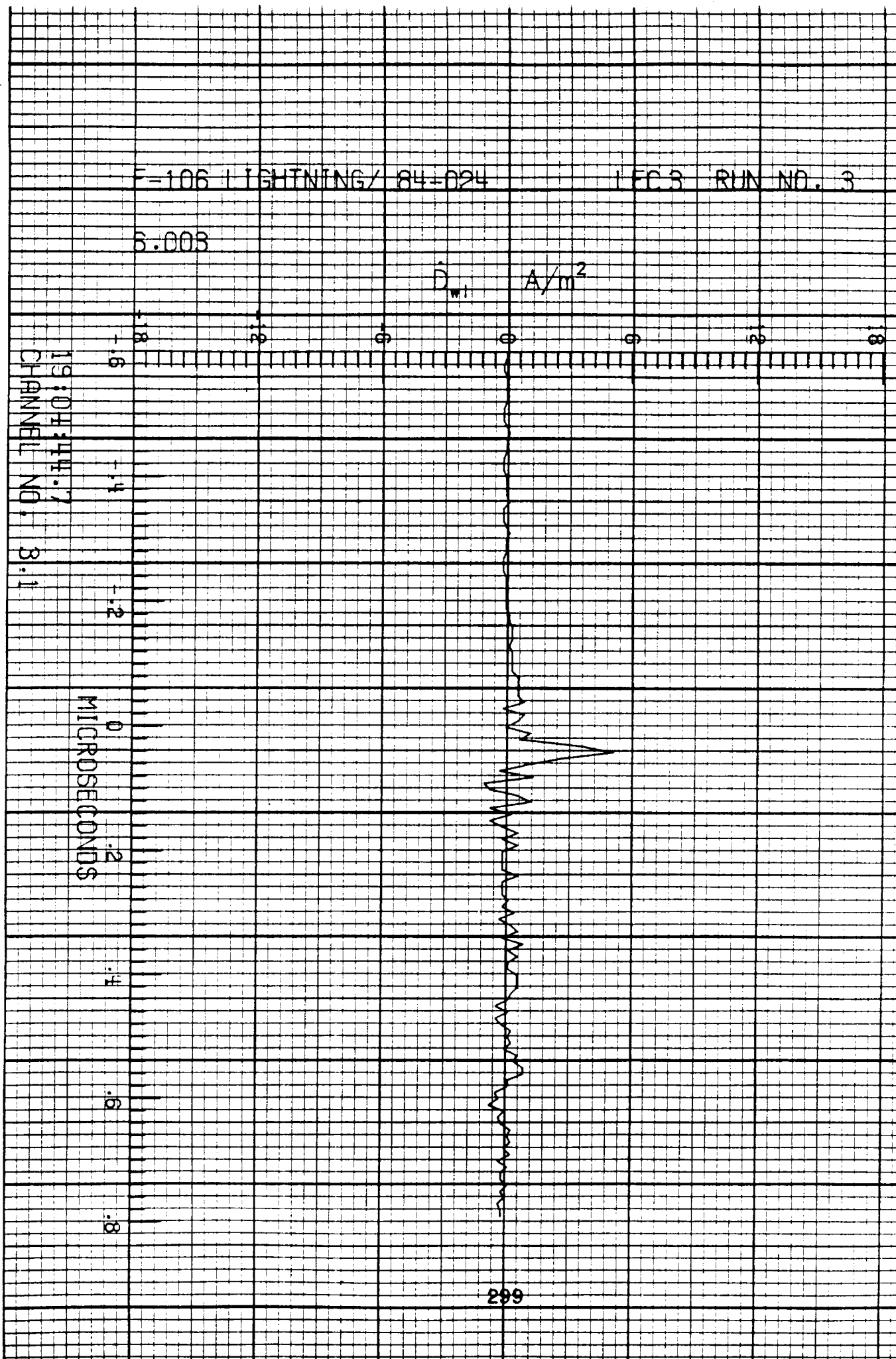
LEC 3 RUN NO. 3

3.003

\dot{D}_{WH} A/m²

19:04:14.7
CHANNEL NO. 3.1

MICROSECONDS



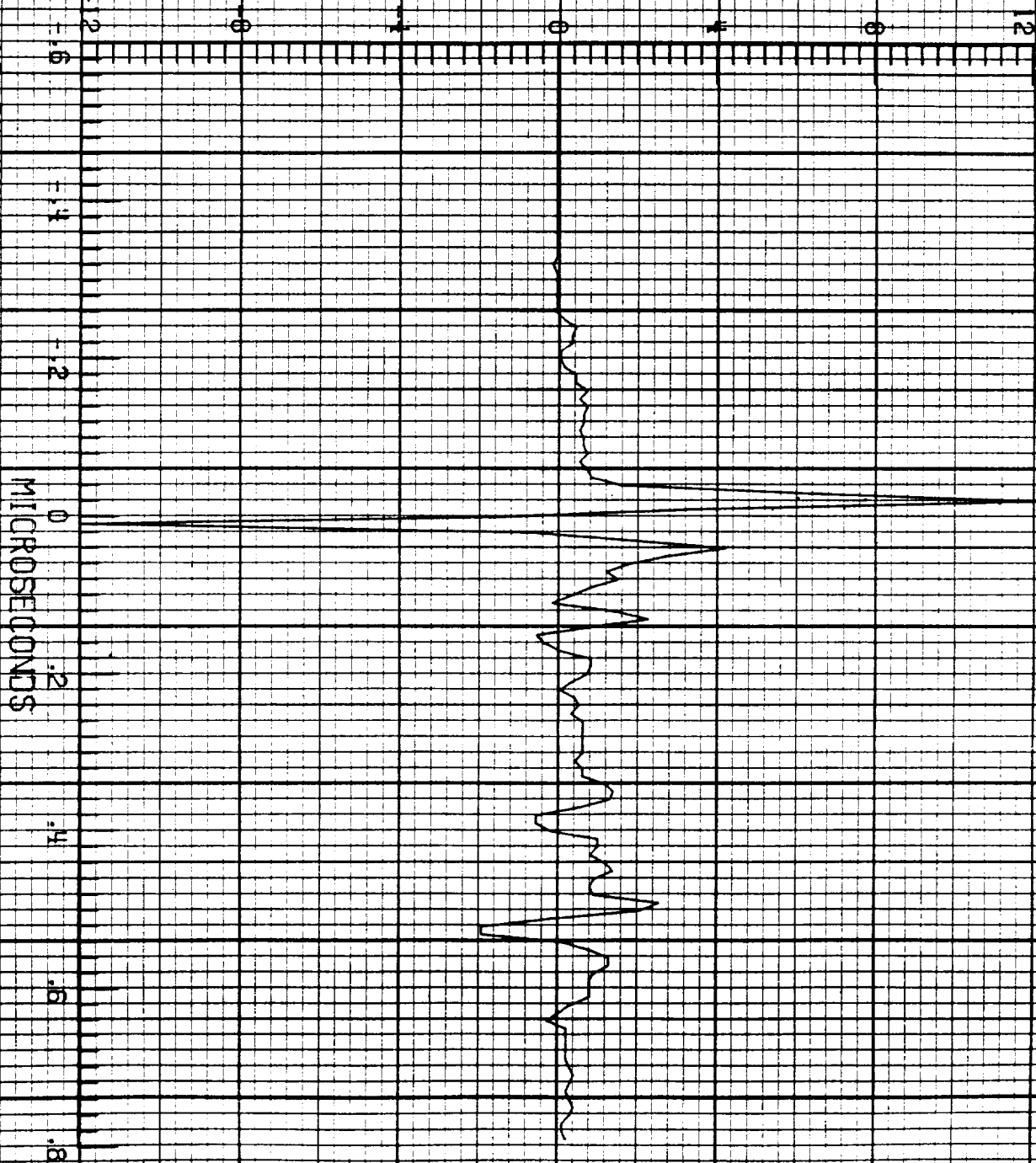
F-106 LIGHTNING/ 84-024

LEC 3 RUN NO. 3

5.003

D_r A/m²

19:04:44.7
CHANNEL NO. 3.2



F=106 LIGHTNING/ 84-024

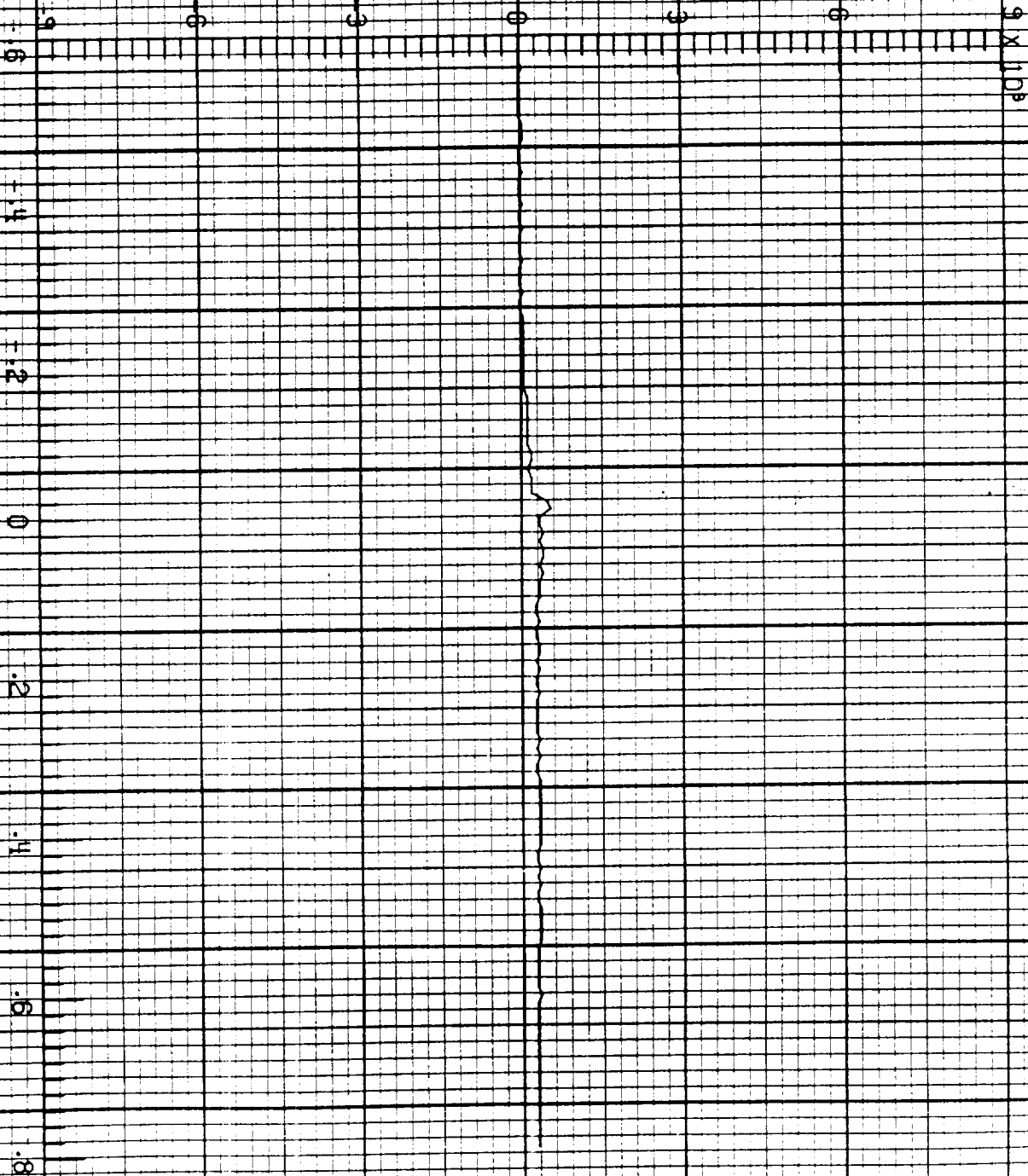
LEFC 4 RUN NO. 3

5.003

I_n A

19:04:44.7
CHANNEL NO. #11

MICROSECONDS



F-106 LIGHTNING/ 84-024

LEC 4 RUN NO. 3

5.003

T_r A

19:04:14.7
CHANNEL NO. 4.2

9 X 10⁹

MICROSECONDS

F-106 LIGHTNING/ 84-024

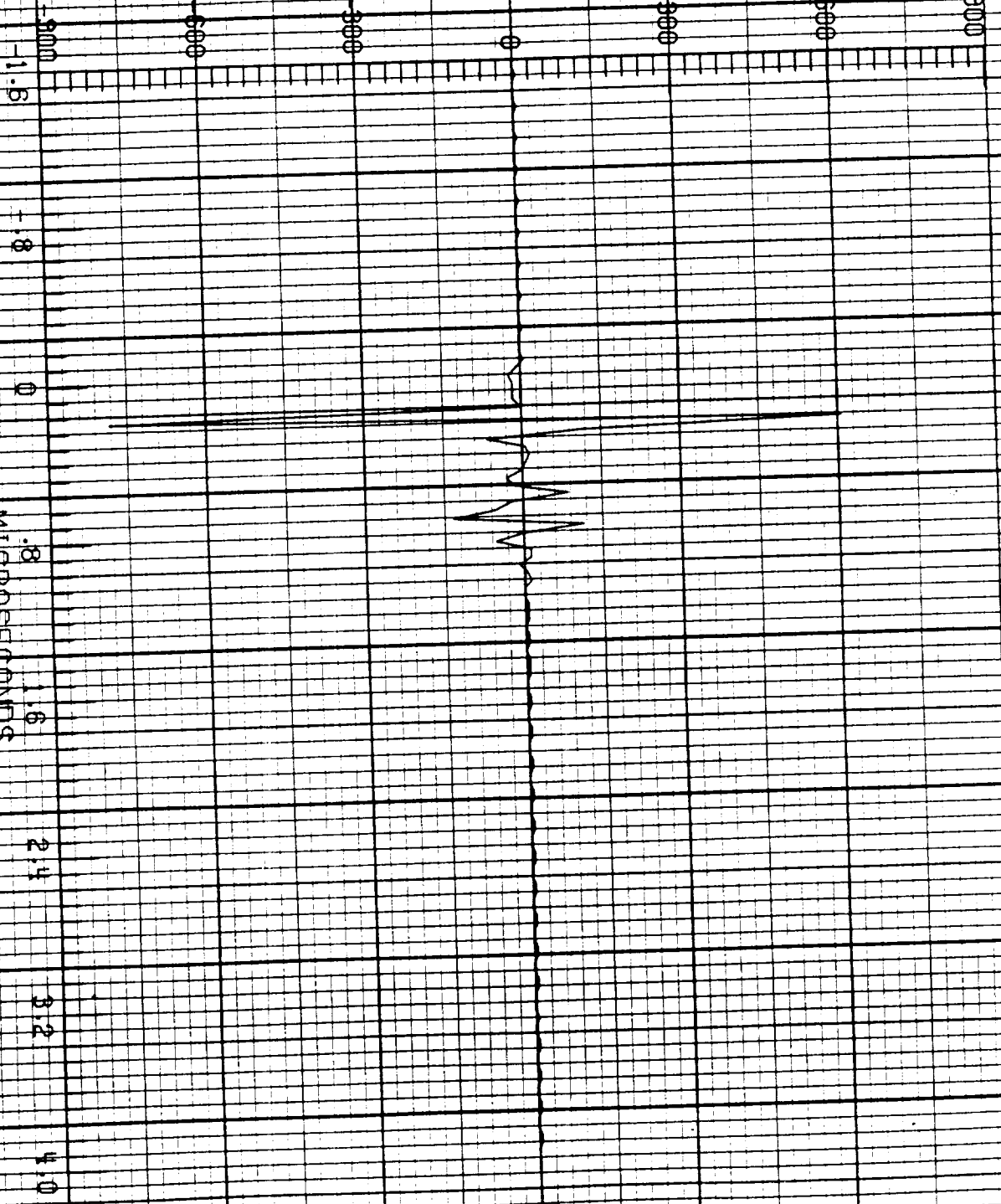
LEO1 RUN NO. 3B

5.005

B_{wl} T/s

19:21:56.0
CHANNEL NO. 1.1

MICROSECONDS



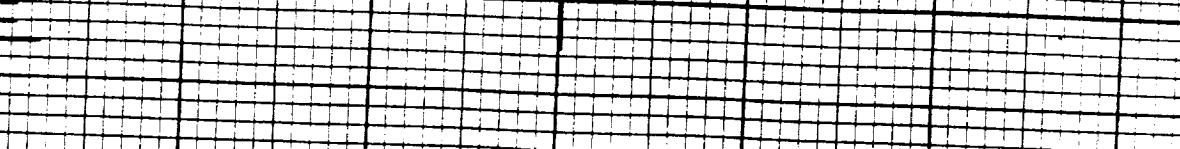
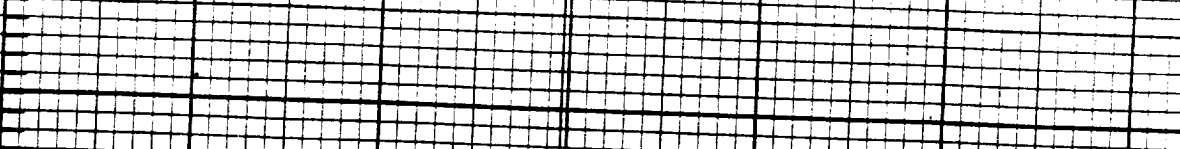
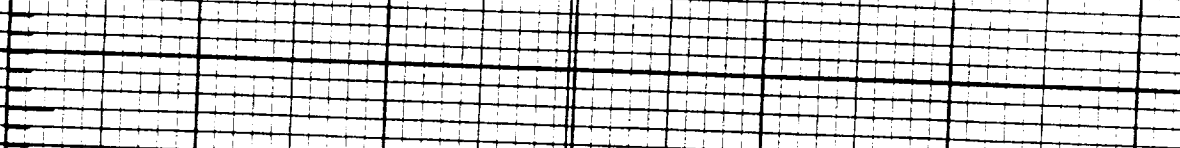
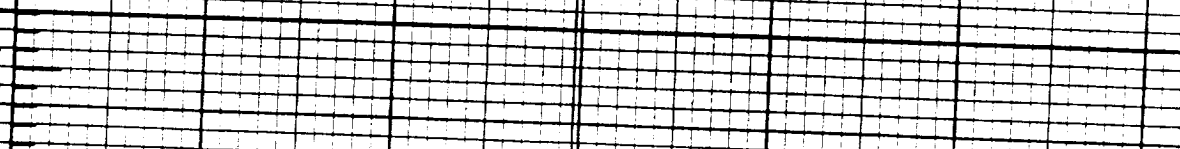
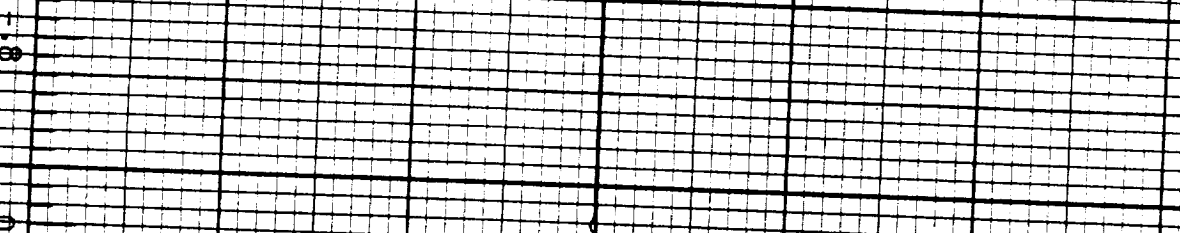
E=106 LIGHTNING/ 84-024

LEO I RUN NO. 38

3.005

E_{wr} T/s

119:21:55.0
CHANNEL NO. 1.2



MICROSECONDS

-1.6
-1.2
-0.8
-0.4
0
0.4
0.8
1.2
1.6
2.0
2.4
2.8
3.2
3.6
4.0

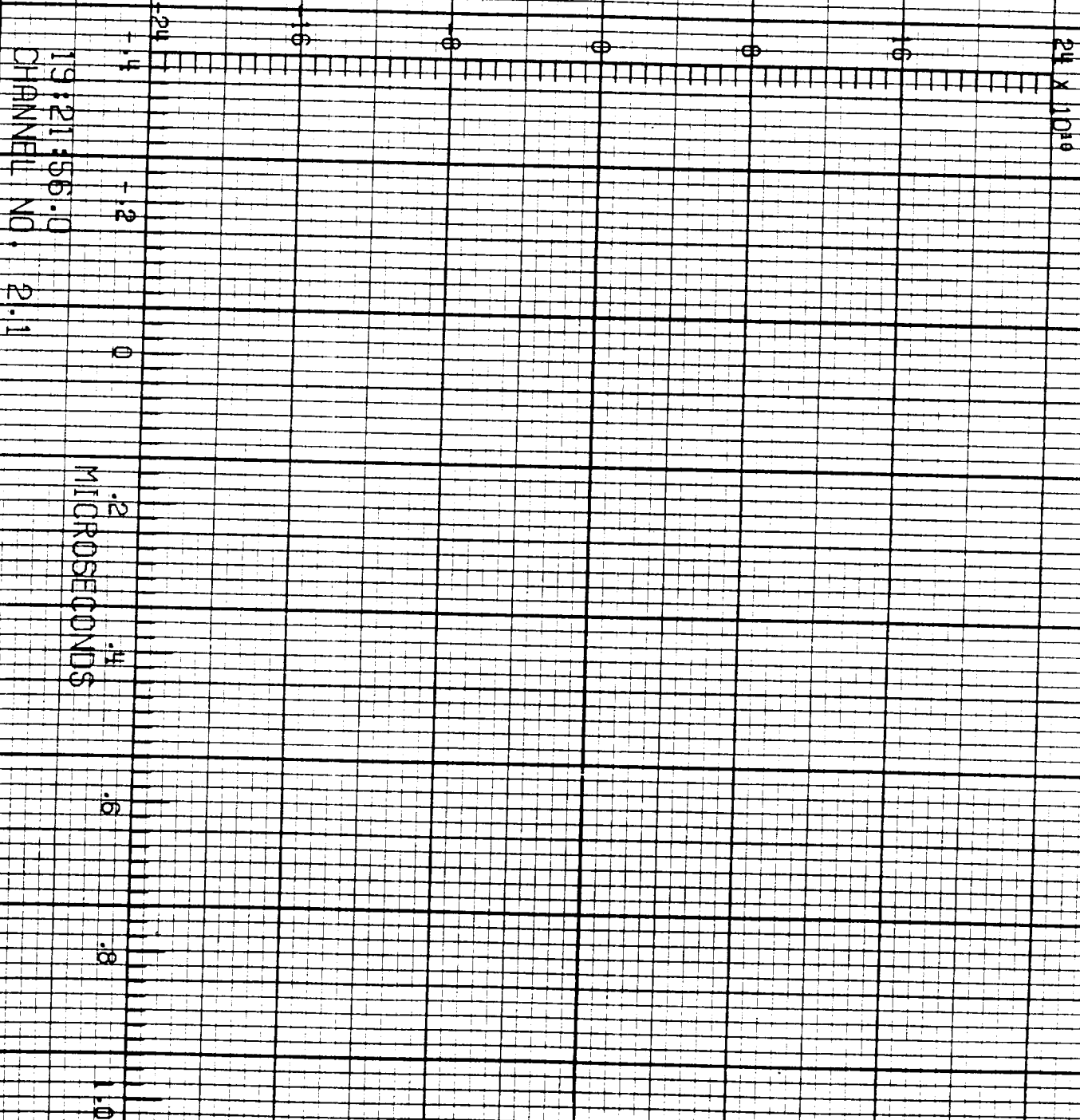
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F-106 LIGHTNING/ 84-024

LEC 2 RUN NO. 3B

6.005

I A/s



F-106 LIGHTNING 84-024

LEO 2 RUN NO. 38

3.005

B₁ T/s

1800 1200 600 0 600 1200 1800

19:21:55.0
CHANNEL NO. 2.2

MICROSECONDS



F=106 LIGHTNING/84-024

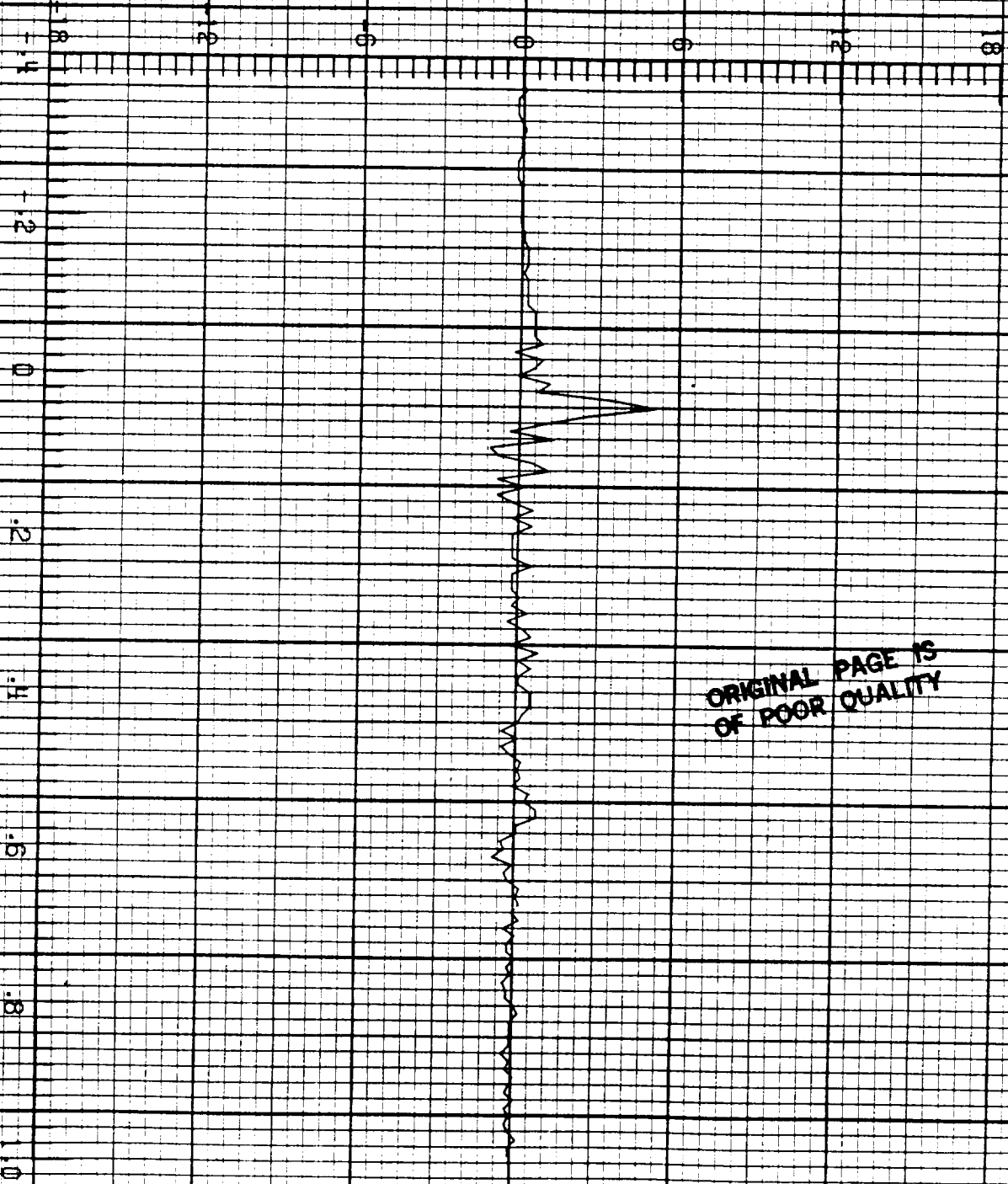
LECB RUN NO. 3B

5.005

D_{wl} A/m²

19:21:55.0
CHANNEL NO. 3.1

MICROSECONDS



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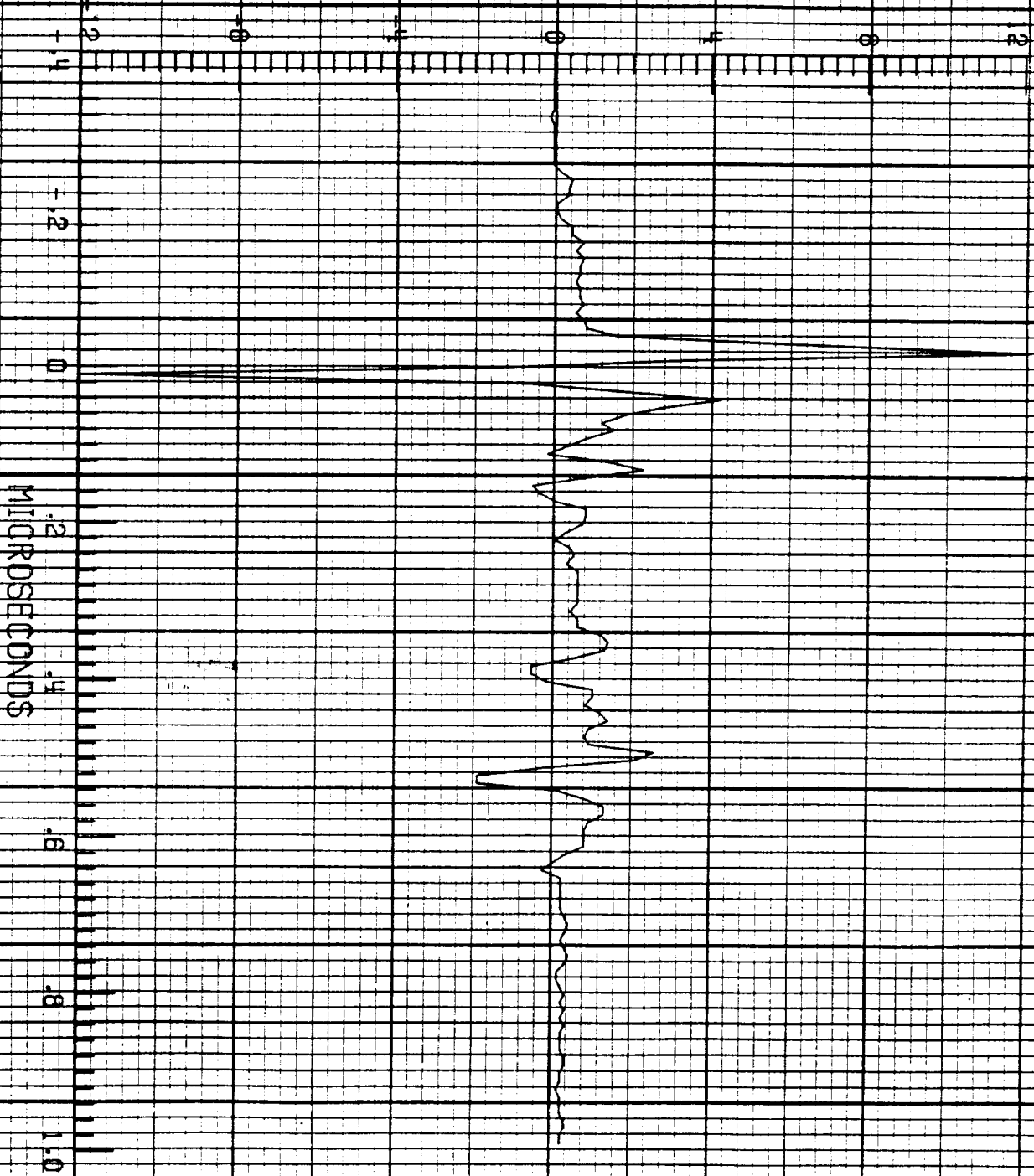
F=106 LIGHTNING/ 84-024

LECS RUN NO. 38

5.005

D_r A/m²

19:21:56.0
CHANNEL NO. 3.2



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F-106 LIGHTNING/ 84-024

LEC 4 RIN NO. 3B

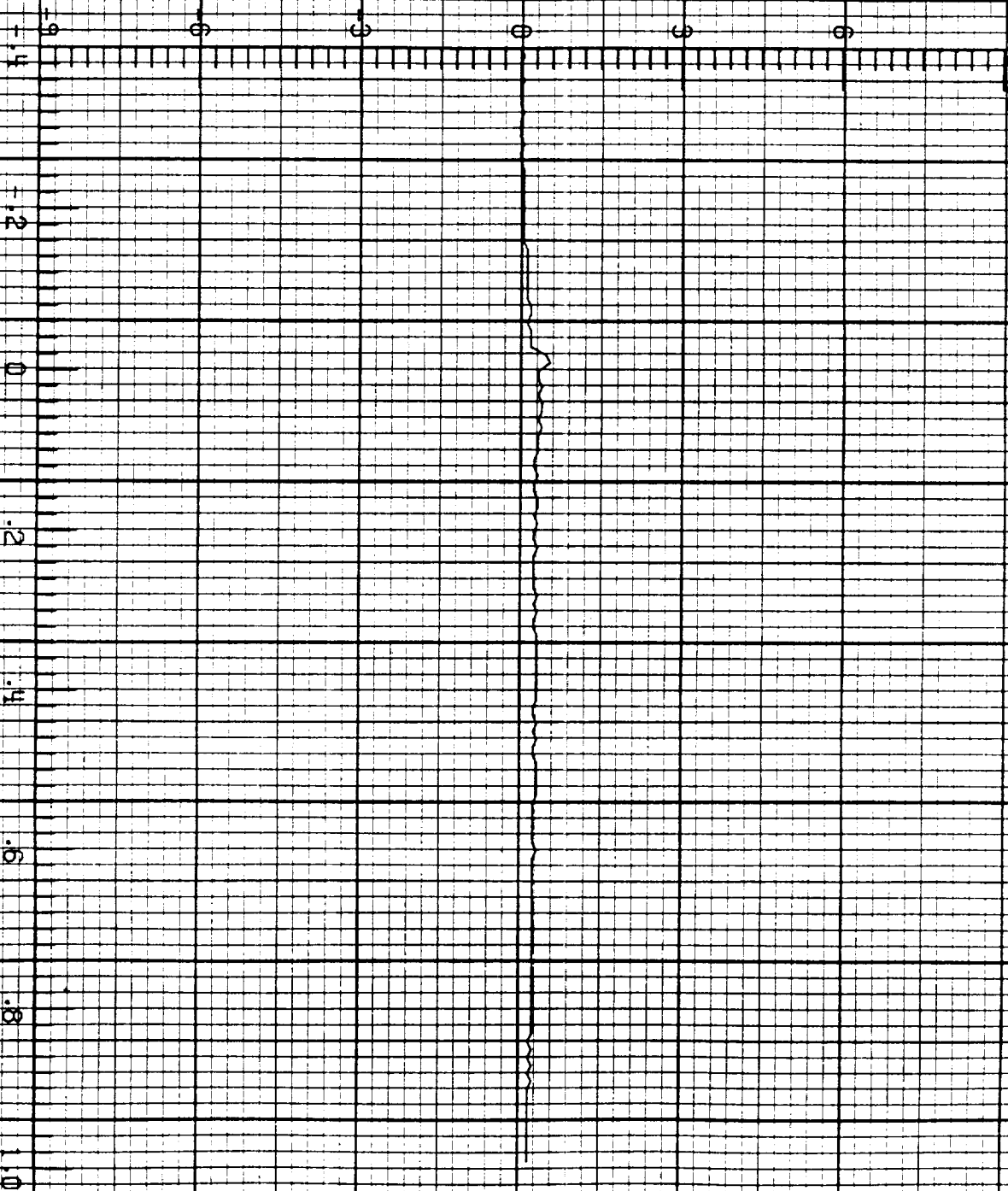
5.005

I_n A

19:21:56.0
CHANNEL NO. #.1

9 x 10³

MICROSECONDS



F-106 LIGHTNING/ 84-024

LEF4 RUN NO. 38

3.005

I_r A

9 x 10³

19:21:56.0
CHANNEL NO. 4.2

MICROSECONDS

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F-106 LIGHTNING/ 84-024

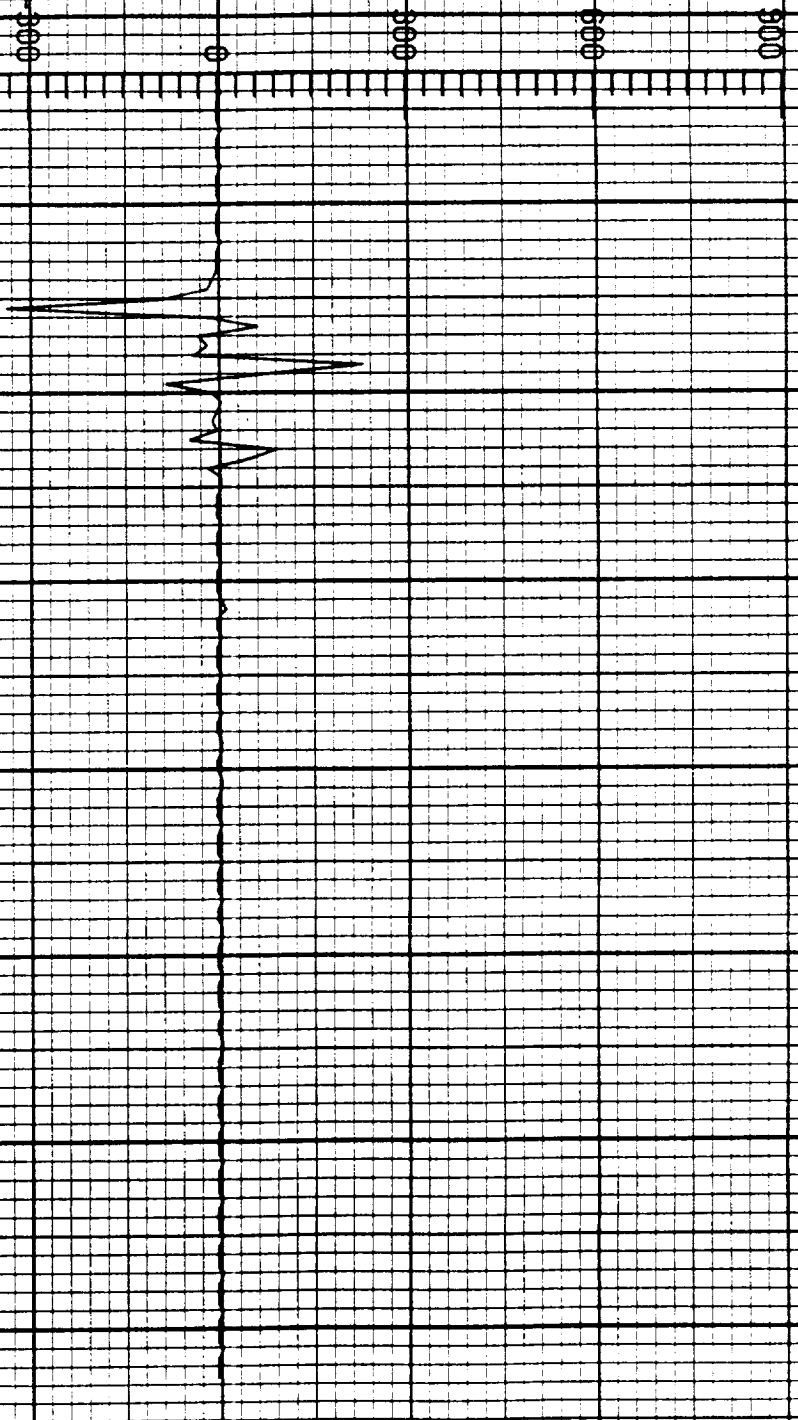
LEC 1 RUN NO. 4

5.006

B_{v1} T/s

19:22:57.5
CHANNEL NO. 1.1

MICROSECONDS



F-106 LIGHTNING/ 84-024

IFC1 RUN NO. 4

5.006

B_{wr} T/s

9000
6000
3000
0
3000
6000
9000

19:22:57.5
CHANNEL NO. 1.2

MICROSECONDS

0
.8
1.6
2.4
3.2
4.0
4.8

ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-024

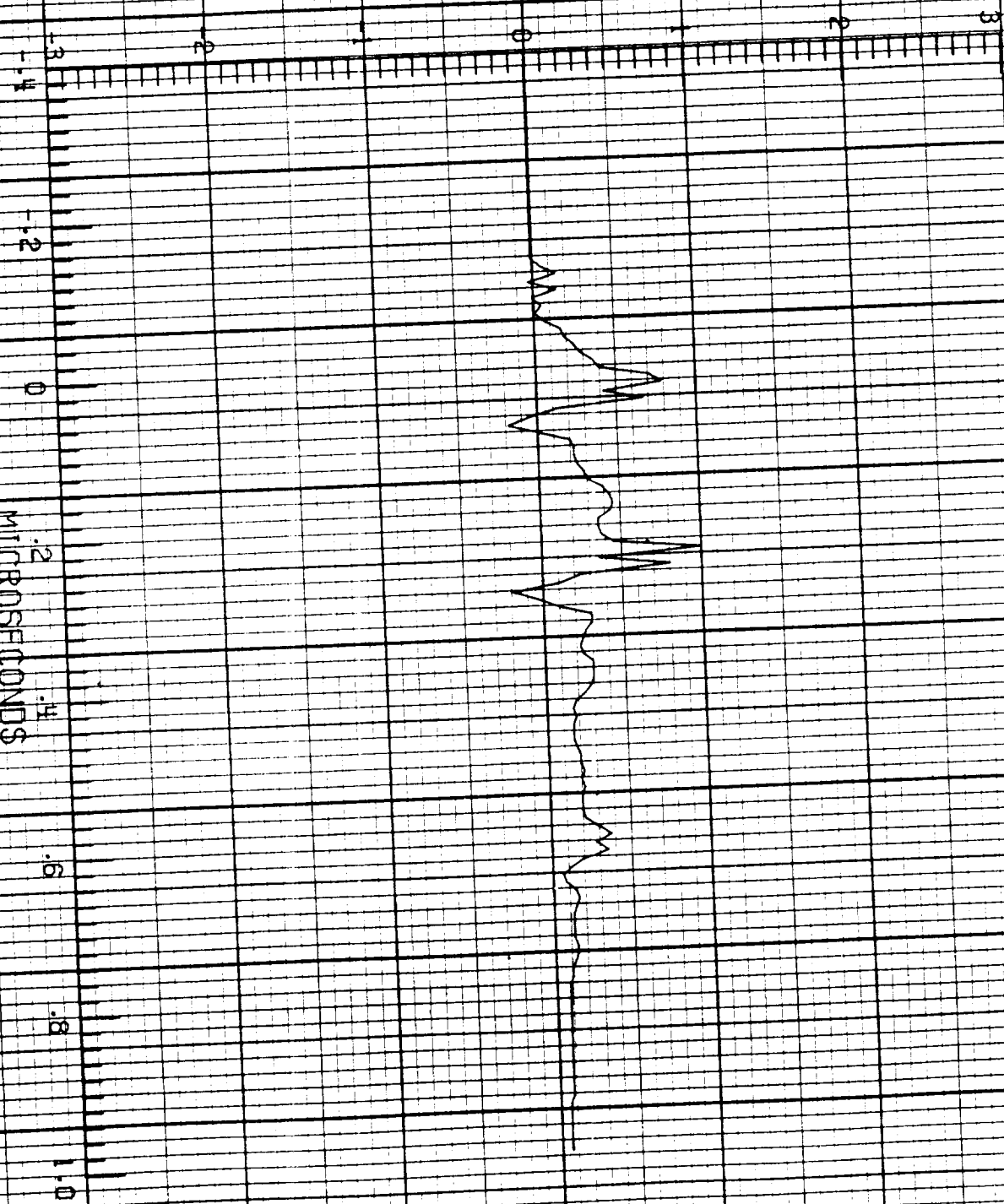
LEC2 RUN NO. 4

5.006

D_t A/m²

19:22:57.8
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-024

IFC 2 RUN NO. 4

5.006

\dot{I} A/s

19:22:57.5
CHANNEL NO. 2.1

24 X 10¹⁶

MICROSECONDS



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F-106 LIGHTNING/ 84-024

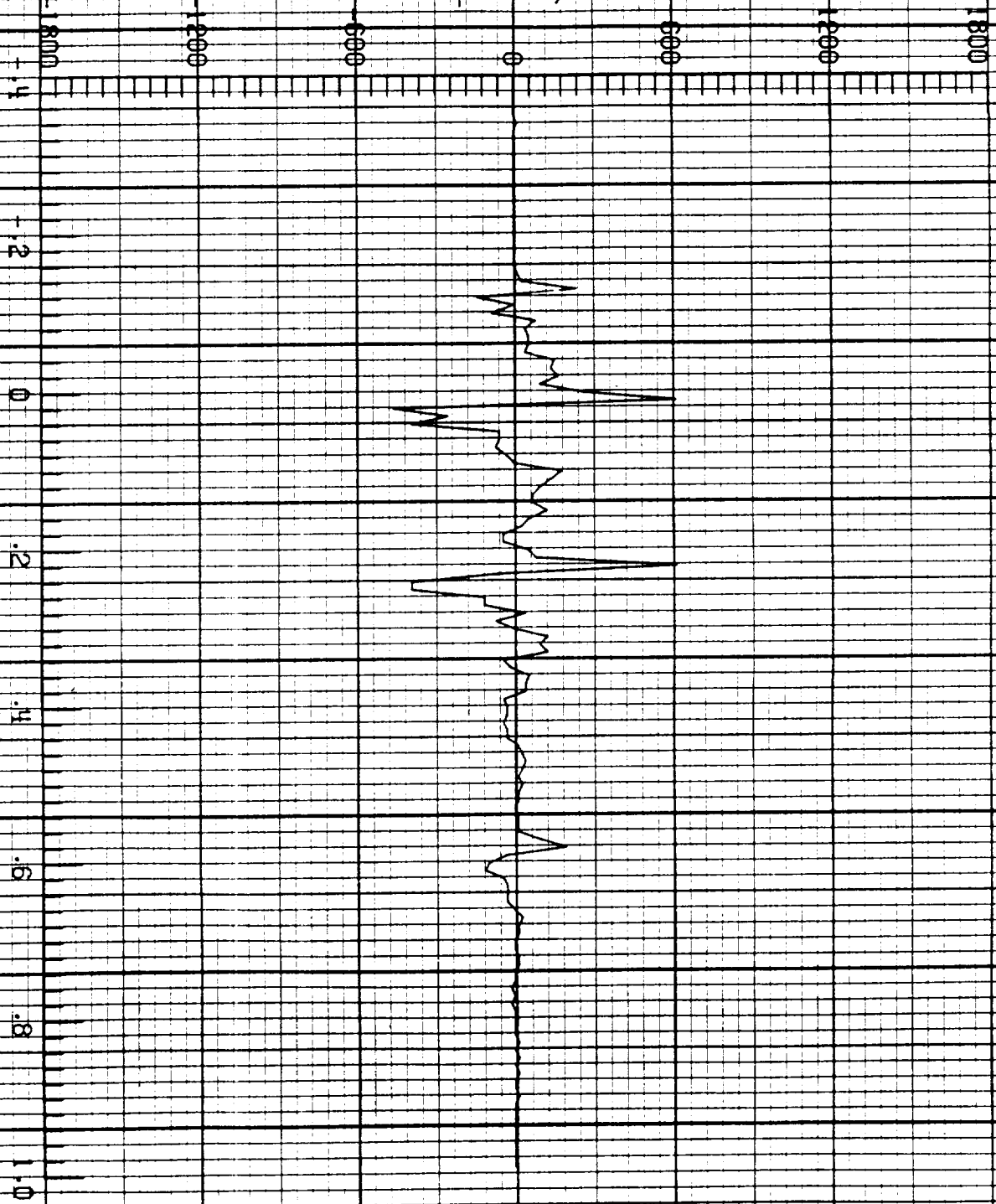
LEC2 RUN NO. 4

5.006

B_1 T/s

19:22:57.5
CHANNEL NO. 2.2

MICROSECONDS



F-106 LIGHTNING/ 84-024

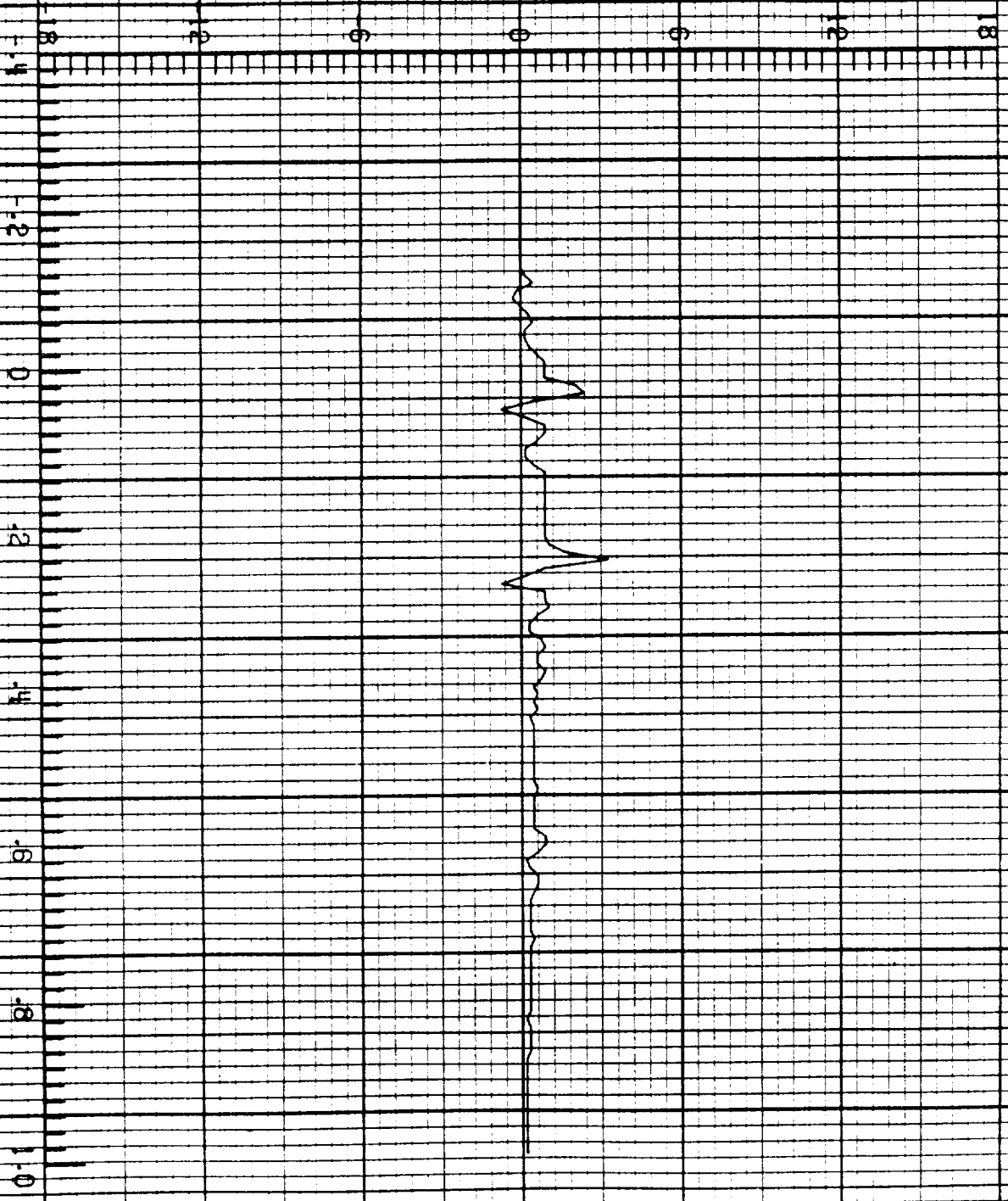
LEC 3 RUN NO. 4

5.006

D_{wr} A/m²

19:22:57.5
CHANNEL NO. 8.0

MICROSECONDS



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F-106 LIGHTNING/ 84-024

LEC 3 RUN NO. 4

5.006

D_{wl} A/m²

19:22:57.5
CHANNEL NO. 8.1

MICROSECONDS

F-106 LIGHTNING/ 84-024

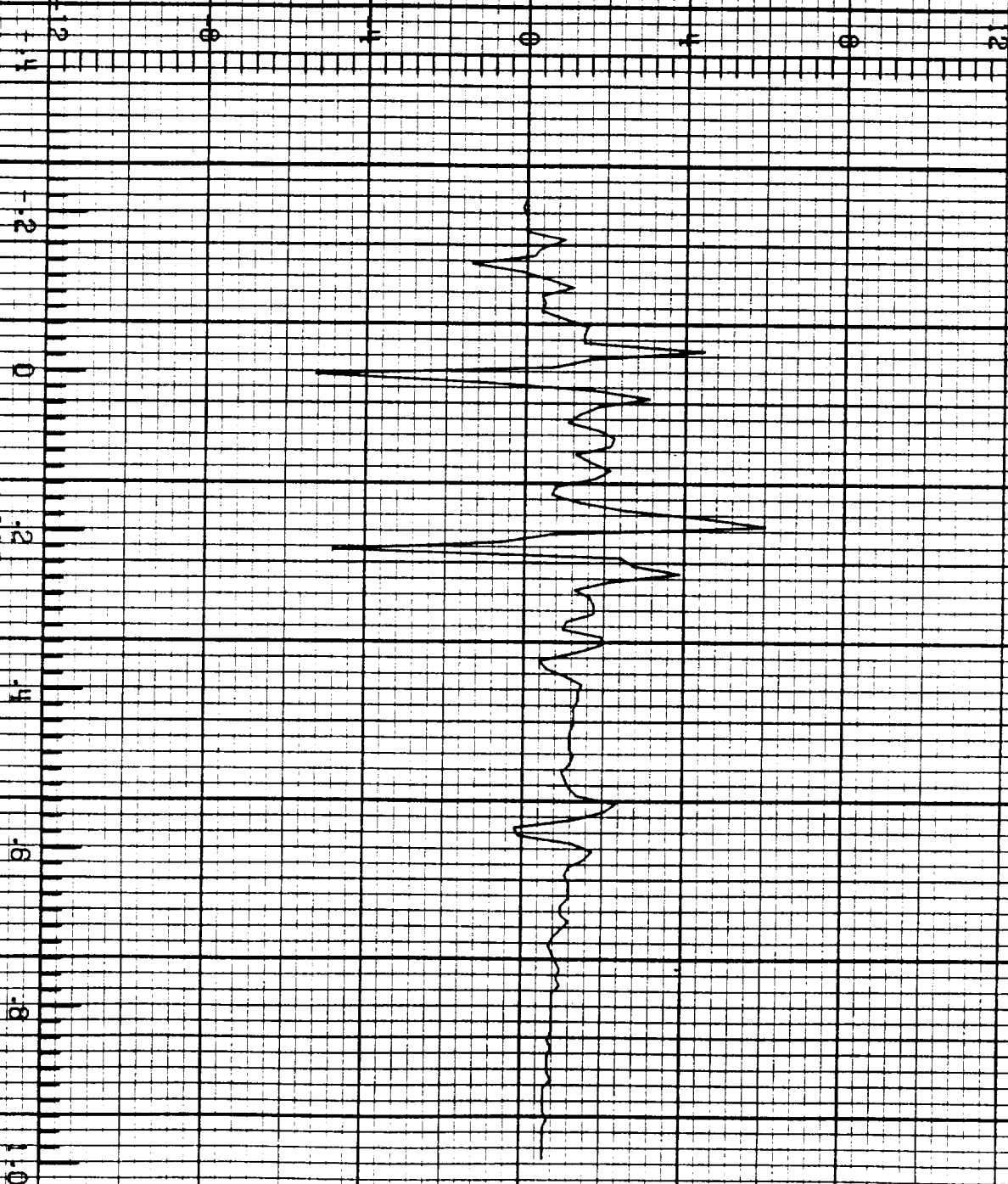
FC3 RUN NO. 4

6.006

D_r A/m²

19:22:57.8
CHANNEL NO. 3.2

MICROSECONDS



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F-106 LIGHTNING/ 84-024

LEC 4 RUN NO. 4

6.006

V_{ra} V

19:22:57.5
CHANNEL NO. 4.0

MICROSECONDS

F=106 LIGHTNING/ 84=024

REC 4 RUN NO. 4

6.006

I_n A

19:22:57.5
CHANNEL NO. #1.1

9 X 10⁹

MICROSECONDS

1.4
1.2
1.0
.8
.6
.4
.2
0

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F-106 LIGHTNING/ 84-024

LFC 4 RUN NO. 4

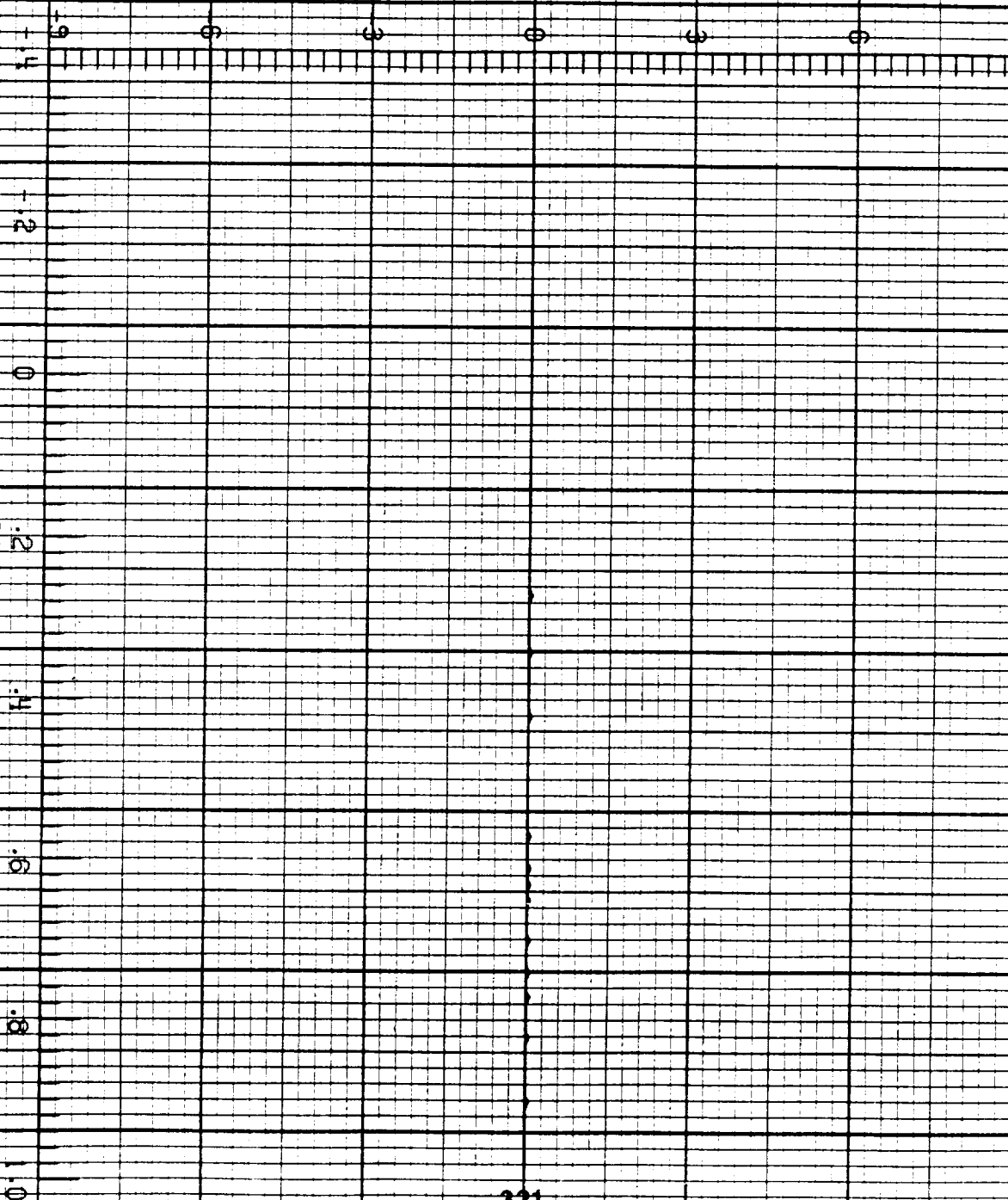
6.006

\bar{I}_t A

19:22:57.5
CHANNEL NO. 4.2

9 x 10³

MICROSECONDS



F-106 LIGHTNING/ 84-024

LEC 1 RUN NO. 5

5.006

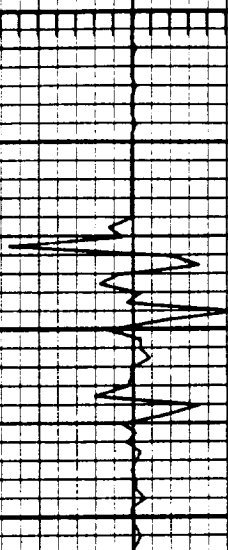
B_w T/s

900 800 700 600 500 400 300 200 100 0

19:25:15.8
CHANNEL NO. 1.1

MICROSECONDS

.8 0 .8 1.6 2.4 3.2 4.0 4.8



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-024

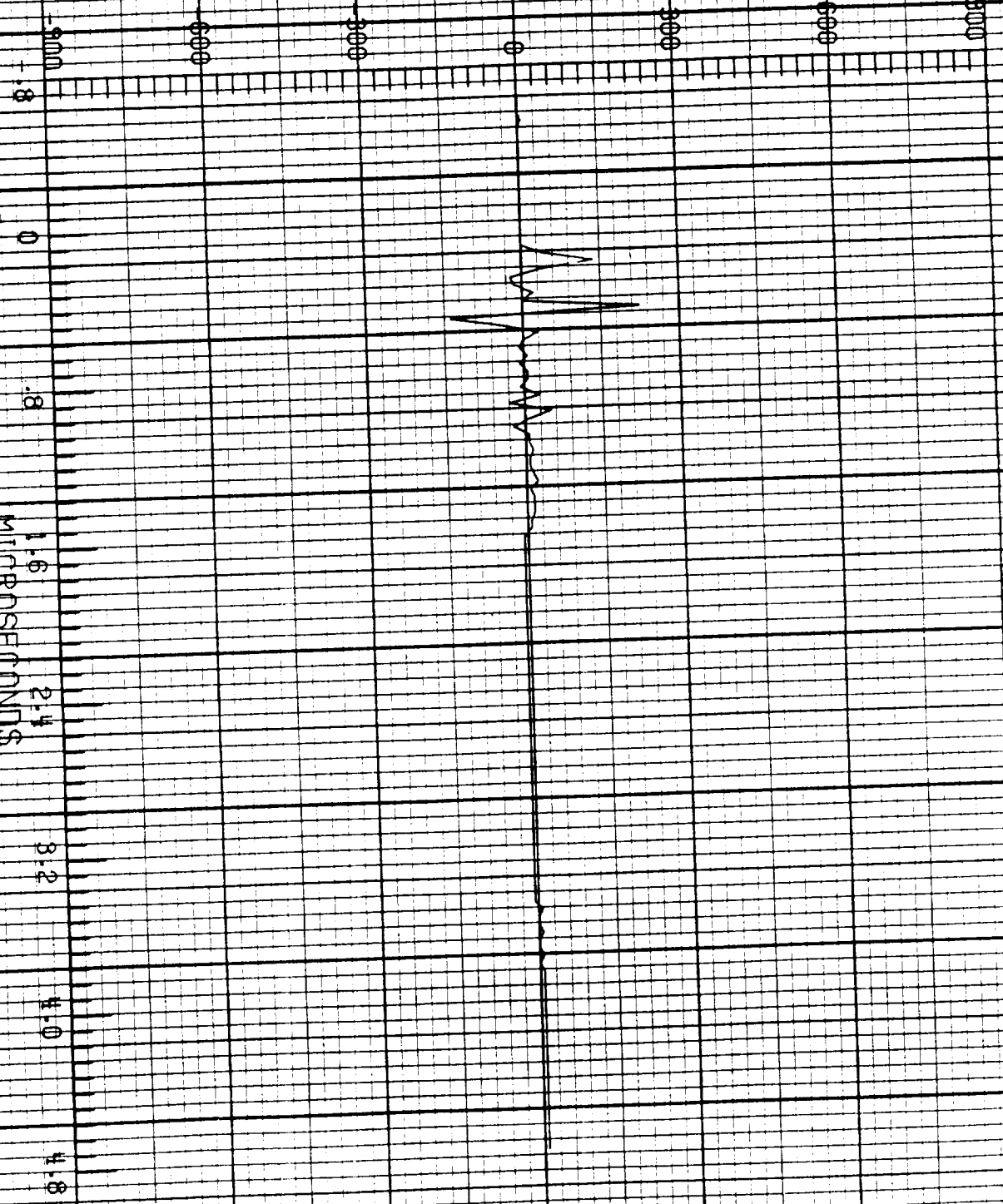
1 FC1 RUN NO. 5

5.006

B_{wr} F/s

19:25:15.8
CHANNEL NO. 1.2

MICROSECONDS



F-106 LIGHTNING/ 84-024

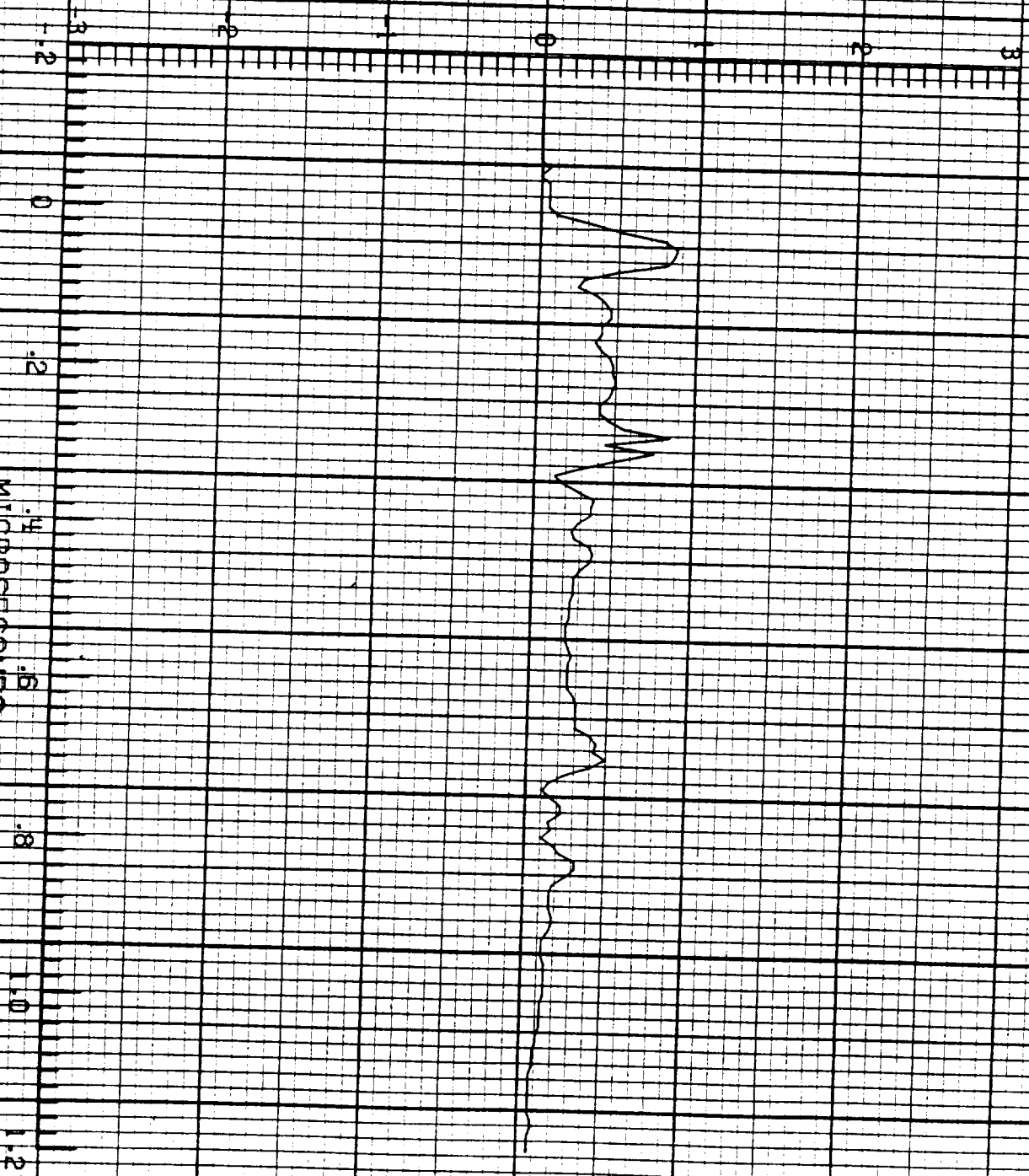
LEC2 RUN NO. 5

6.006

D_t A/m²

19:25:15.8
CHANNEL NO. 2.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-024

1 FC.2 RUN NO. 5

5.006

I A/s

19:25:15.8
CHANNEL NO. 2.1

MICROSECONDS

24 x 10¹⁰

F-106 LIGHTNING/ 84-024

IFC2 RUN NO. 5

3.006

B_{II} T/s

1800 1200 600 0 600 1200 1800

19:25:15.8
CHANNEL NO. 2.2

MICROSECONDS

.12

0

.2

.4

.6

.8

1.0

1.2

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F-106 LIGHTNING/ 84-024

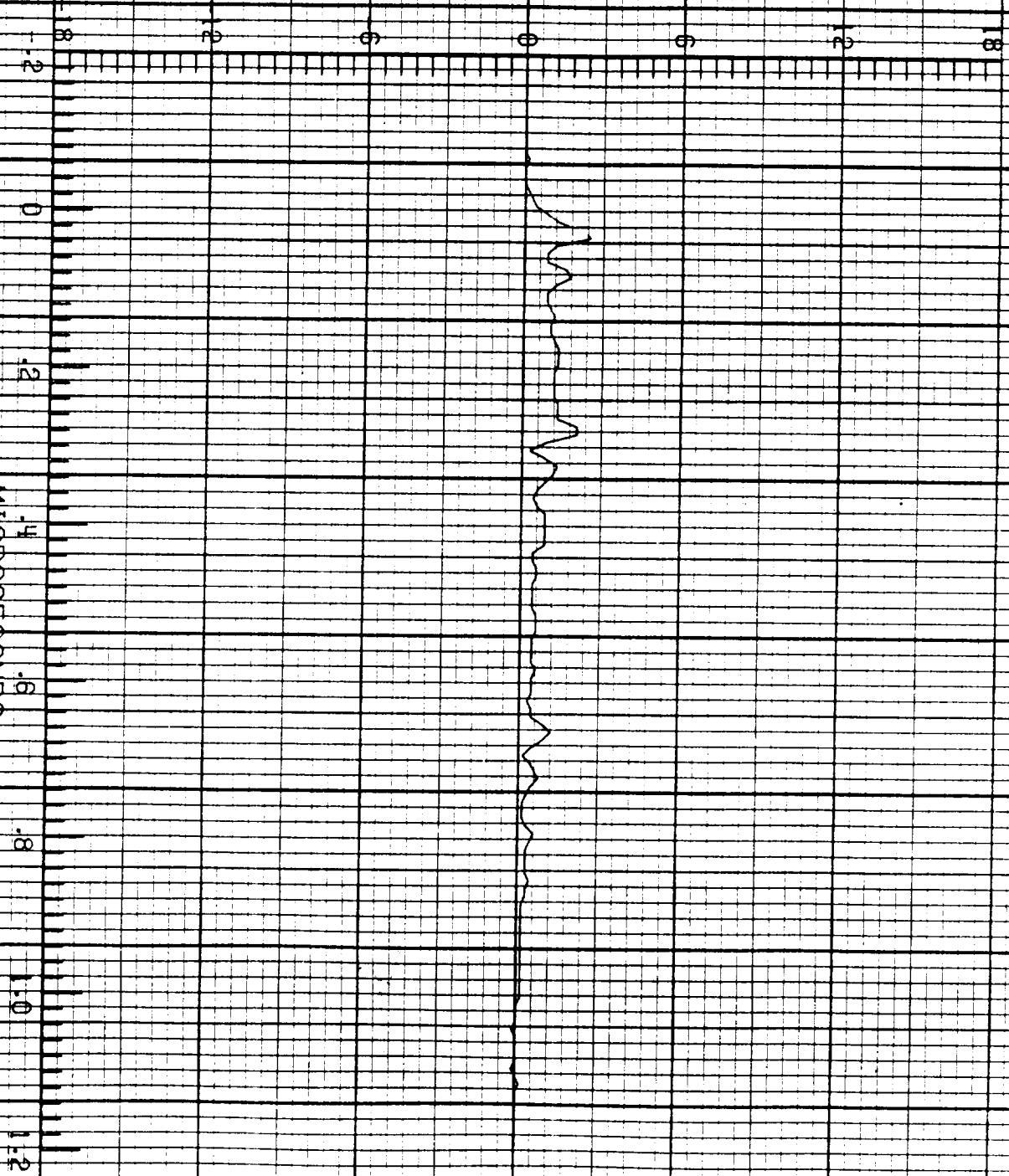
LEC 3 RUN NO. 5

6.006

D_{wr} A/m²

19:25:15.8
CHANNEL NO. 8.0

MICROSECONDS



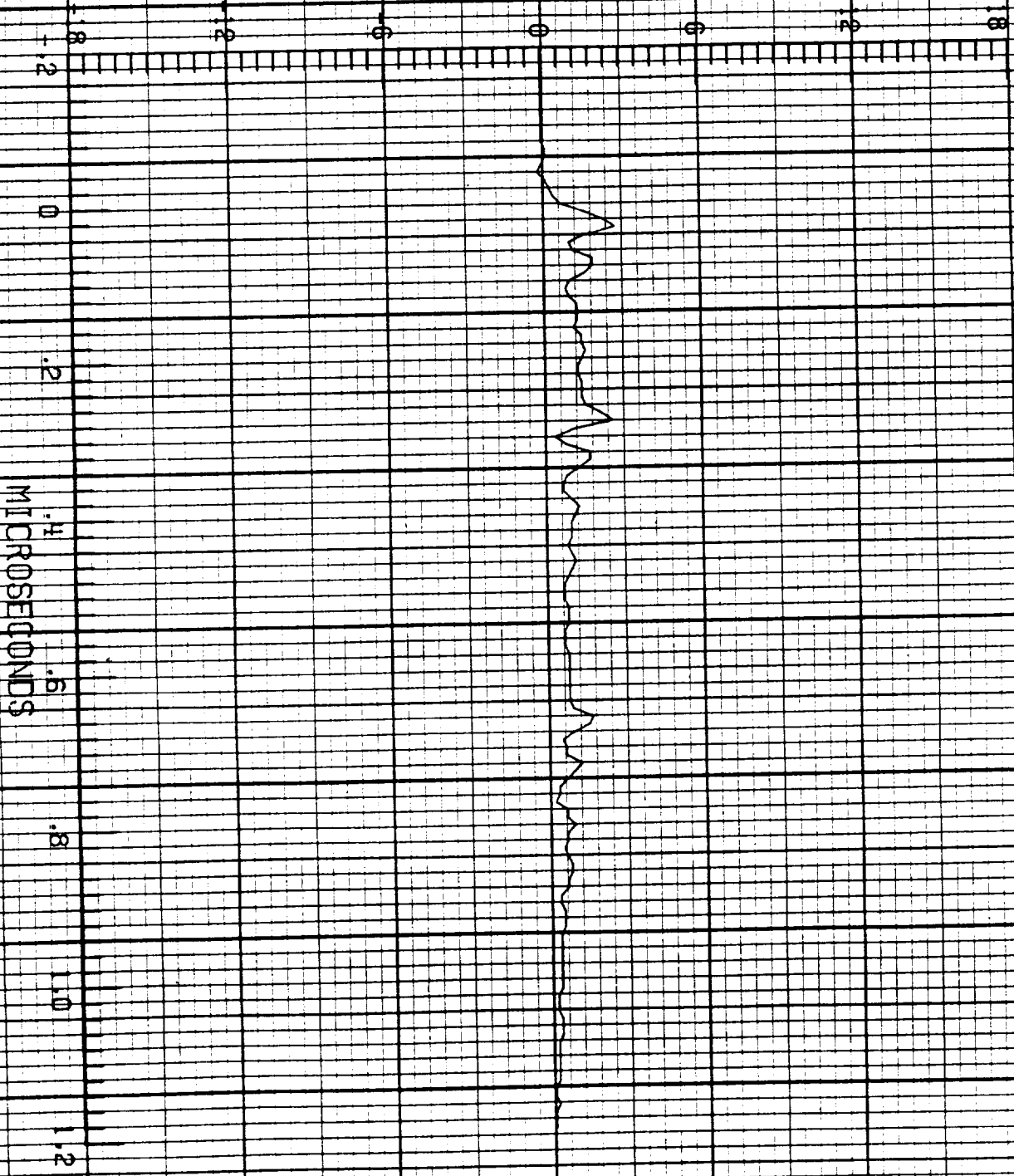
F-106 LIGHTNING/ 84-024

LEC 3 RUN NO. 5

5.006

D_{wl} A/m²

19:25:15.8
CHANNEL NO. 3.1



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F-106 LIGHTNING/ 84-024

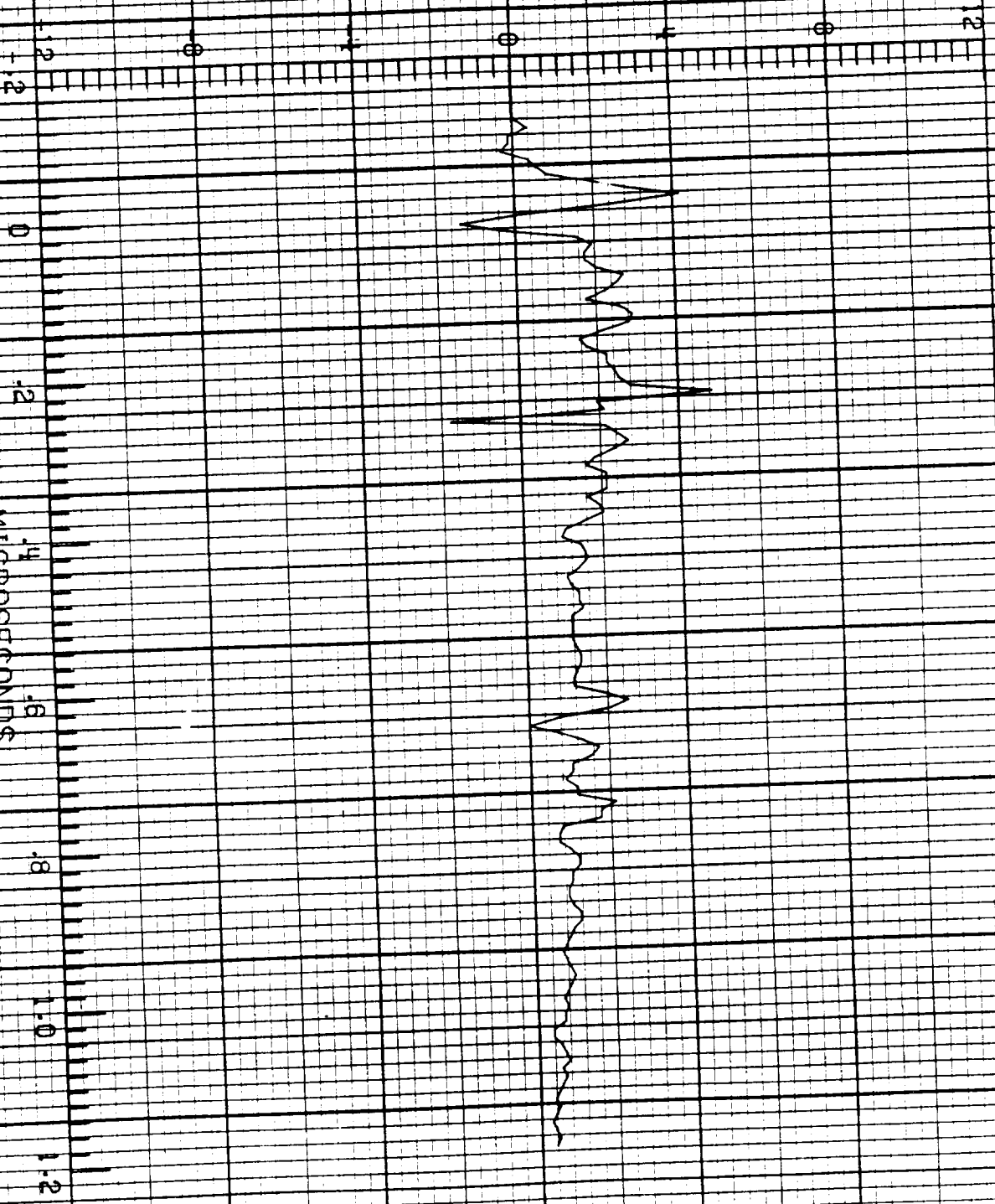
LECS RUN NO. 5

5.006

D_r A/m²

19:25:15.8
CHANNEL NO. 3.2

MICROSECONDS



F-106 LIGHTNING/ 84-024

LEC 4 RIN NO. 5

6.006

V_{T0} V

ϕ

19:25:15.8
CHANNEL NO. 4.0

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-024

1 FC 4 RUN NO. 5

5.006

T_n A

19:25:15.8
CHANNEL NO. #.1

MICROSECONDS

9×10^3

F-106 LIGHTNING/ 84-024

LEC 4 RUN NO. 5

6.006

I_t A

19:25:15.8
CHANNEL NO. 4.2

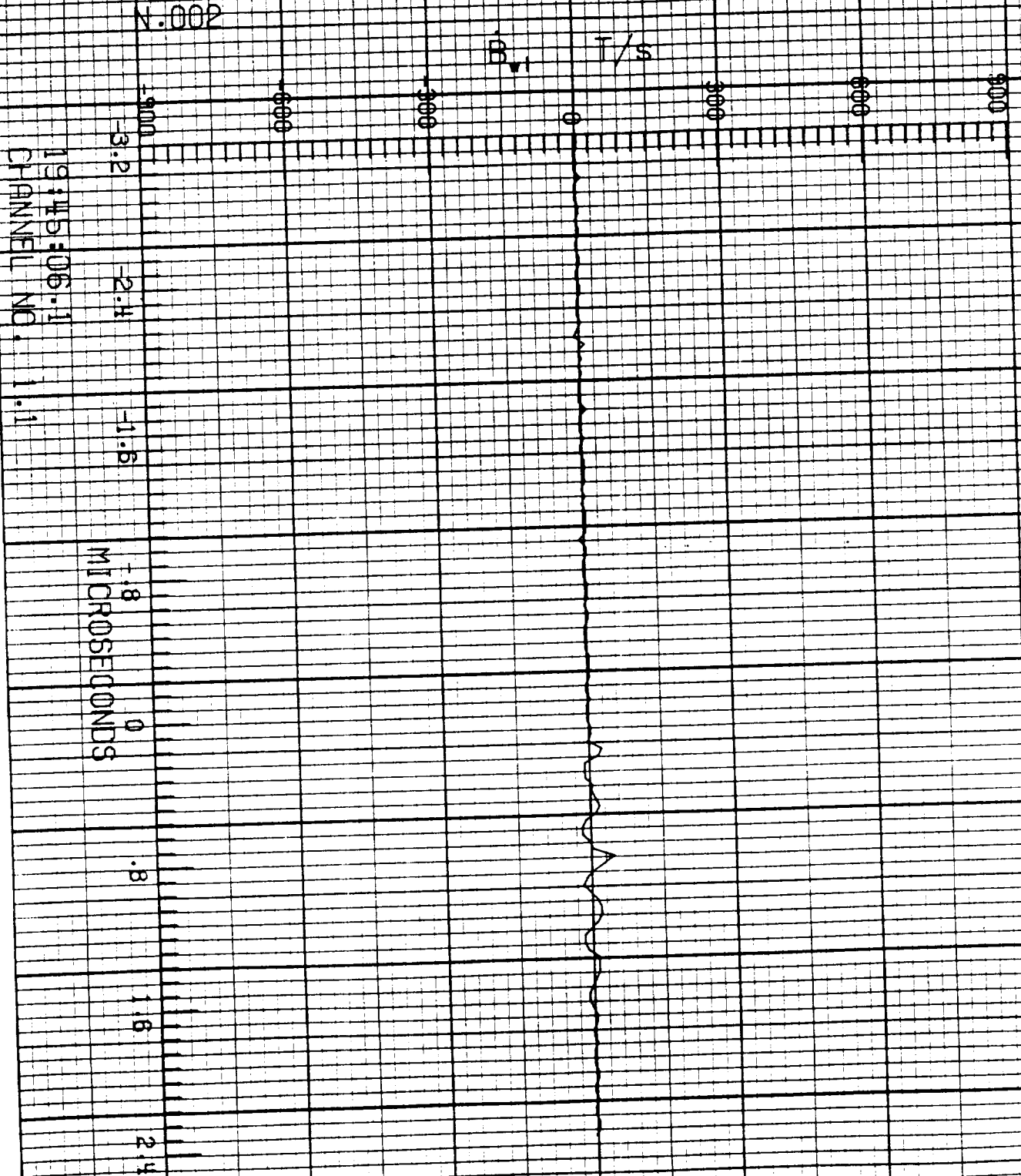
9×10^3

MICROSECONDS

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F-106 LIGHTNING/ 84-024

TEC 1 RUN NO. 6



F-106 LIGHTNING/ 84-024

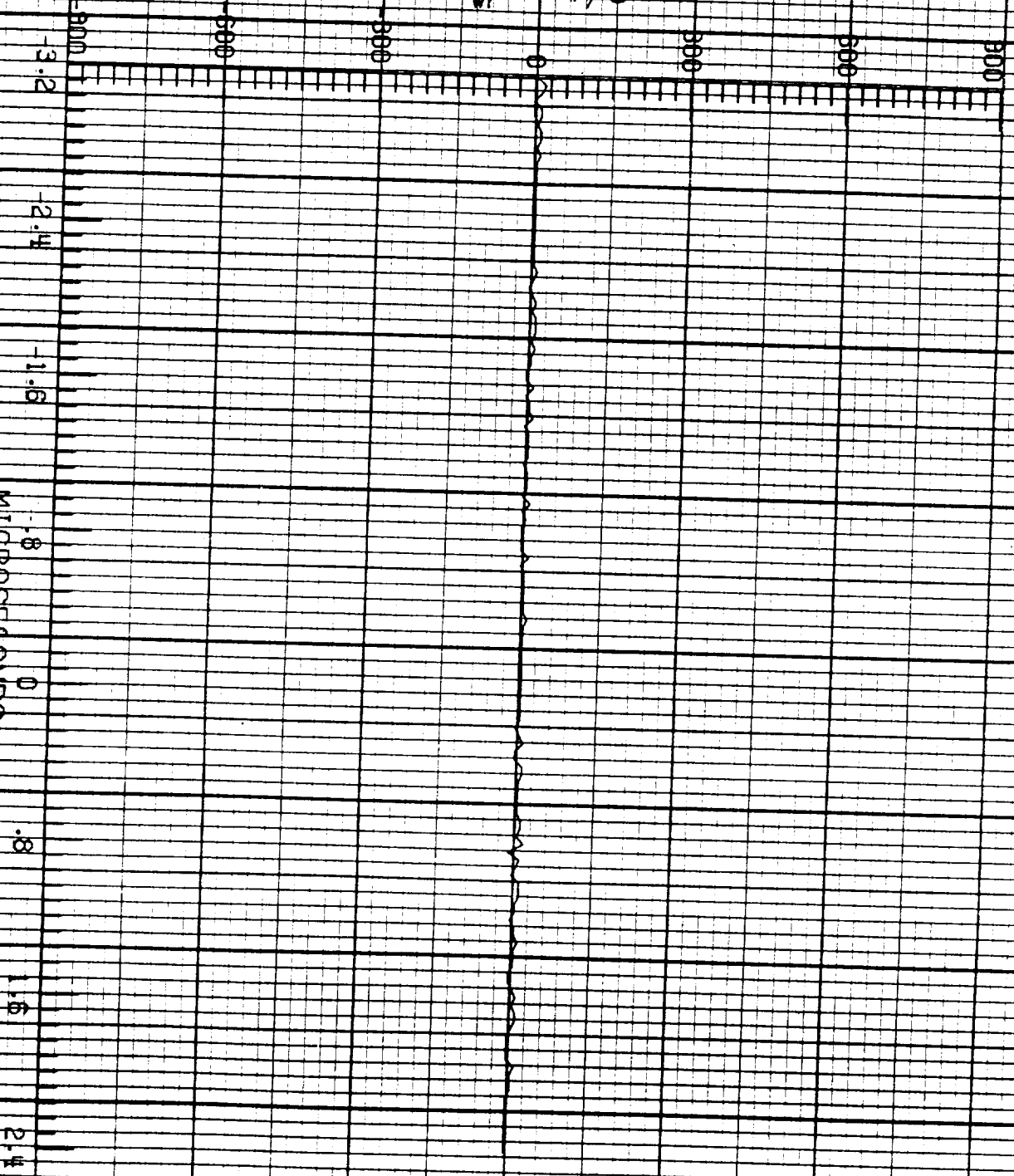
LEC1 RUN NO. 6

N.002

B_{wr} T/s

19:45:05.1
CHANNEL NO. 1.2

MICROSECONDS



F-106 LIGHTNING/ 84-024

IFC2 RUN NO. 6

V.002

D_1 A/m²

19:45:06.1
CHANNEL NO. 2.0

MICROSECONDS

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F-106 LIGHTNING/ 84-024

FC 2 RUN NO. 6

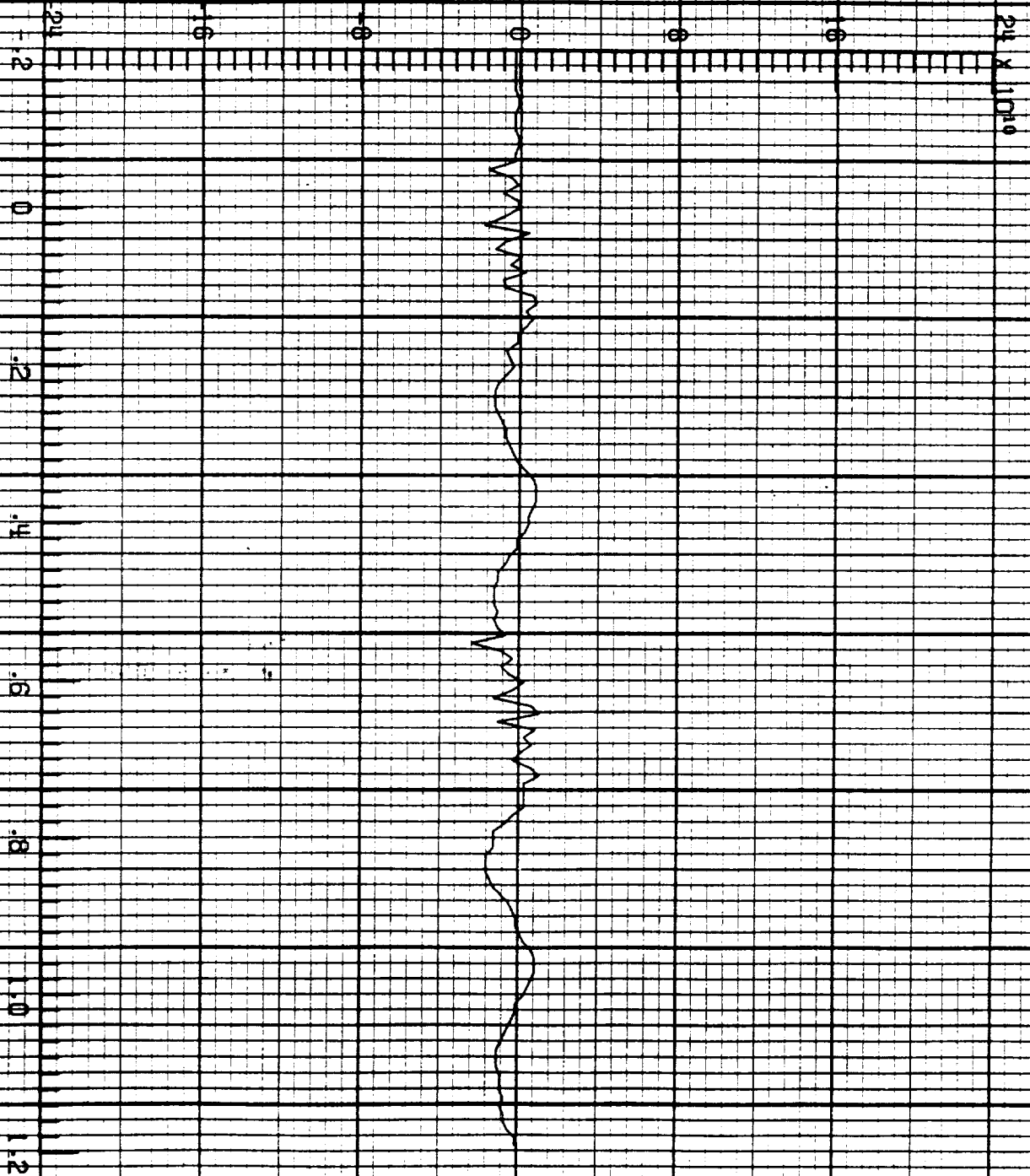
N.002

I A/S

24 X 10¹⁰

19:45:06.1
CHANNEL NO. 2.1

MICROSECONDS



ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-024

IFCP RUN NO. 6

N.002

B₁ T/s

19:45:06.1
CHANNEL NO. 2:2

MICROSECONDS

F=106 LIGHTNING/ 84-024

LECH RUN NO. 6

N.002

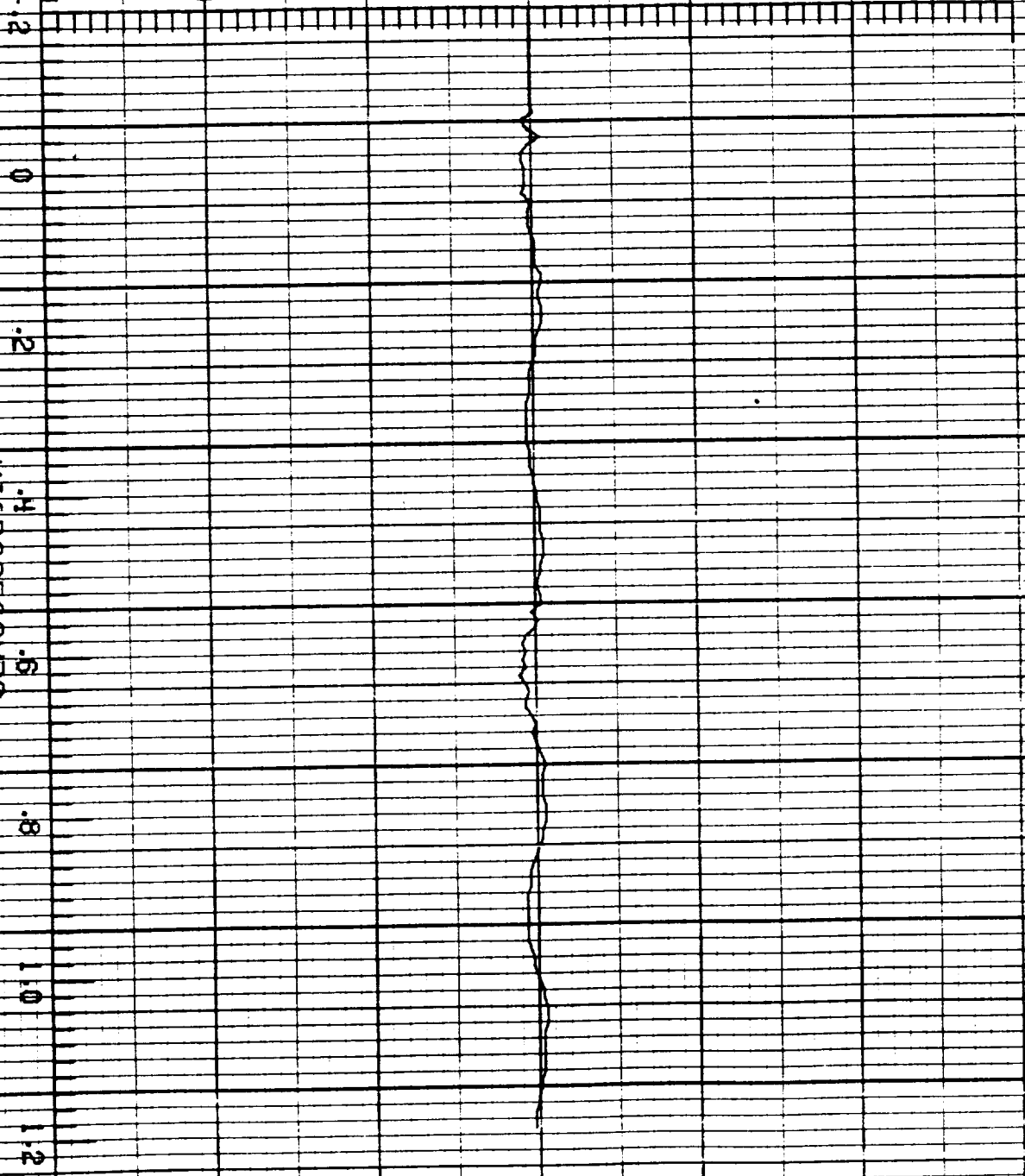
V_{fo} V

60 40 20 0 -20 -40 -60

19:45:06.1
CHANNEL NO. 4.0

MICROSECONDS

1.2
0
.2
.4
.5
.8
1.0
1.2



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F-106 LIGHTNING/ 84-024

LEC 4 RUN NO. 6

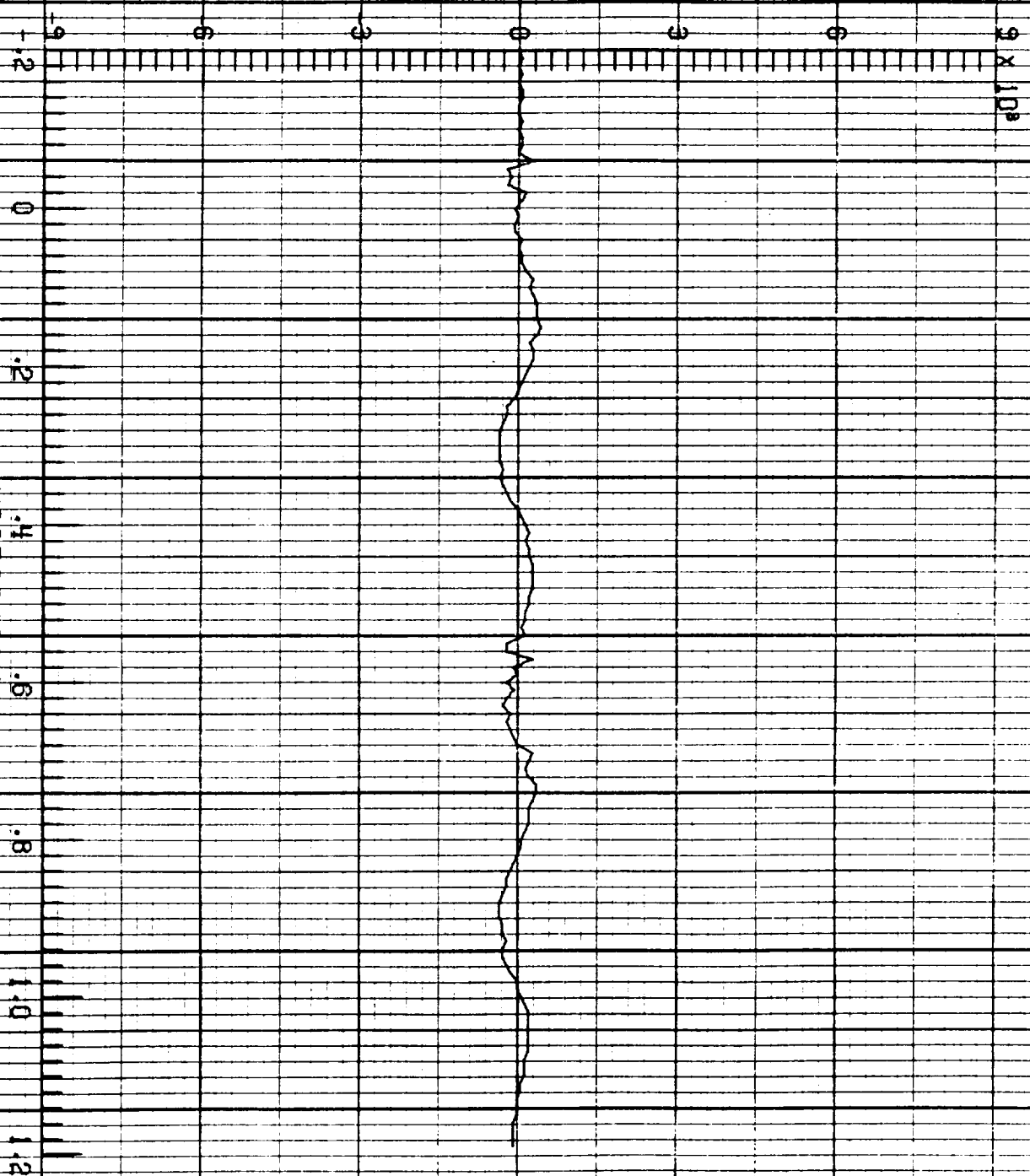
N.002

I_{II} A

19:45:06.1
CHANNEL NO. 4.1

MICROSECONDS

2×10^2

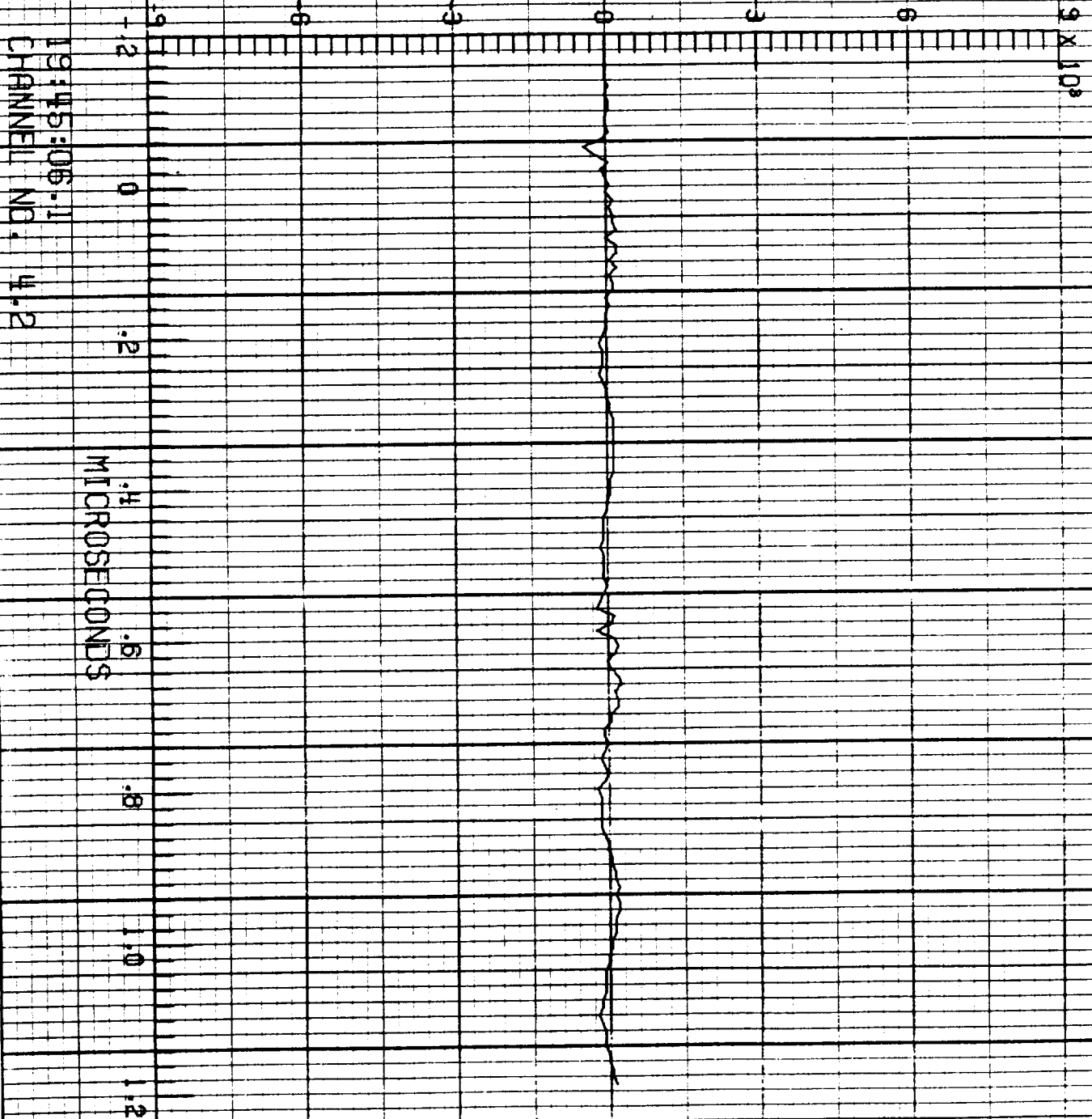


F-106 LIGHTNING/ 84-024

LEC4 RUN NO. 6

N.002

I_t A



19:45:06.11
CHANNEL NO. 4.2

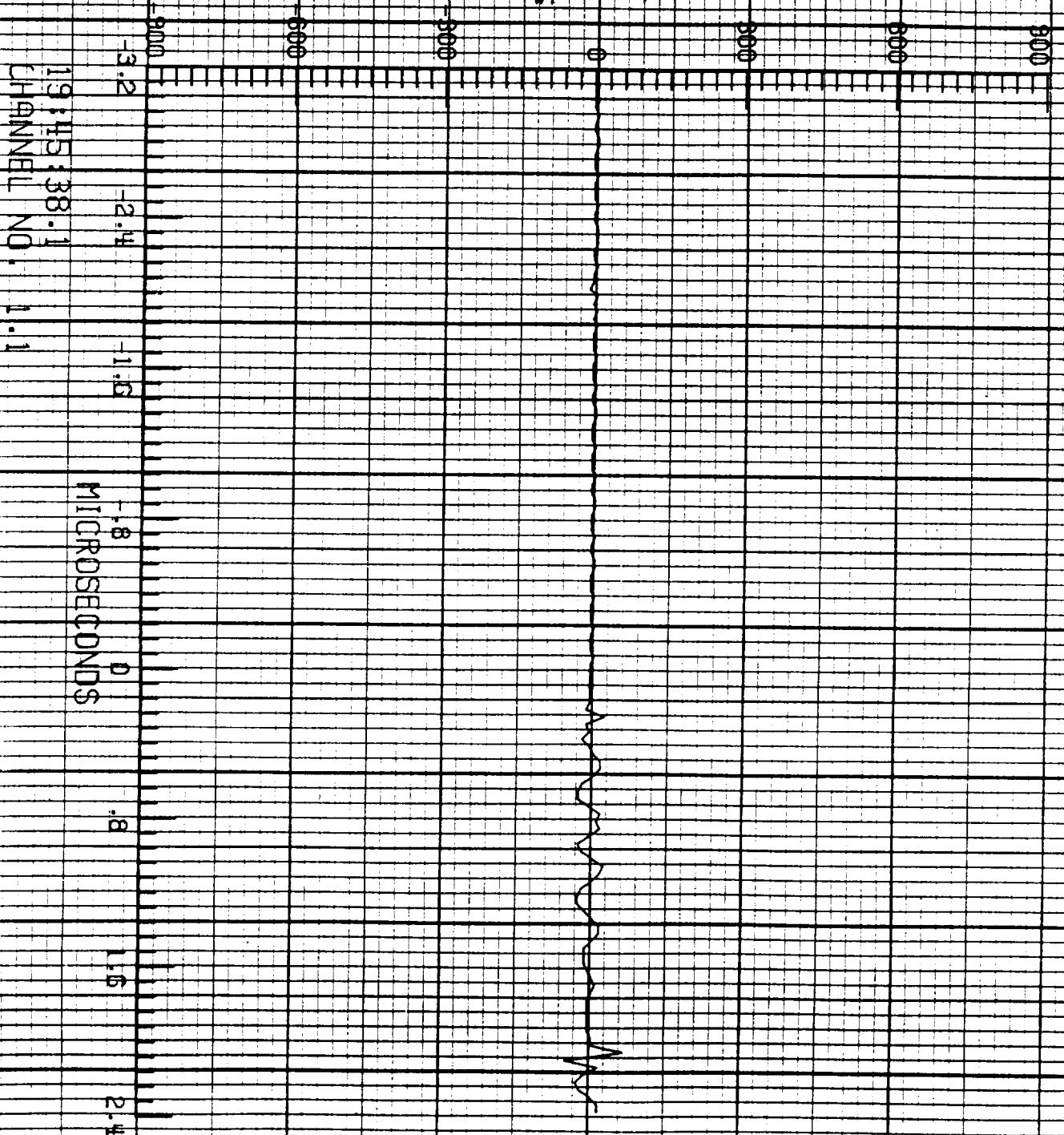
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F-106 LIGHTNING/ 84-024

LED 1 RUN NO. 7

NL003

B_v T/s



19:45:38.1
CHANNEL NO. 1.1

F-106 LIGHTNING/ 84-024

1 FC1 RUN NO. 7

N.003

B
T/s

9000
6000
3000
0
3000
6000
9000

-3.2
-2.4
-1.6
-0.8
0
.8
1.6
2.4

19:45:38.1
CHANNEL NO. 1.2

MICROSECONDS

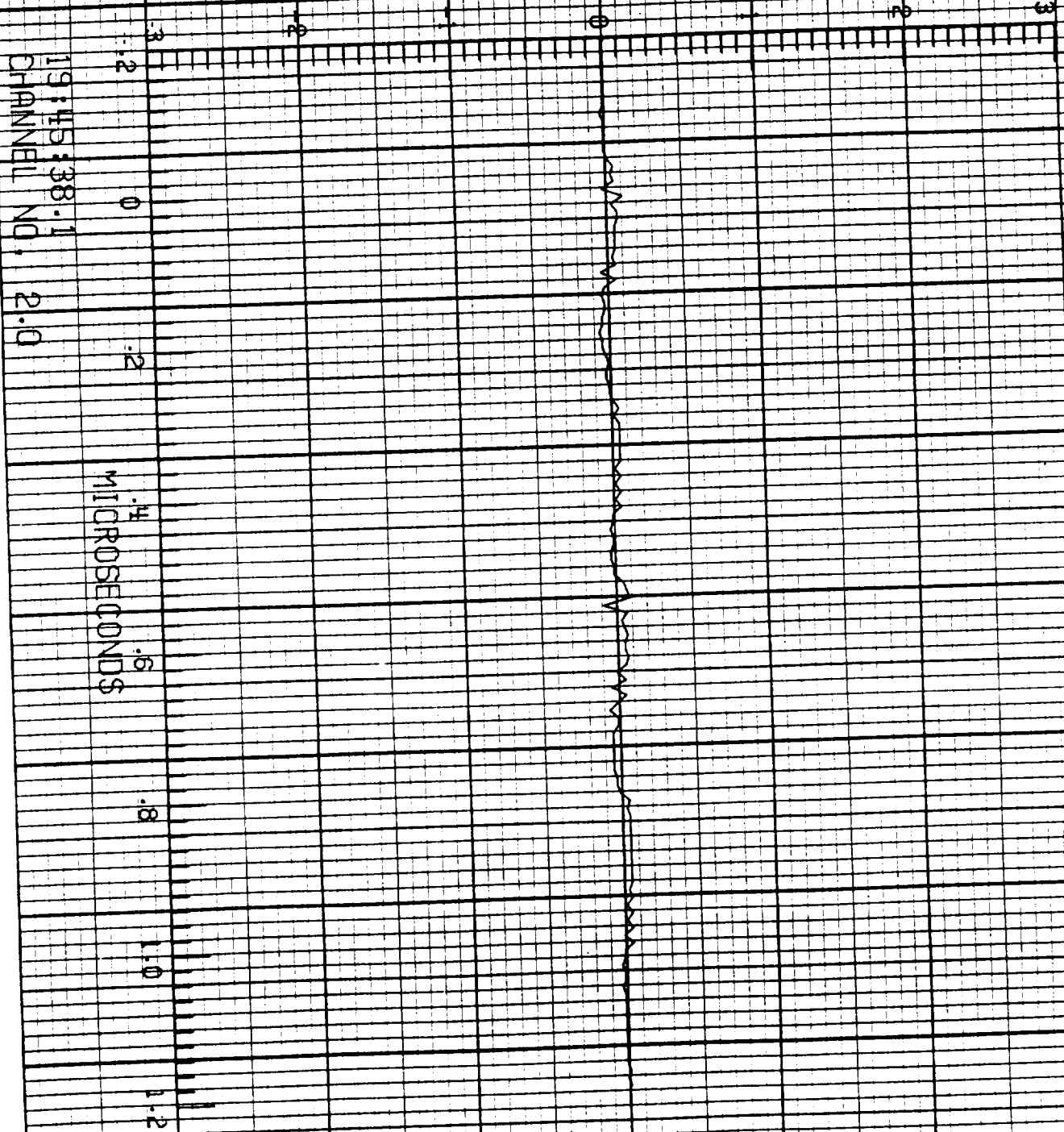
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F-106 LIGHTNING/ 84-024

LEC 2 RUN NO. 7

N.003

\bar{D}_1 A/m²



F-106 LIGHTNING/ 84-024

LEC 2 RUN NO. 7

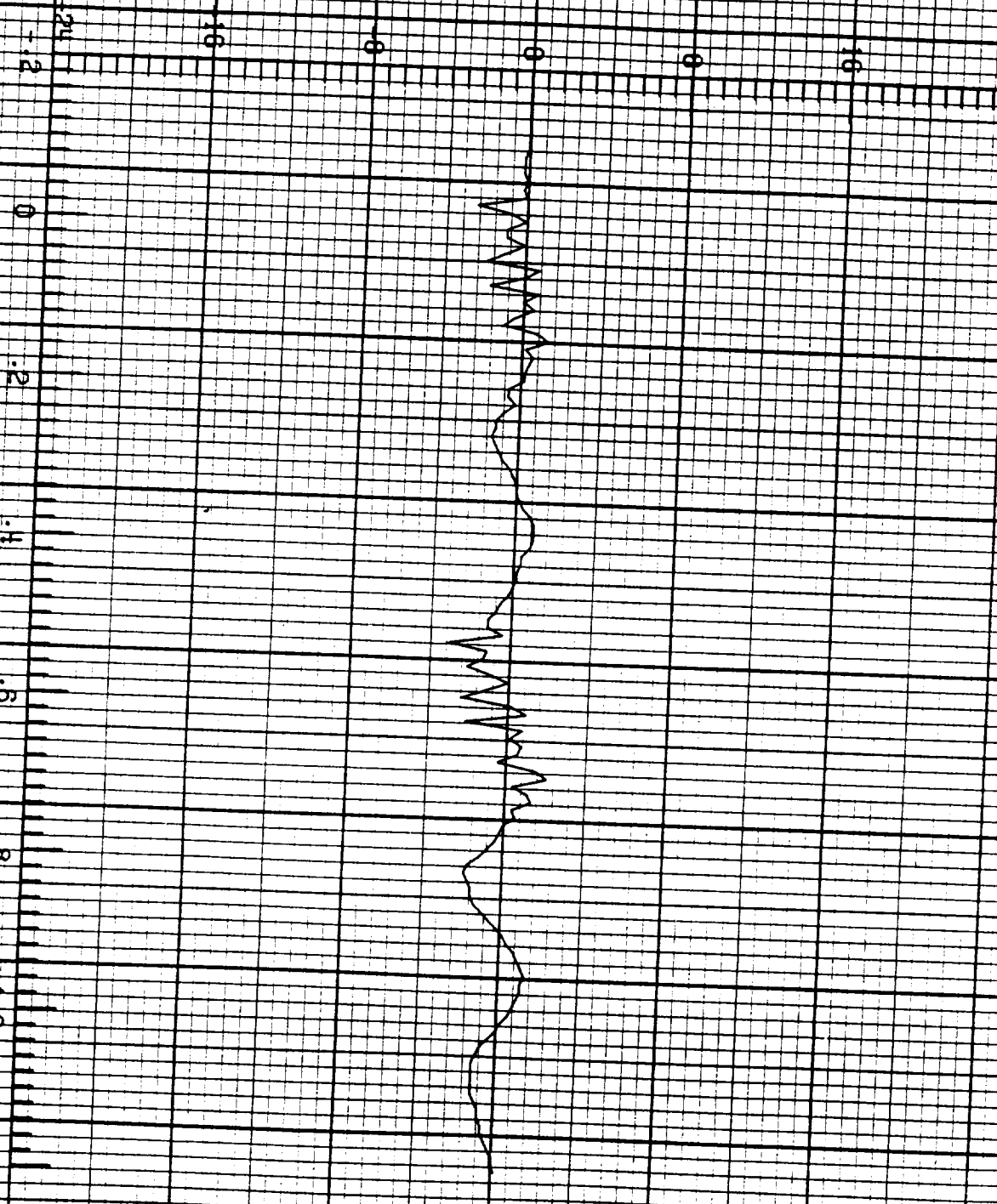
N:003

$\frac{1}{T}$ A/s

25×10^6

19:45:38.1
CHANNEL NO. 2:1

MICROSECONDS



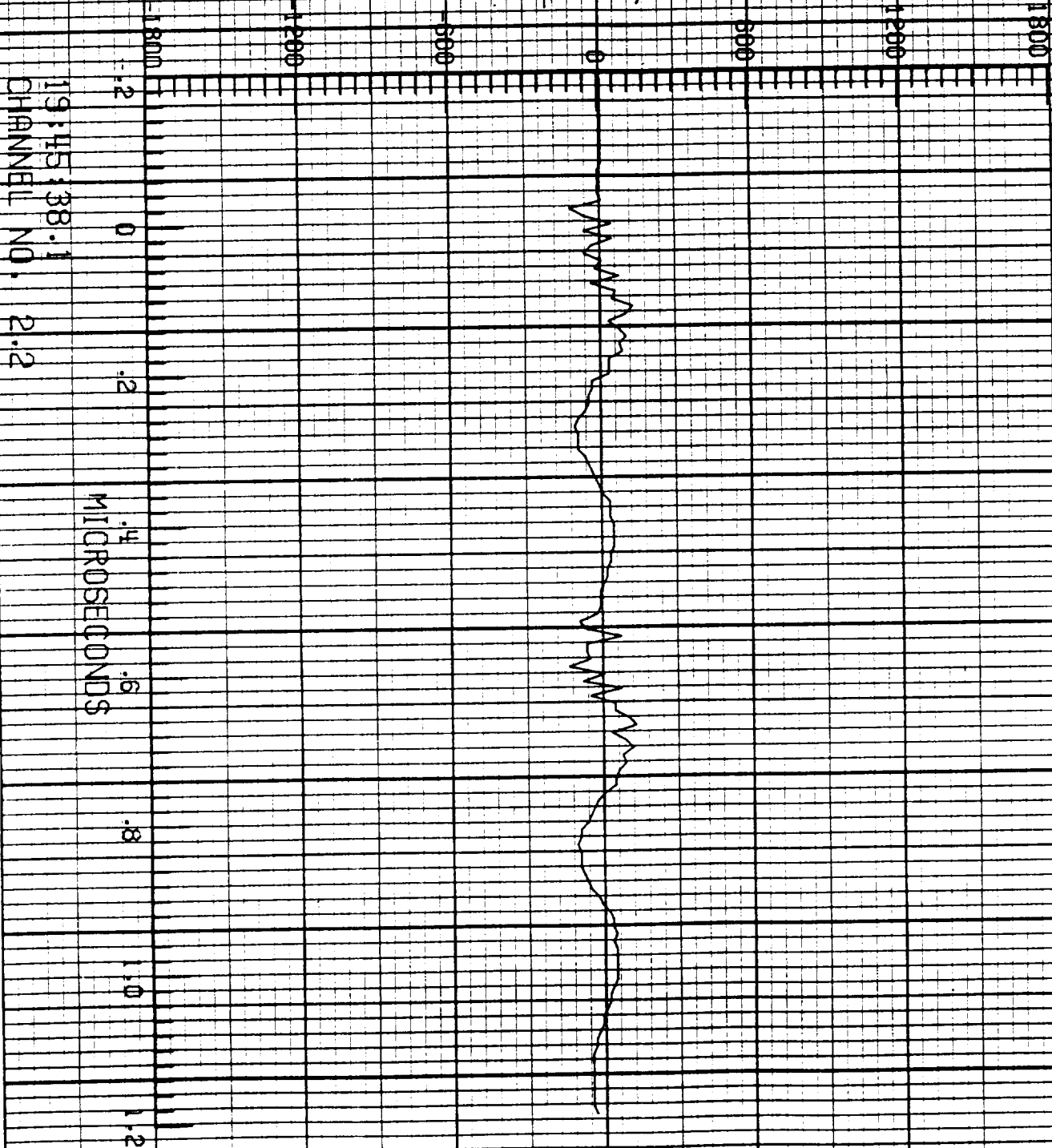
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F-106 LIGHTNING/ 84-024

LEC 2 RUN NO. 7

N.003

B₁ T/s



F-106 LIGHTNING/ 84-024

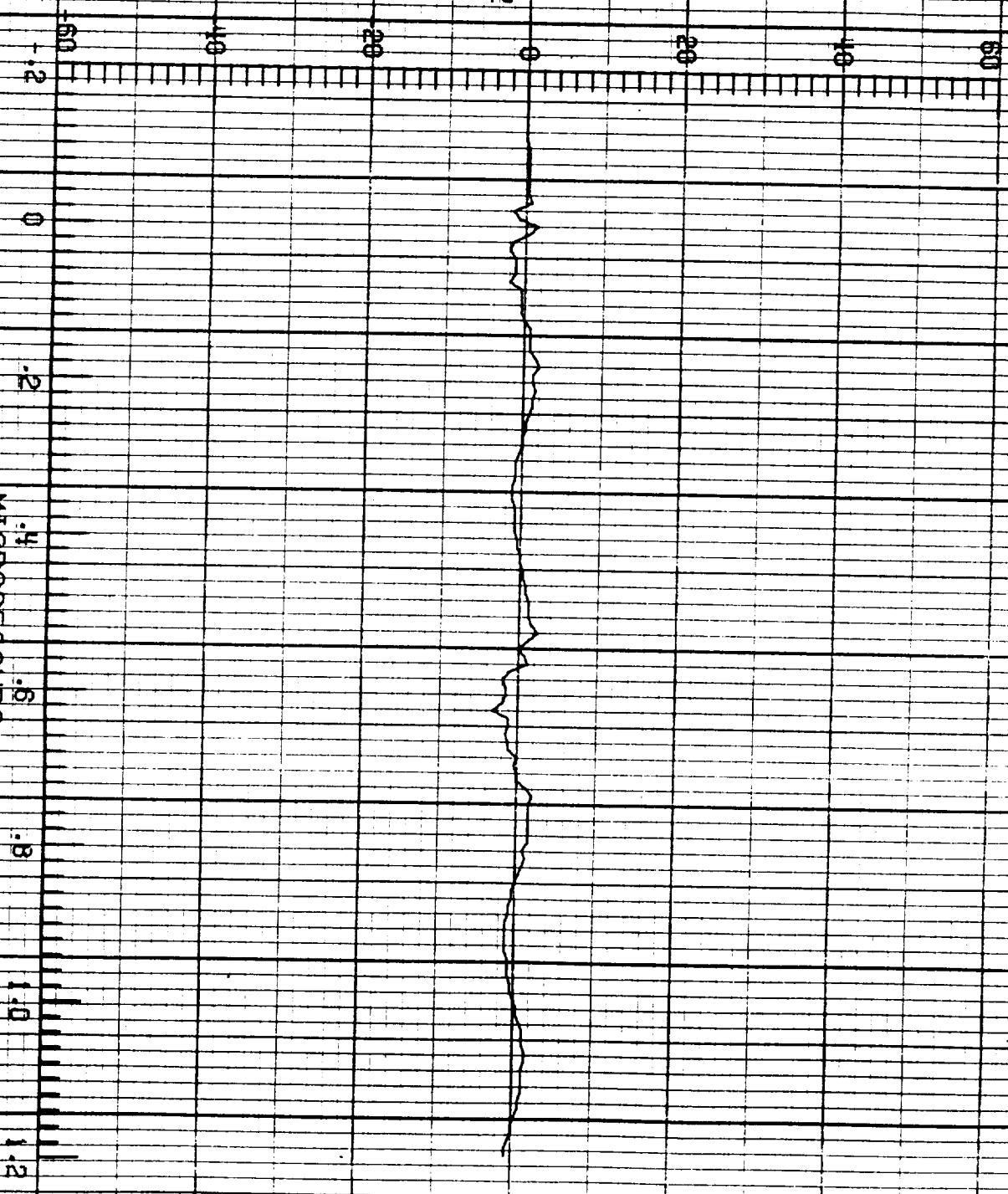
IFC 4 RUN NO. 7

N.003

V_{ra} V

19:45:38.1
CHANNEL NO. 4.0

MICROSECONDS



ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-024

LFC.4 RUN NO. 7

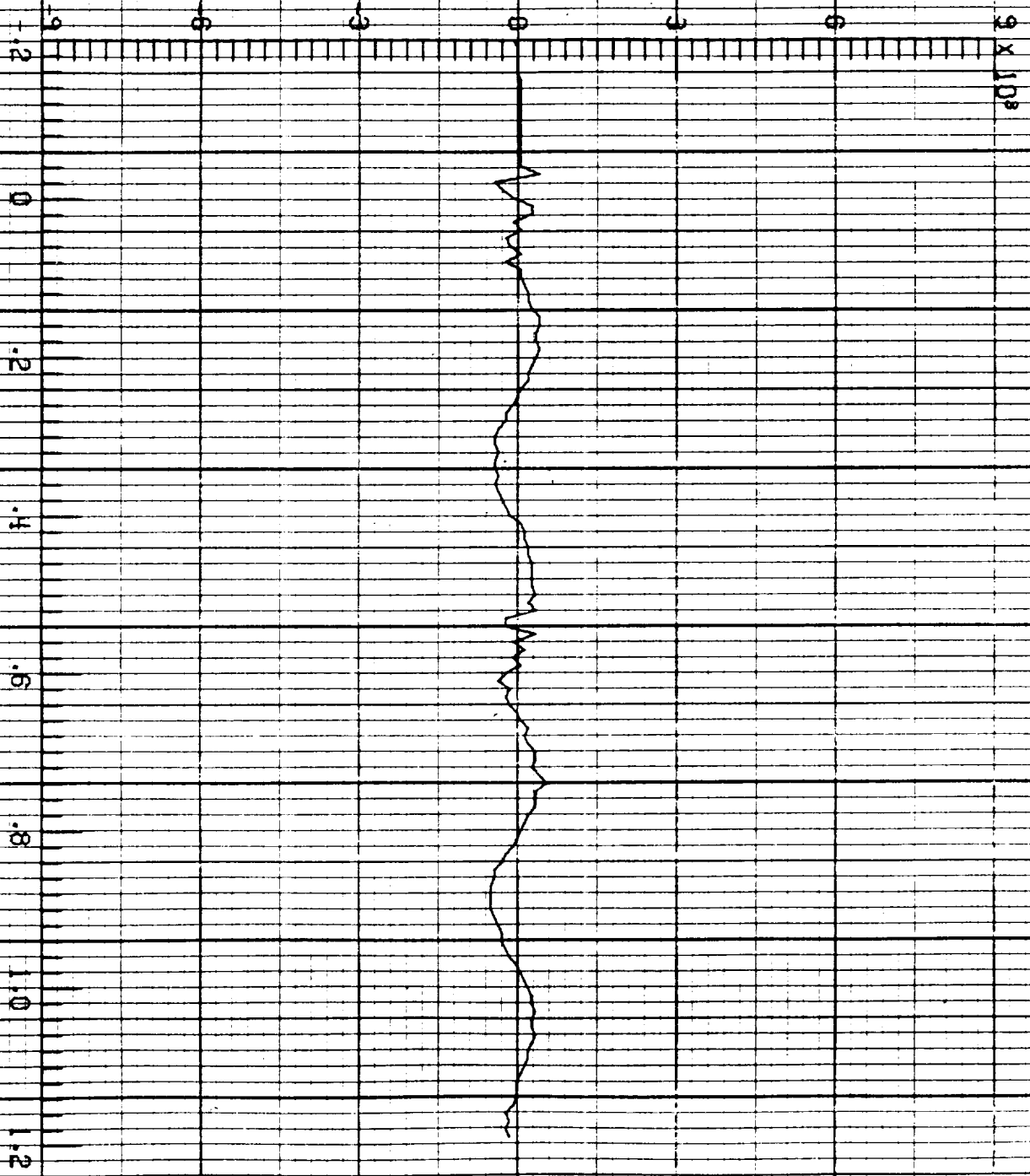
N.003

I_n A

19:45:38.1
CHANNEL NO. 4.1

MICROSECONDS

2×10^3



347

F-106 LIGHTNING/ 84-024

1 EC4 RUN NO. 7

N.003

I_t A

19:45:38.1
CHANNEL NO. 4.2

9 x 10⁸

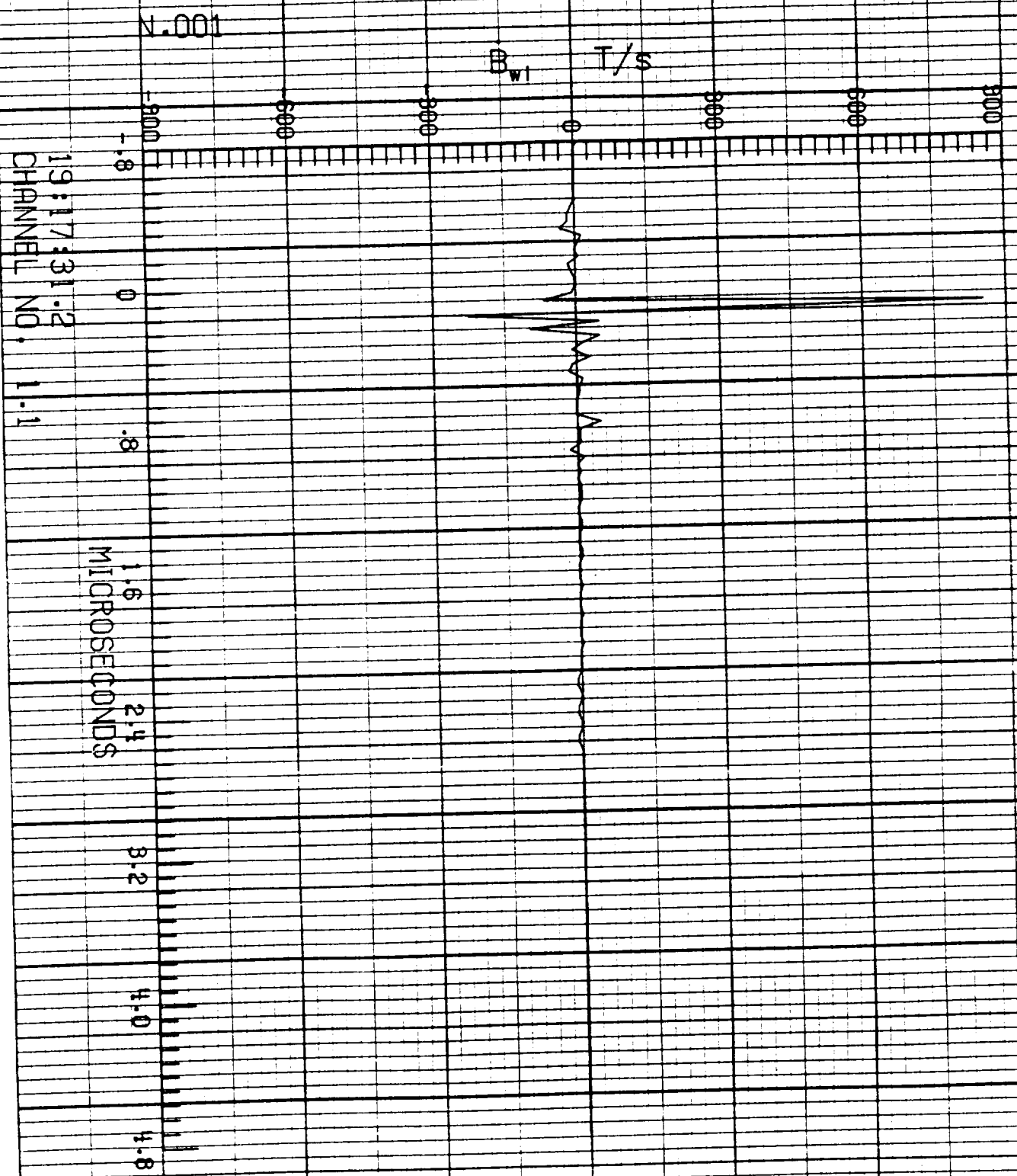
MICROSECONDS



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F-106 LIGHTNING/ 84-025

LEC 1 RIN NO. 1



19:17:31.2
CHANNEL NO. 1.1

F=106 LIGHTNING/ 84-025

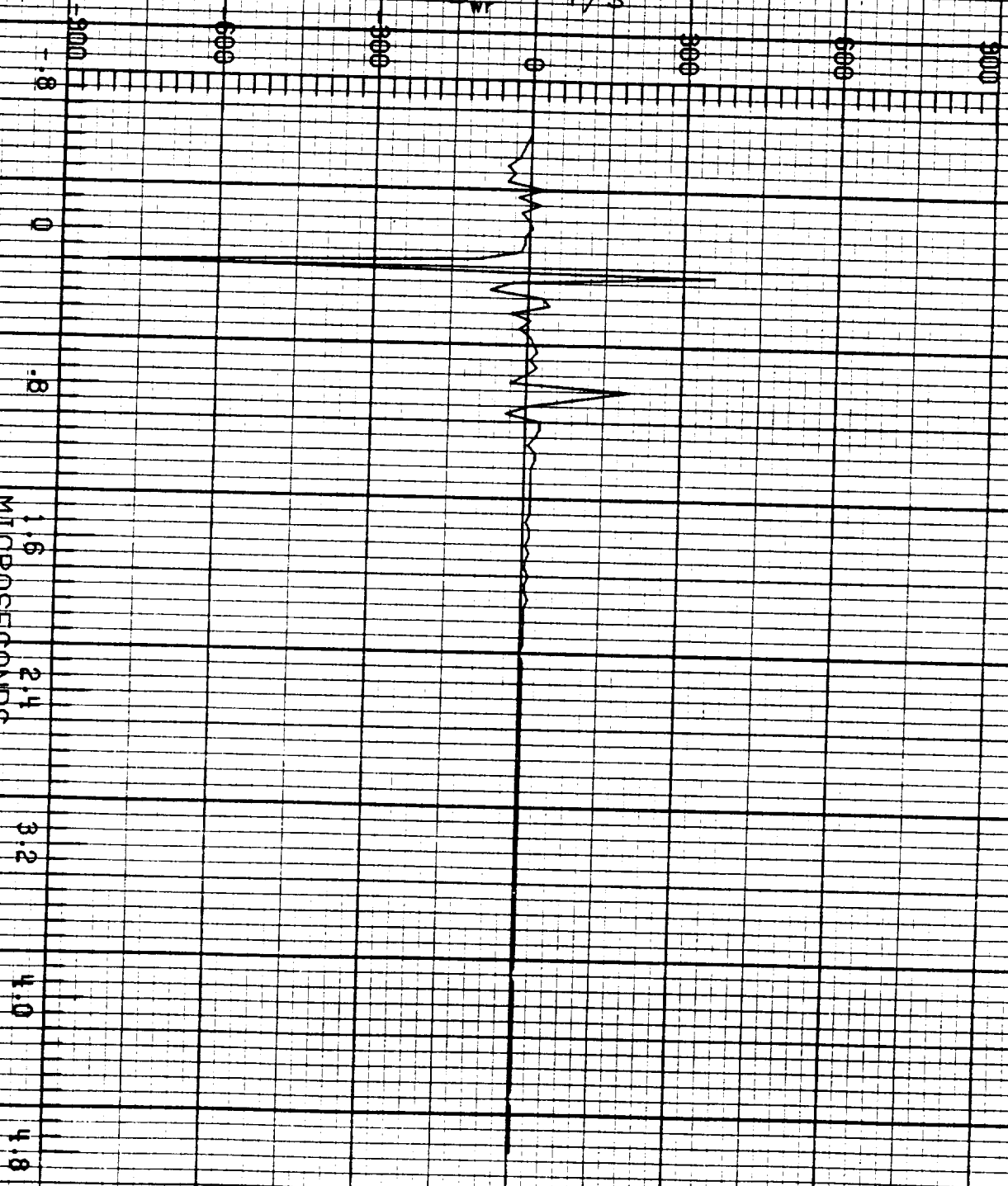
LEC 1 RUN NO. 1

N.001

B_{wr} T/s

19:17:31.2
CHANNEL NO. 1.2

MICROSECONDS



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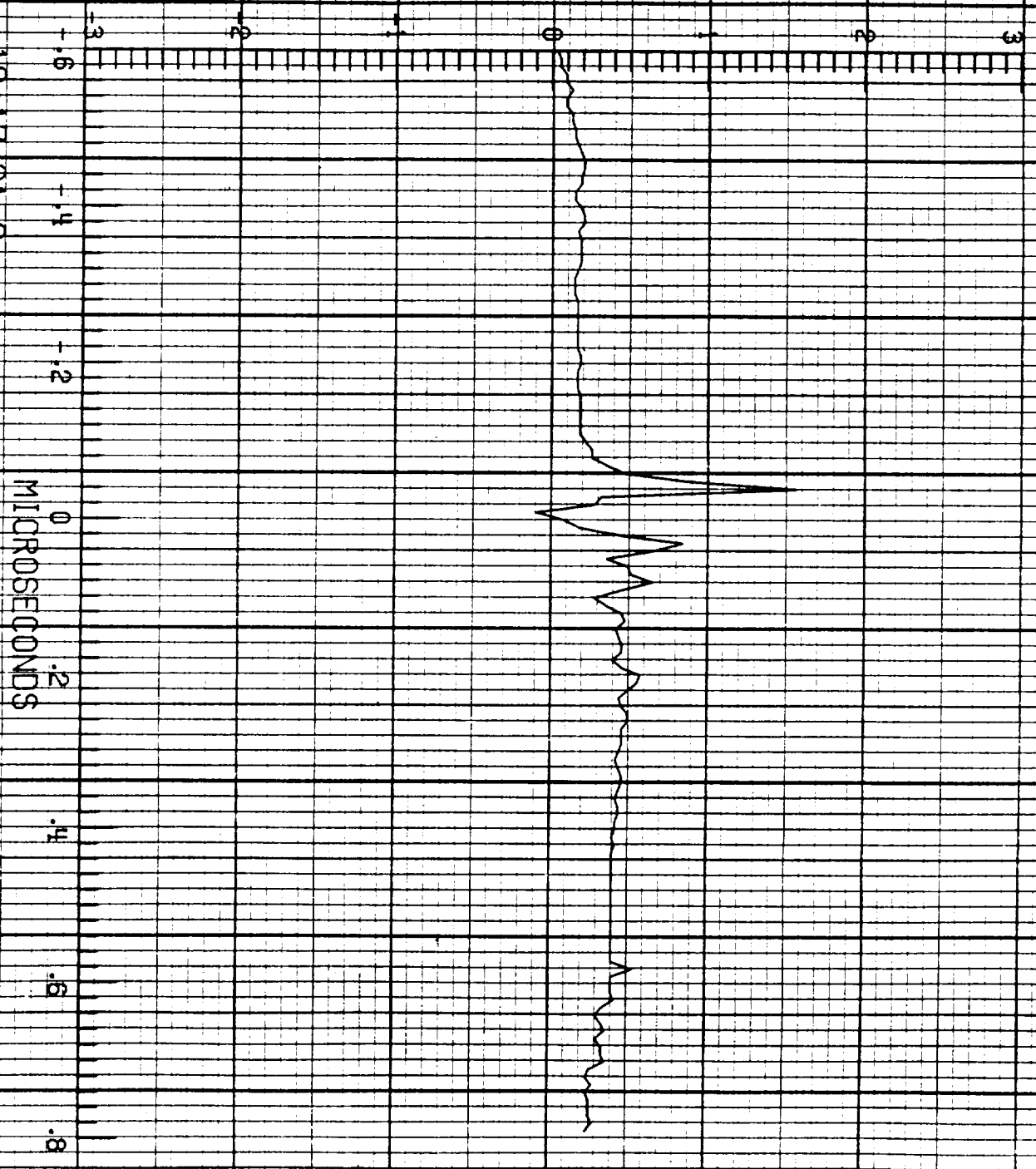
F-106 LIGHTNING/ 84-025

LEC 2 RUN NO. 1

N.001

D_t A/m²

19:17:31.2
CHANNEL NO. 2.0



F-106 LIGHTNING/ 84-025

LEC 2 RUN NO. 1

N.001

i A/s

24 x 10¹⁰

19:17:31.2
CHANNEL NO. 2.1

MICROSECONDS

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OF POOR QUALITY

F-106 LIGHTNING/ 84-025

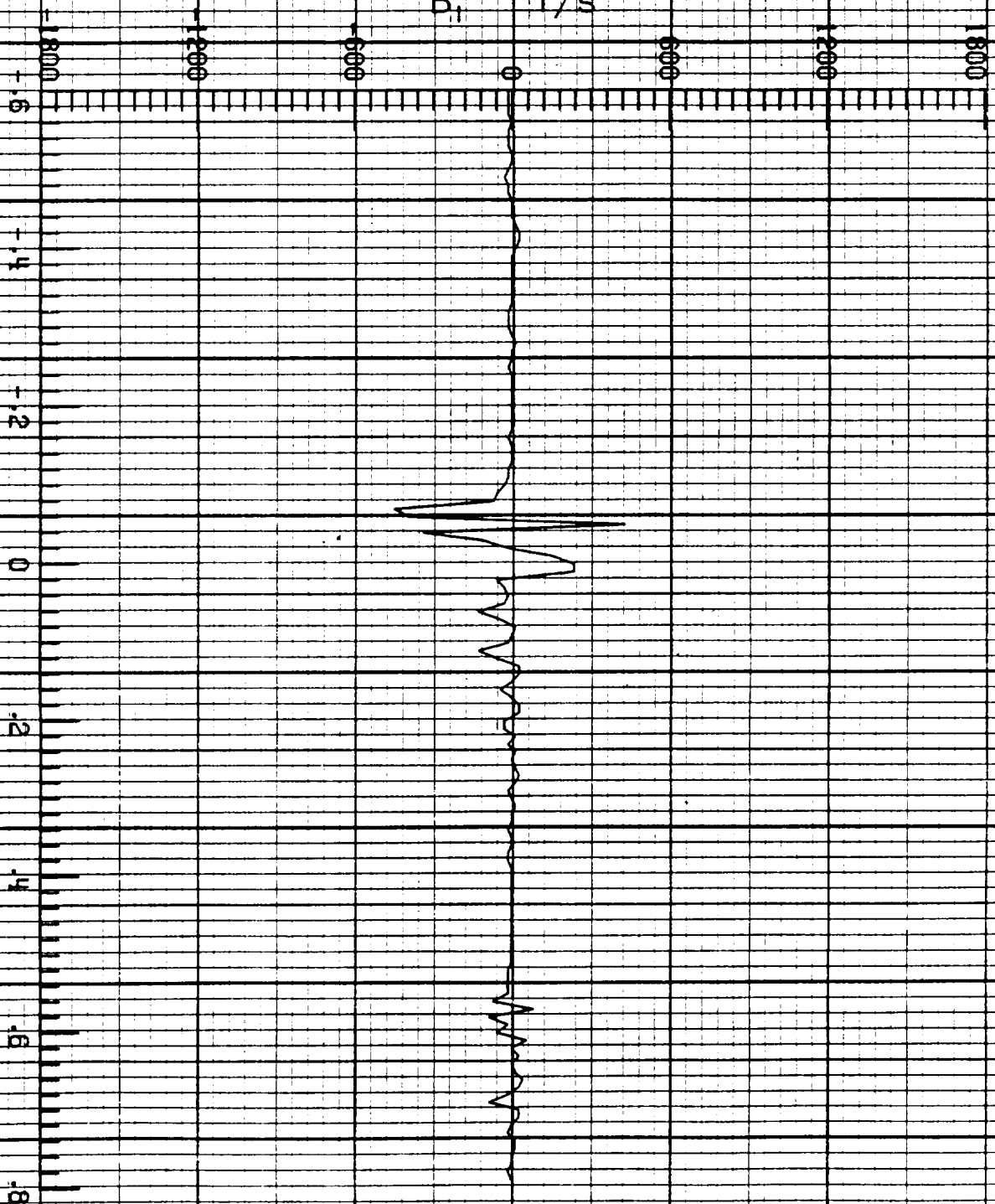
LEC 2 RUN NO. 1

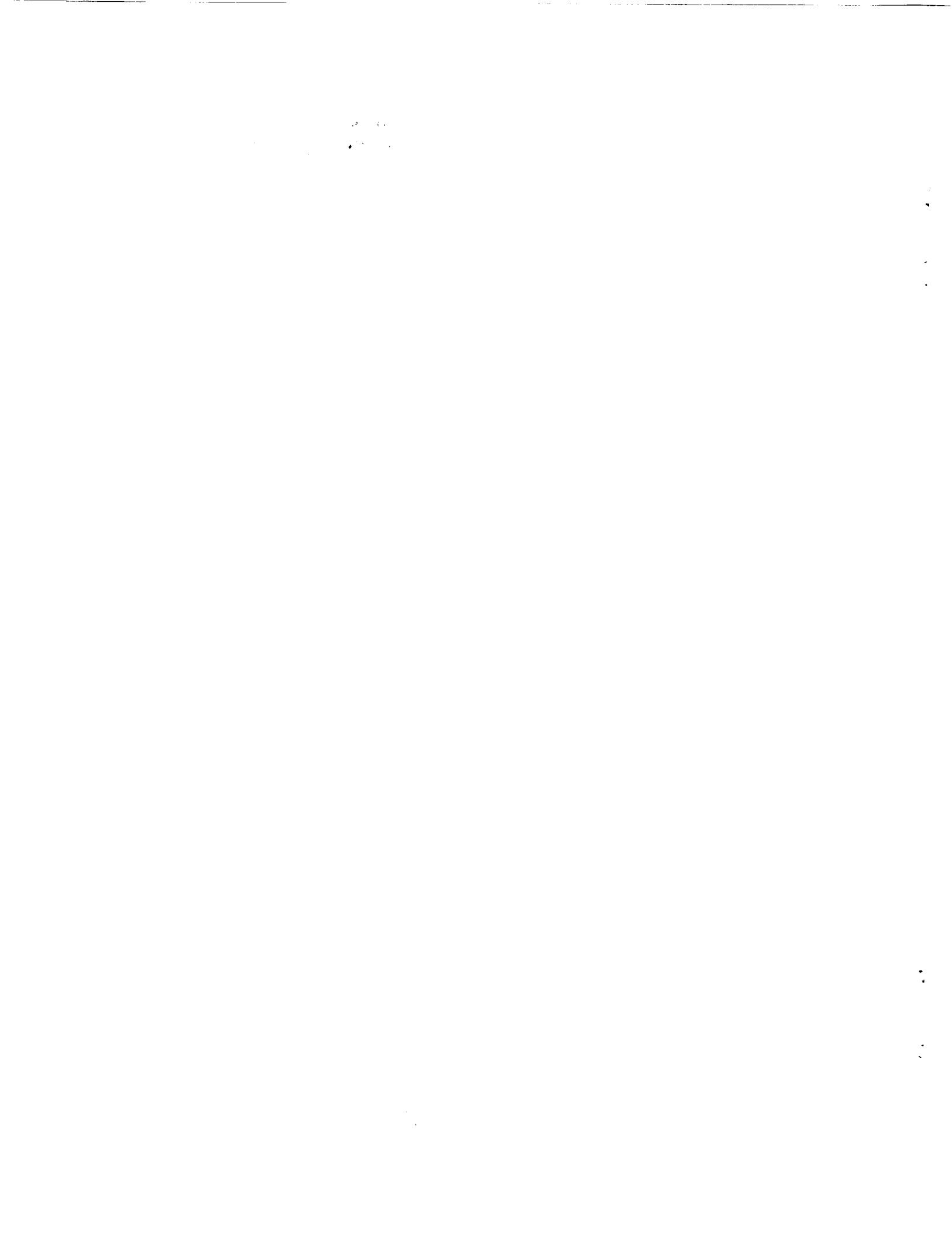
N.001

B_1 T/s

19:17:31.2
CHANNEL NO. 2.2

MICROSECONDS





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F=106 LIGHTNING/ 84-025

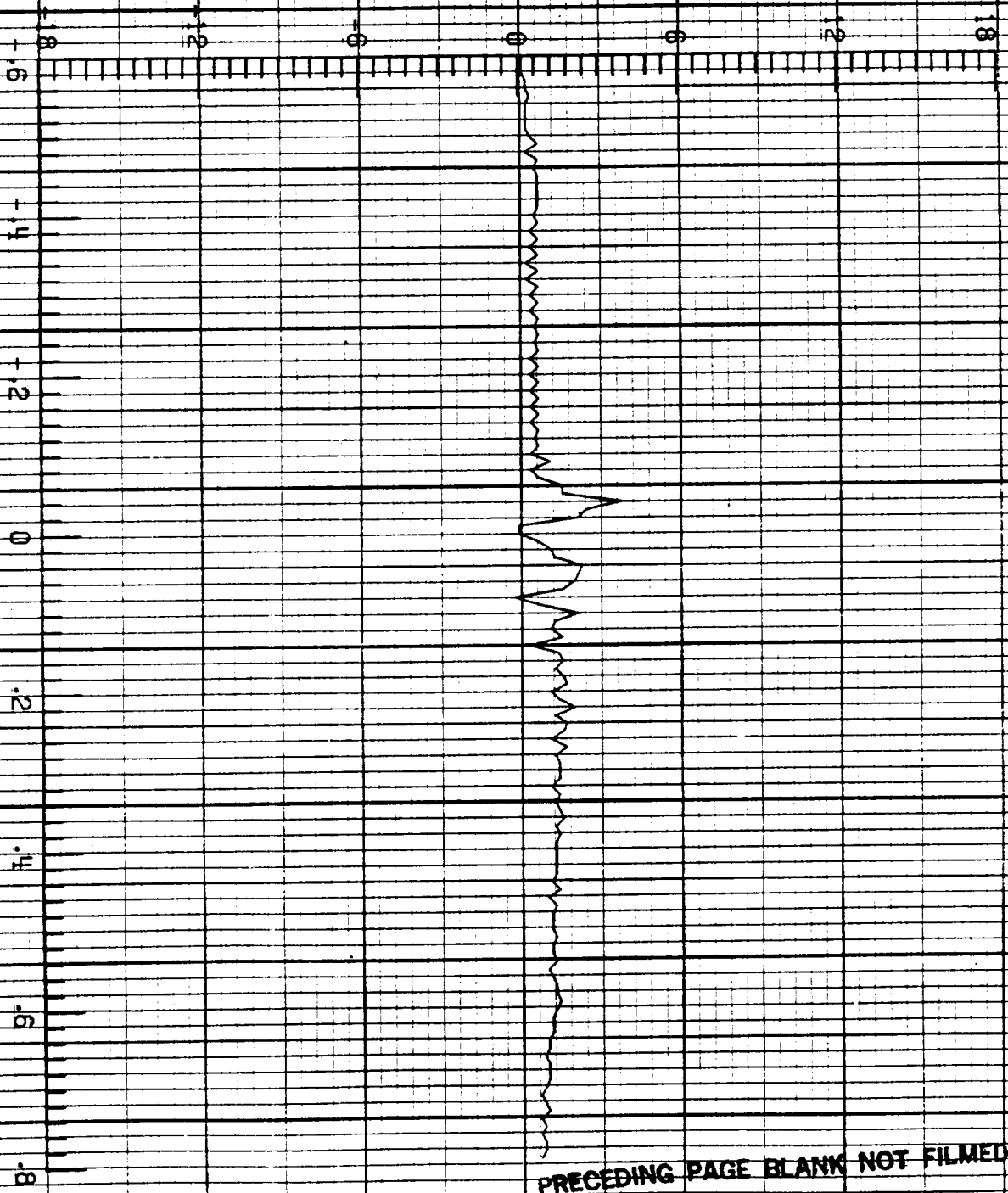
LFC 3 RUN NO. 1

N.001

D_w A/m²

19:17:31.2
CHANNEL NO. 3.1

MICROSECONDS



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F-106 LIGHTNING/ 84-025

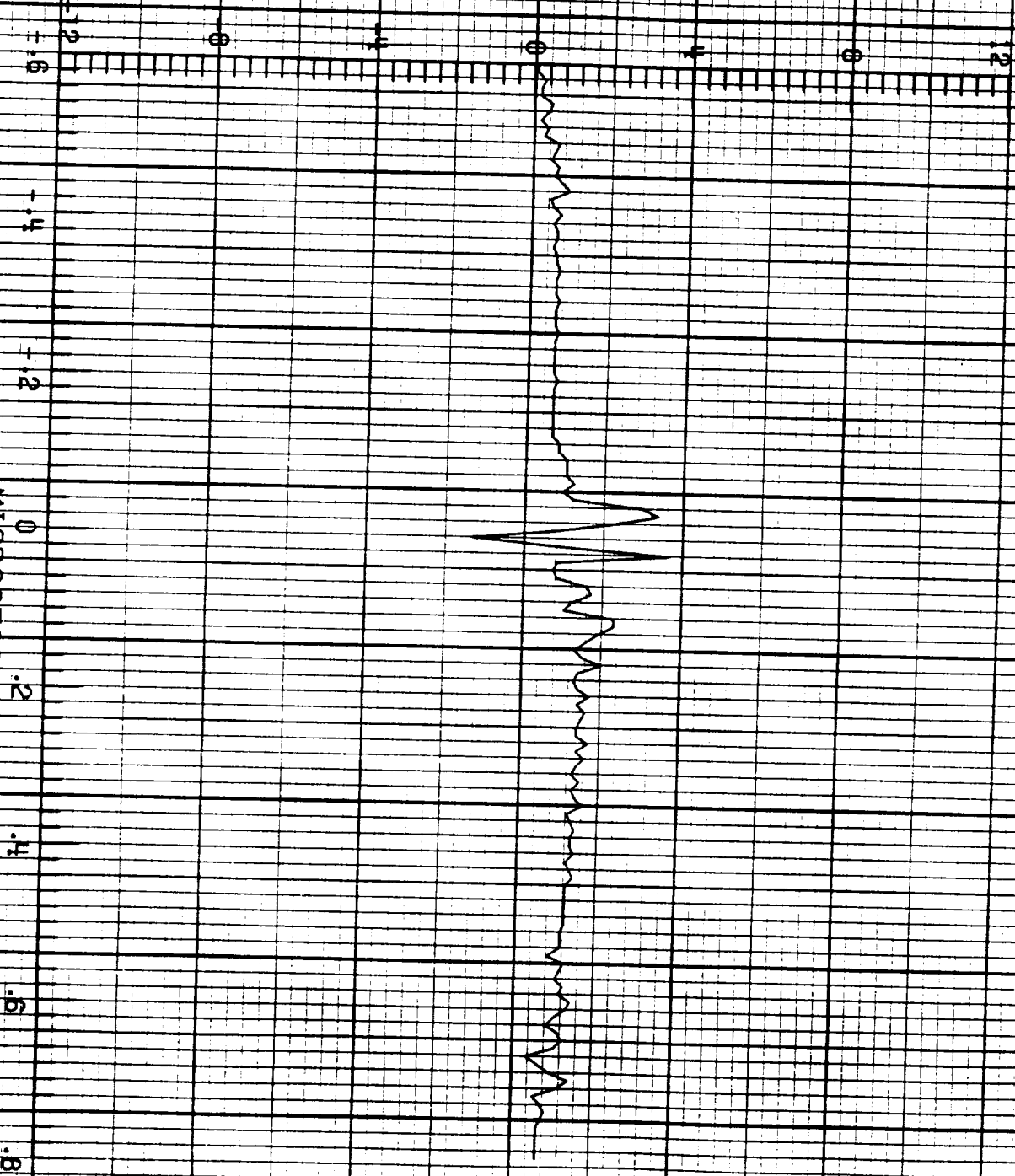
LEF 3 RUN NO. 1

N.001

D_r A/m²

19:17:31.2
CHANNEL NO. 3.2

MICROSECONDS



F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 1

N.001

V_{ra} V

19:17:31.2
CHANNEL NO. 4.0

ORIGINAL PAGE IS
OF POOR QUALITY

MICROSECONDS

F-106 LIGHTNING/ 84-025

FC4 RUN NO. 1

N.001

I_n A

19:17:31.2
CHANNEL NO. 4.1

9×10^2

MICROSECONDS

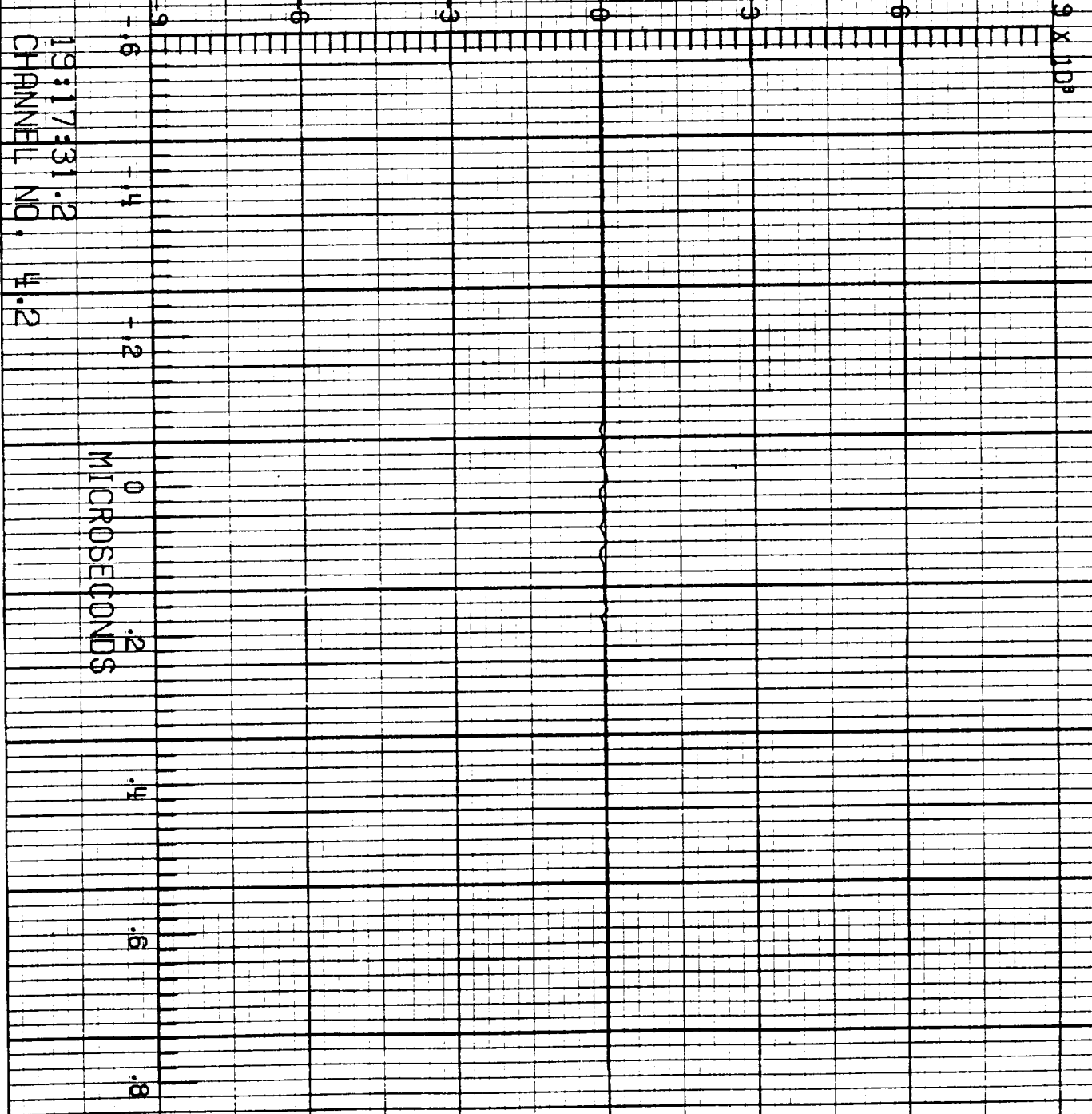
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F-106 LIGHTNING/ 84-025

LECH RUN NO. 1

N.001

I_t A



F-106 LIGHTNING/ 84-025

LEC 1 RUN NO. 2

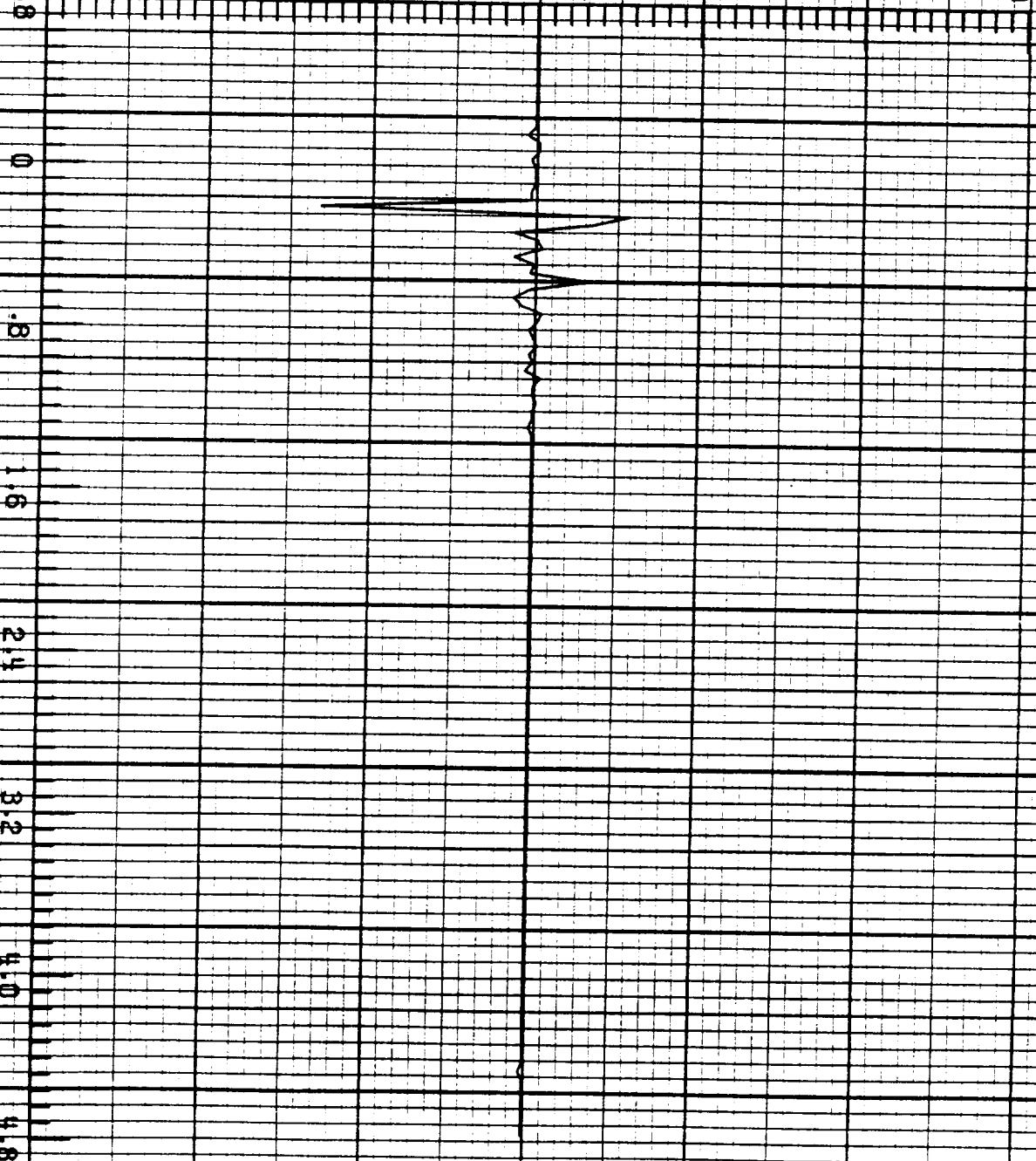
5.003

B_{VI} T/s

3000
2000
1000
0
-1000
-2000
-3000

19:18:25.8
CHANNEL NO. 1.1

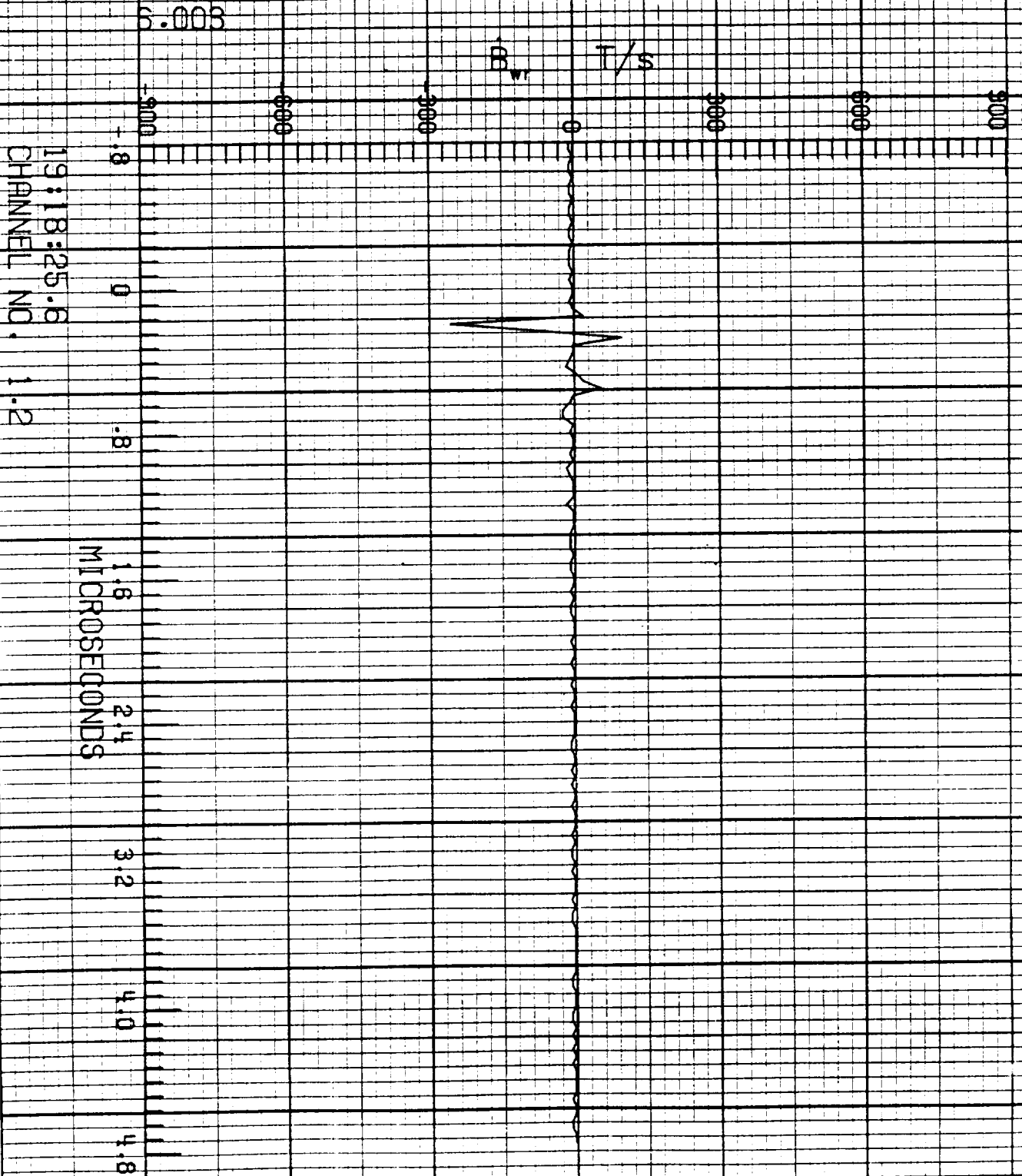
MICROSECONDS
0
.8
1.6
2.4
3.2
4.0
4.8



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F-106 LIGHTNING/ 84-025

LFC 1 RUN NO. 2



19:18:25.6
CHANNEL NO. 1.2

F=106 LIGHTNING/ 84-025

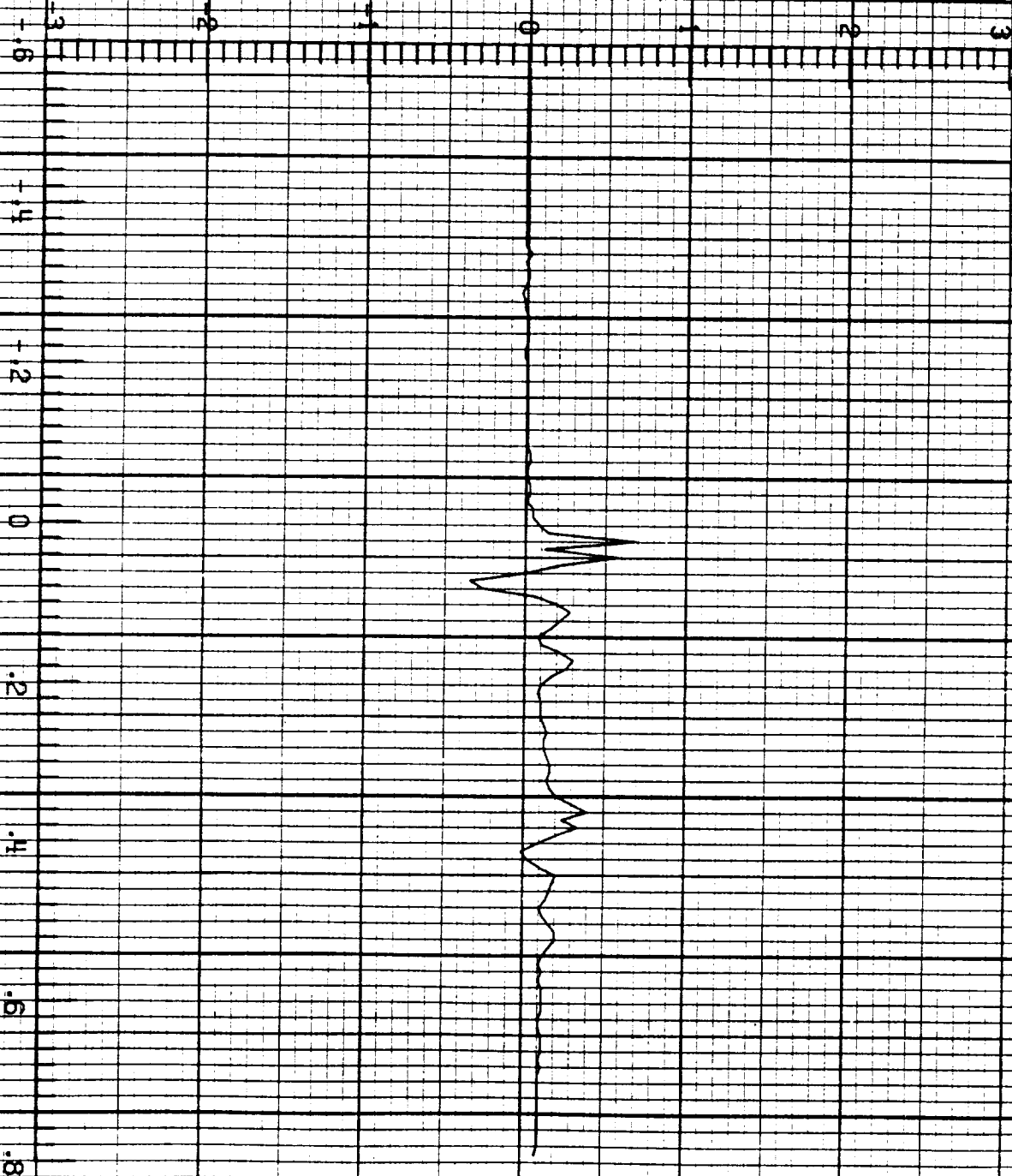
LEC 2 RUN NO. 2

5.003

\dot{D}_t A/m²

19:18:25.6
CHANNEL NO. 2.0

MICROSECONDS



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OF POOR QUALITY

F=106 LIGHTNING/ 84-025

LEC 2 RUN NO. 2

5.008

I A/S

19:18:25.6
CHANNEL NO. 2.1

MICROSECONDS

24×10^{10}

F=106 LIGHTNING/ 84-025

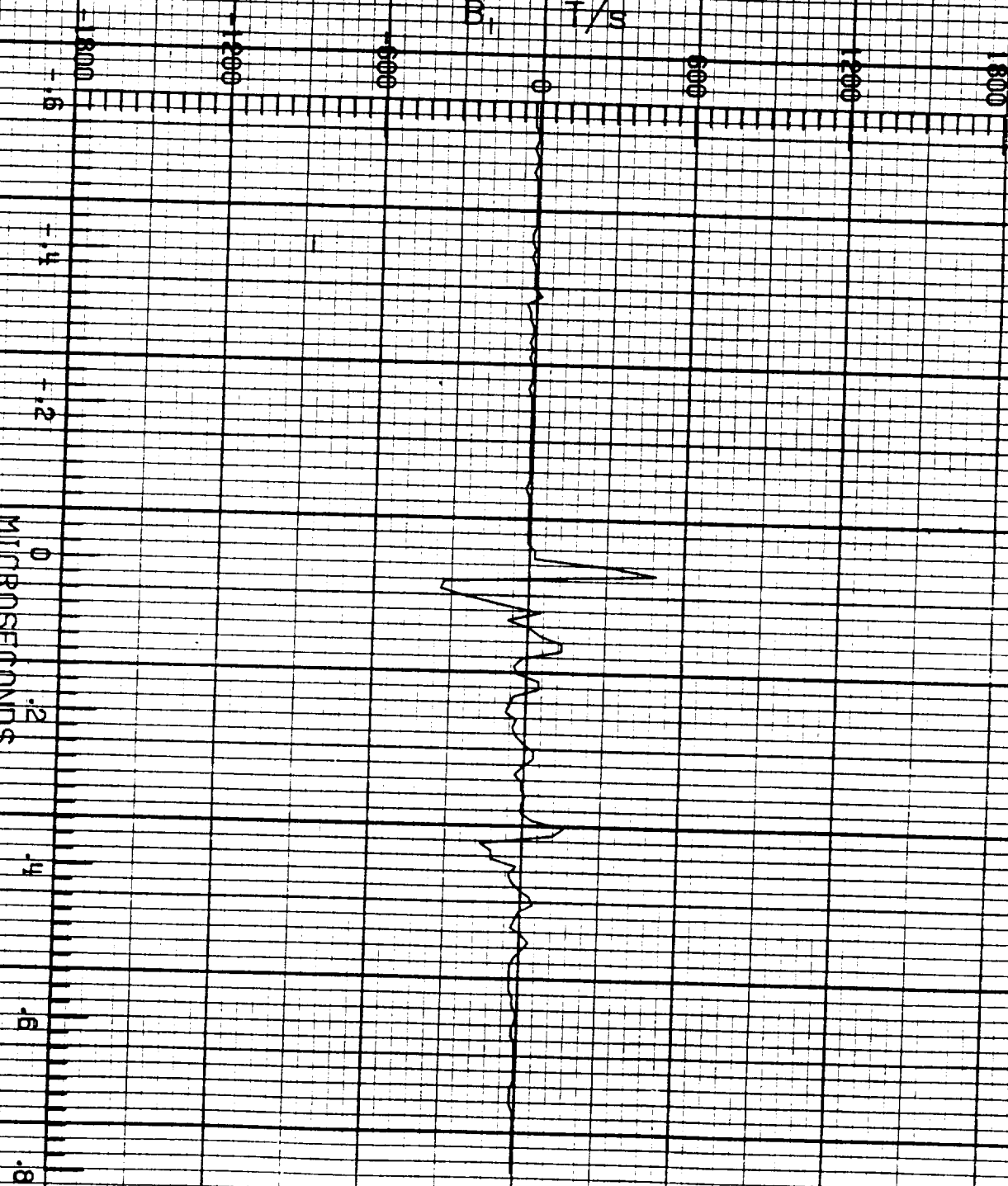
IFC2 RUN NO. 2

5.003

B_1 T/s

19:18:25.6
CHANNEL NO. 2.2

MICROSECONDS



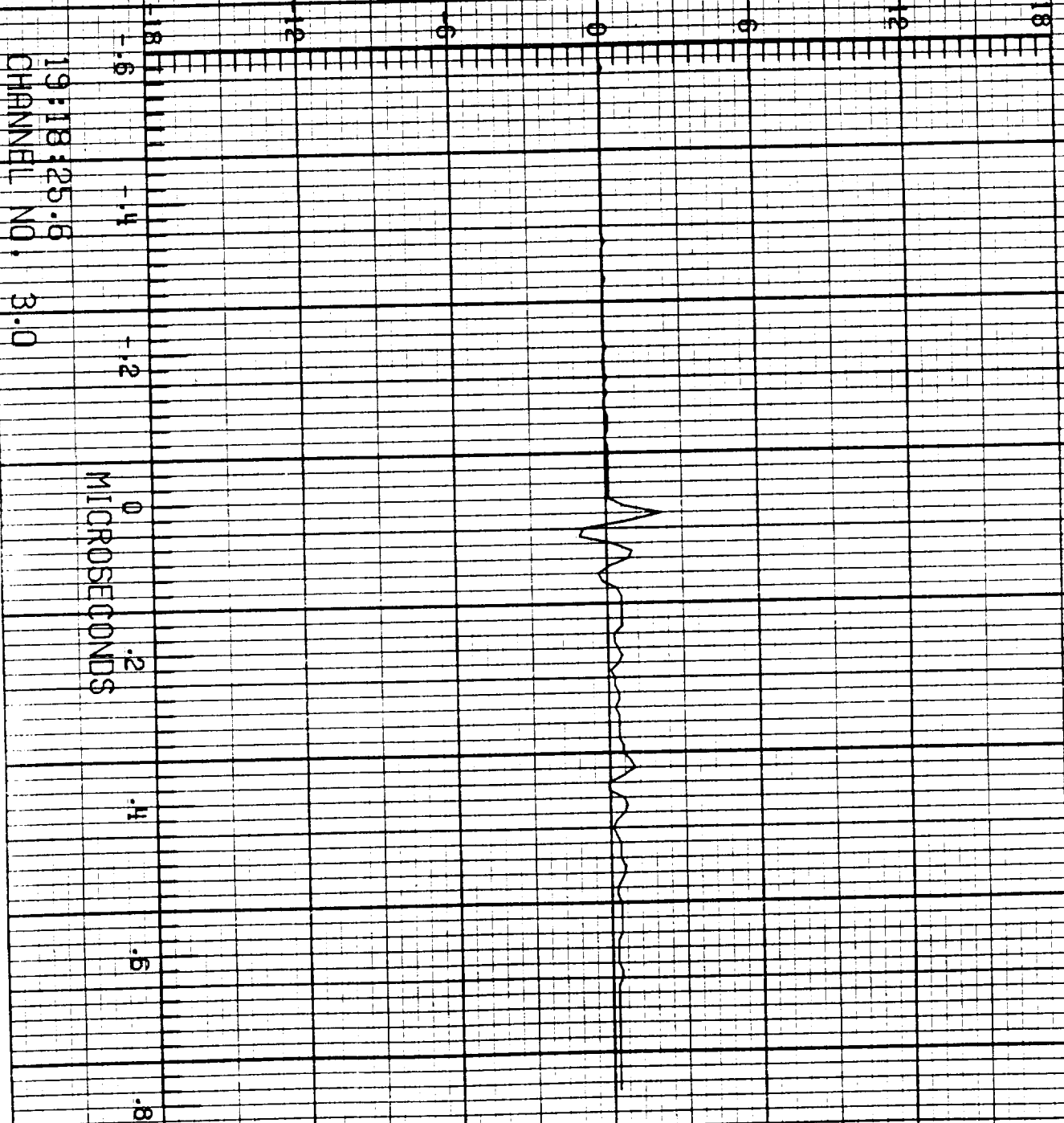
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F-106 LIGHTNING/ 84-025

LECS RUN NO. 2

5.003

\bar{D}_{WF} A/m²



F-106 LIGHTNING/ 84-025

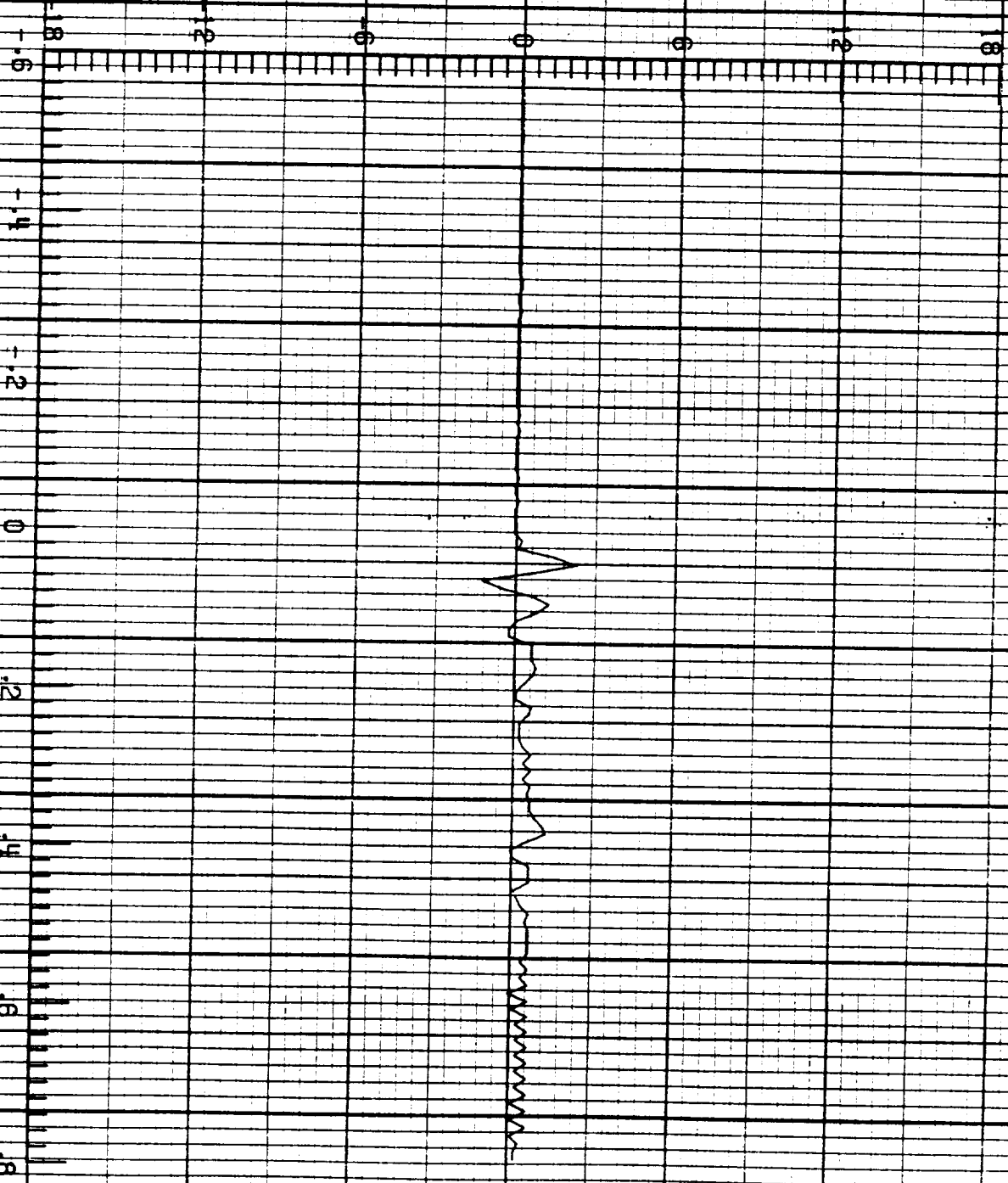
LFC3 RUN NO. 2

6.003

D_{wl} A/m²

19:18:25.6
CHANNEL NO. 3.1

MICROSECONDS



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F-106 LIGHTNING/ 84-025

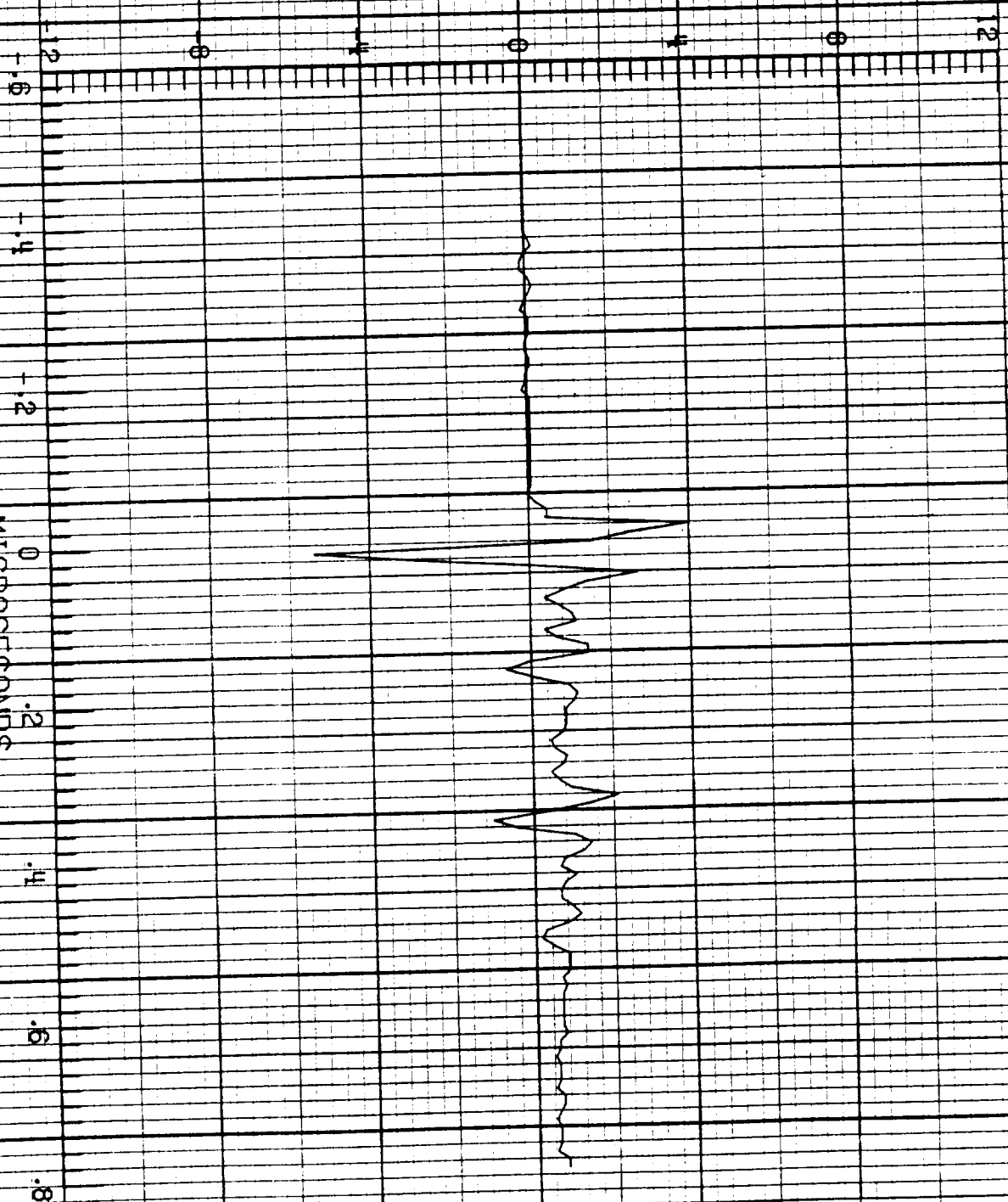
LEC 3 RUN NO. 2

5.003

D_r A/m²

19:18:25.6
CHANNEL NO. 3.2

MICROSECONDS



F=106 LIGHTNING/ 84-025

LEC 4 RUN NO. 2

5.003

V_{ra} V

60 40 20 0 20 40 60

-.6

-.4

-.2

0

.2

.4

.6

.8

19:18:25.8

CHANNEL NO. 4.0

MICROSECONDS

F-106 LIGHTNING/ 84-025

LEC4 RUN NO 2

S.003

I_n A

19:18:25.8
CHANNEL NO. 4.1

MICROSECONDS

9 X 10³

F-106 LIGHTNING/ 84-025

LEC4 RUN NO. 2

6.003

I_t A

19:18:25.6
CHANNEL NO. 4.2

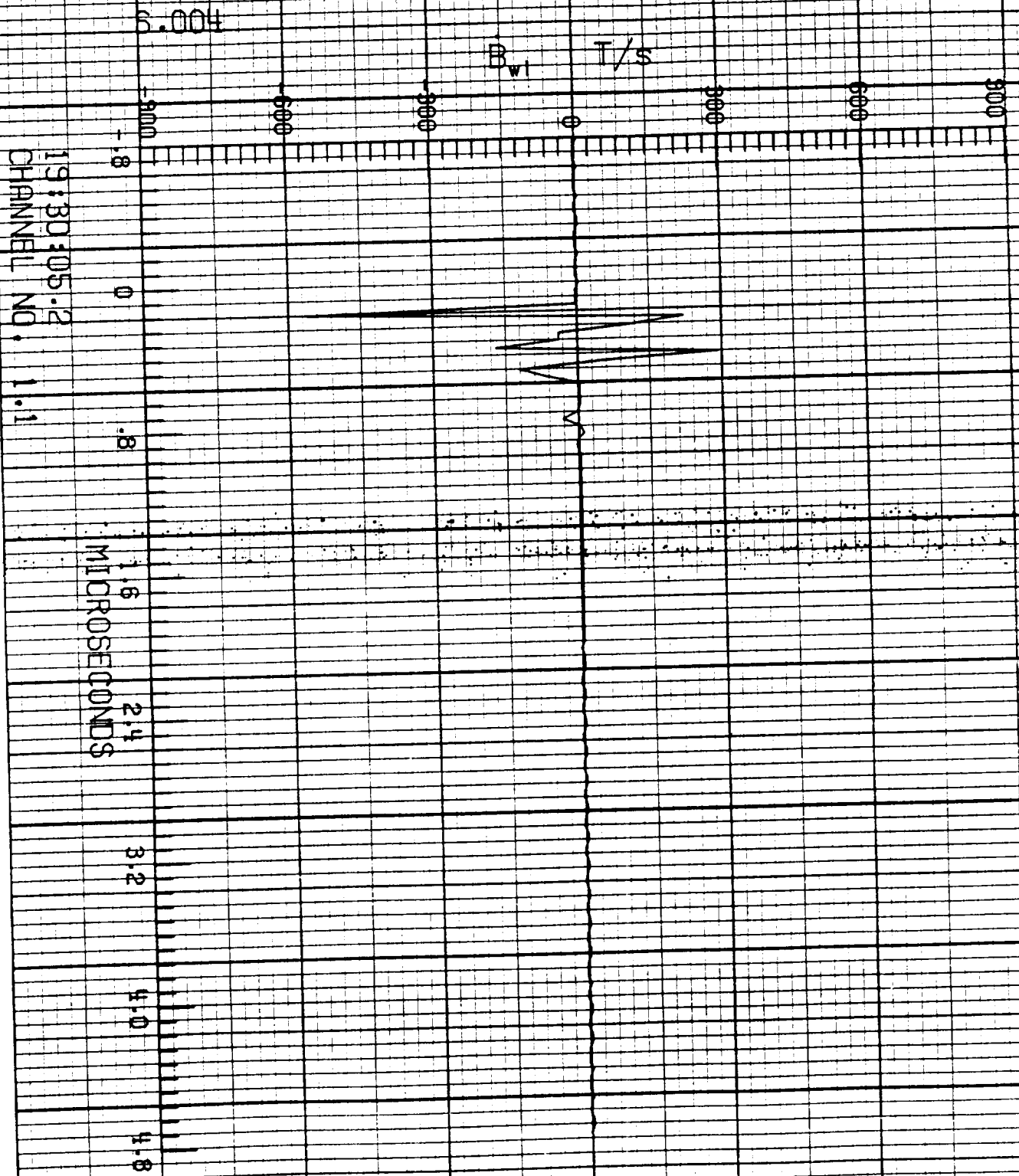
9×10^3

MICROSECONDS

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F-106 LIGHTNING/ 84-025

LEF 1 RUN NO. 3



19:30:05.2
CHANNEL NO. 1.1

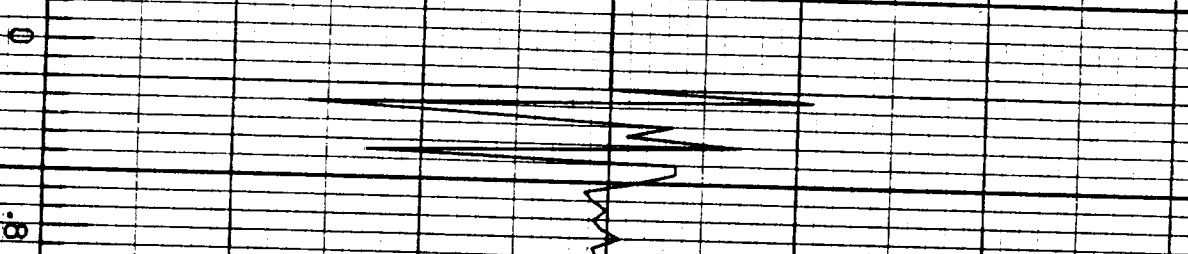
F-106 LIGHTNING/ 84-025

LEC1 RUN NO. 3

5.004

EP
T/s

119:30:05.2
CHANNEL NO. 1.2



MICROSECONDS

1.6
2.4
3.2
4.0
4.8

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E-106 LIGHTNING/ 84-025

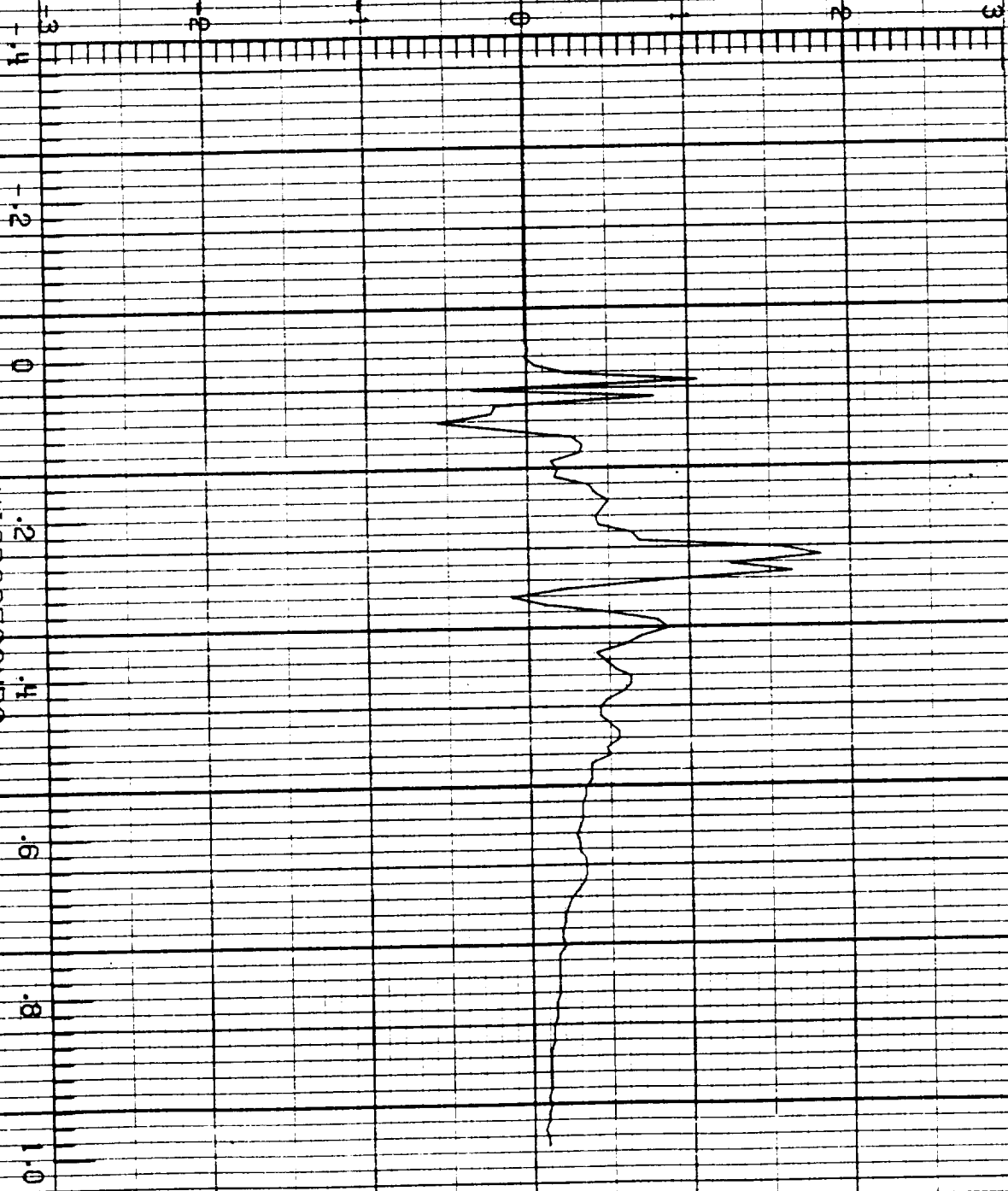
LEC 2 RUN NO. 3

5.004

D_t A/m²

19:30:05.2
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-025

LEC 2 RUN NO. 3

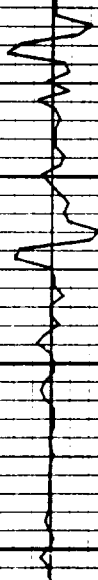
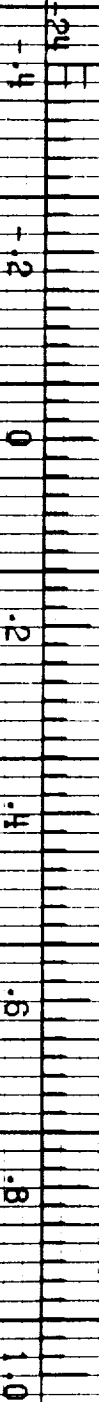
5.004

I A/s

24 X 10¹⁰

19:30:05.2
CHANNEL NO. 2.1

MICROSECONDS



F-106 LIGHTNING/ 84-025

1 FC2 RUN NO. 3

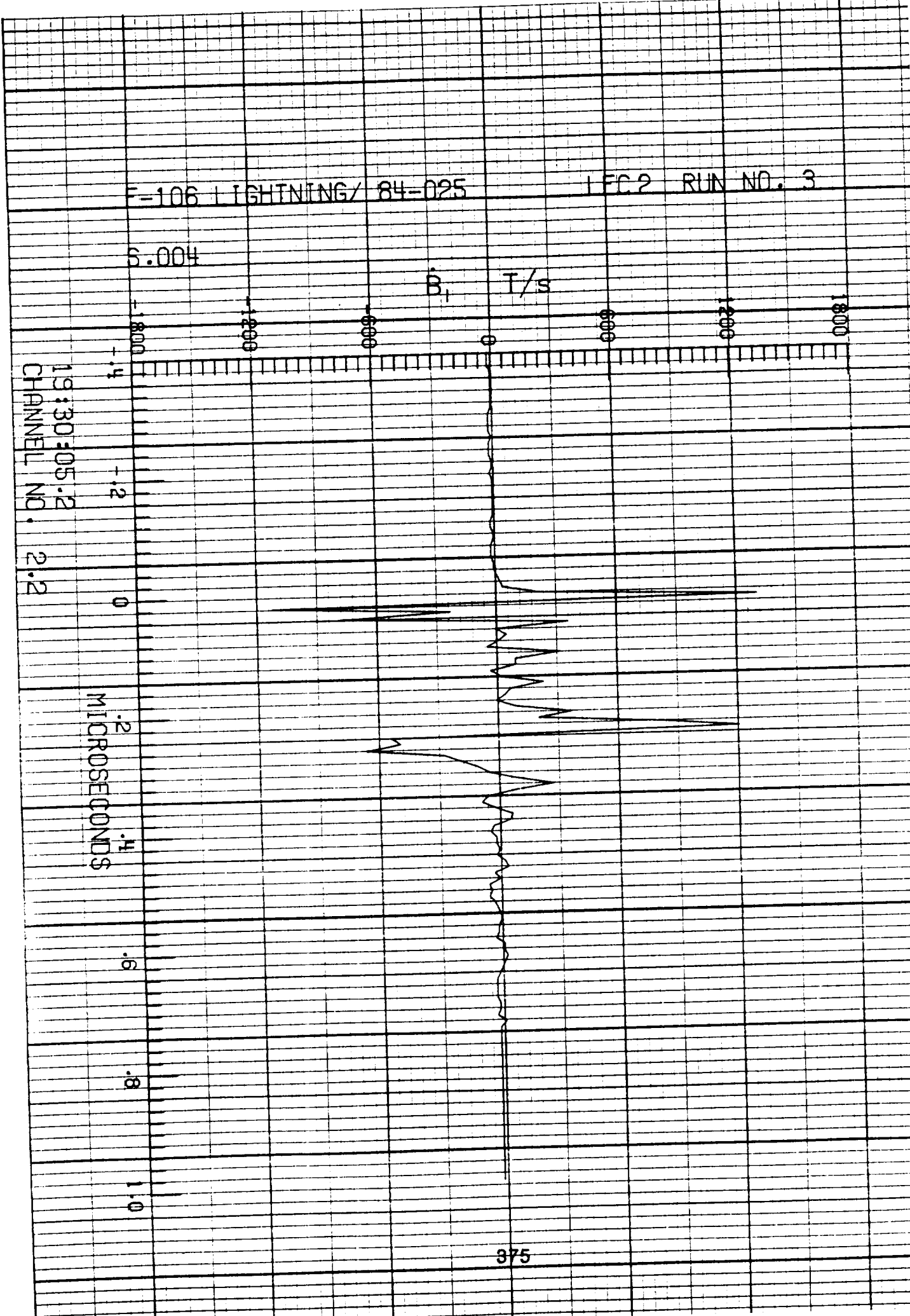
5.004

B_1 T/s

19:30:05.2
CHANNEL NO. 2.2

MICROSECONDS

375



F-106 LIGHTNING/ 84-025

LEC 3 RUN NO. 3

3.004

D_{wr} A/m²

19:30:05.2
CHANNEL NO. 3.0



-1.2

0

.2

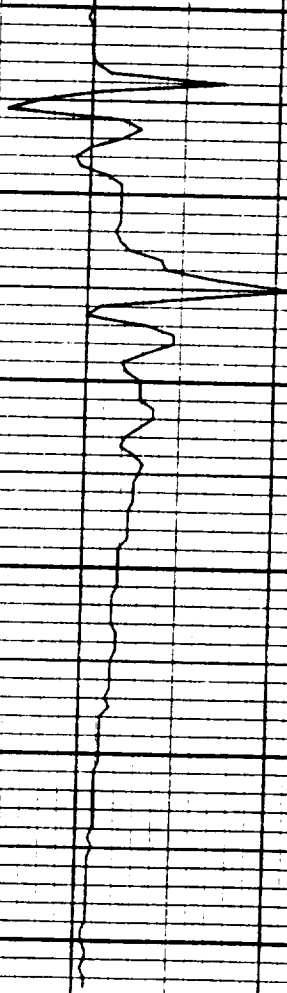
.4

.6

.8

1.0

MICROSECONDS



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F-106 LIGHTNING/ 84-025

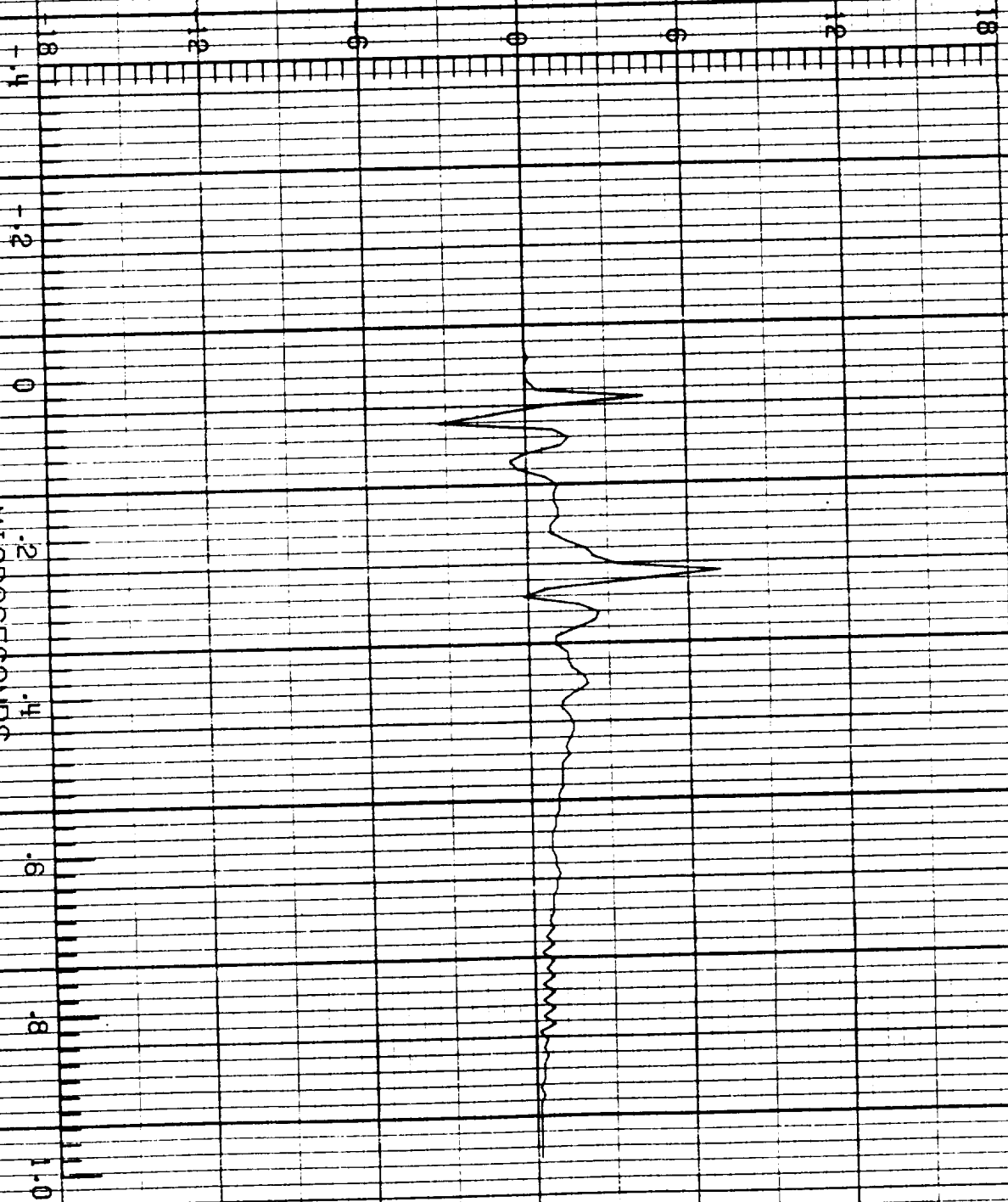
LEC 3 RUN NO. 3

5.004

D_{wl} A/m²

19:30:05.2
CHANNEL NO. 3.1

MICROSECONDS



F-106 LIGHTNING/ 84-025

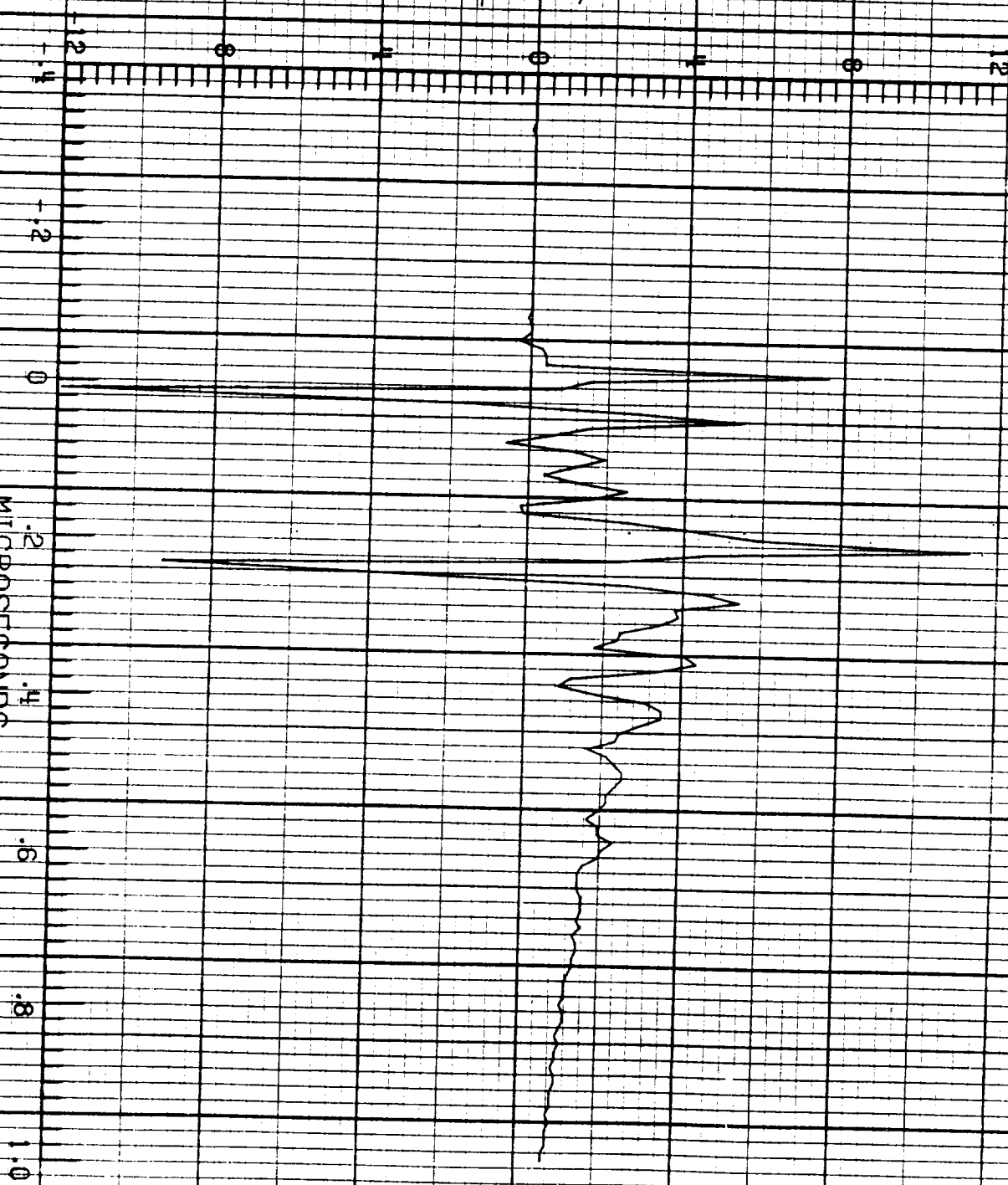
LFC 3 RUN NO. 3

S.004

D_r A/m²

19:30:05.2
CHANNEL NO. 3.2

MICROSECONDS



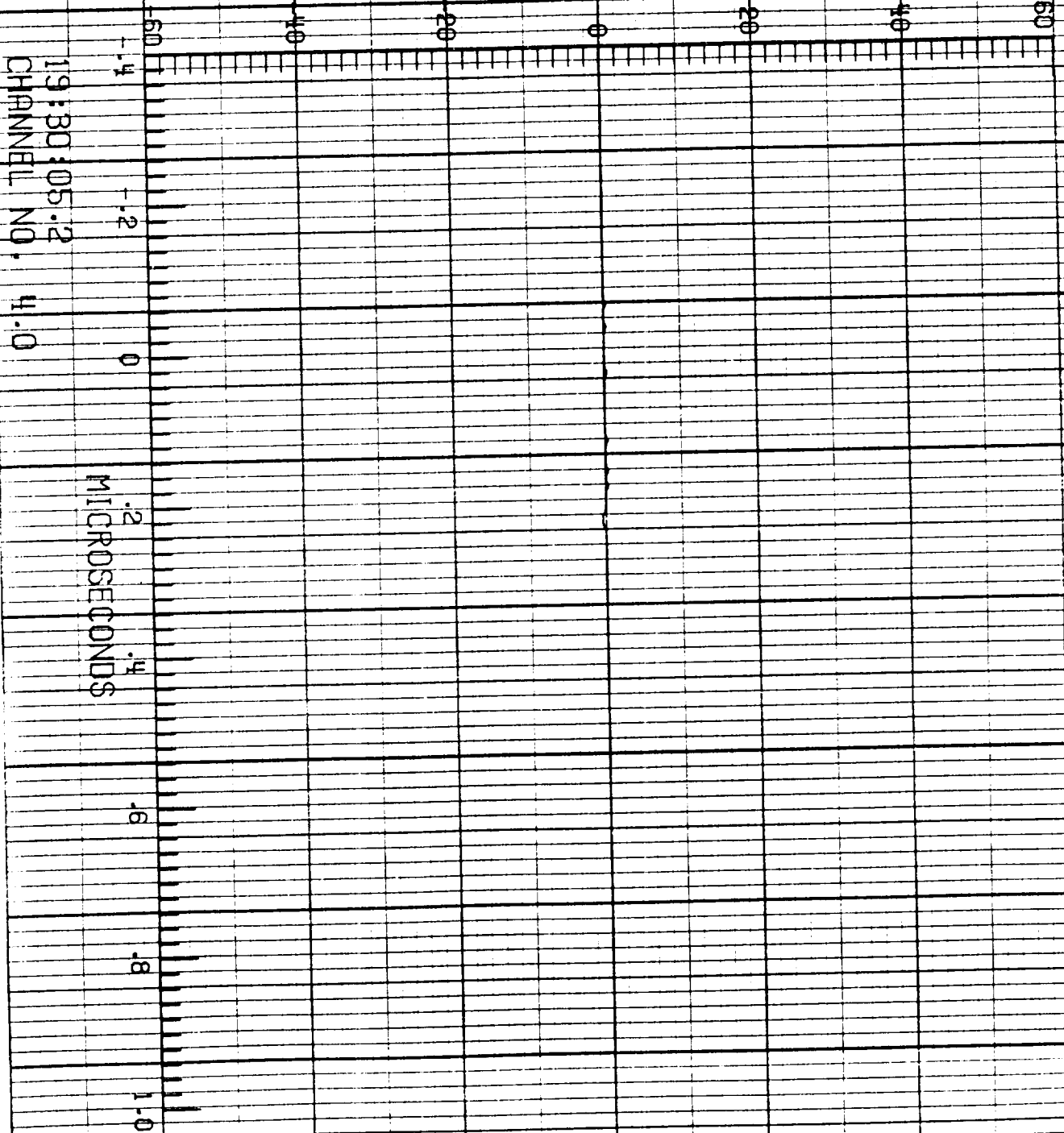
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F-106 LIGHTNING/ 84-025

LEC4 RUN NO. 3

S.004

V_{ra} V



F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 3

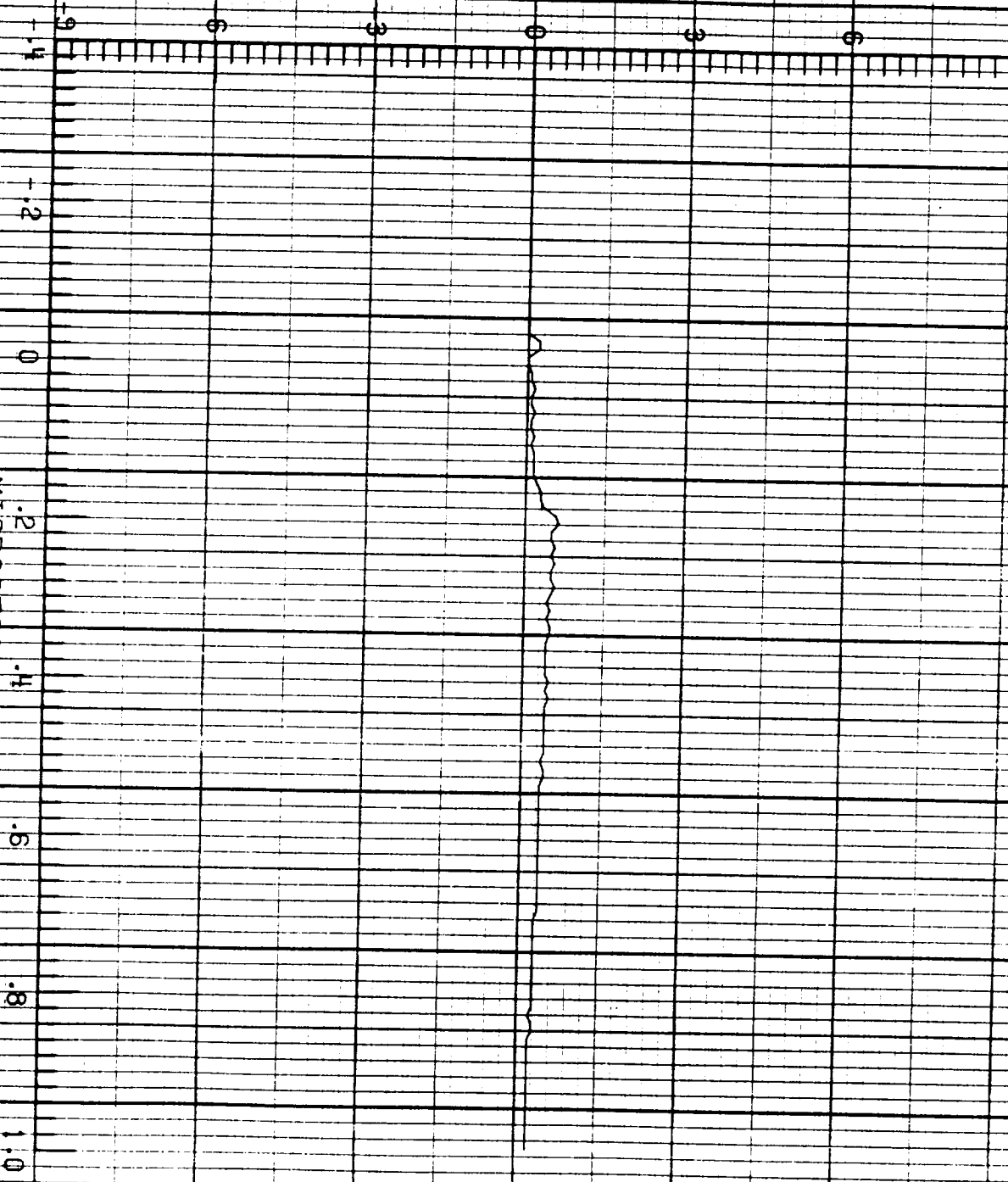
S.004

I_n A

19:30:05.2
CHANNEL NO. 4.1

9×10^5

MICROSECONDS



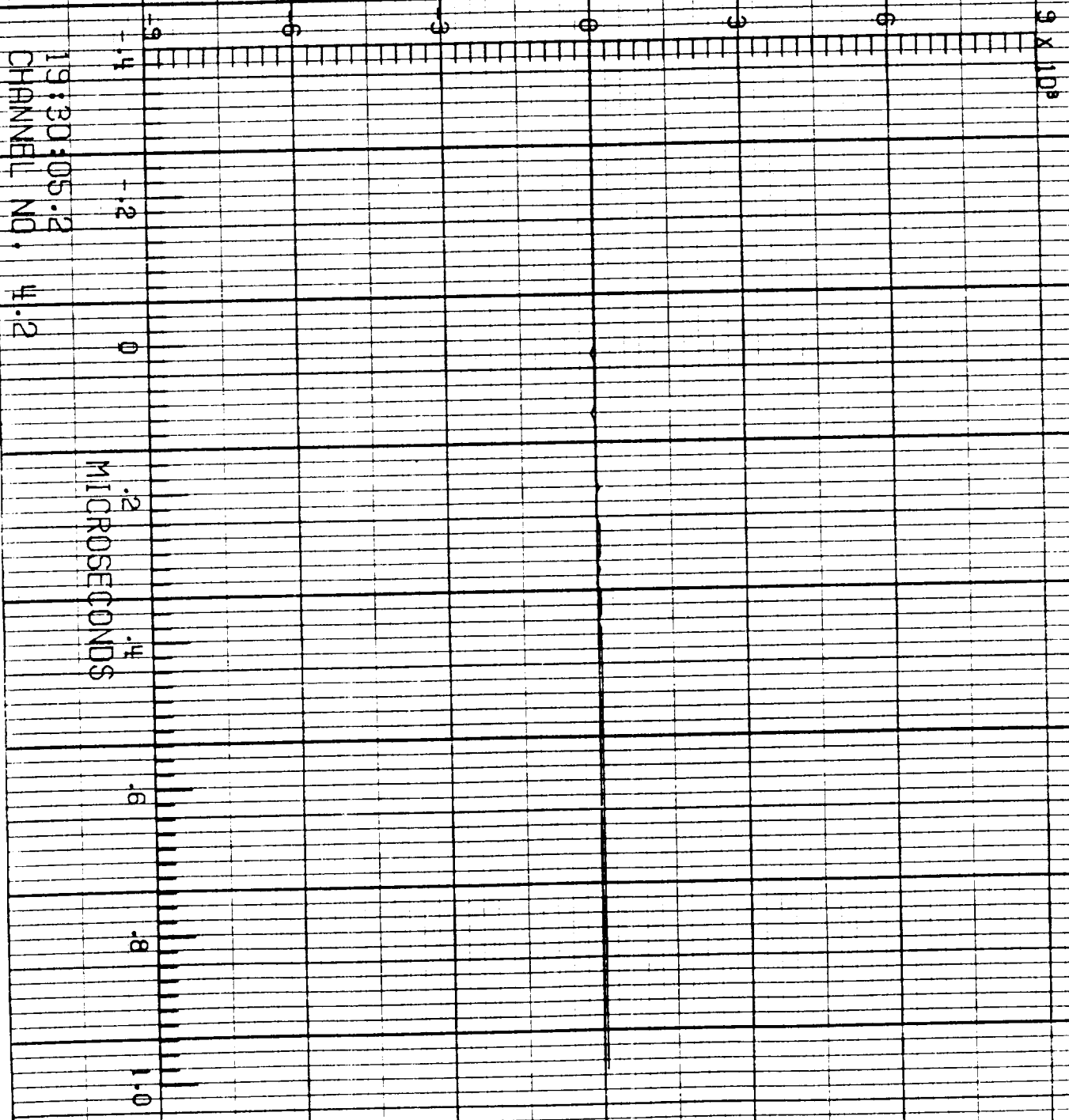
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F=106 LIGHTNING/ 84-025

LEC 4 RUN NO. 3

5.004

I, A



F=106 LIGHTNING/ 84-025

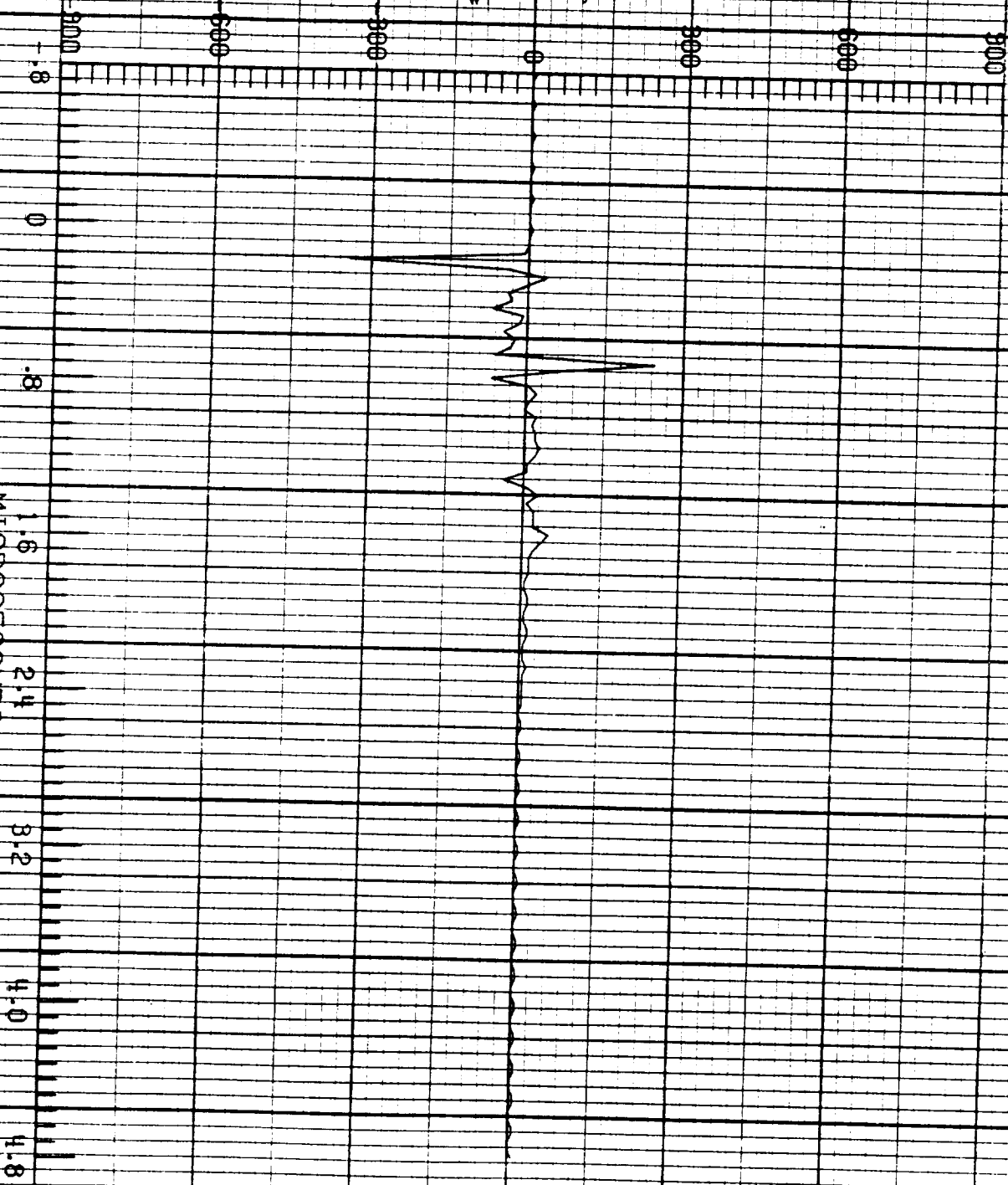
LEC 1 RUN NO. 4

5.005

B_w T/s

19:41:0.1
CHANNEL NO. 1.1

MICROSECONDS



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F-106 LIGHTNING/ 84-025

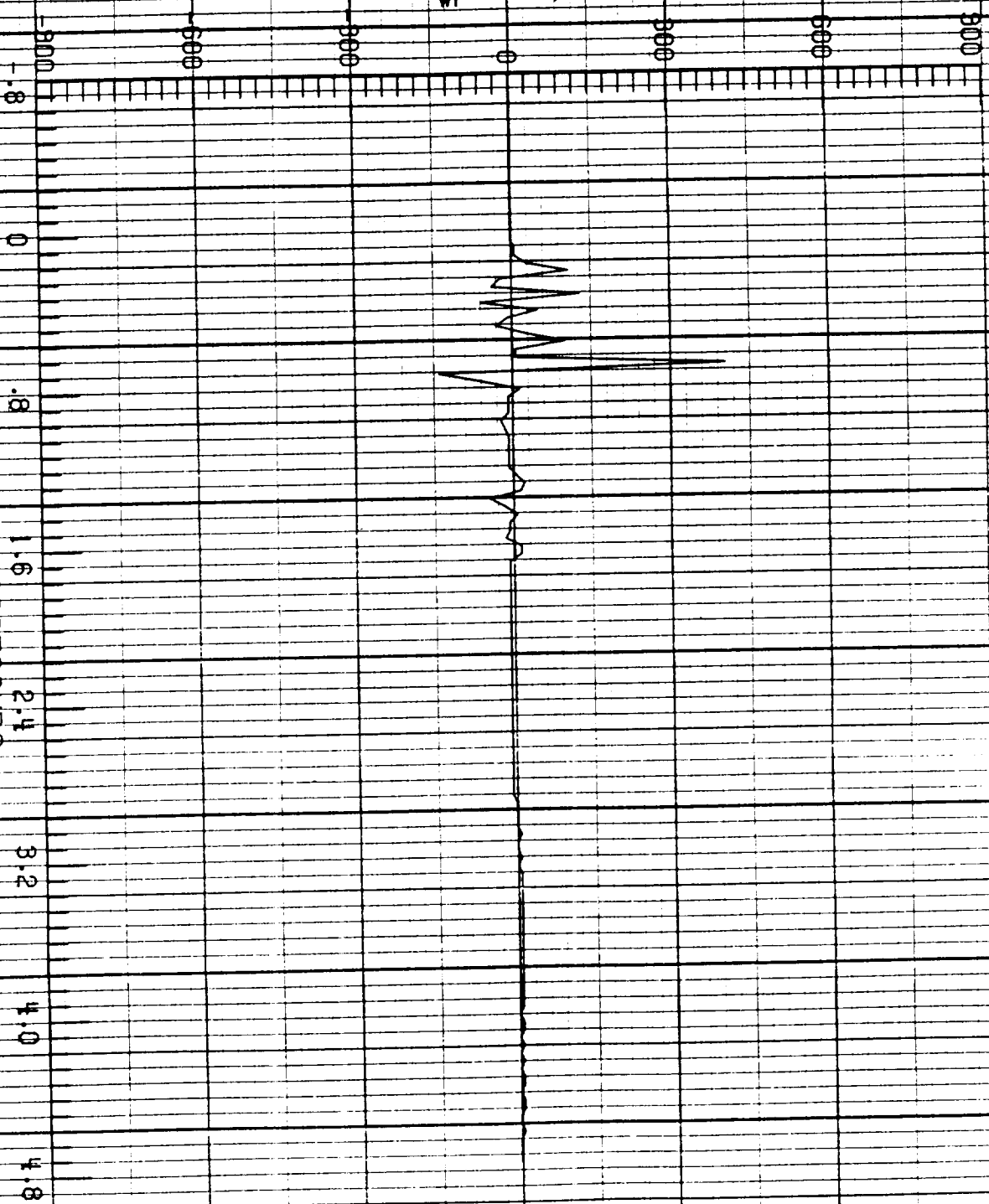
LEC1 RUN NO. 4

3.005

B_{WT} T/s

19:41:0.1
CHANNEL NO. 1.2

MICROSECONDS



F-106 LIGHTNING/ 84-025

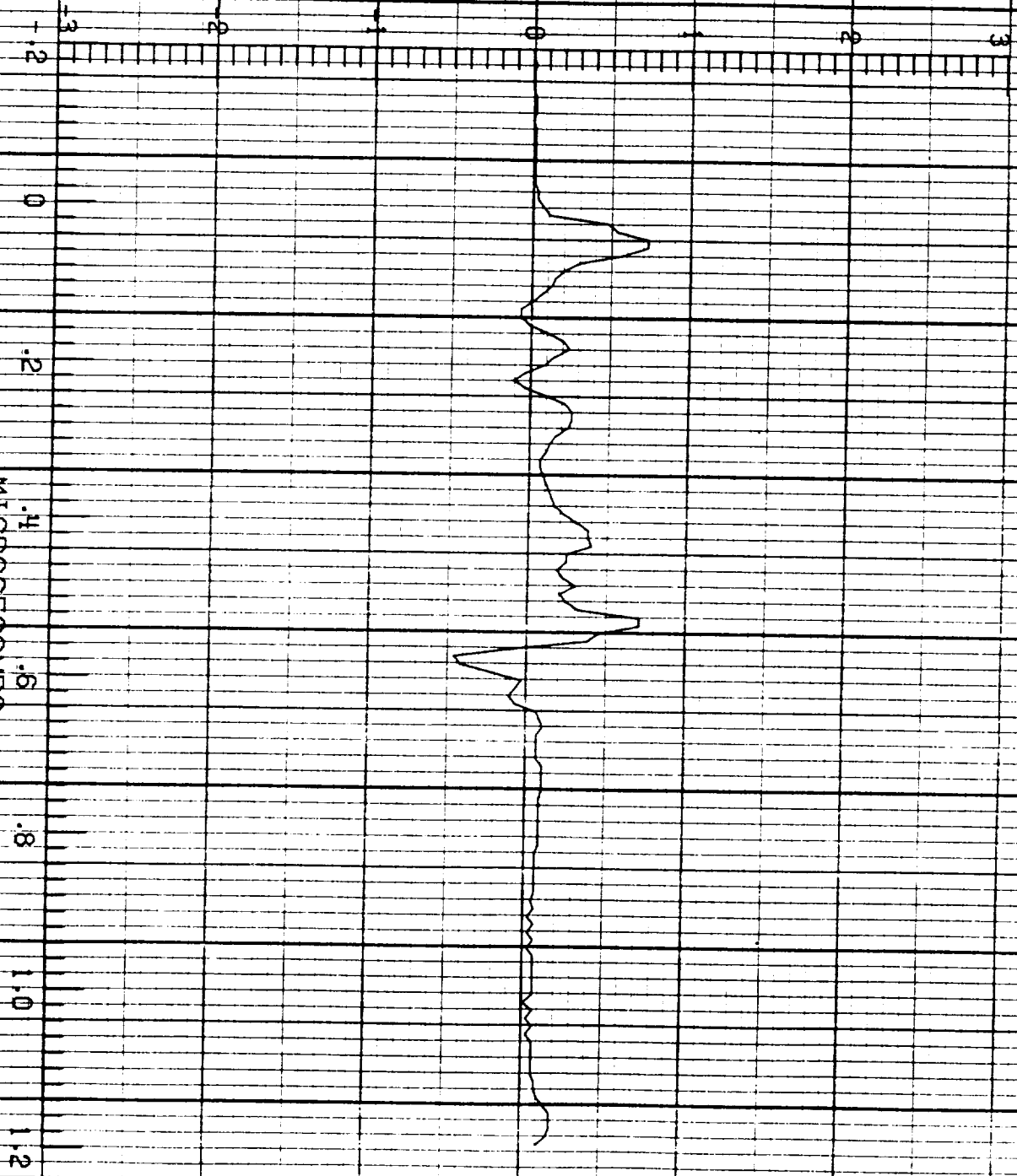
LFC 2 RUN NO. 4

5.005

D_t A/m²

19:41:30.1
CHANNEL NO. 2.0

MICROSECONDS



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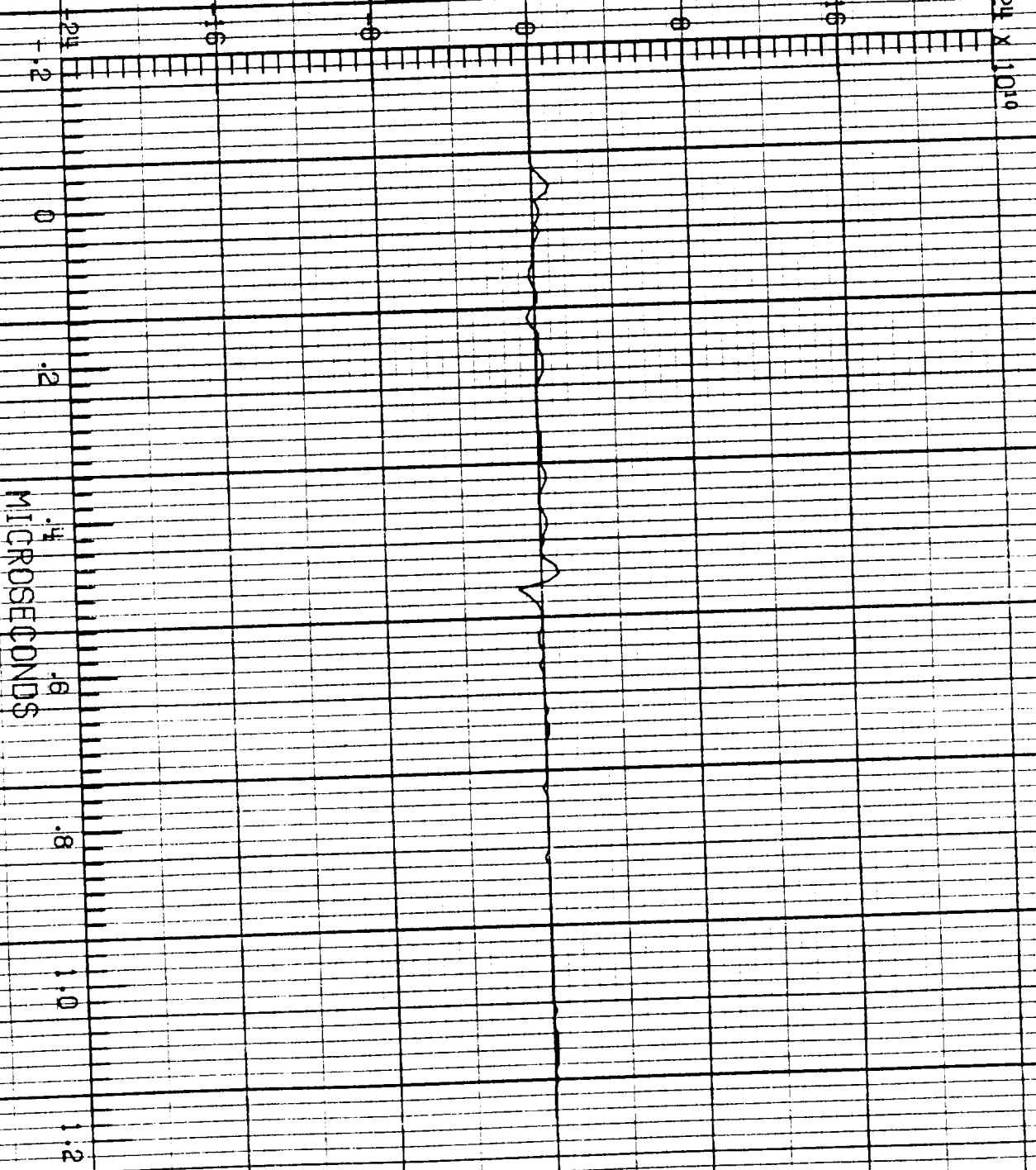
F-106 LIGHTNING/ 84-025

LEC 2 RUN NO. 4

5.005

I A/s

19:41:0.1
CHANNEL NO. 2.1



24 X 10¹⁰

F-106 LIGHTNING/ 84-025

LEC 2 RUN NO. 4

5.005

B₁ T/s

1800

1200

600

0

600

1200

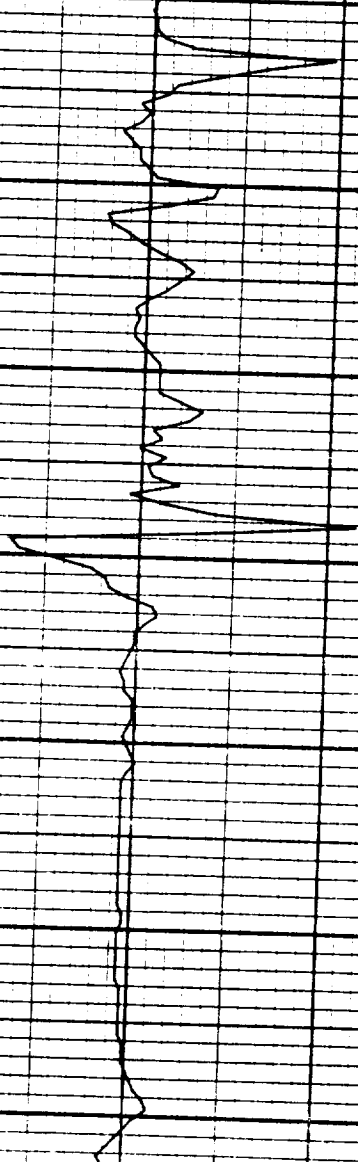
1800

19:41:0.1

CHANNEL NO. 2.2

0
.2
.4
.6
.8
1.0
1.2

MICROSECONDS



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F-106 LIGHTNING/ 84-025

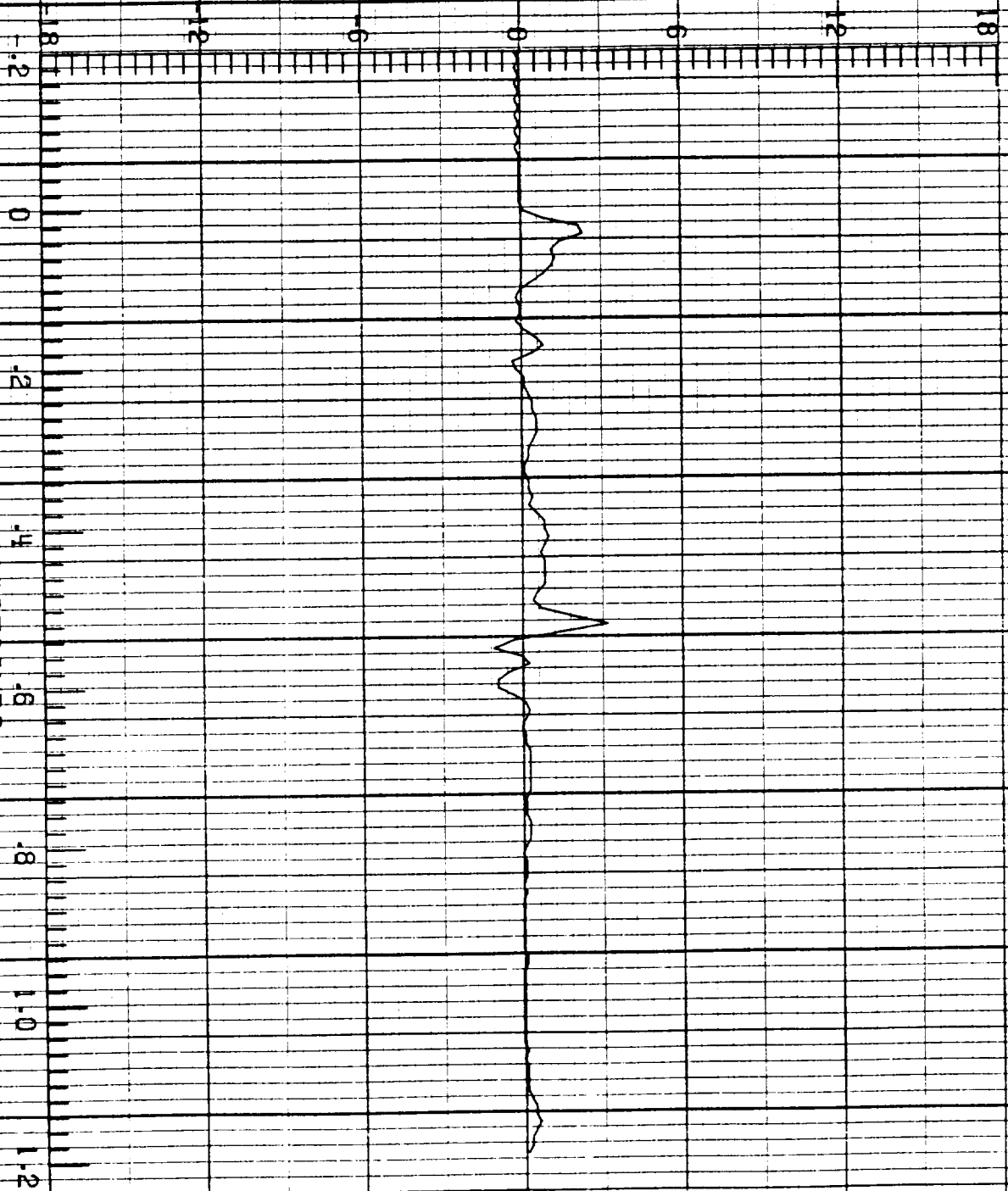
LEC 3 RUN NO. 4

S.005

D_{wr} A/m²

19:41:0.1
CHANNEL NO. 3.0

MICROSECONDS



~~387~~

387

F-106 LIGHTNING/ 84-025

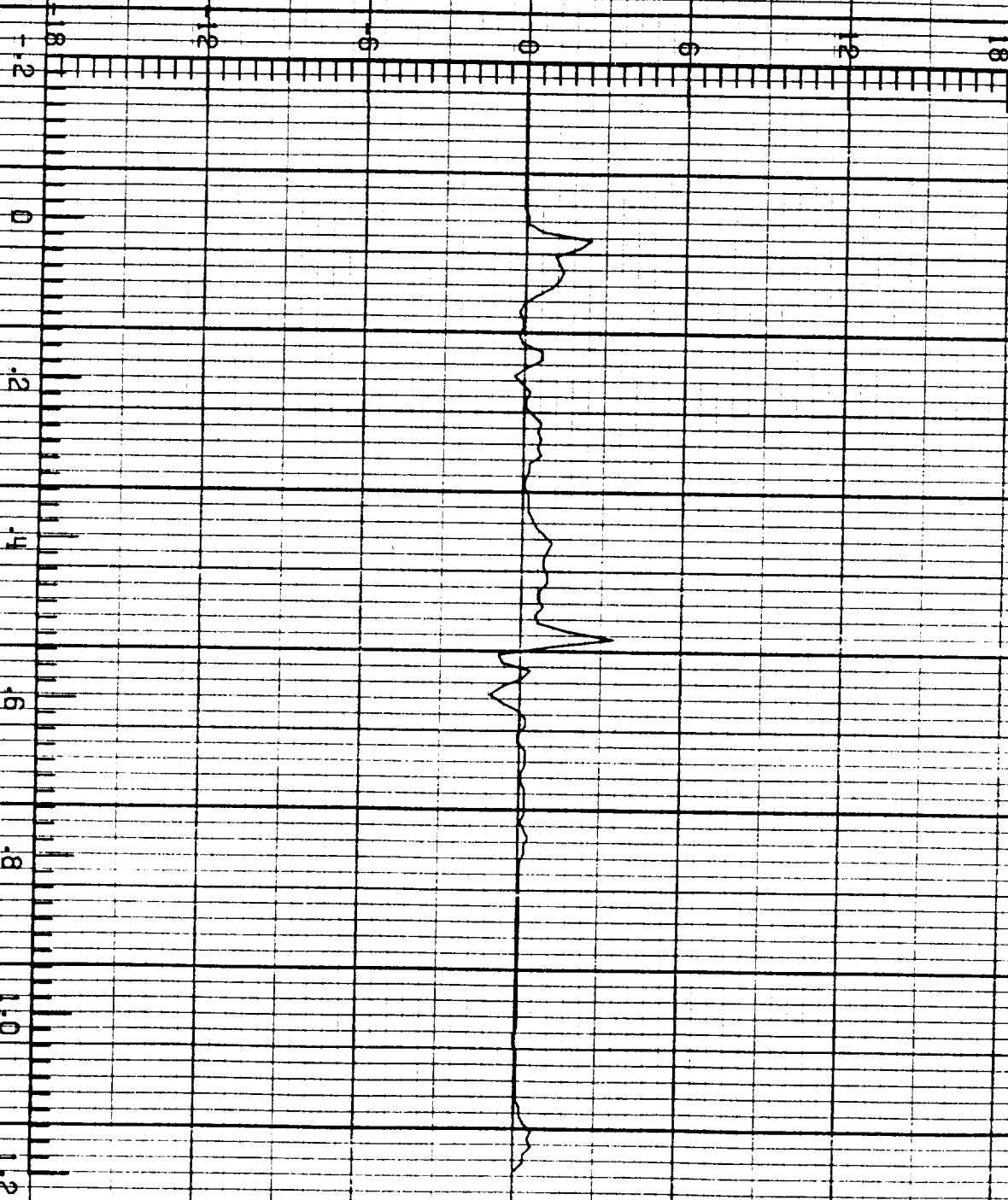
LEC 3 RUN NO. 4

5.005

D_{wl} A/m²

19:41:0.1
CHANNEL NO. 8.1

MICROSECONDS



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F-106 LIGHTNING/ 84-025

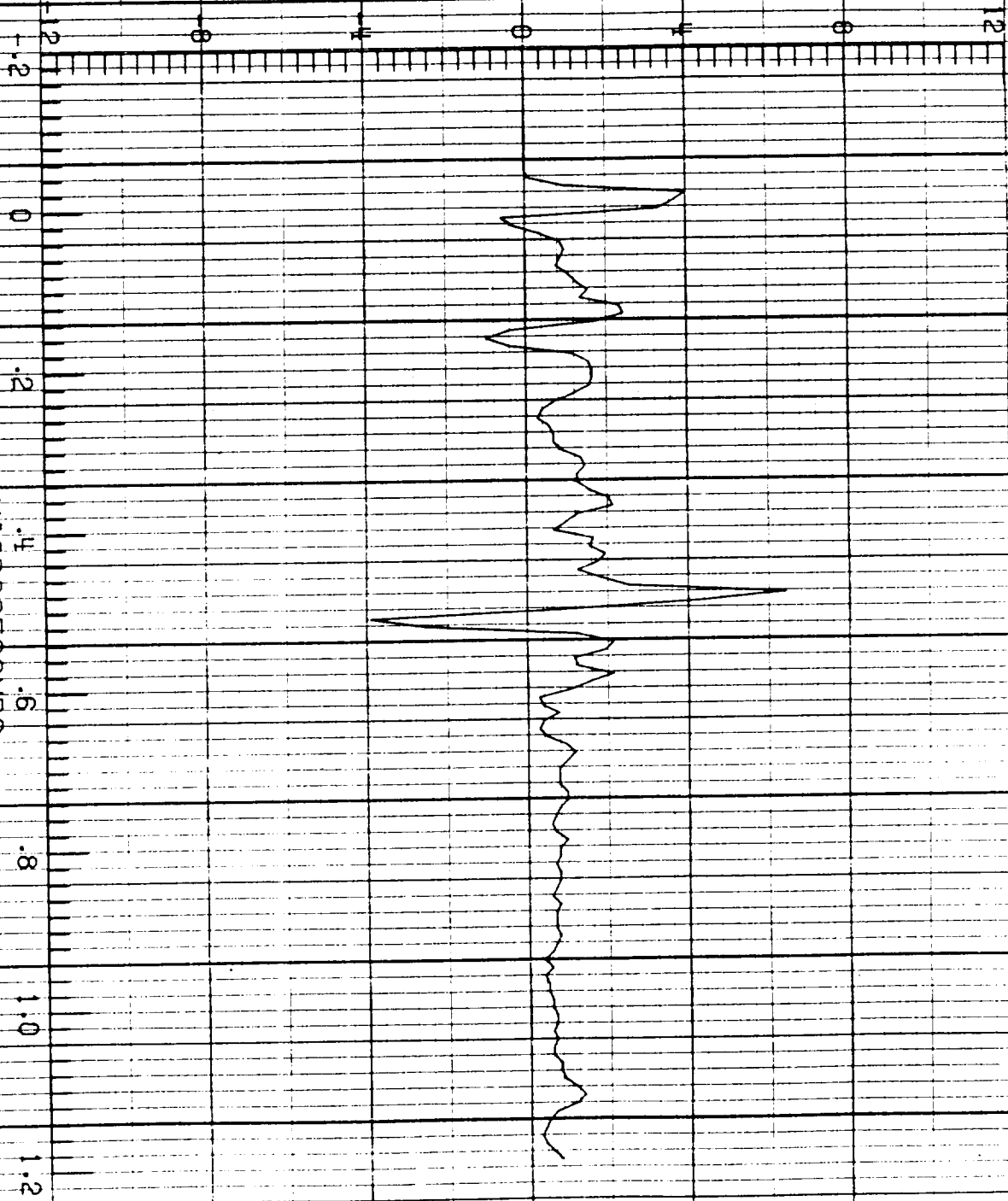
LEC 3 RUN NO. 4

5.005

D_r A/m²

19:41:0.1
CHANNEL NO. 3.2

MICROSECONDS



F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 4

5.005

V_{ra} V

19:41:0.1
CHANNEL NO. 4.0

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 4

5.005

I_n A

19:41:0.1
CHANNEL NO. 4.1

9×10^3

MICROSECONDS

F-106 LIGHTNING/ 84-025

LEC4 RUN NO. 4

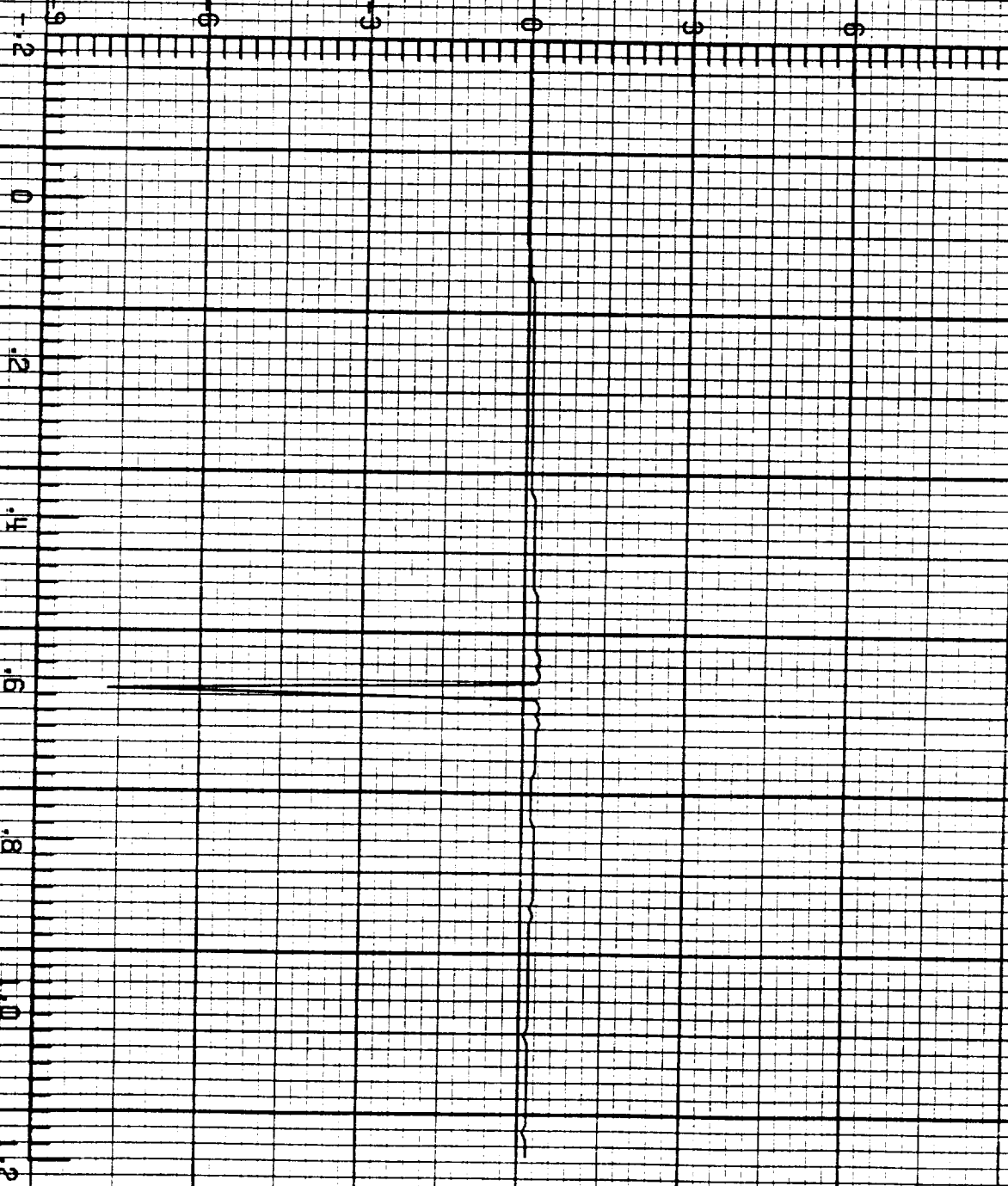
5.005

I_v A

19:41:00.1
CHANNEL NO. 4.2

5 X 10³

MICROSECONDS



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OF POOR QUALITY

F-106 LIGHTNING/ 84-025

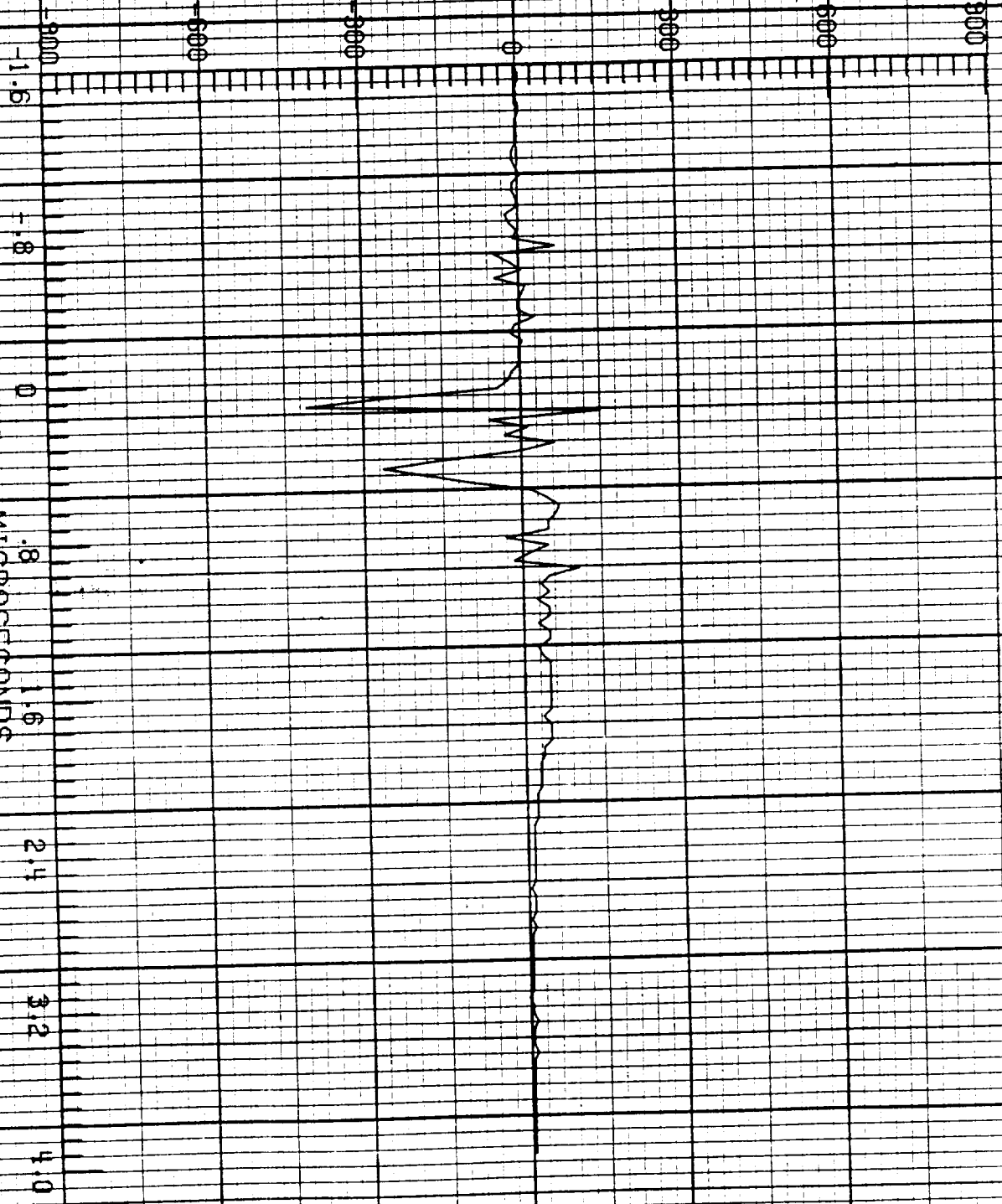
LEC 1 RUN NO. 5

5.006

B_{wl} T/s

19:43:19.2
CHANNEL NO. 1.1

MICROSECONDS



F-106 LIGHTNING/ 84-025

LEC 1 RUN NO. 5

5.006

B
T/s

19:43:19.2
CHANNEL NO. 1.2

MICROSECONDS

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ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-025

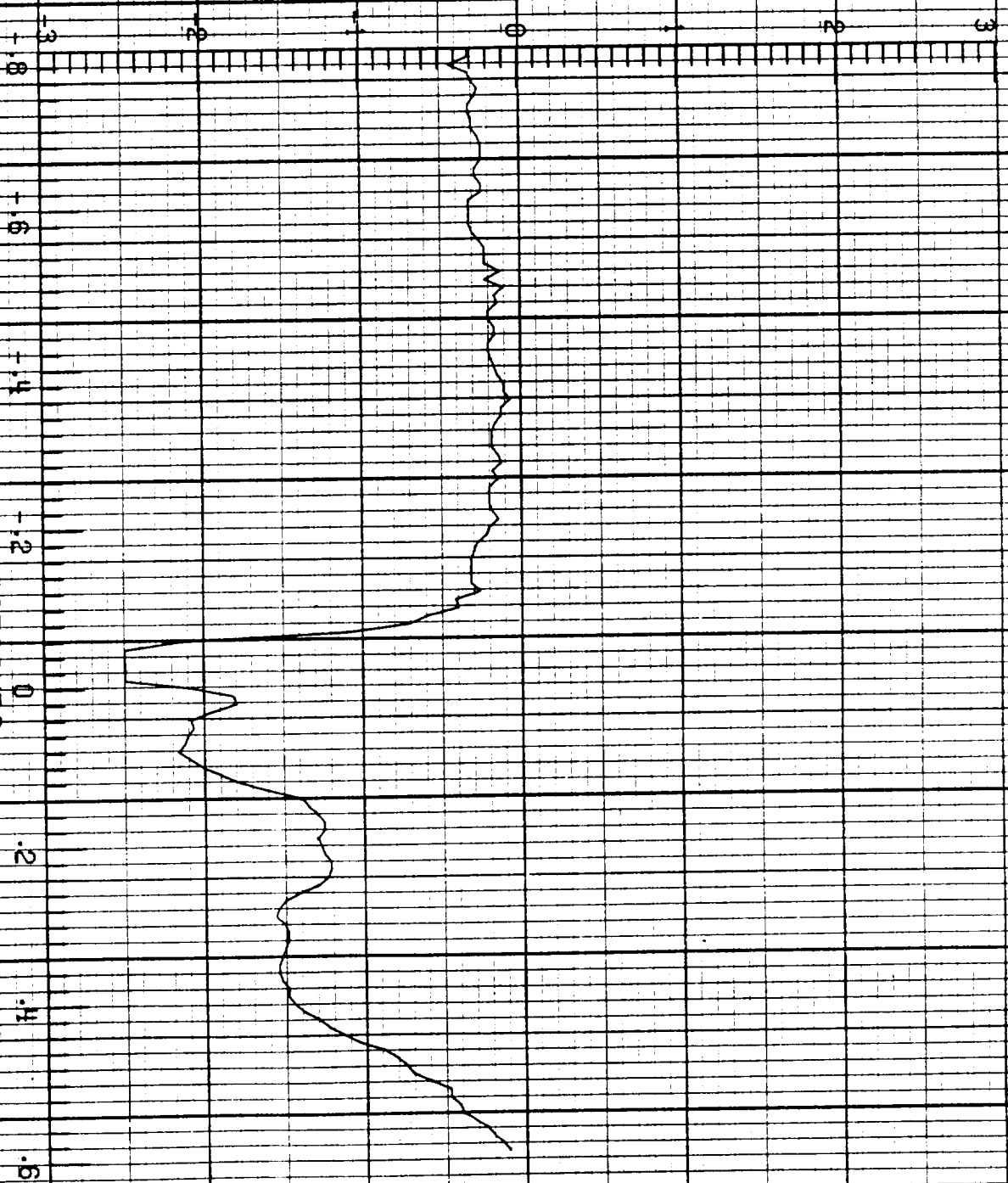
LEC 2 RUN NO. 5

3.006

D_t A/m²

19:43:19.2
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-025

LEC2 RUN NO. 5

5.006

I A/s

24 x 10¹⁰

19:43:19.2
CHANNEL NO. 2.1

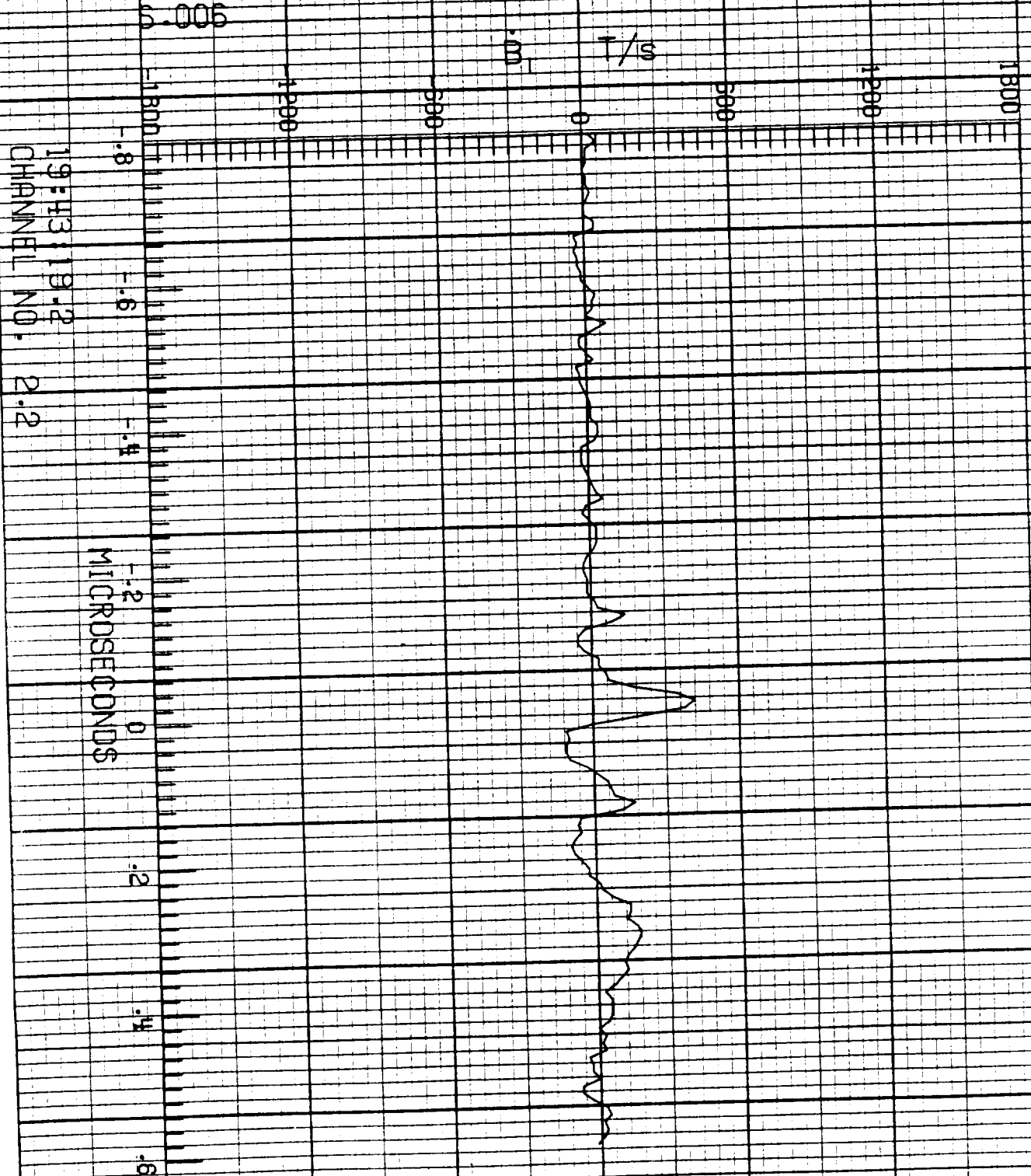
MICROSECONDS

-.8
-.6
-.4
-.2
0
.2
.4
.6

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F-105 LIGHTNING/ 84-025

LEC 2 RUN NO 5



19:43 19:2
CHANNEL NO. 2.2

F-106 LIGHTNING/ 84-025

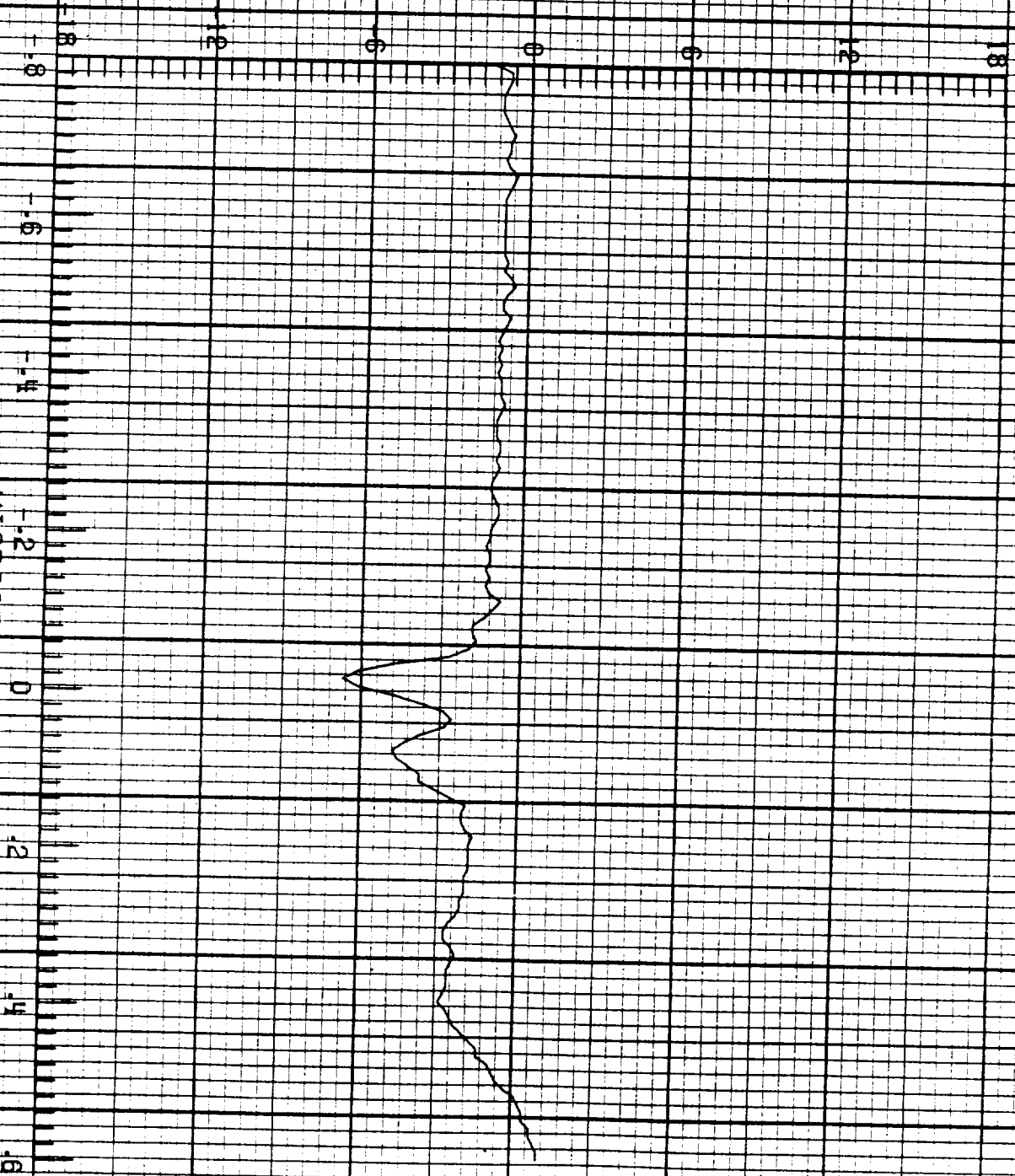
LEO3 RUN NO. 5

5.006

D_{wr} A/m²

19:43:19.2
CHANNEL NO. 8.0

MICROSECONDS



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F-106 LIGHTNING/ 84-025

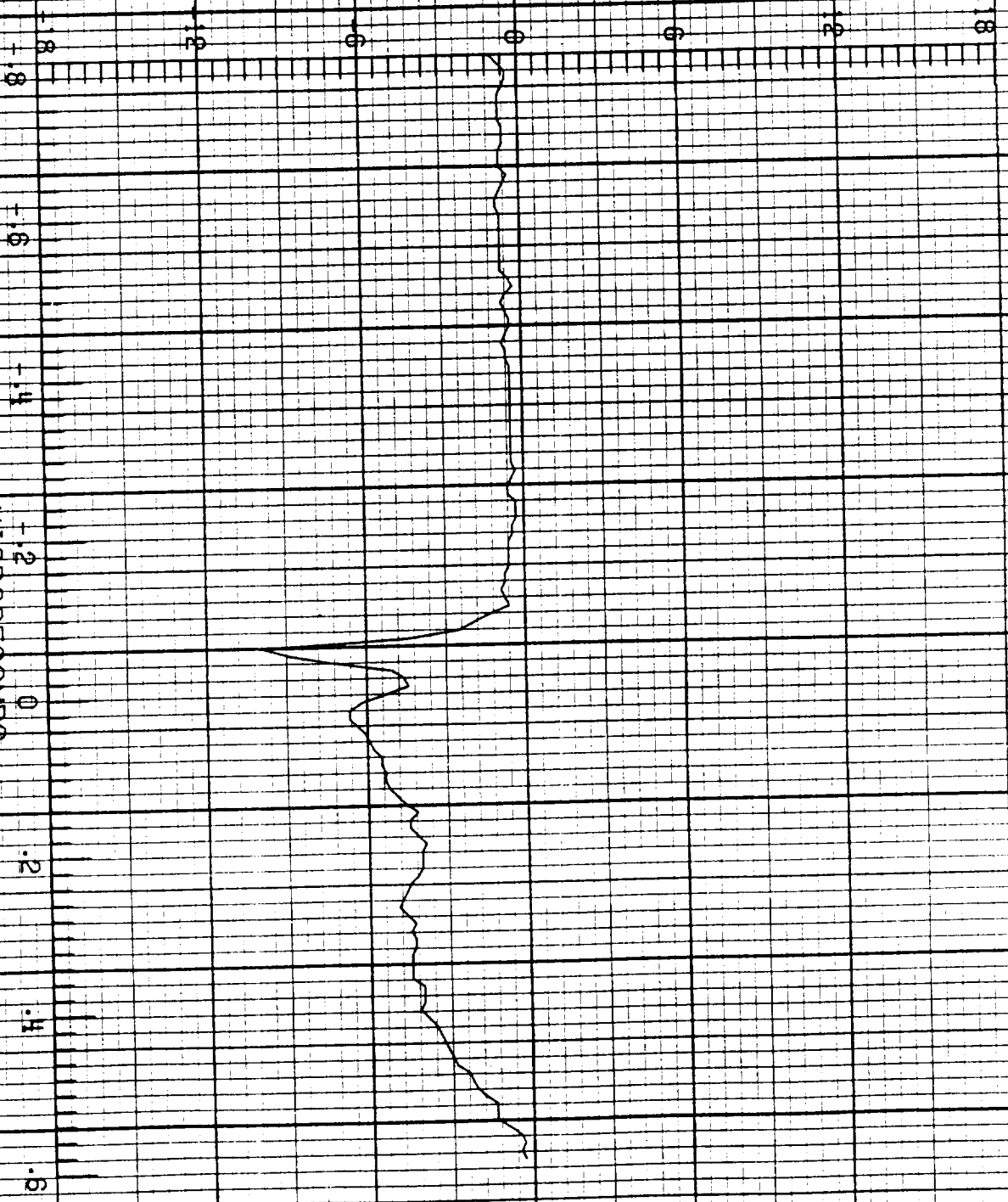
LFC3 RUN NO. 5

5.006

\hat{D}_{wt} A/m²

19:43:19.2
CHANNEL NO. 3.1

MICROSECONDS



F-106 LIGHTNING/ 84-025

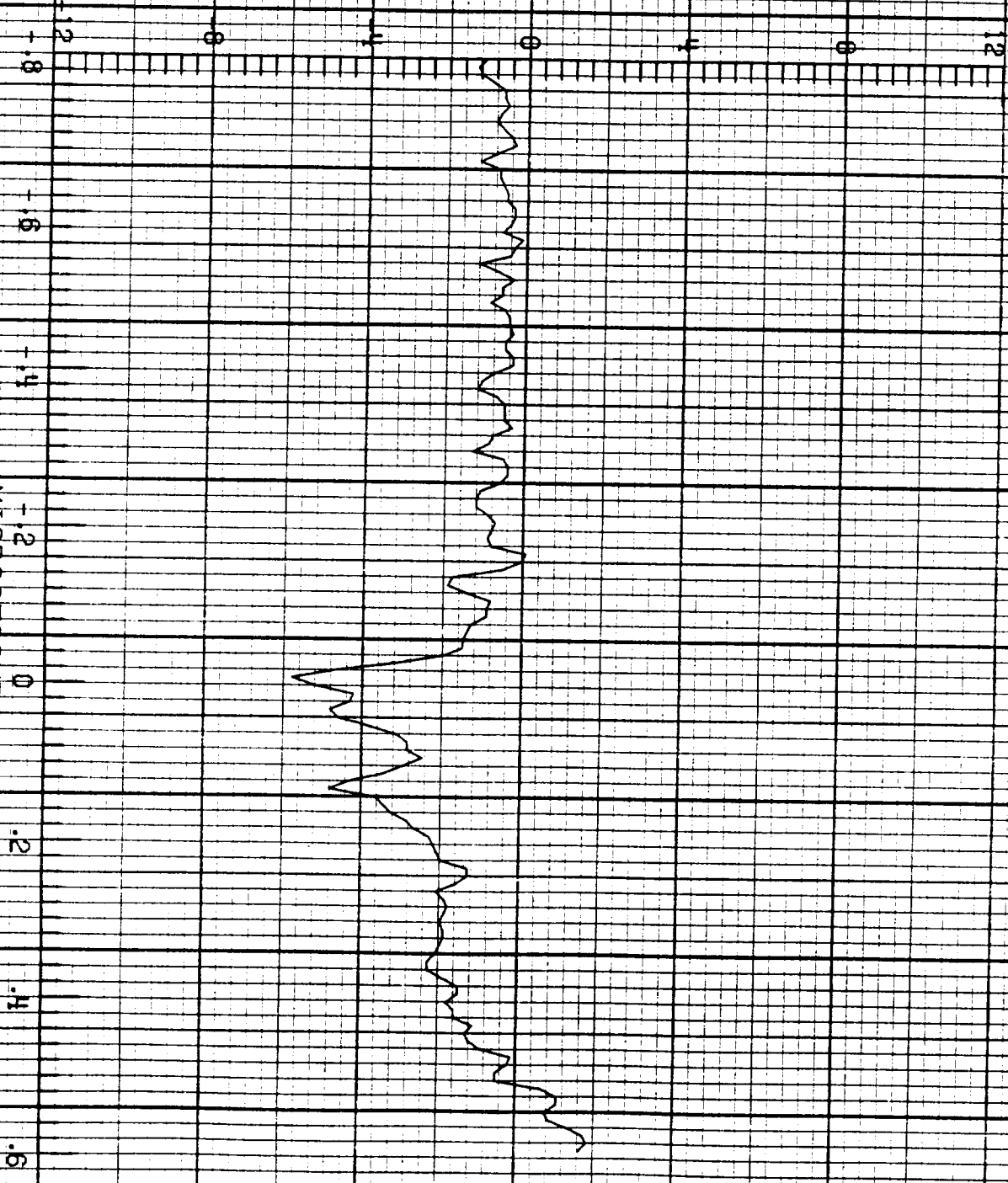
FC 3 RUN NO. 5

5.006

D_r A/m²

19:43:19.2
CHANNEL NO. 3.2

MICROSECONDS



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F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 5

6.006

V_{ro} V

19:43:19.2
CHANNEL NO. 4.0

MICROSECONDS

F=106 LIGHTNING/ 84-025

LECH RUN NO. 5

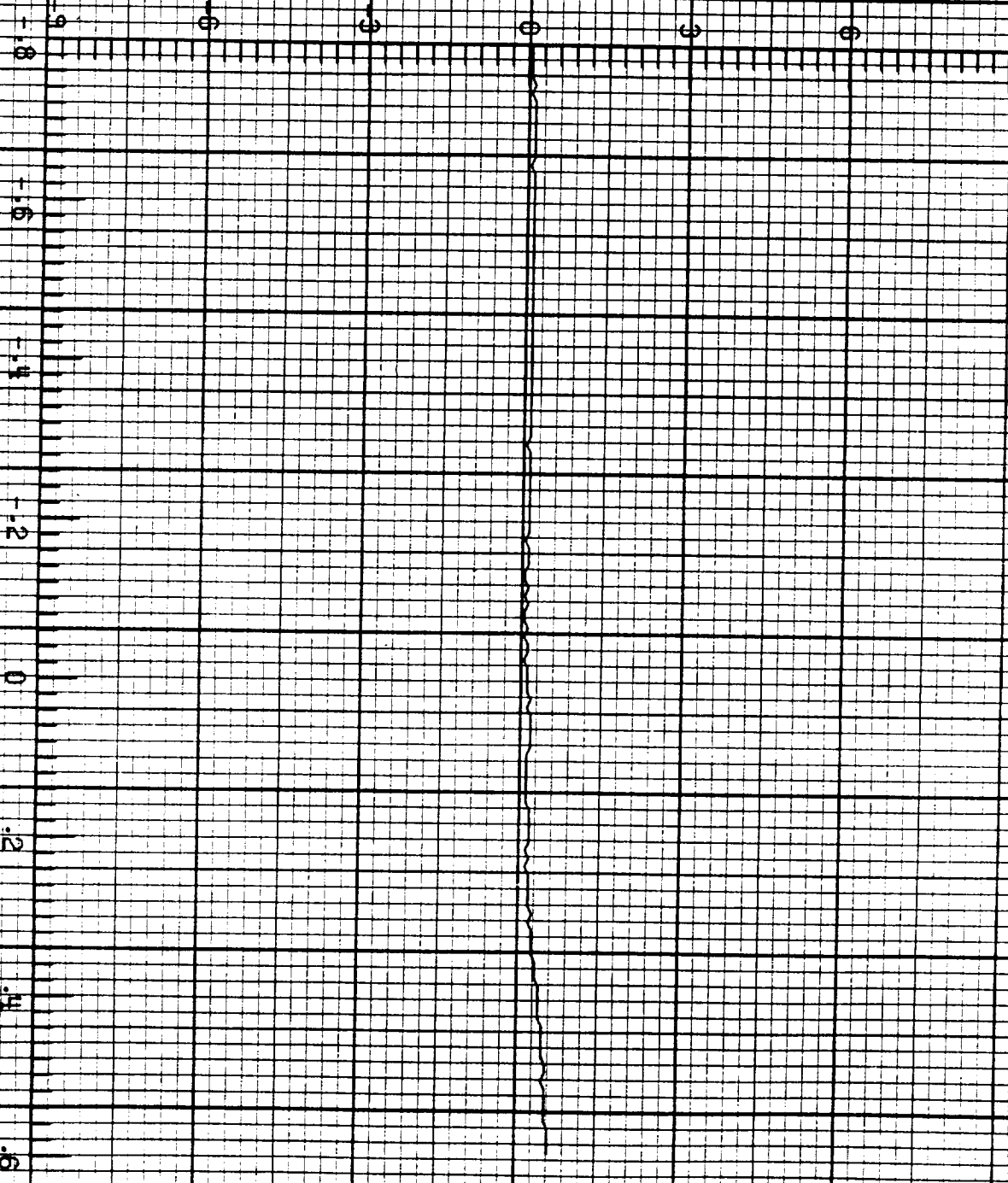
5.006

T_n A

19:43:19.2
CHANNEL NO. 4.1

9 x 10²

MICROSECONDS



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OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LEC4 RUN NO. 5

0.005

I, A

19:43:19.2
CHANNEL NO. 4.2

MICROSECONDS

9×10^3

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OF POOR QUALITY

-106 LIGHTNING/ 84-025

LFC.1 RUN NO. 6

3.000

B_{wl} T/s

900 600 300 0 300 600 900

19:43:48.9
CHANNEL NO. 1.1

MICROSECONDS

1.5 .8 0 .8 1.6 2.4 3.2 4.0

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E-106 LIGHTNING/ 84-025

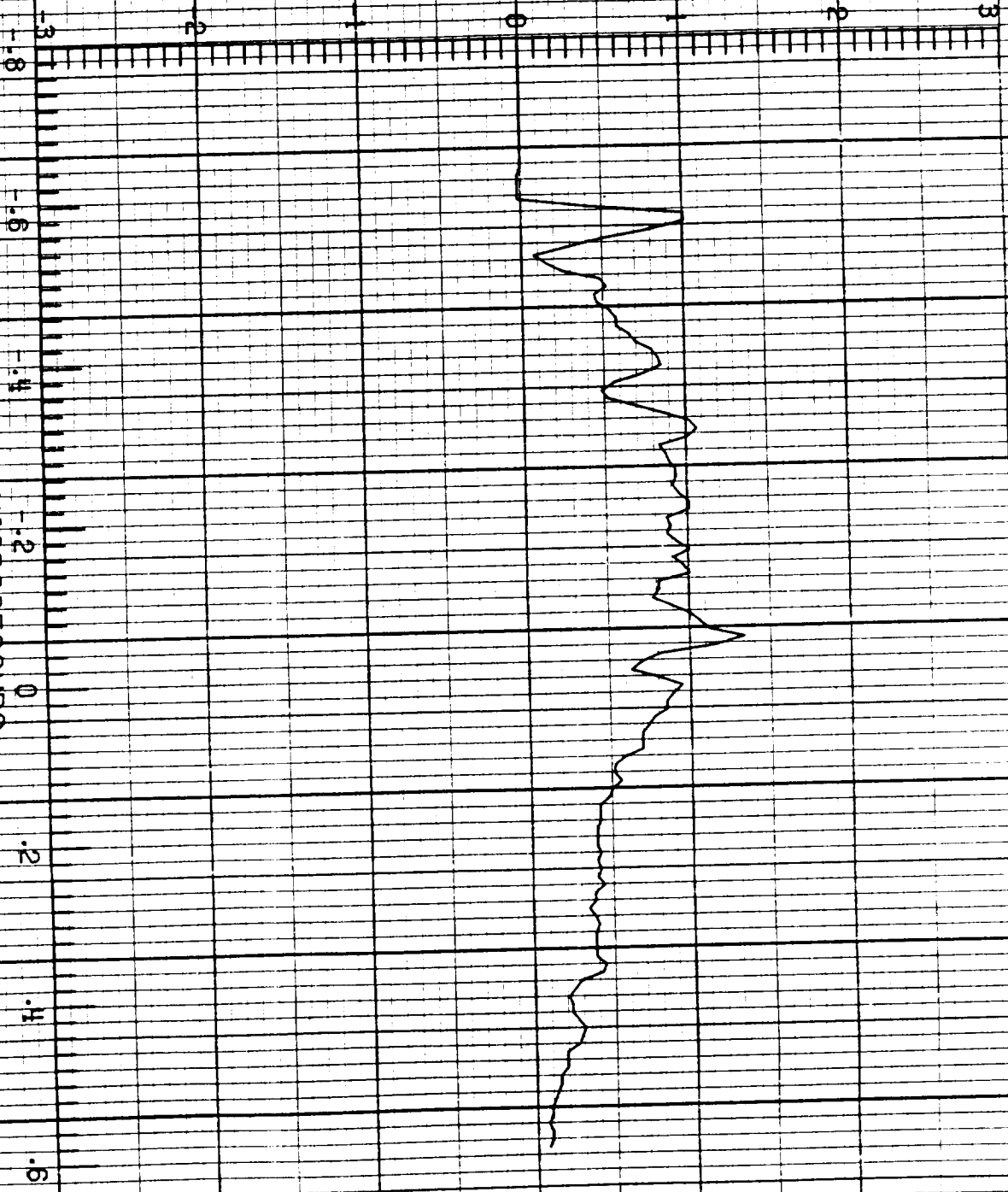
LEC 2 RUN NO. 6

5.009

D_t A/m²

19:43:48.9
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-025

LEC 2 RUN NO. 6

6.000

I A/s

19:43:48.9
CHANNEL NO. 2.1

24 X 10¹⁰

MICROSECONDS

ORIGINAL PAGE IS
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-106 LIGHTNING/ 84-025

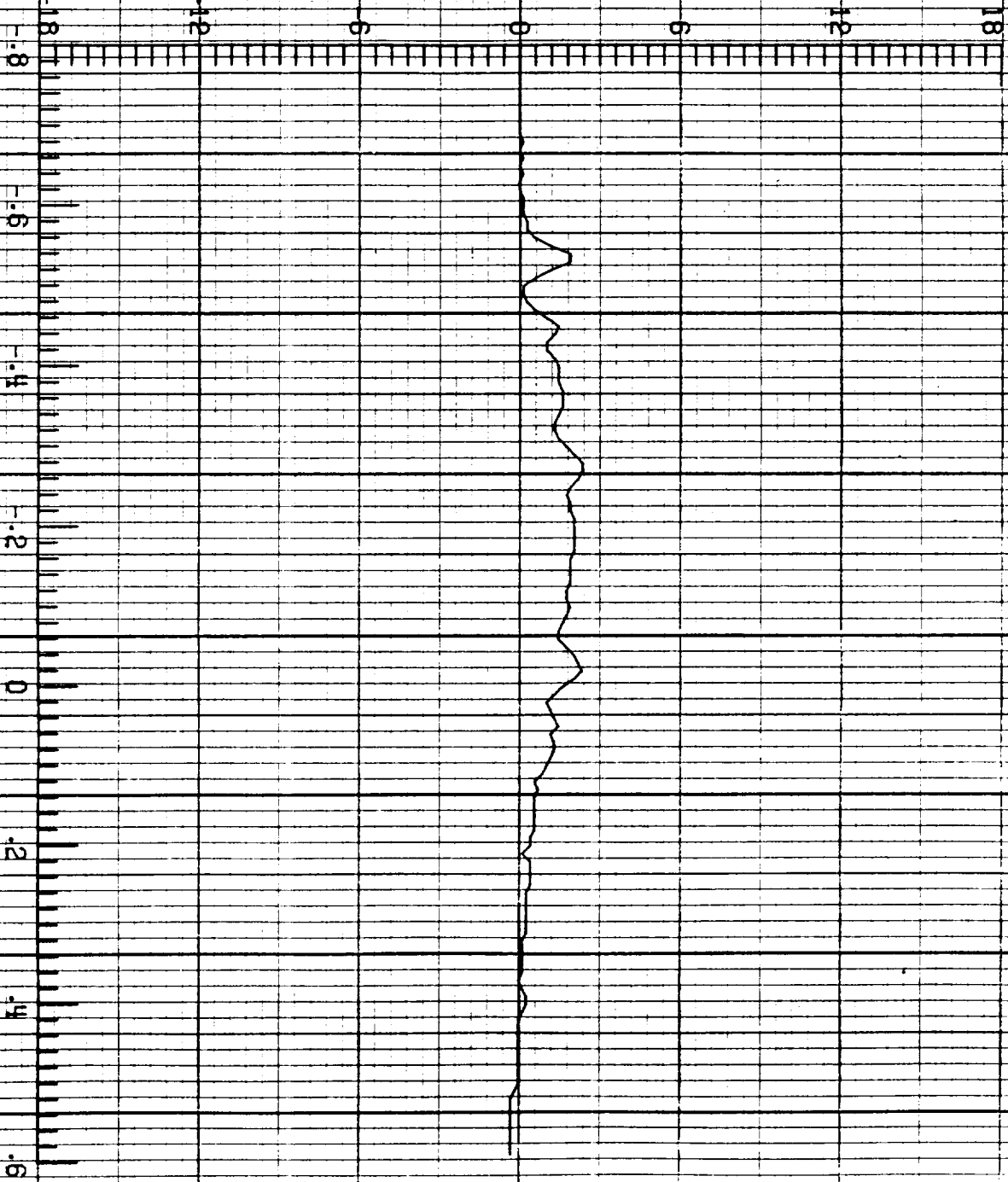
LEC 3 RUN NO. 6

S.009

D_{wr} A/m^2

19:43:48.9
CHANNEL NO. 9.0

MICROSECONDS



=106 LIGHTNING/ 84-025

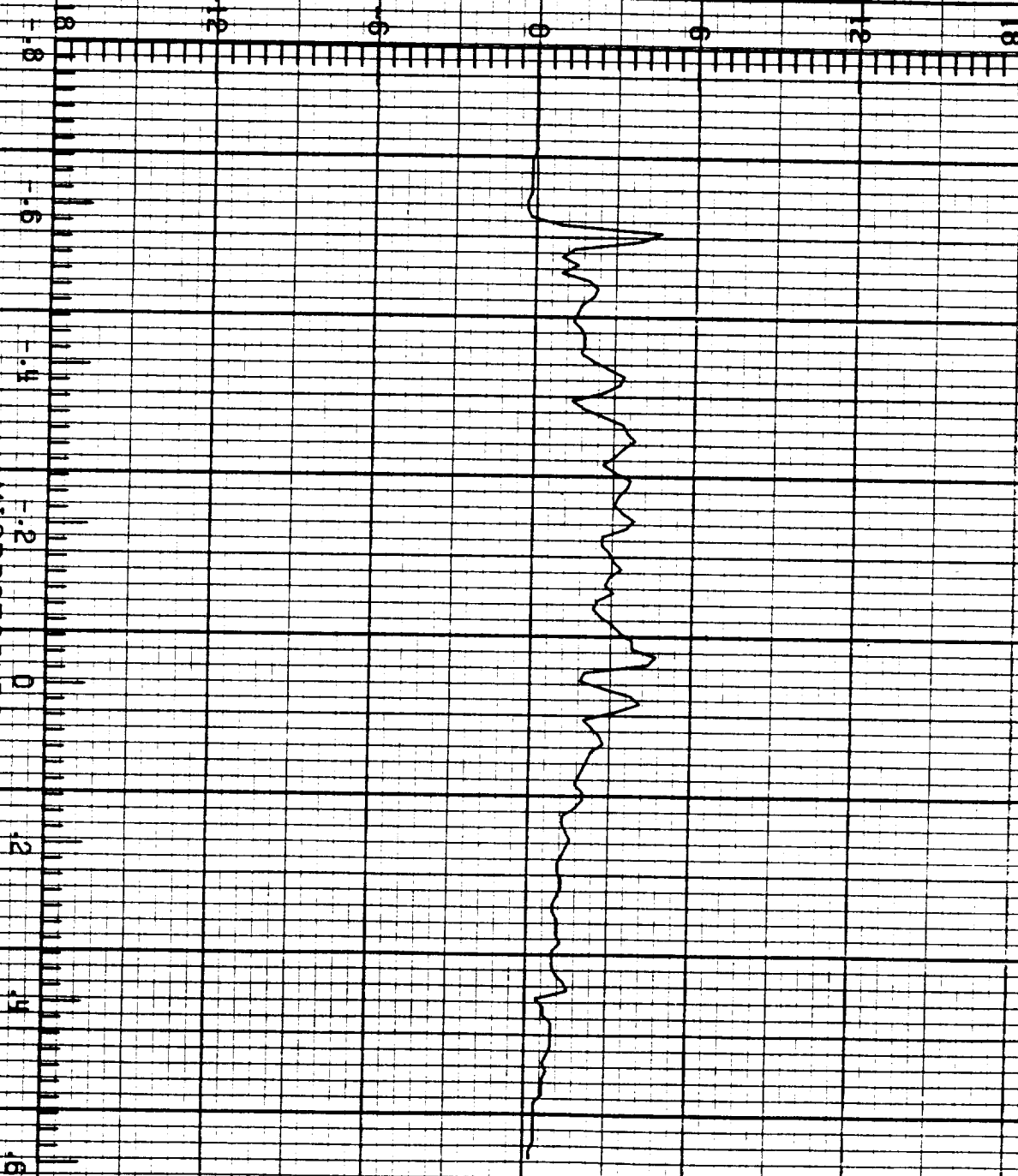
LEC 3 RUN NO. 6

5.009

D_{wl} A/m²

19:43:48.9
CHANNEL NO. 3.1

MICROSECONDS



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F-106 LIGHTNING/ 84-025

LEC 4 RUN NO 6

5.009

V_{T0} V

19:43:48.9
CHANNEL NO. 4.0

MICROSECONDS

F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 6

3.000

I_n A

19:43:48.9
CHANNEL NO. 4.1

9 x 10³

MICROSECONDS

1.8
1.6
1.4
1.2
1.0
.8
.6
.4
.2
0
.2
.4
.6

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F-106 LIGHTNING/ 84-025

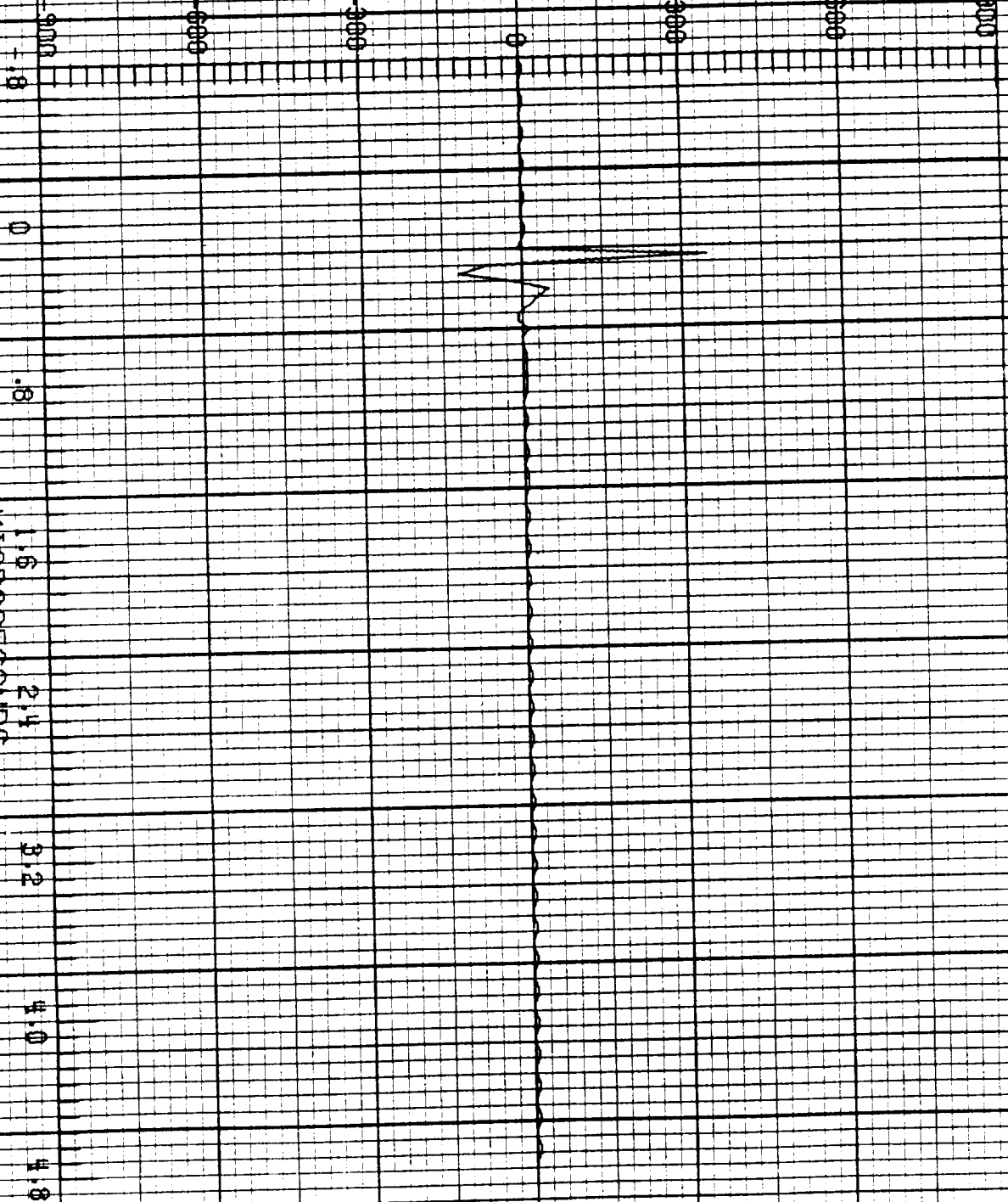
LEC1 RUN NO. 7

3.010

B_w T/s

19:44:27.2
CHANNEL NO. 1.1

MICROSECONDS



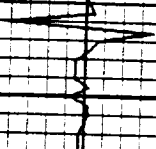
F-106 LIGHTNING/ 84-025

LEC 1 RUN NO. 7

3.010

B_{wr} T/s

19:44:27.2
CHANNEL NO. 1.2



MICROSECONDS

.8
1.6
2.4
3.2
4.0
4.8

ORIGINAL PAGE 19
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

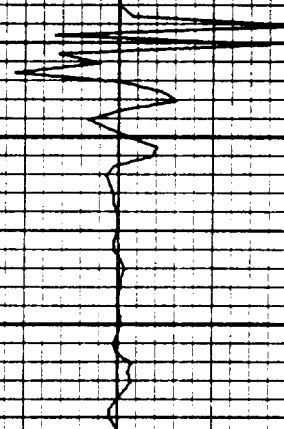
LEC2 RUN NO. 7

6.010

D_t A/m²

19:44:27.2
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-025

IFC 2 RUN NO. 7

3.010

I A/s

24 x 10¹⁰

19:44:27.2
CHANNEL NO. 2.1

MICROSECONDS

0.4
0.2
0
0.2
0.4
0.6
0.8
1.0

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F-106 LIGHTNING/ 84-025

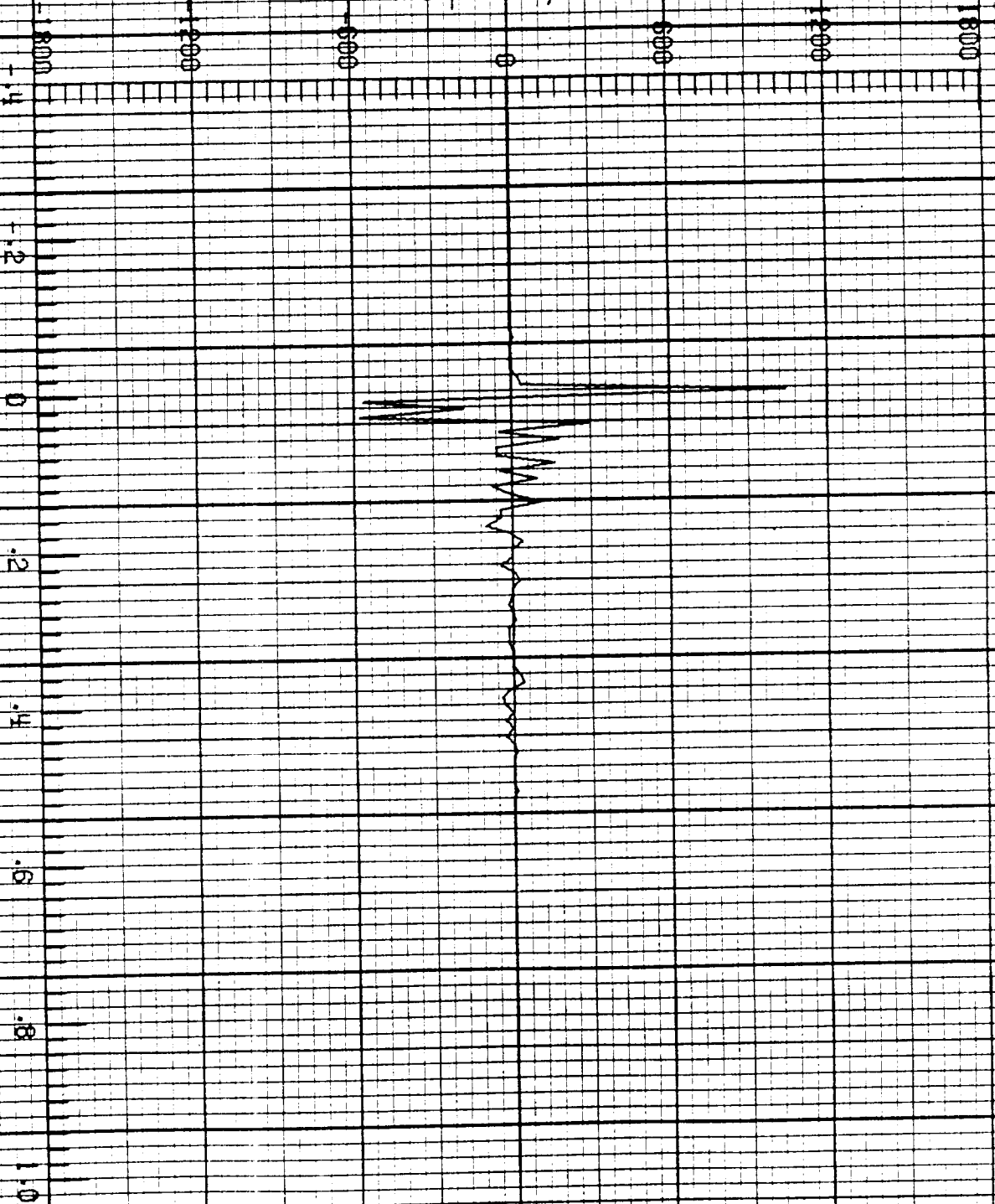
IFCP RUN NO. 7

5.010

B_1 T/s

19:44:27.2
CHANNEL NO. 2.2

MICROSECONDS



F-106 LIGHTNING/ 84-025

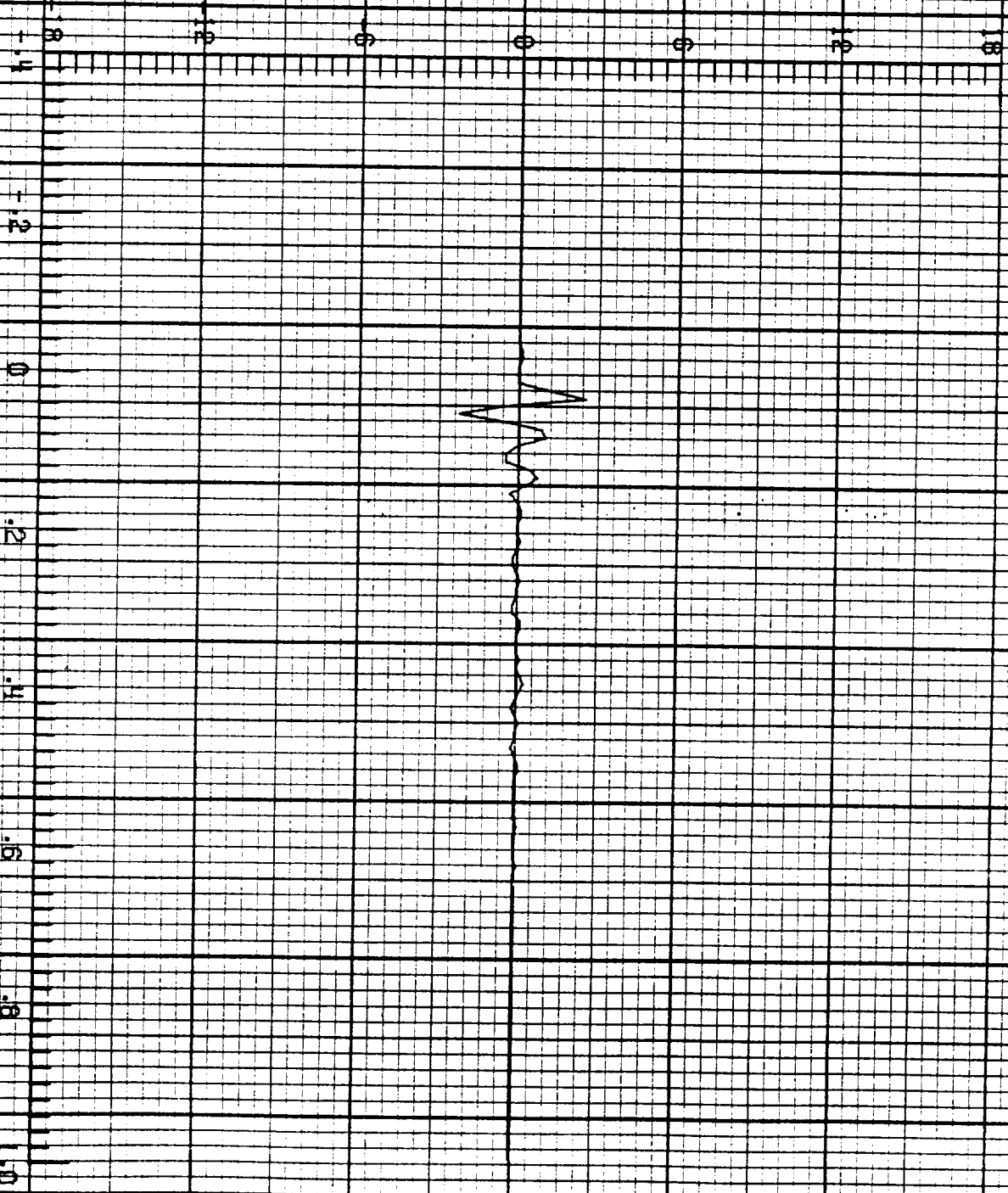
LEC 3 RUN NO. 7

5.010

D_{wr} A/m²

19:44:27.2
CHANNEL NO. 3.0

MICROSECONDS



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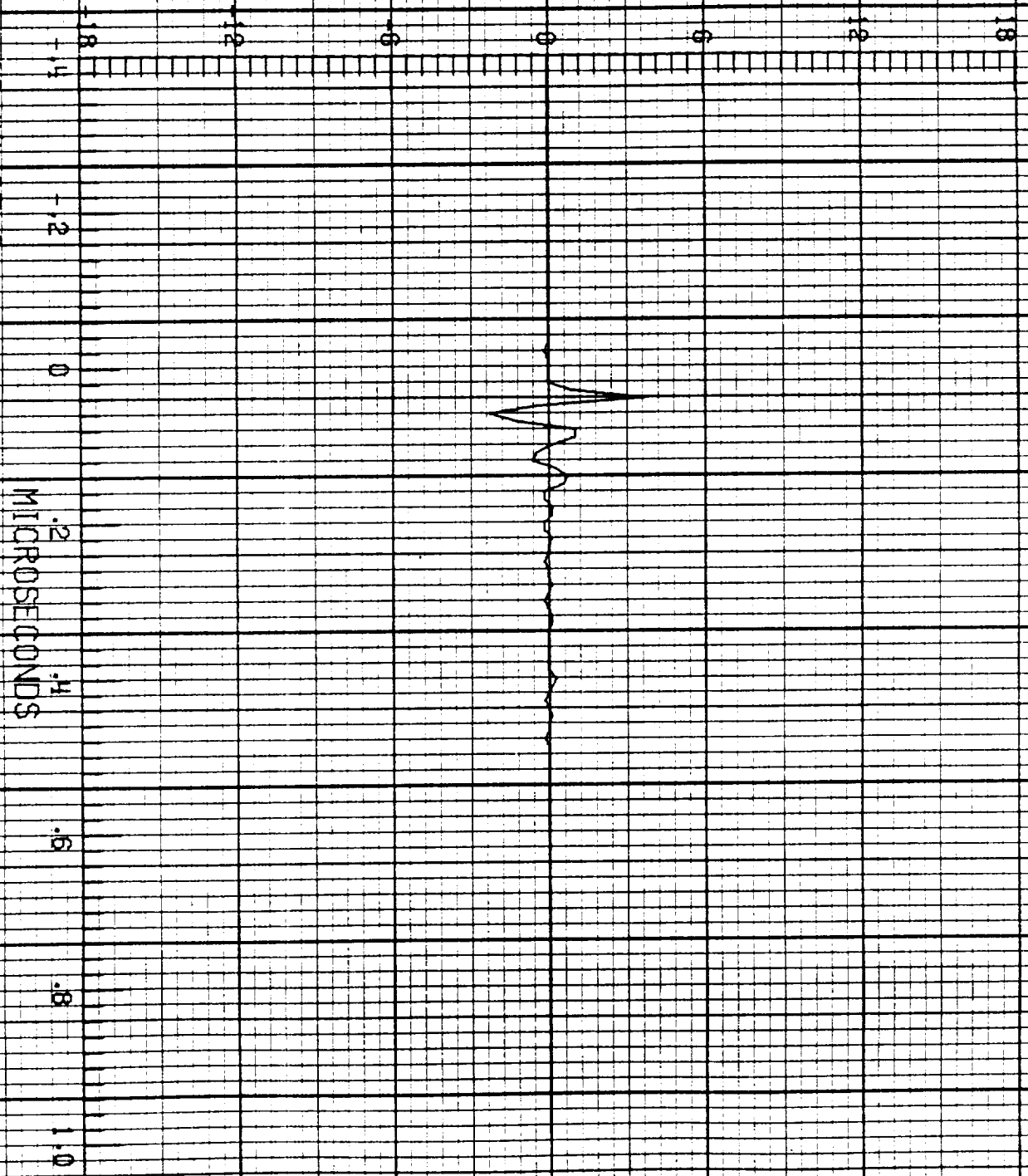
F-106 LIGHTNING/ 84-025

FCB RUN NO. 7

3.010

\dot{D}_{wl} A/m²

19:44:27.2
CHANNEL NO. 3.1



F-106 LIGHTNING/ 84-025

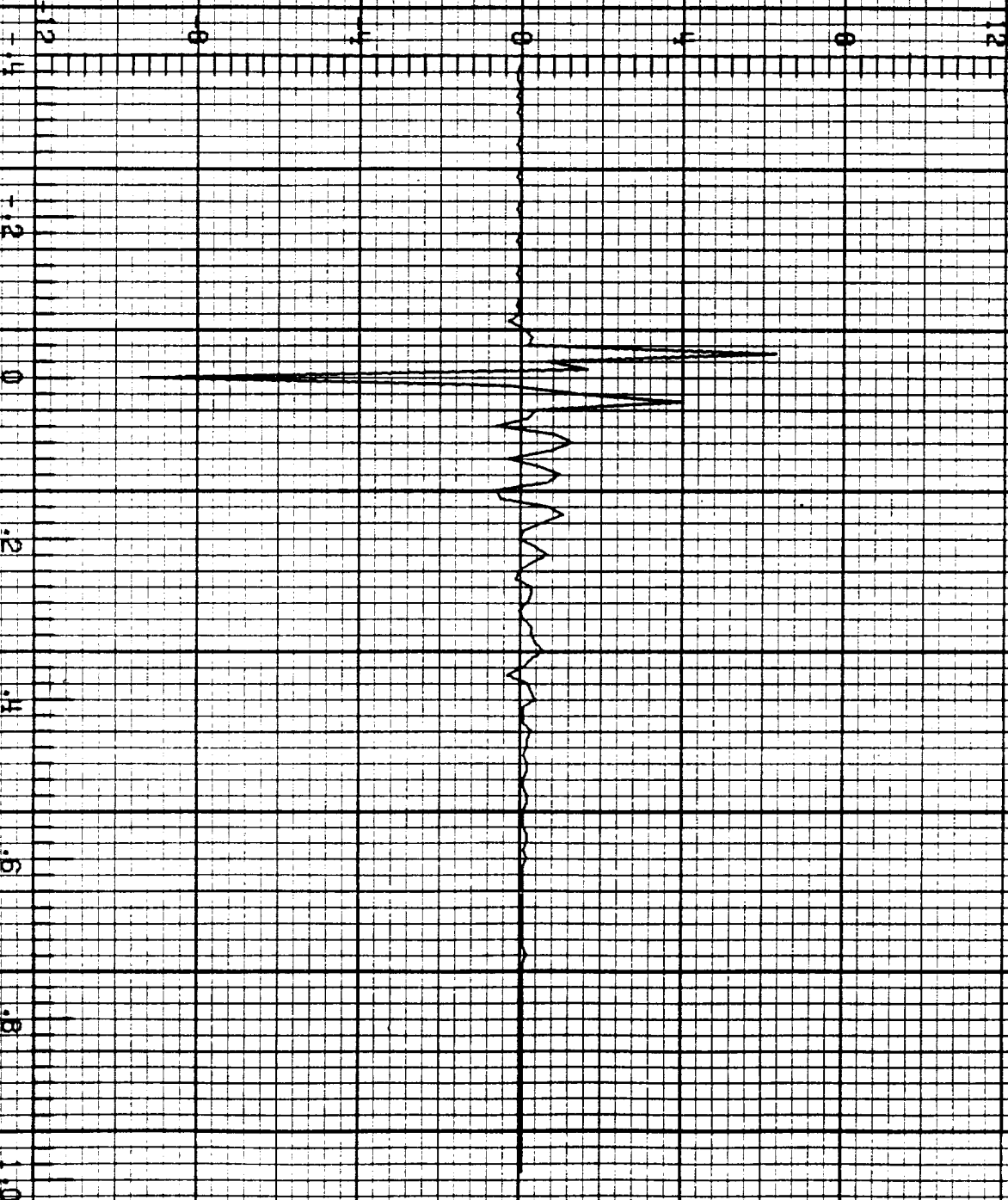
LEC 3 RUN NO. 7

6.010

D_r A/m²

19:44:27.2
CHANNEL NO. 3.2

MICROSECONDS



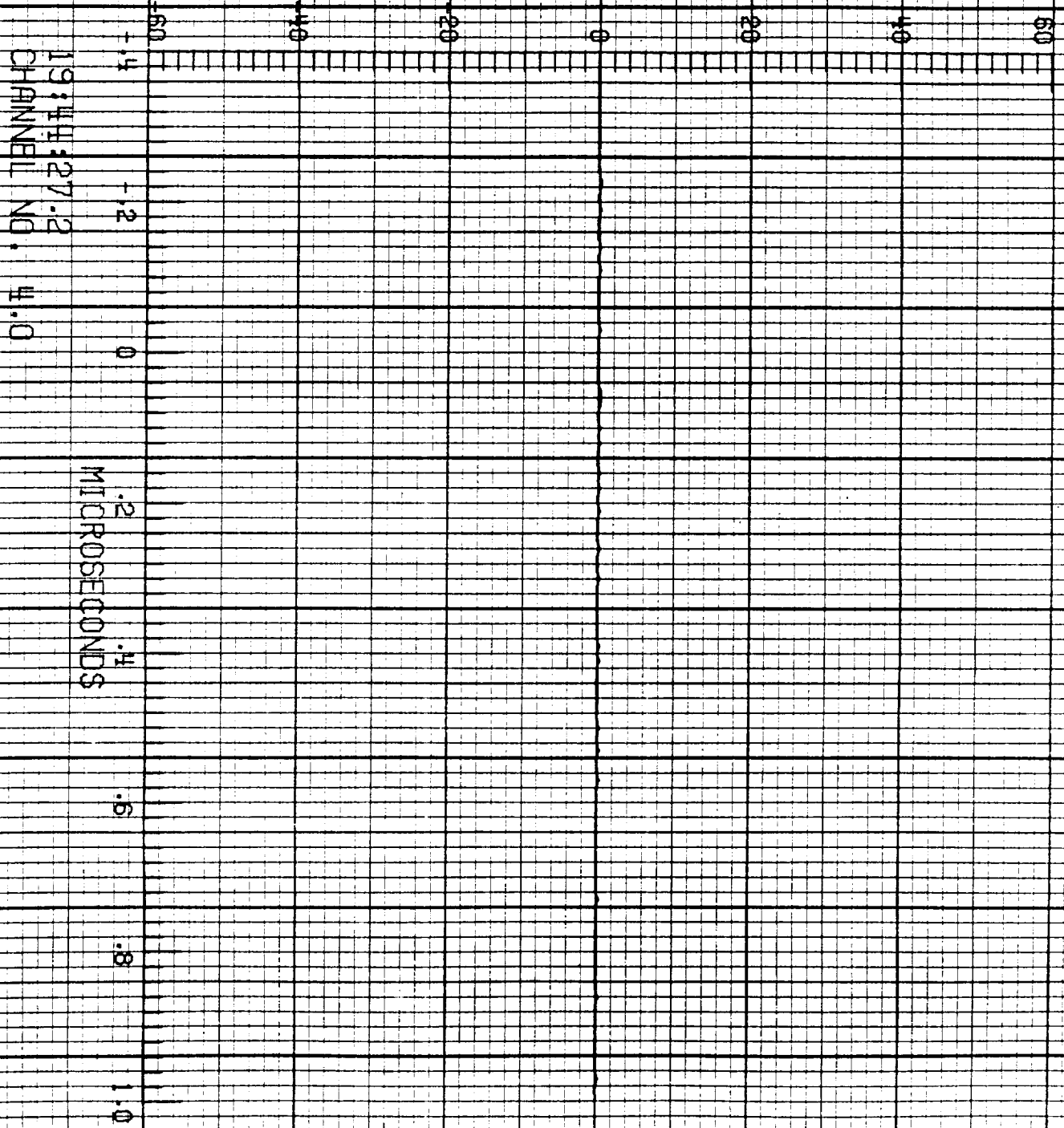
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F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 7

8.010

V_{ra} V



F-106 LIGHTNING/ 84-025

LECH RUN NO. 7

3.010

T_n A

9 x 10³

19:44:27.2
CHANNEL NO. 4.1

MICROSECONDS

ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-025

LEC4 RUN NO. 7

6.010

I_r A

19:44:27.2
CHANNEL NO. 4.2

9 x 10³

MICROSECONDS

F-106 LIGHTNING/ 84-025

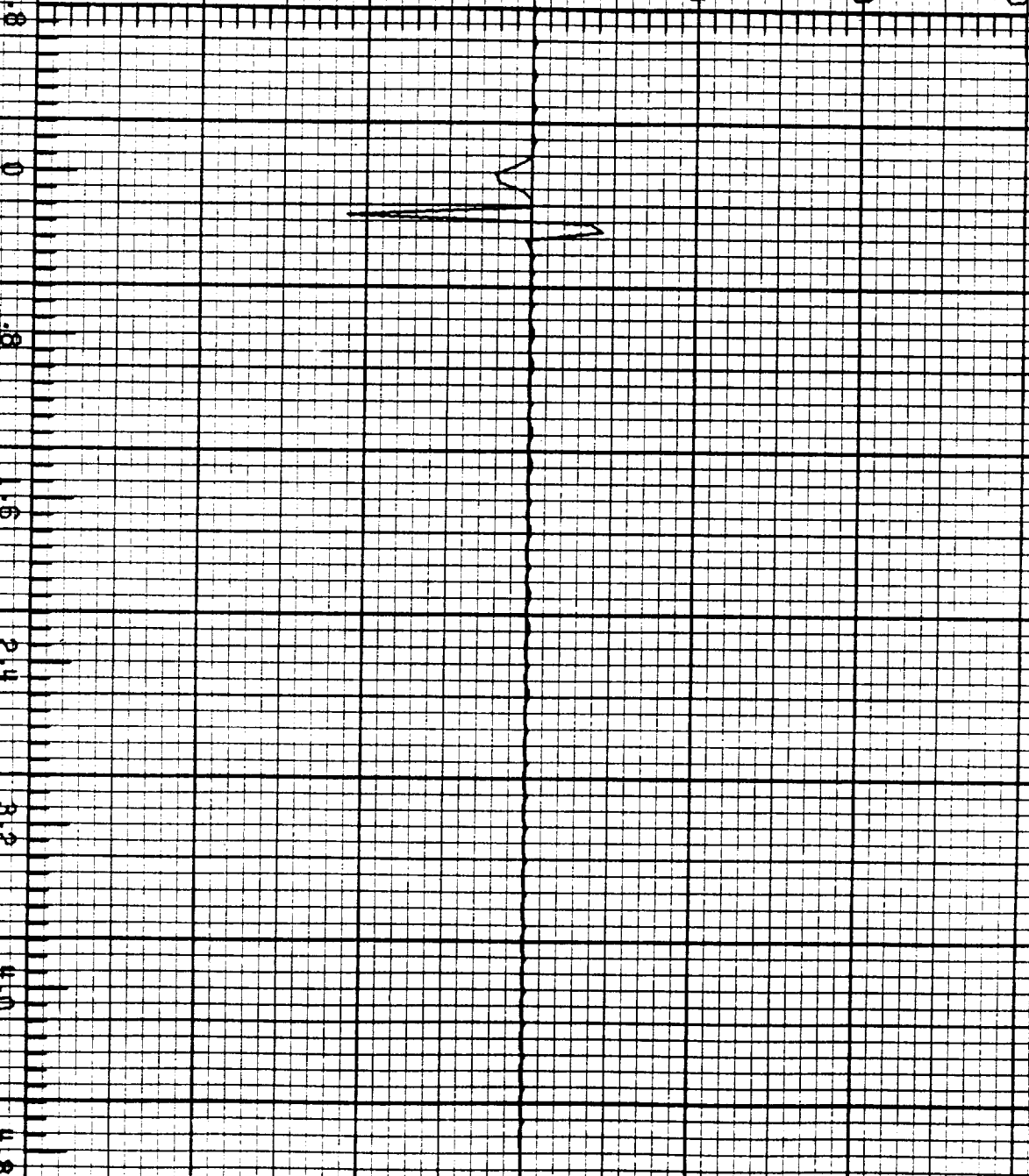
LEC 1 RUN NO. 8

3.011

B_w T/s

5000 5000 5000 5000 5000 5000

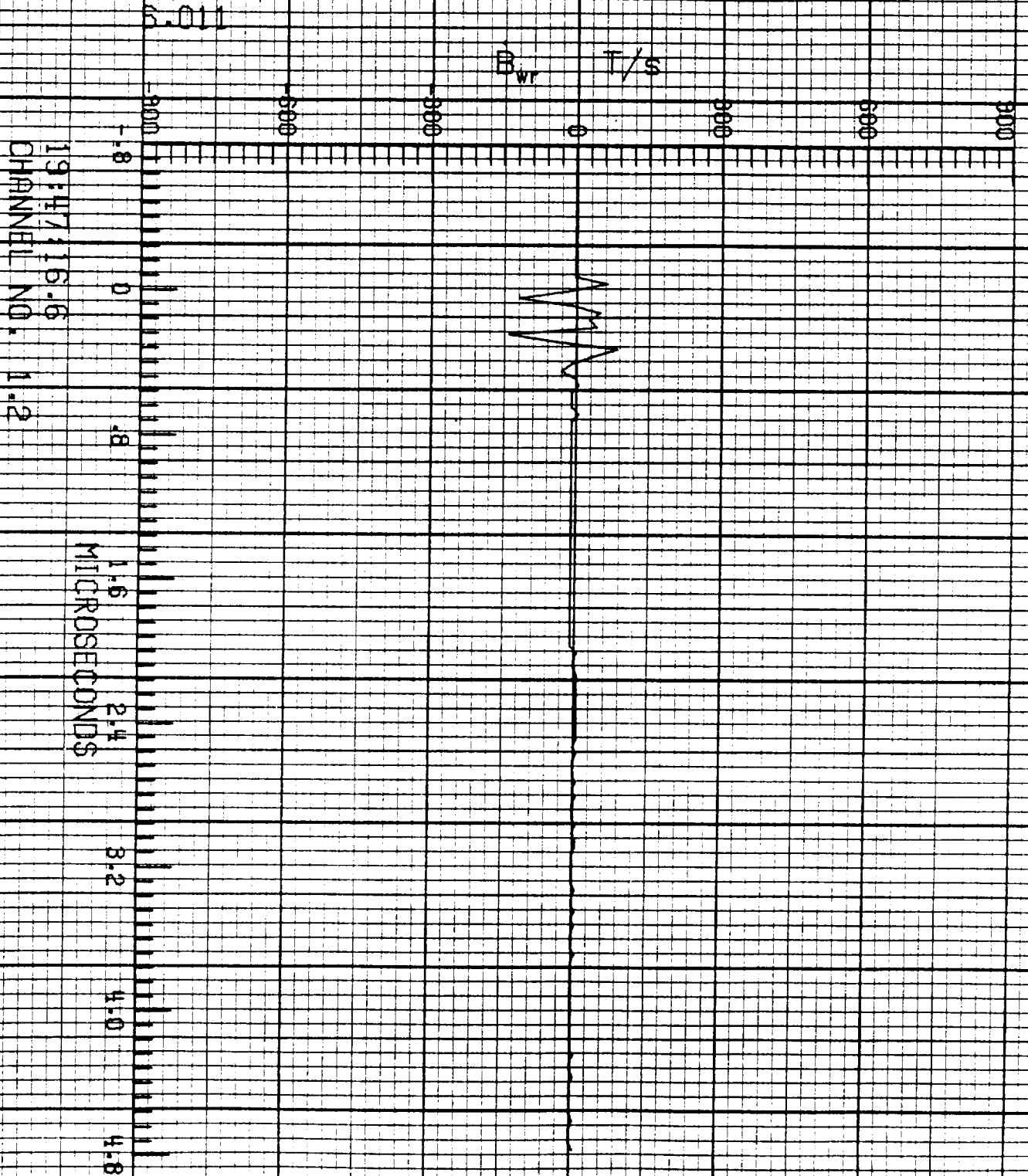
19:47:16.8
CHANNEL NO. 1.1



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F-106 LIGHTNING/ 84-025

LEC 1 RUN NO. 8



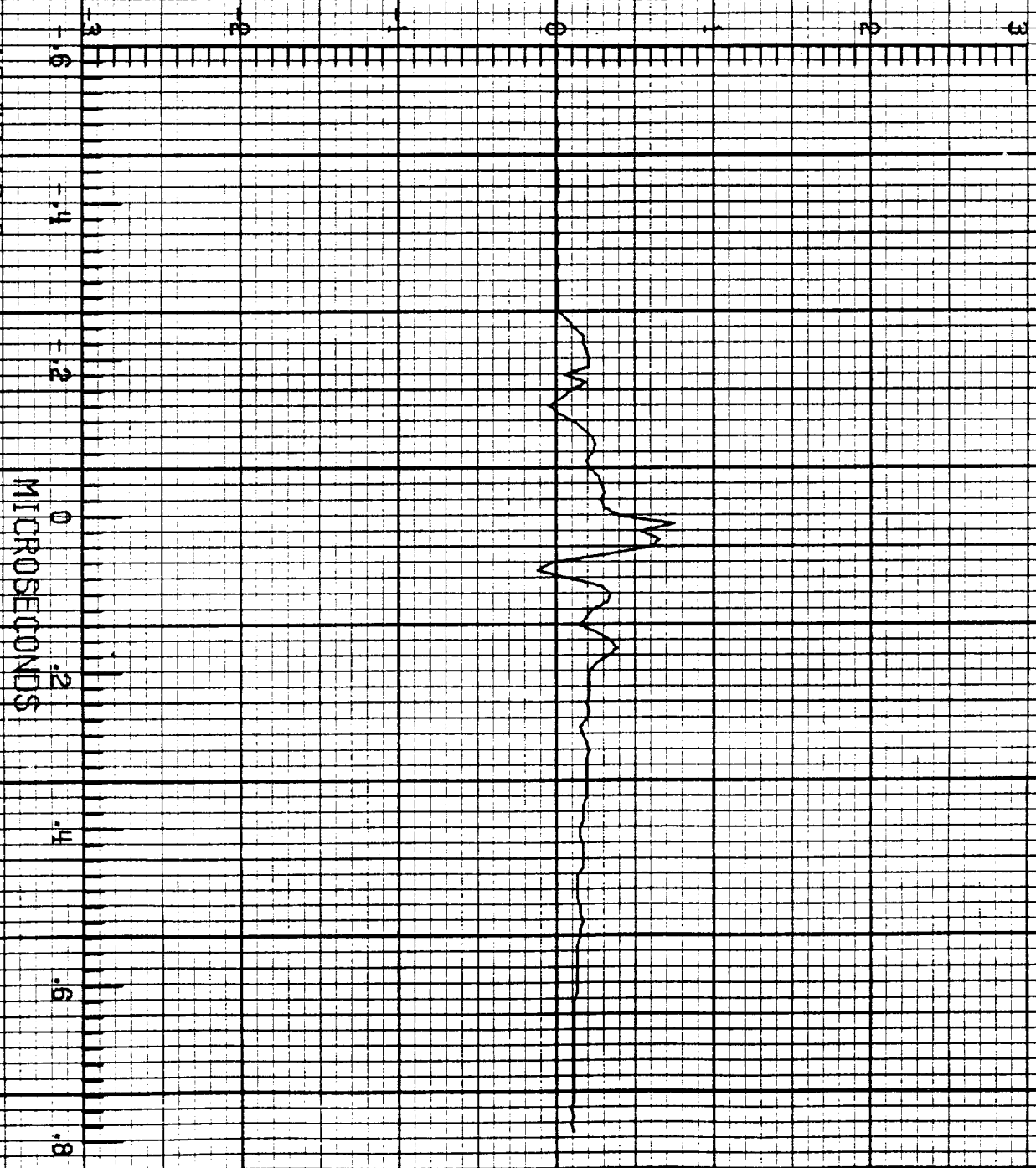
F-106 LIGHTNING/ 84-025

LEO2 RUN NO. 8

5.011

\bar{D}_t A/m²

19:47:16.6
CHANNEL NO. 2.0



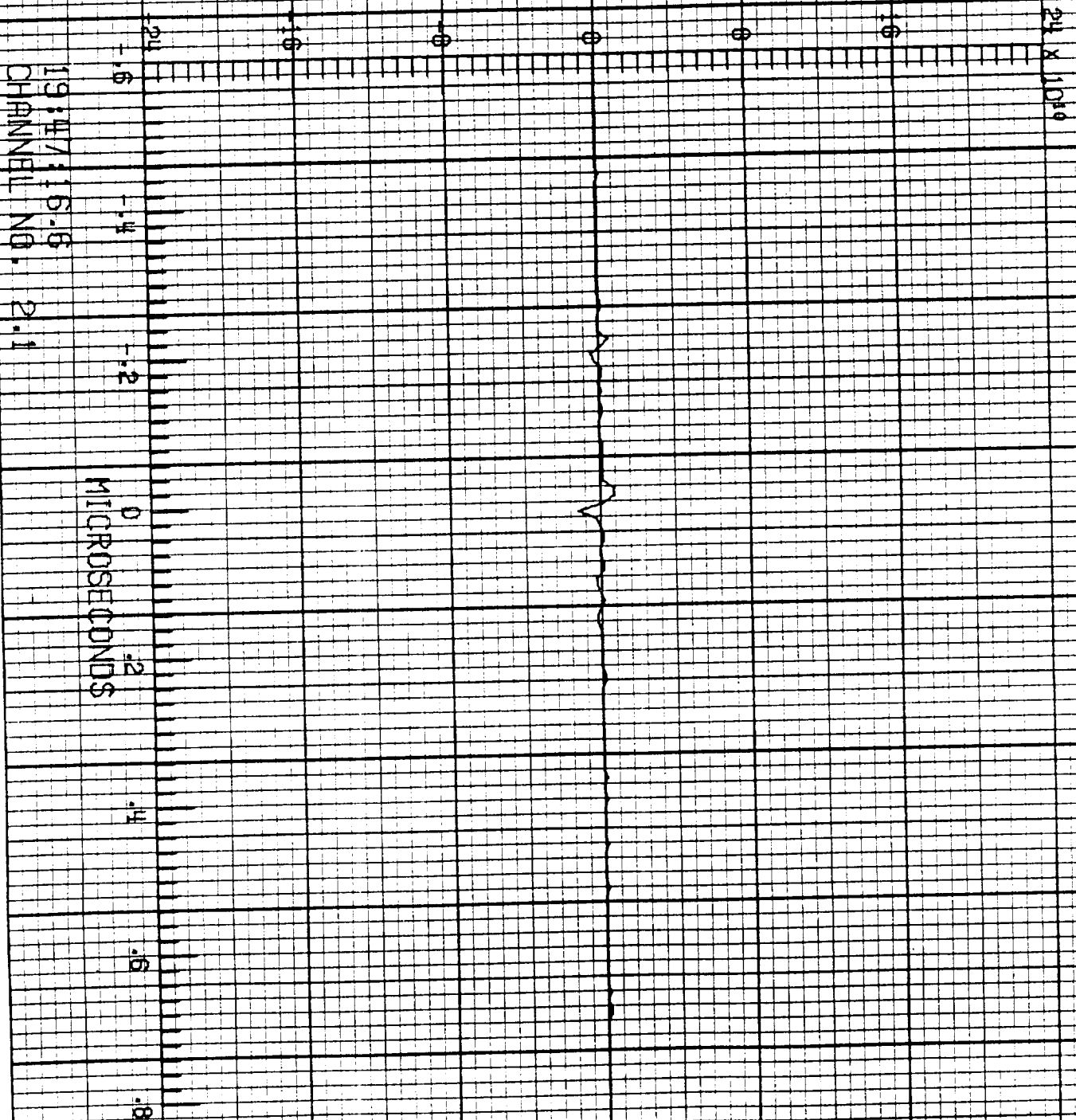
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F=106 LIGHTNING/ 84-025

LEC 2 RUN NO. 8

S.011

\dot{I} A/s



F-106 LIGHTNING/ 84-025

LECD RUN NO. 8

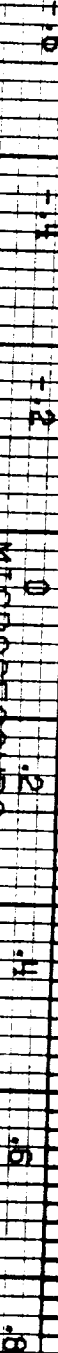
5.011

\dot{B}_1 T/s

19:47:16.8
CHANNEL NO. 2.2



MICROSECONDS



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F-106 LIGHTNING/ 84-025

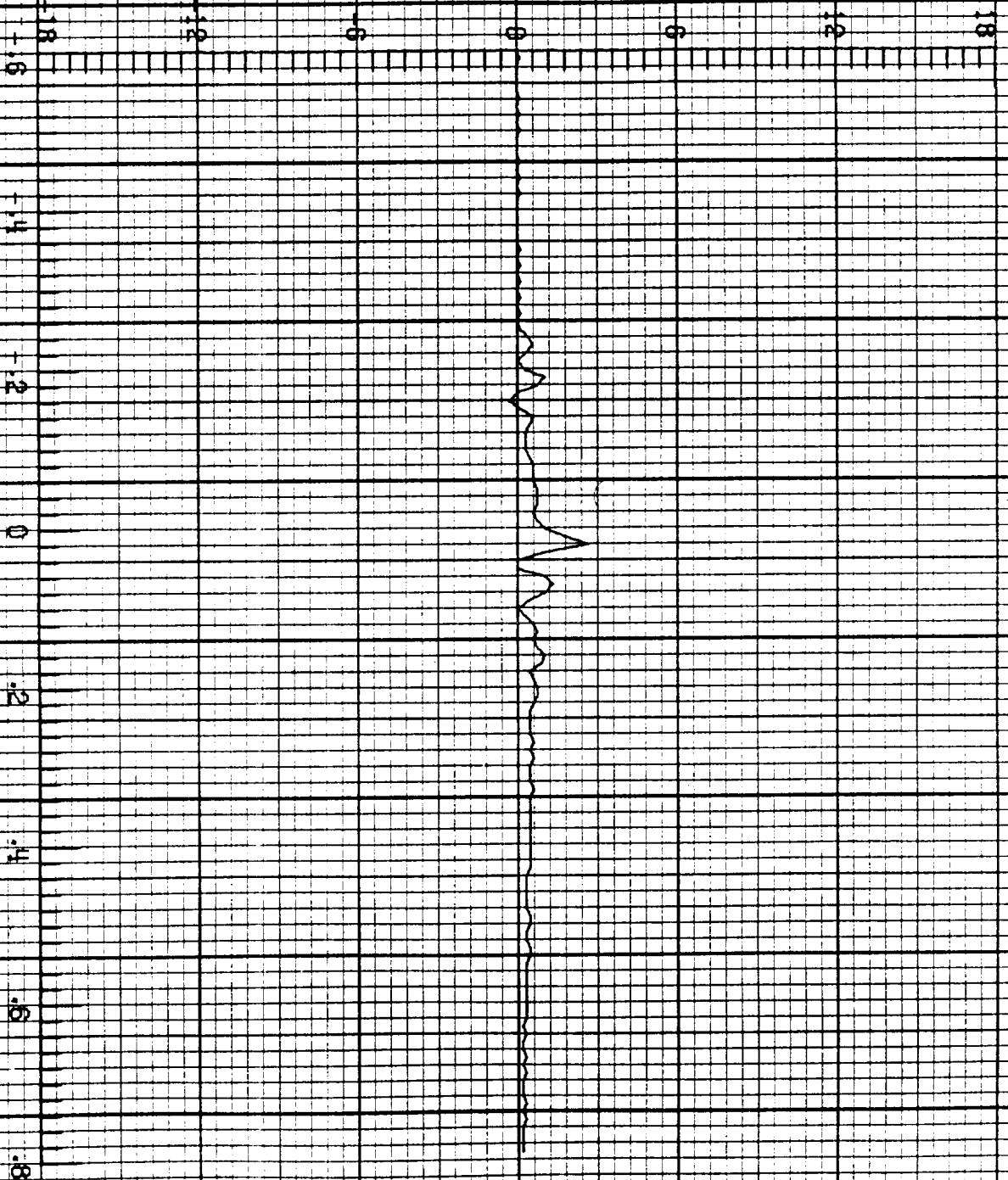
LEC 3 RUN NO. 8

3.011

\dot{D}_w A/m²

19:47:16.8
CHANNEL NO. 3.0

MICROSECONDS



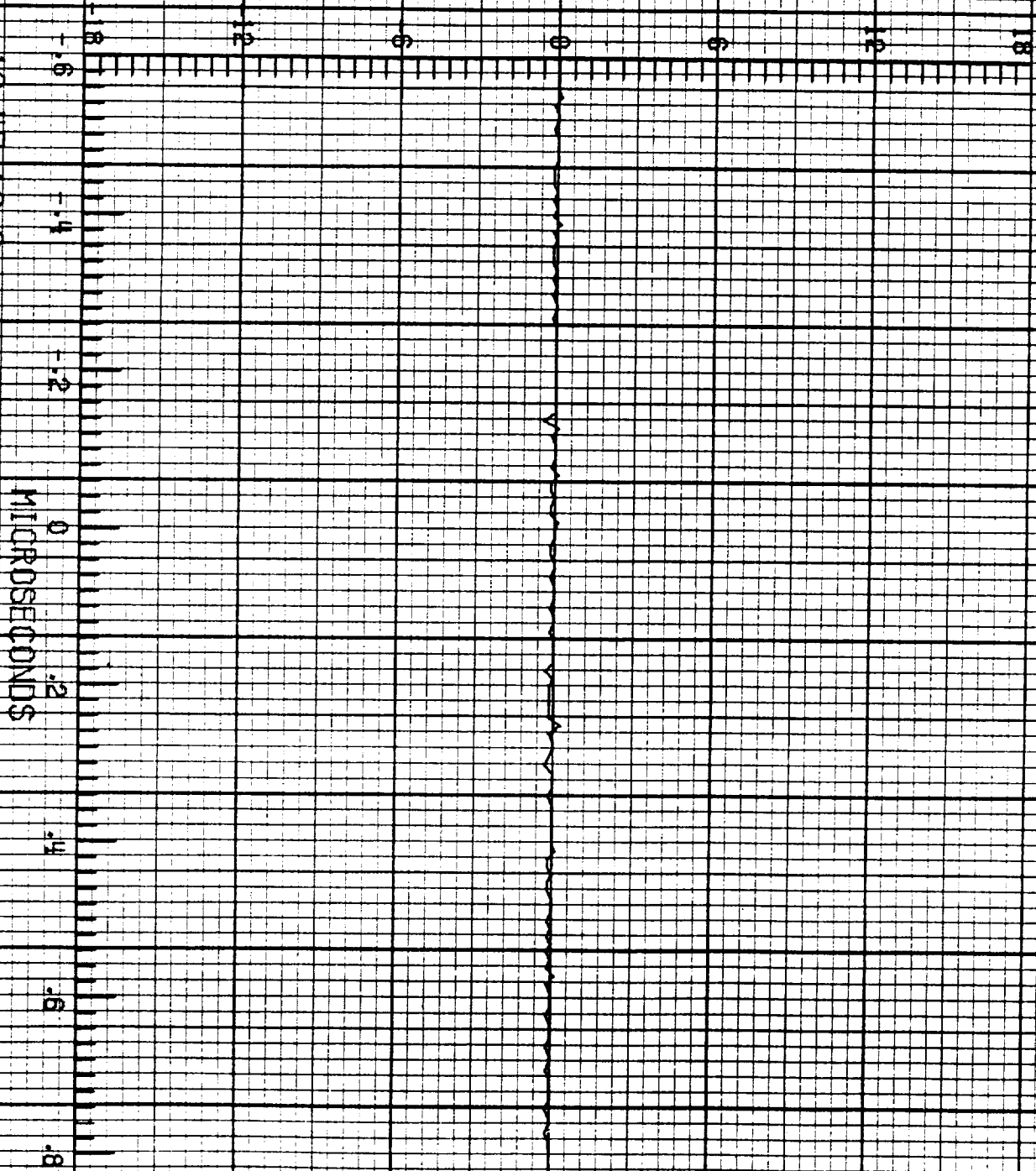
F-106 LIGHTNING/ 84-025

LEC 3 RUN NO. 8

8.011

\dot{D}_{wl} A/m²

19:47:15.6
CHANNEL NO. 8.1



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F-106 LIGHTNING/ 84-025

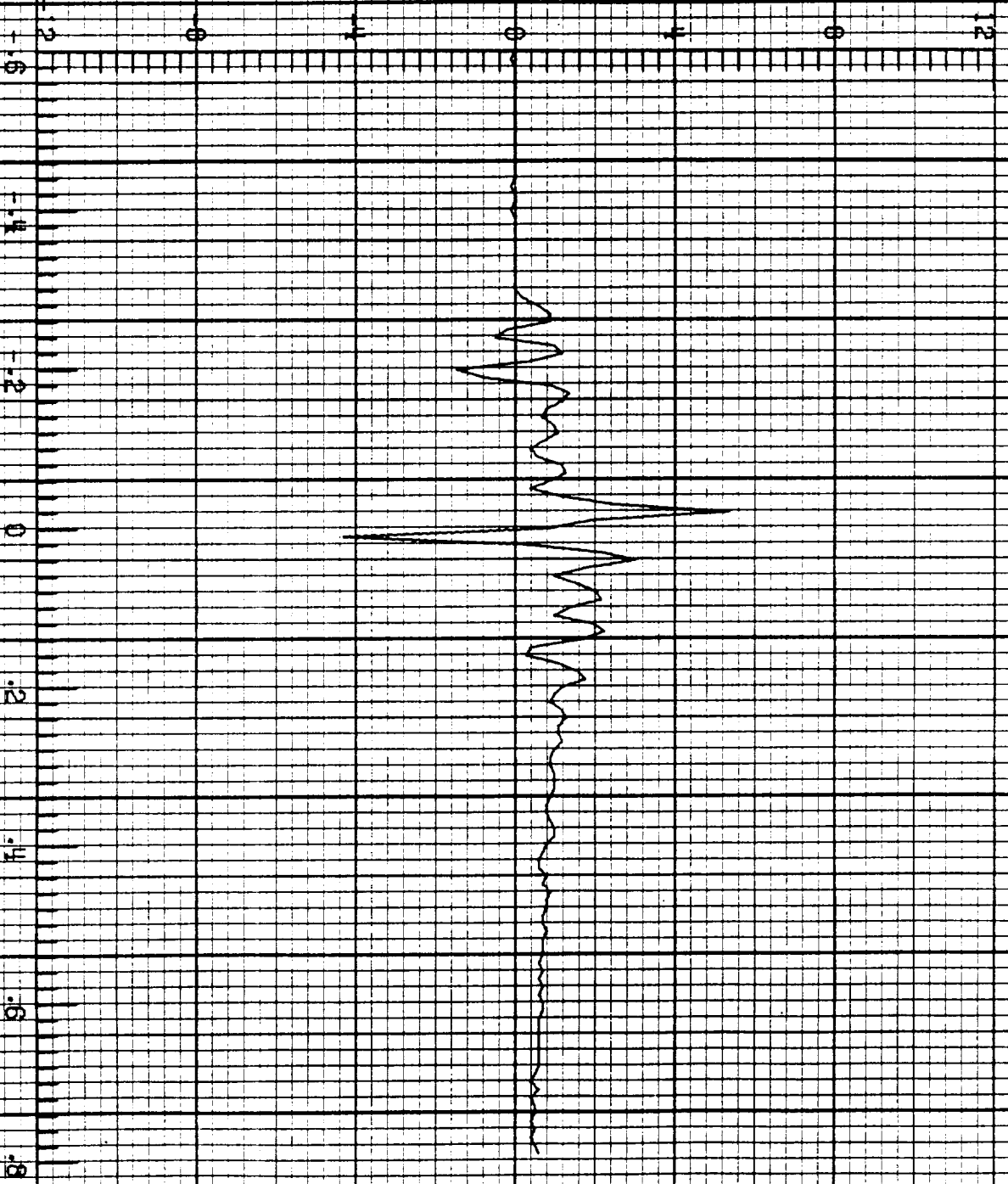
LEC 3 RUN NO. 8

3.011

D_r A/m²

19:47:16.6
CHANNEL NO. 8.2

MICROSECONDS



F-106 LIGHTNING/ 84-025

IFC# RUN NO. 8

S.011

V_{ra} V

60 40 20 0 20 40 60

-1.6

-1.4

-1.2

0

.2

.4

.6

.8

19:47:16.8
CHANNEL NO. 4.0

MICROSECONDS

ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-025

LECH RUN NO. 8

5.011

I_n A

19:47:15.8
CHANNEL NO. 4.1

MICROSECONDS

9×10^3

F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 8

5.011

I_t A

19:47:15.6
CHANNEL NO. 4.2

9 x 10⁸

MICROSECONDS

ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-025

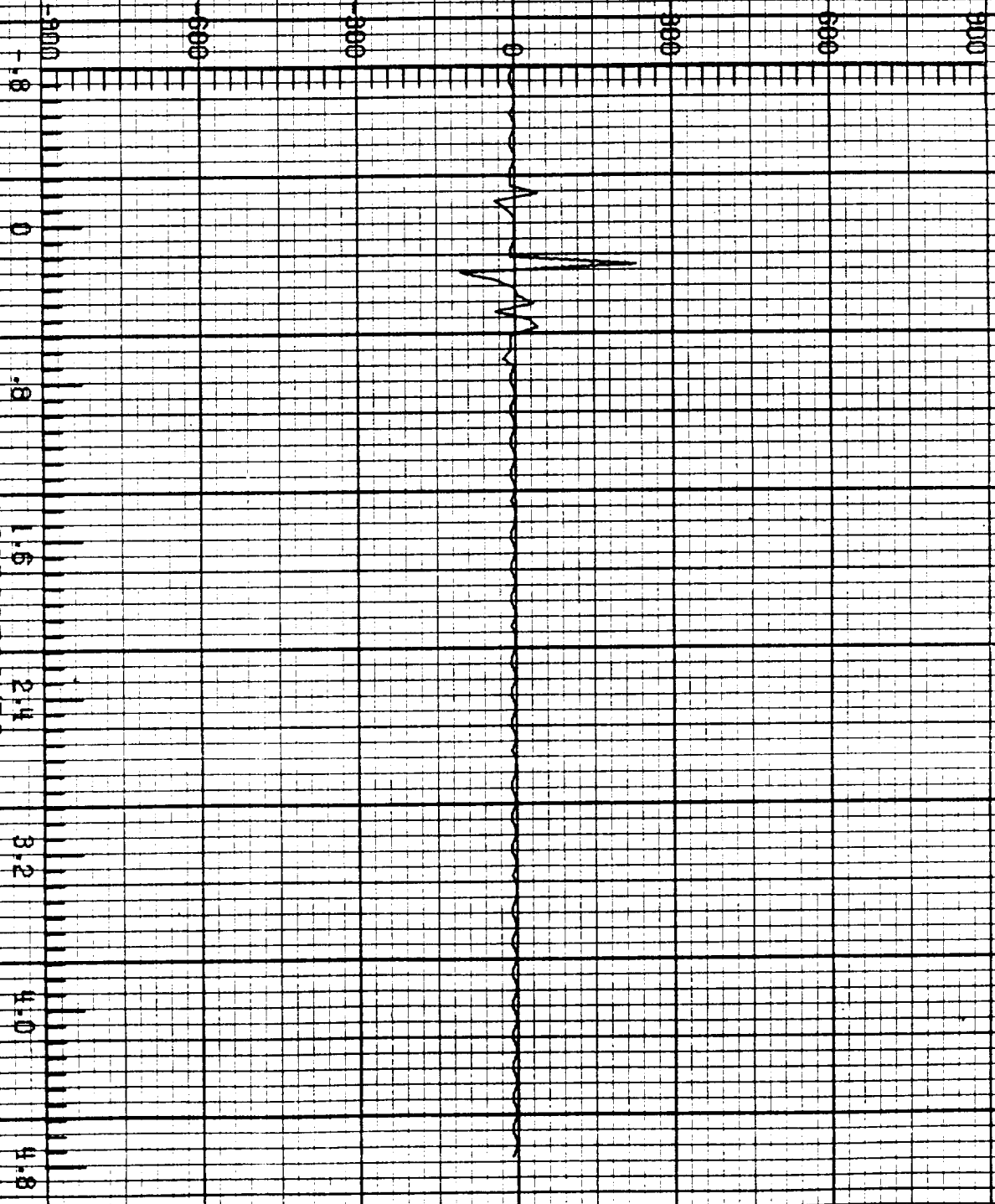
LEC 1 RUN NO. 9

6.012

B_w T/s

19:50:17.9
CHANNEL NO. 1.1

MICROSECONDS



F-106 LIGHTNING/ 84-025

LEC1 RUN NO. 9

5.012

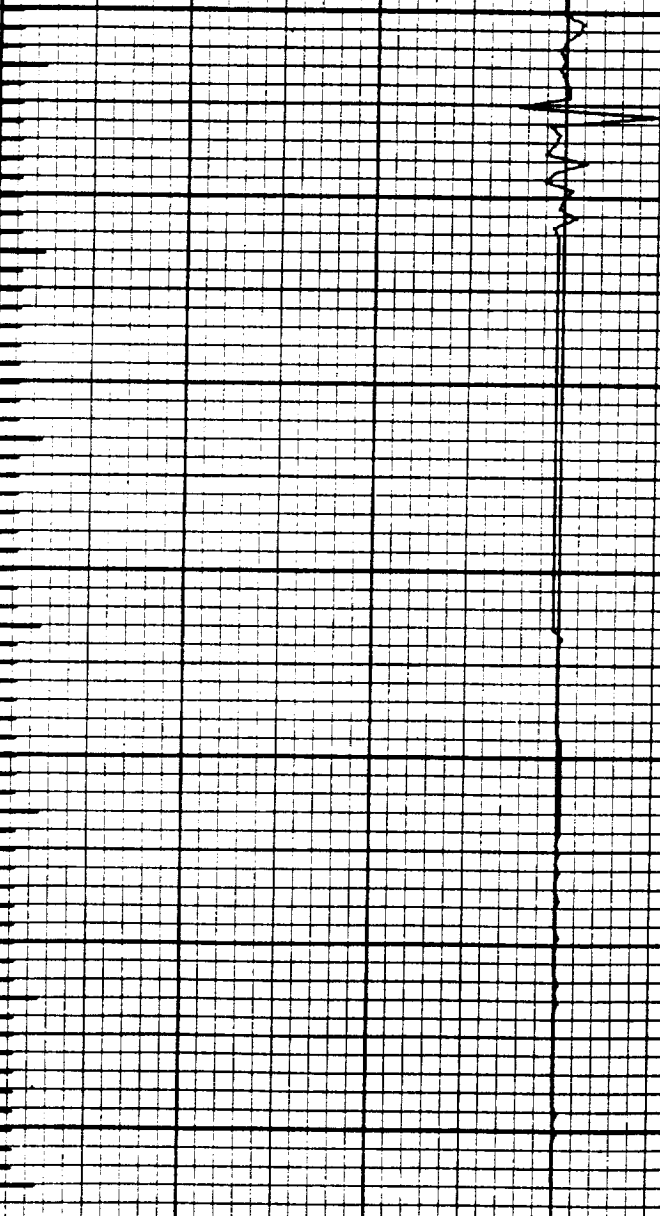
B_{wr} T/s

9000 6000 3000 0 3000 6000 9000

19:50:17.9
CHANNEL NO. 1.2

0.8 0 0.8 1.6 2.4 3.2 4.0 4.8

MICROSECONDS



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F-106 LIGHTNING/ 84-025

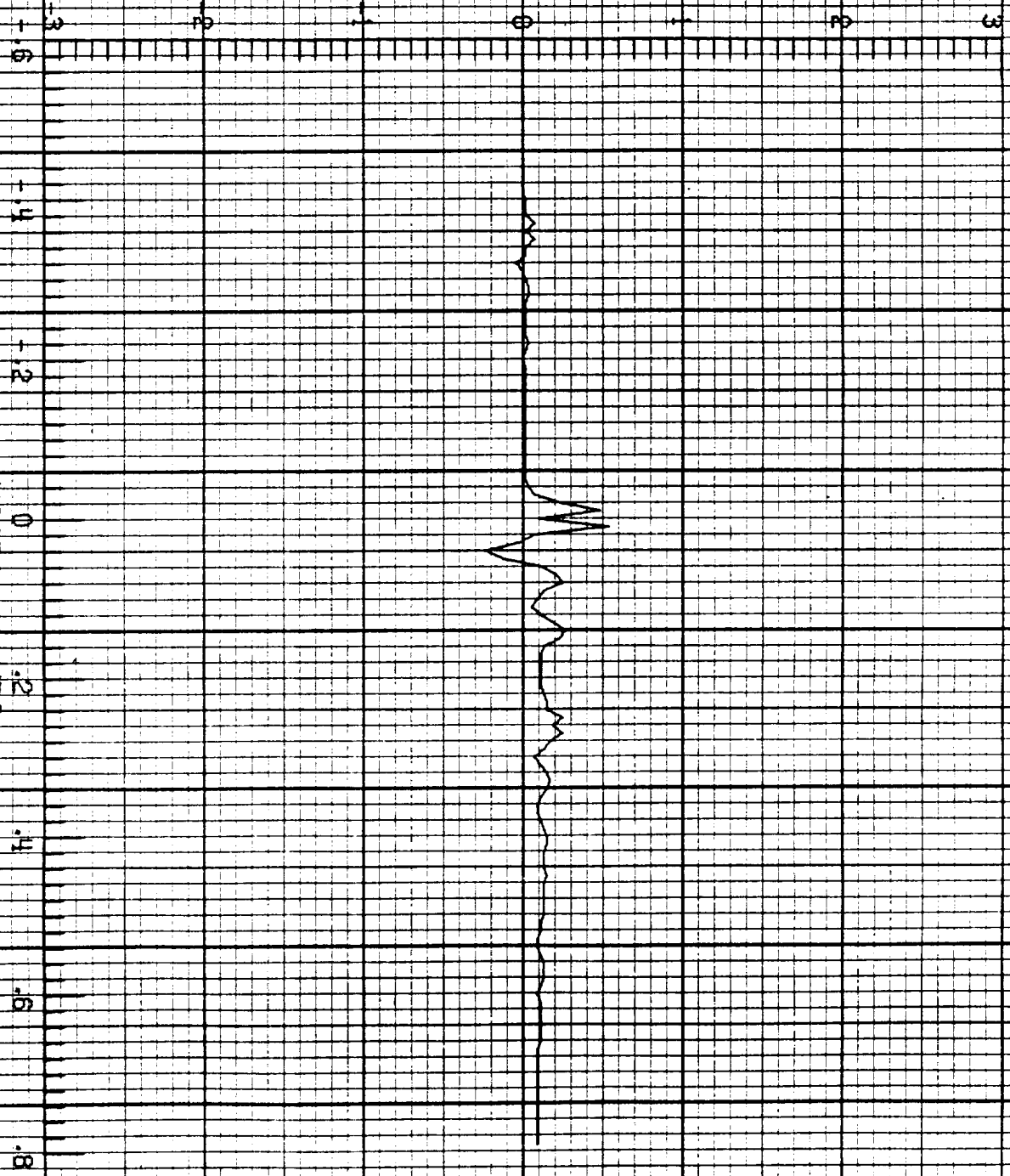
LEAD RUN NO. 9

3.012

\dot{D}_t A/m²

19:50:17.9
CHANNEL NO. 2.0

MICROSECONDS



F=106 LIGHTNING/ 84=025

LFC 2 RUN NO. 9

3.012

\dot{i} A/s

24×10^{10}

19:50:17.9
CHANNEL NO. 2.1

MICROSECONDS

ORIGINAL PAGE IS
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F=106 LIGHTNING/ 84-025

LEC 2 RUN NO. 9

3.012

B_1 T/s

1800
1200
600
0
600
1200
1800

19:50:17.9
CHANNEL NO. 2.2

1.6

1.4

1.2

MICROSECONDS

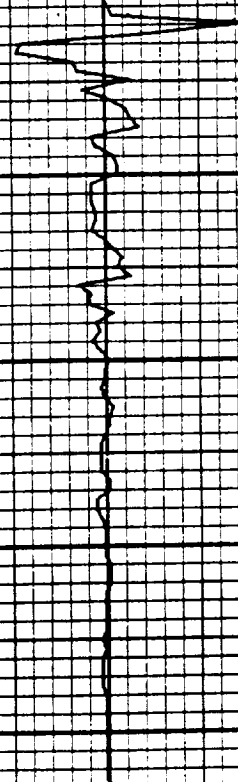
0

.2

.4

.6

.8



F-106 LIGHTNING/ 84-025

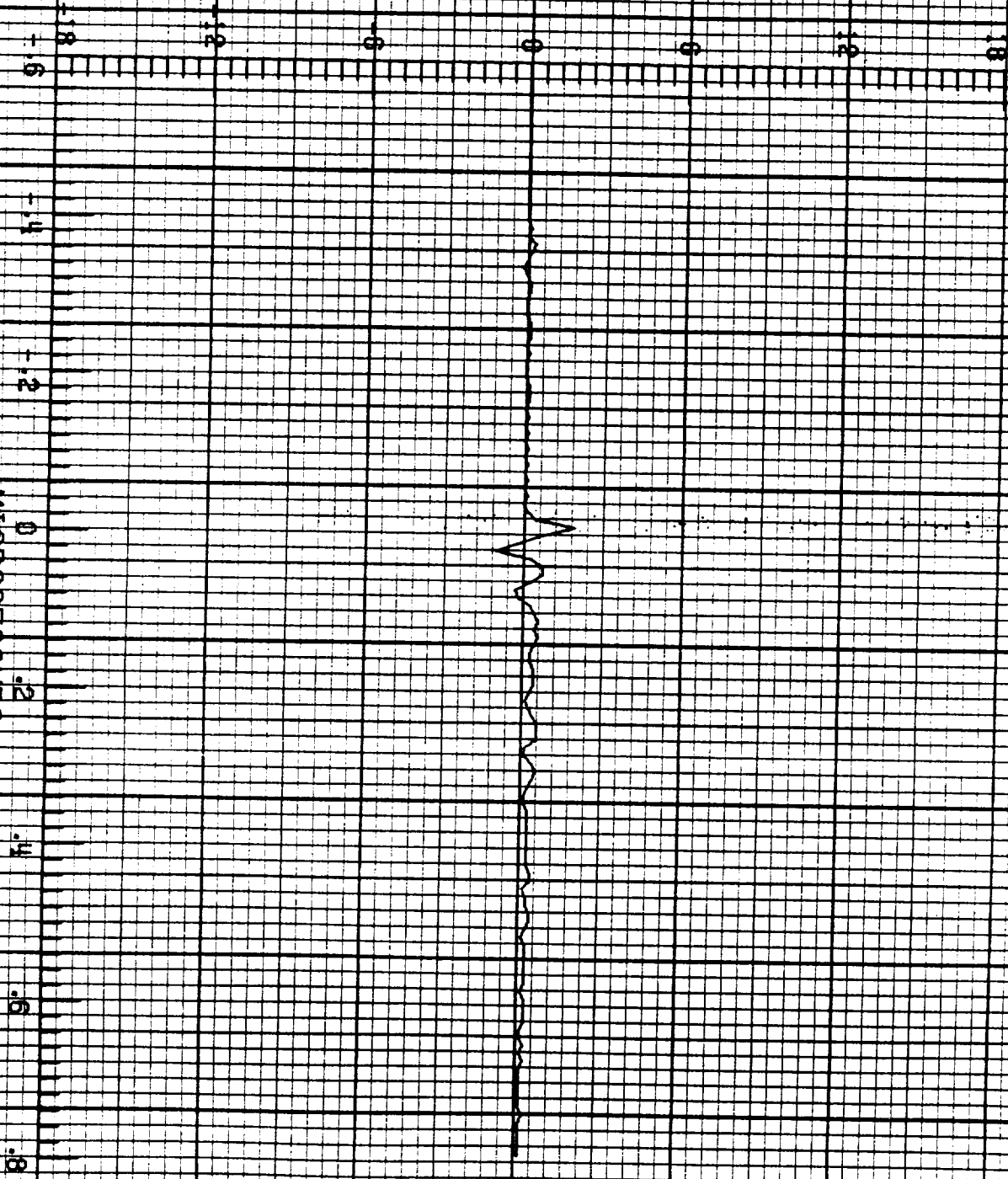
IEC3 RUN NO. 9

6.012

\dot{D}_w A/m²

19:50:17.9
CHANNEL NO. 3.0

MICROSECONDS



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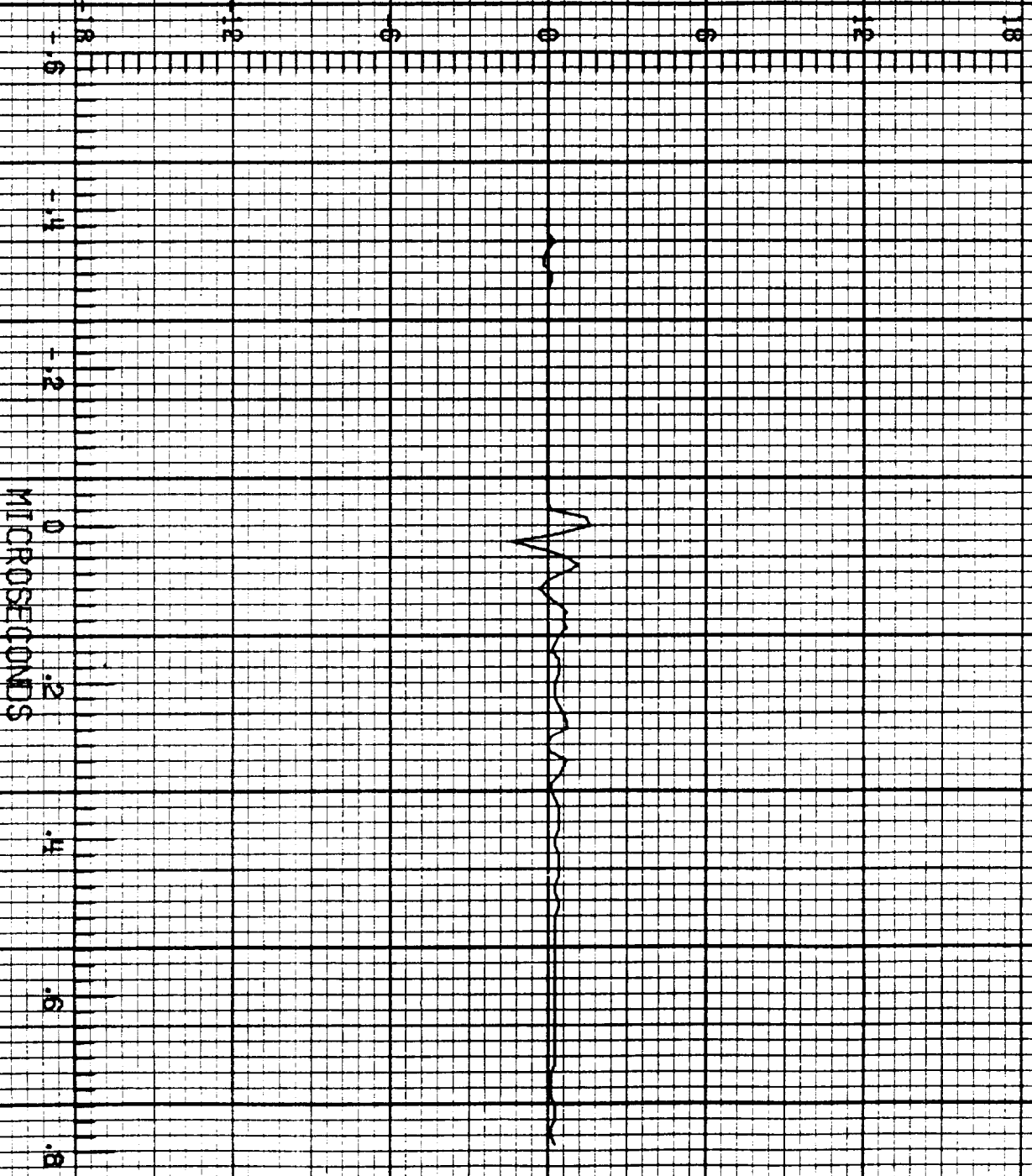
F-106 LIGHTNING/ 84-025

IFCS RUN NO. 9

S.012

\hat{D}_{wl} A/m²

19:50:17.9
CHANNEL NO. 3.1



F=106 LIGHTNING/ 84-025

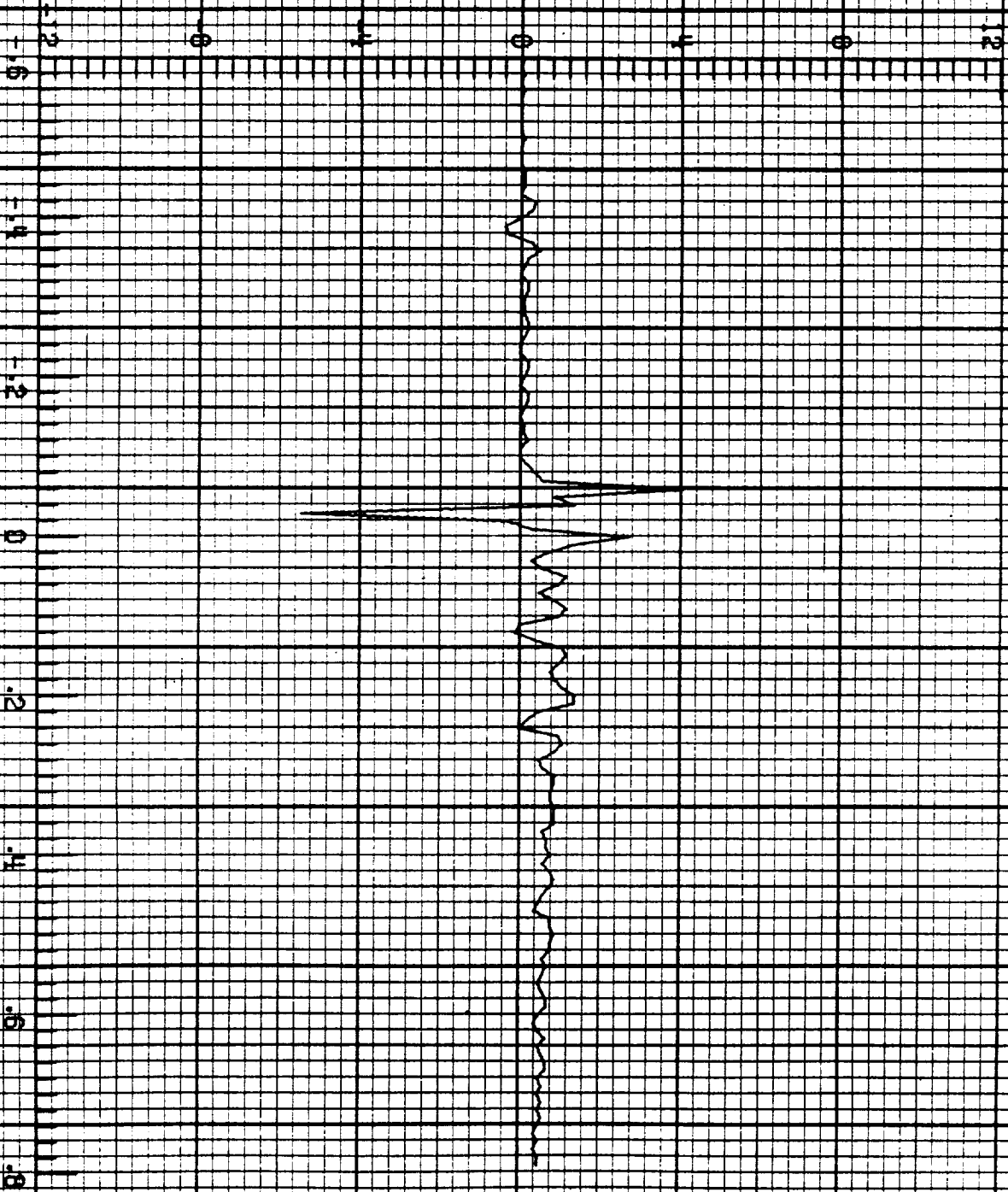
LFC S RUN NO. 9

5.012

D_r A/m²

19:50:17.9
CHANNEL NO. 3.2

MICROSECONDS



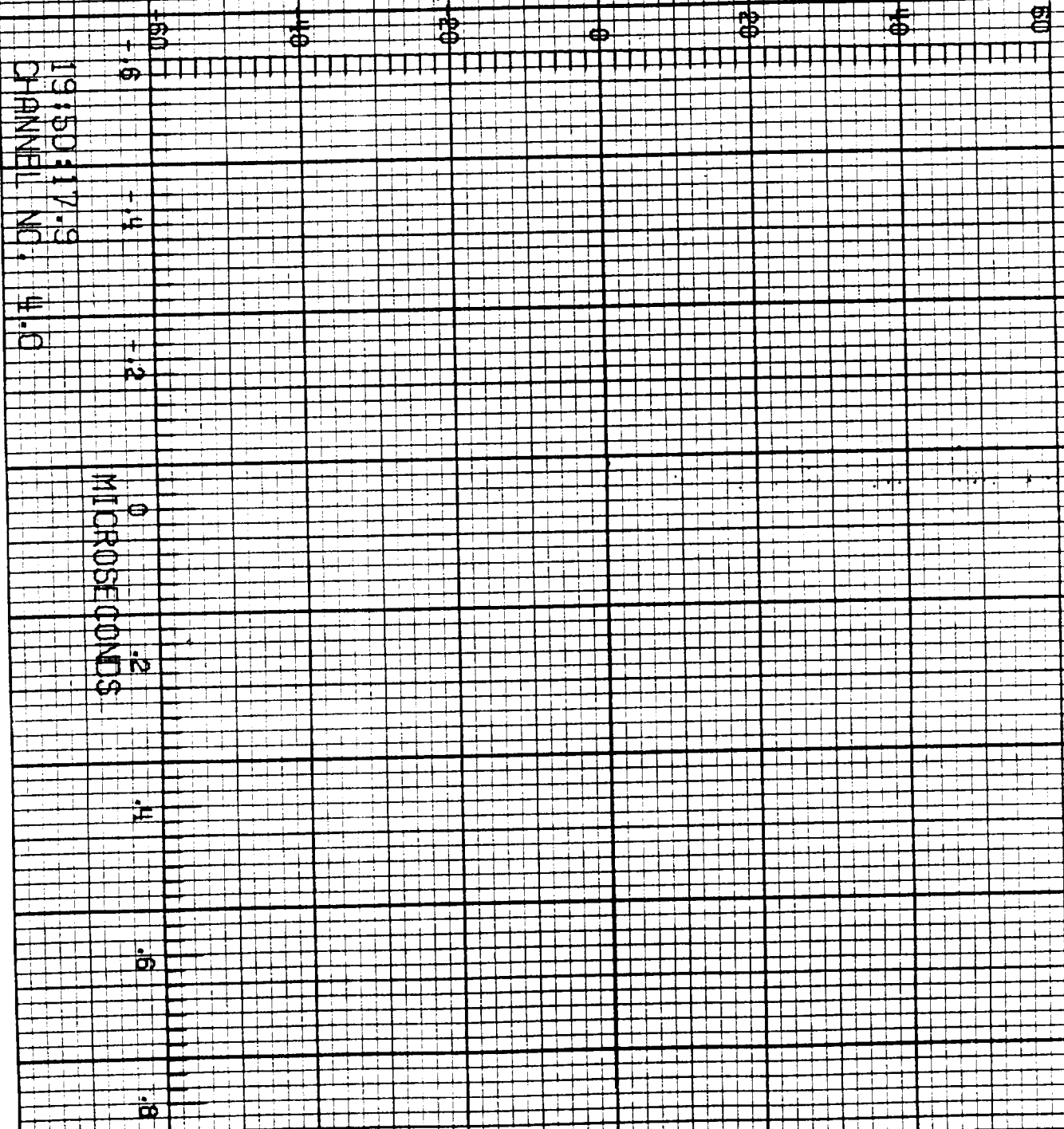
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F-106 LIGHTNING/ 84-025

LECH RUN NO. 9

S.012

V_{fo} V



19:50:17.9
CHANNEL NO. 4.0

F=106 LIGHTNING/ 84-025

LFC4 RUN NO. 9

5.012

T_n A

19:50:17.9
CHANNEL NO. 4.1

9 x 10²

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LEF4 RUN NO. 9

6.012

I_r A

19:50:17.9
CHANNEL NO. 4.2

MICROSECONDS

9 x 10⁸

F-106 LIGHTNING/ 84-025

LEC 1 RUN NO. 10

6.013

B_{VI} T/s

-9000
-6000
-3000
0
3000
6000
9000

19:57:30.2
CHANNEL NO. 11.1

.8
.6
2.4
3.2
4.0
MICROSECONDS

ORIGINAL PAGE IS
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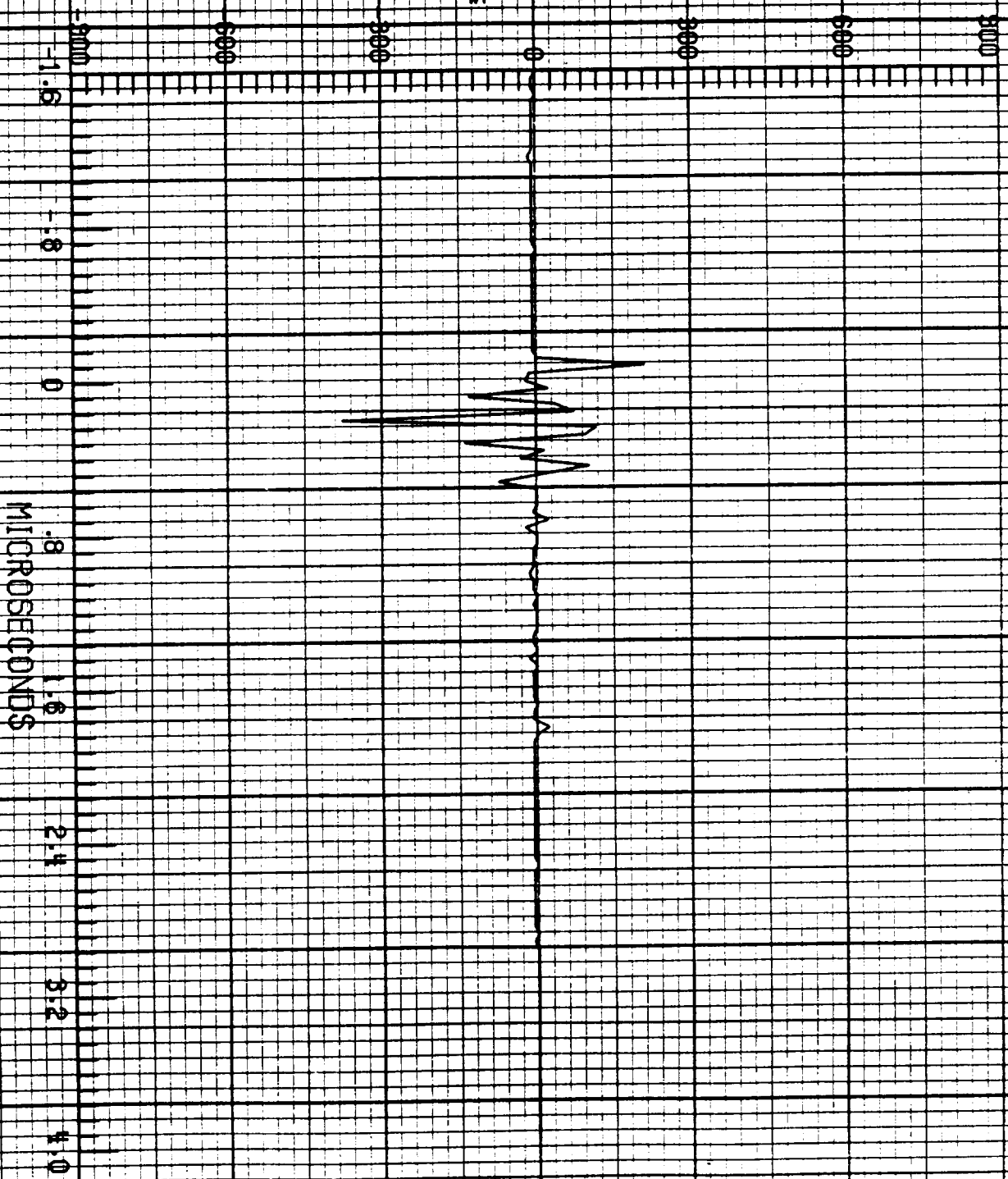
F=106 LIGHTNING/ 84-025

LEC 1 RUN NO. 10

0.013

B_{wr} T/s

19:57:0.2
CHANNEL NO. 1.2



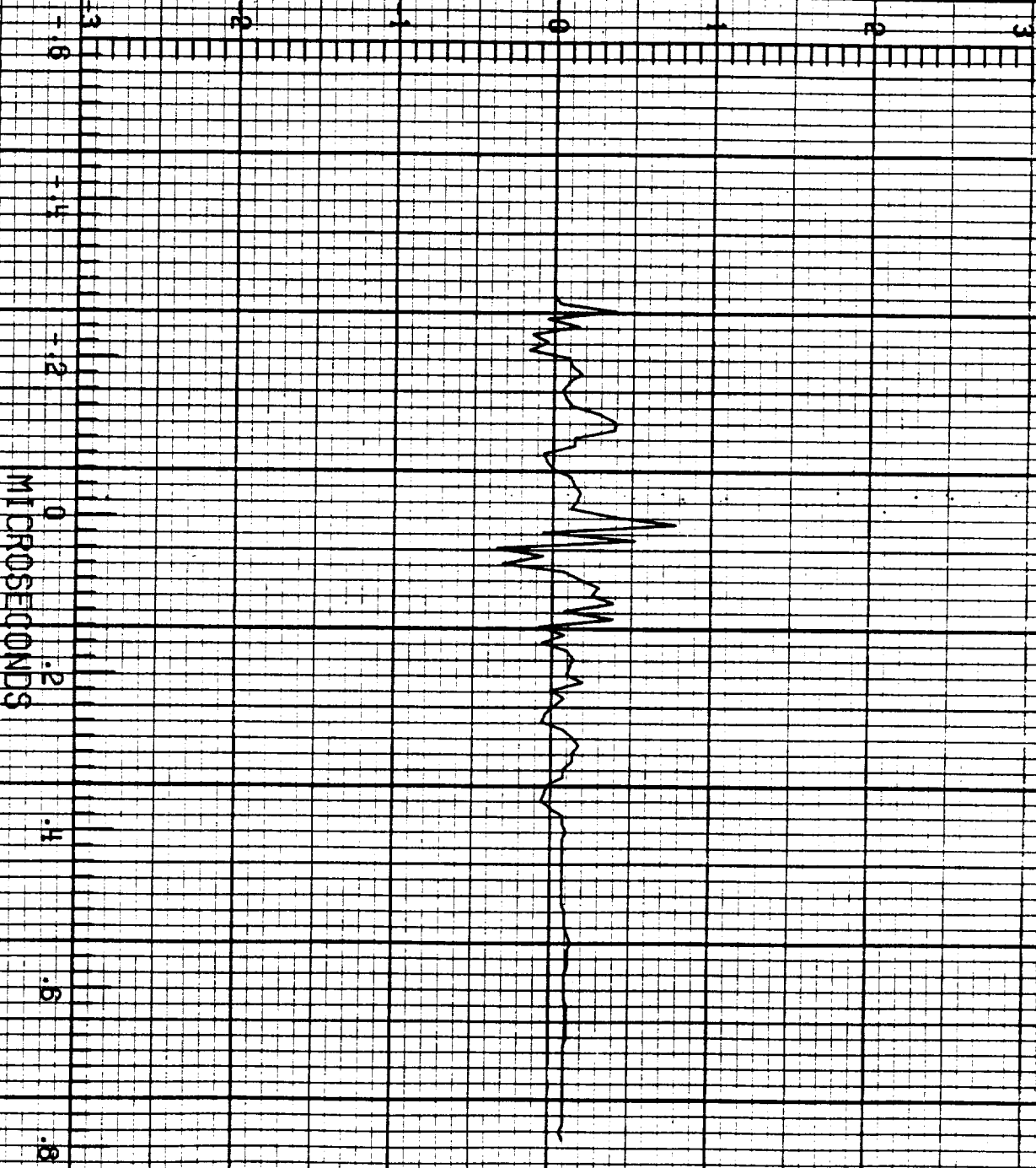
F-106 LIGHTNING/ 84-025

1 FC2 RUN NO. 10

3.013

D_t A/m²

19:57:50.2
CHANNEL NO. 2.0



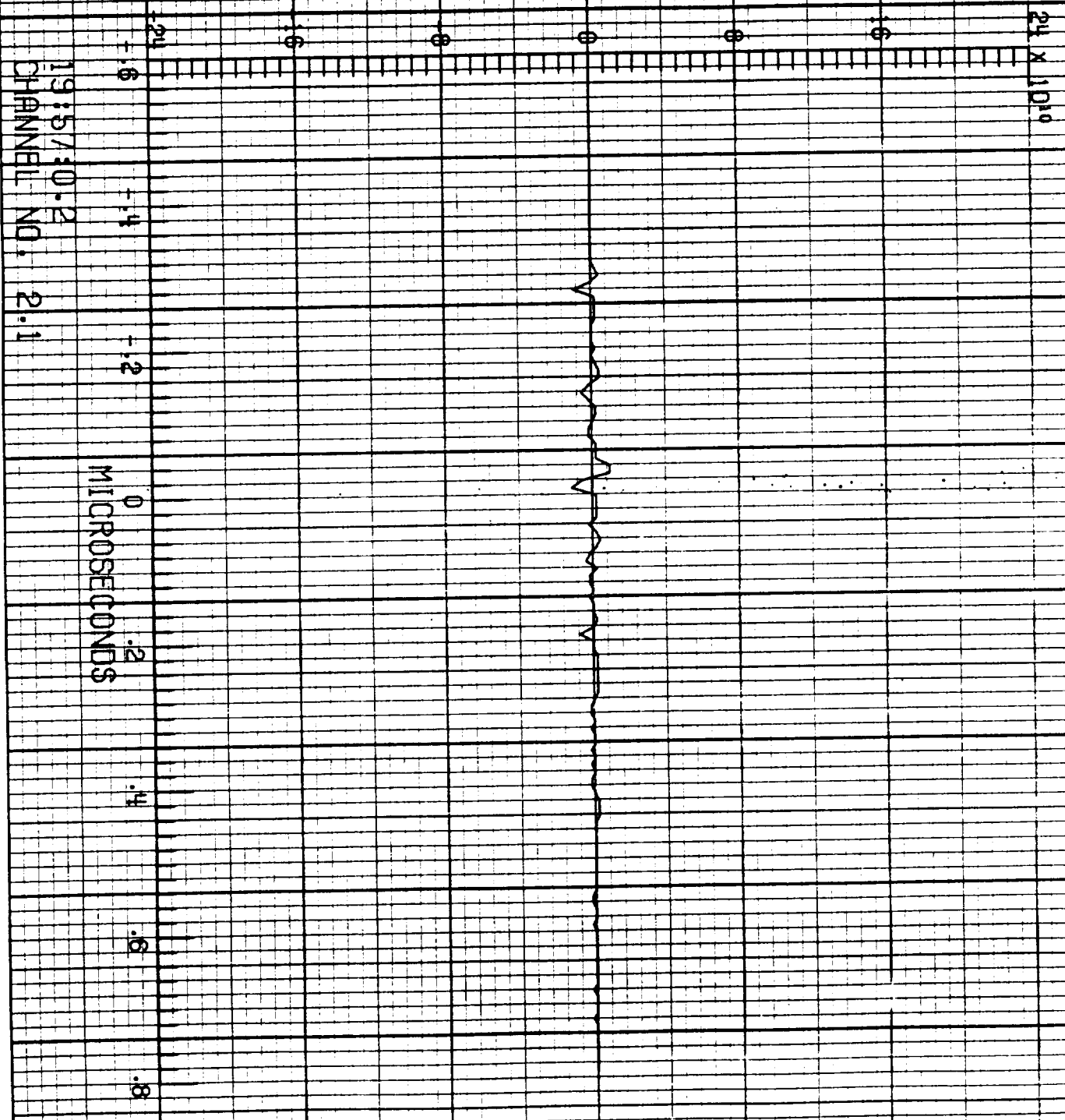
ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

IFC 2 RUN NO. 10

5.018

I A/s



F-106 LIGHTNING/ 84-025

LEC 2 RUN NO. 10

6.013

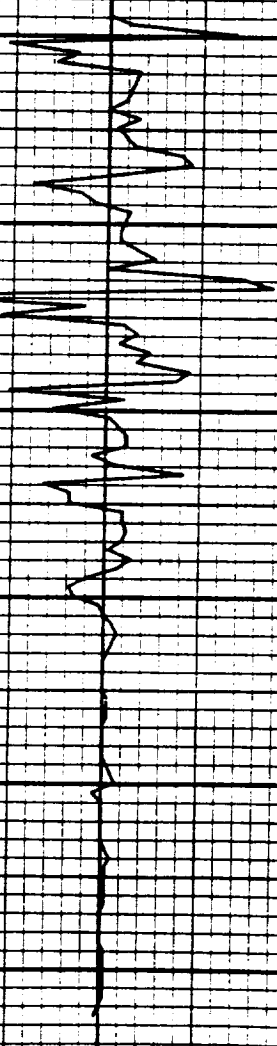
\dot{B}_1 T/s

1800
1200
600
0
600
1200
1800

19:57:0.2
CHANNEL NO. 2.2

MICROSECONDS

.6
.4
.2
0
.2
.4
.6
.8



F-106 LIGHTNING/ 84-025

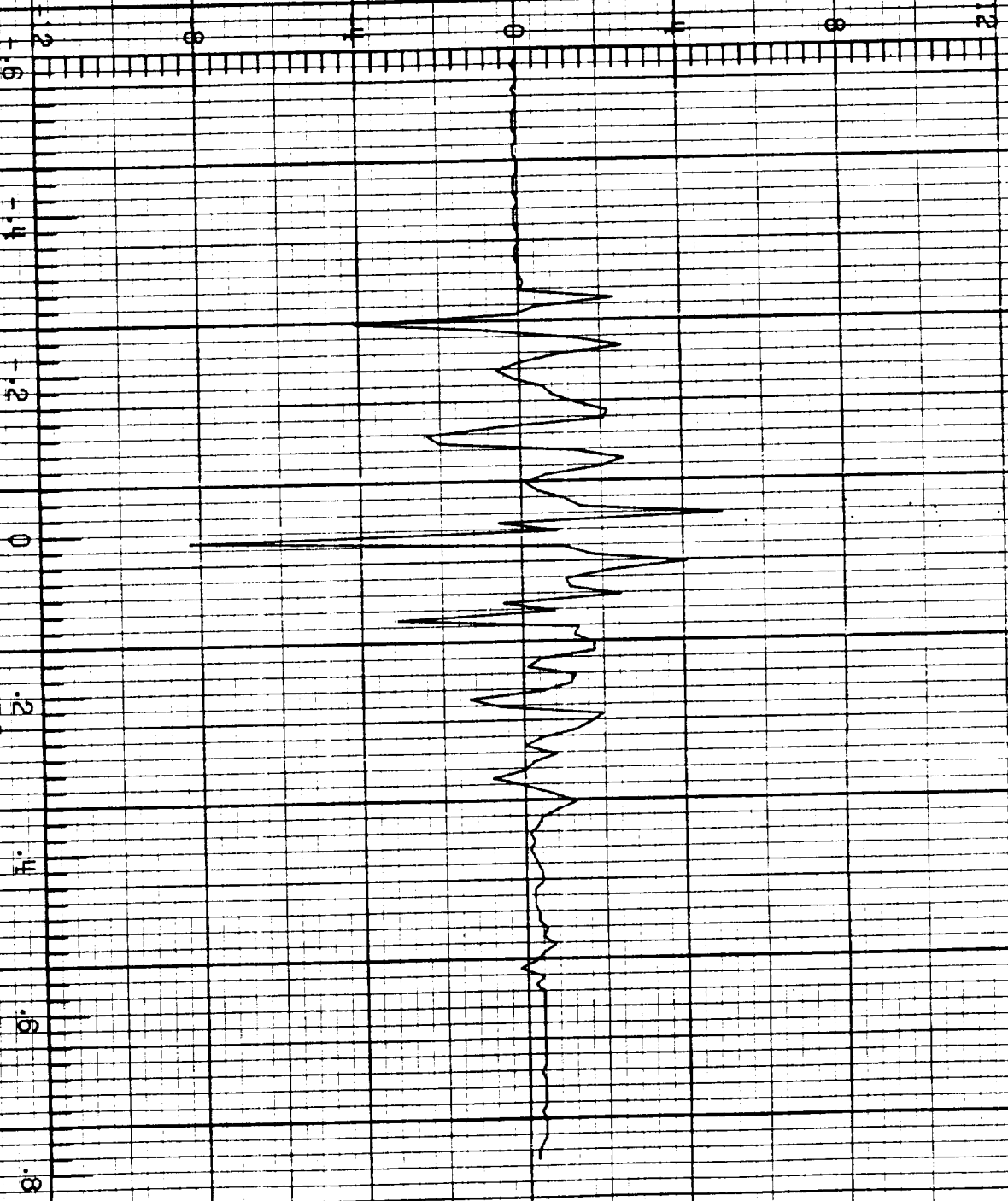
LECS RUN NO. 10

6.013

D_r A/m²

19:57:00.2
CHANNEL NO. 3.2

MICROSECONDS



F-106 LIGHTNING/ 84-025

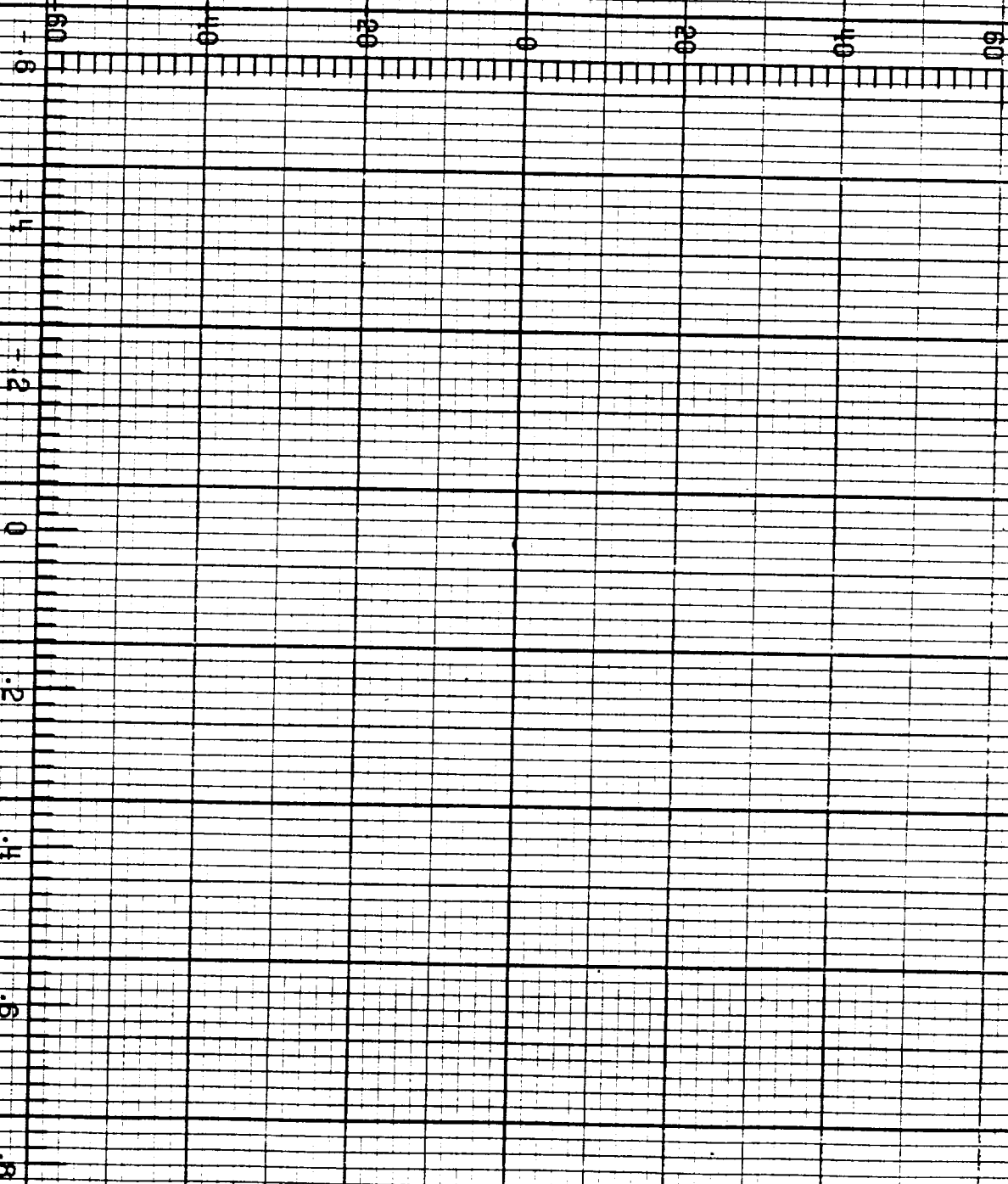
LEC 4 RUN NO. 10

S.013

V_{fd} V

19:57:0.2
CHANNEL NO. 4.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LFC 3 RUN NO. 10

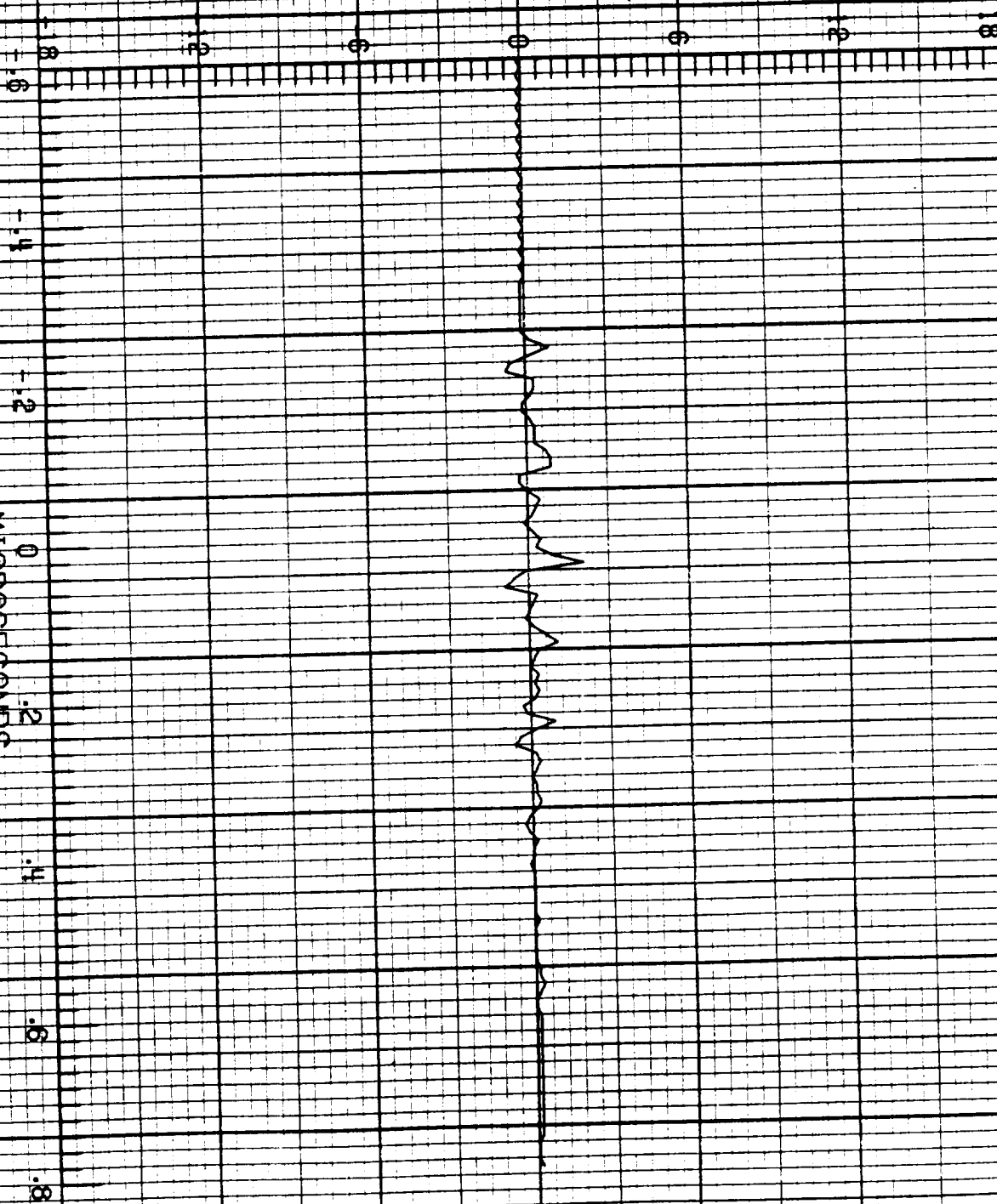
6.013

\bar{D}_{wr} A/m²

ORIGINAL PAGE IS
OF POOR QUALITY

19:57:00.2
CHANNEL NO: 3.0

MICROSECONDS



F-106 LIGHTNING/ 84-025

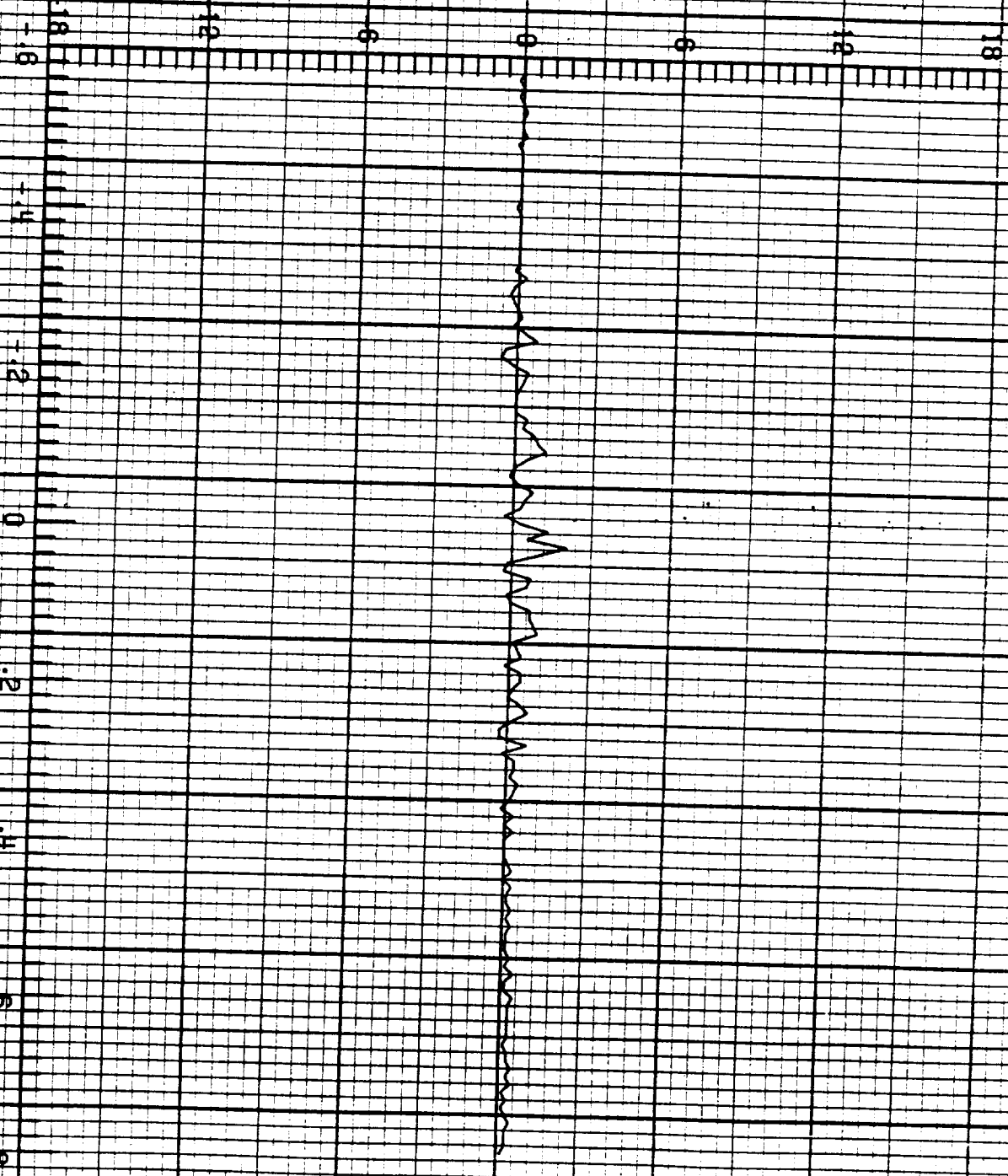
LEC.3 RUN NO. 10

6.013

\dot{D}_w A/m²

19:57:01.2
CHANNEL NO. 3-1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

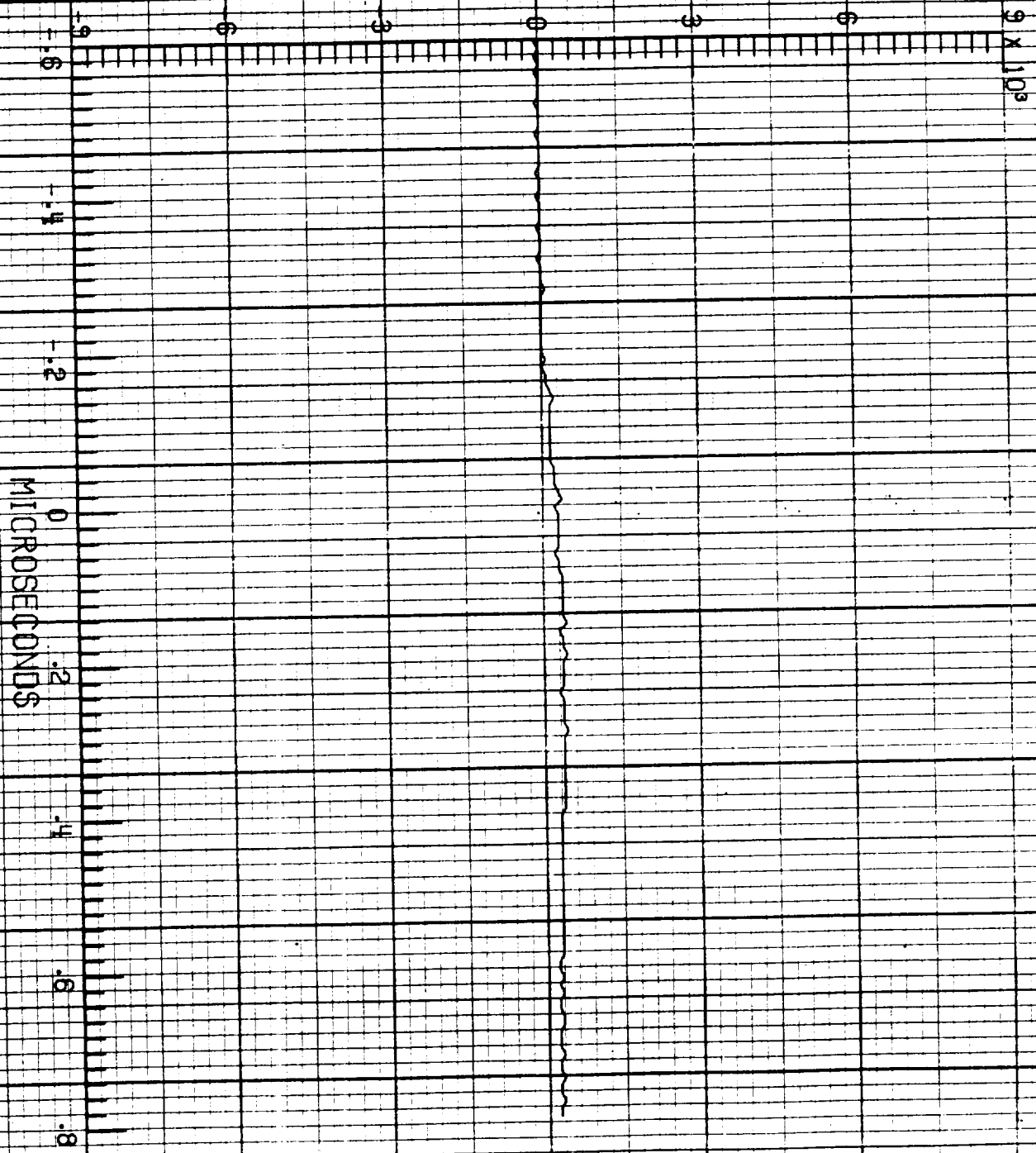
F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 10

3.013

I_n A

19:57:0.2
CHANNEL NO. 4.1



F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 10

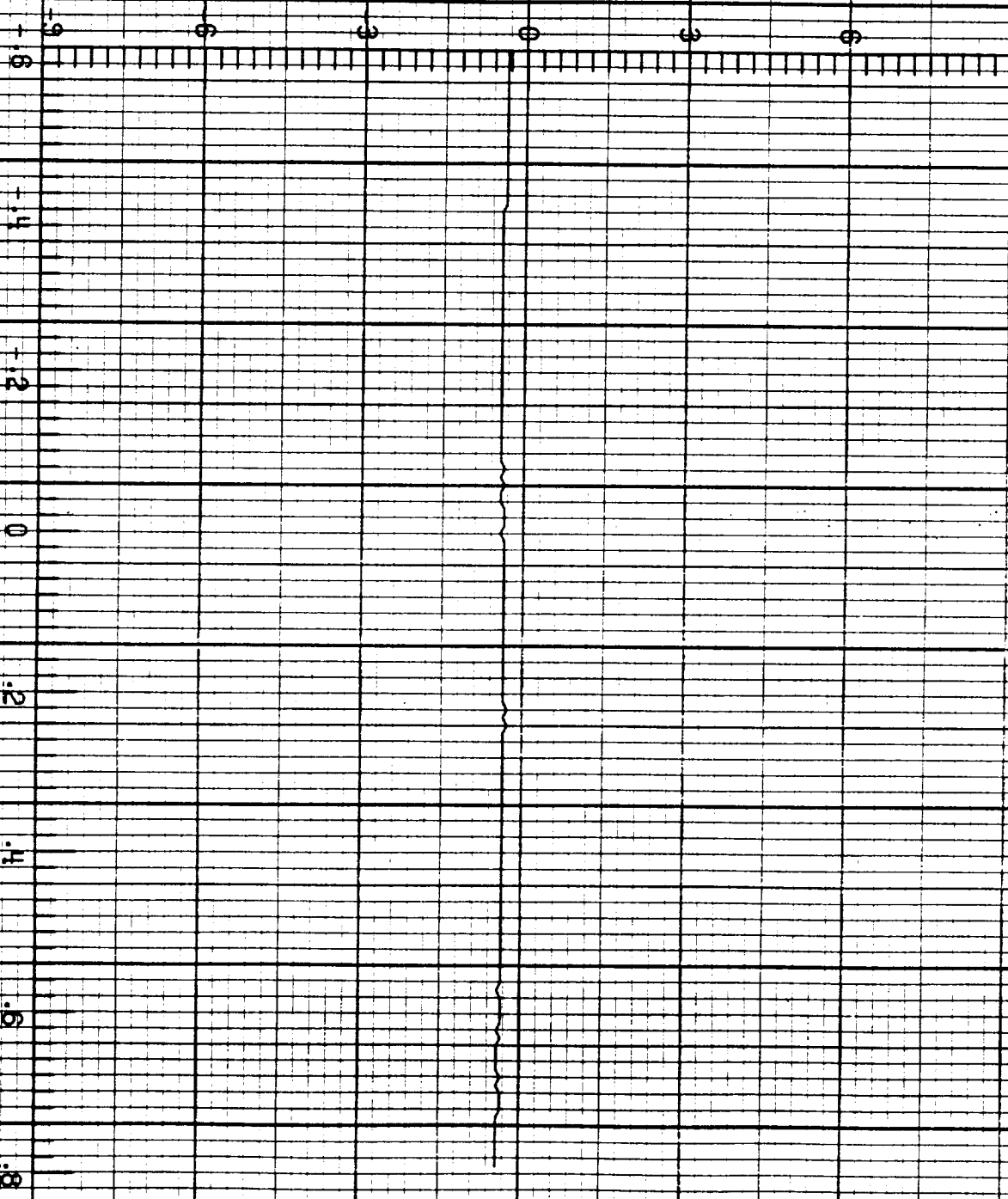
6.013

I_t A

19:57:00.2
CHANNEL NO. 4.2

9 x 10⁹

-.6
-.4
-.2
0
.2
.4
.6
.8
MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

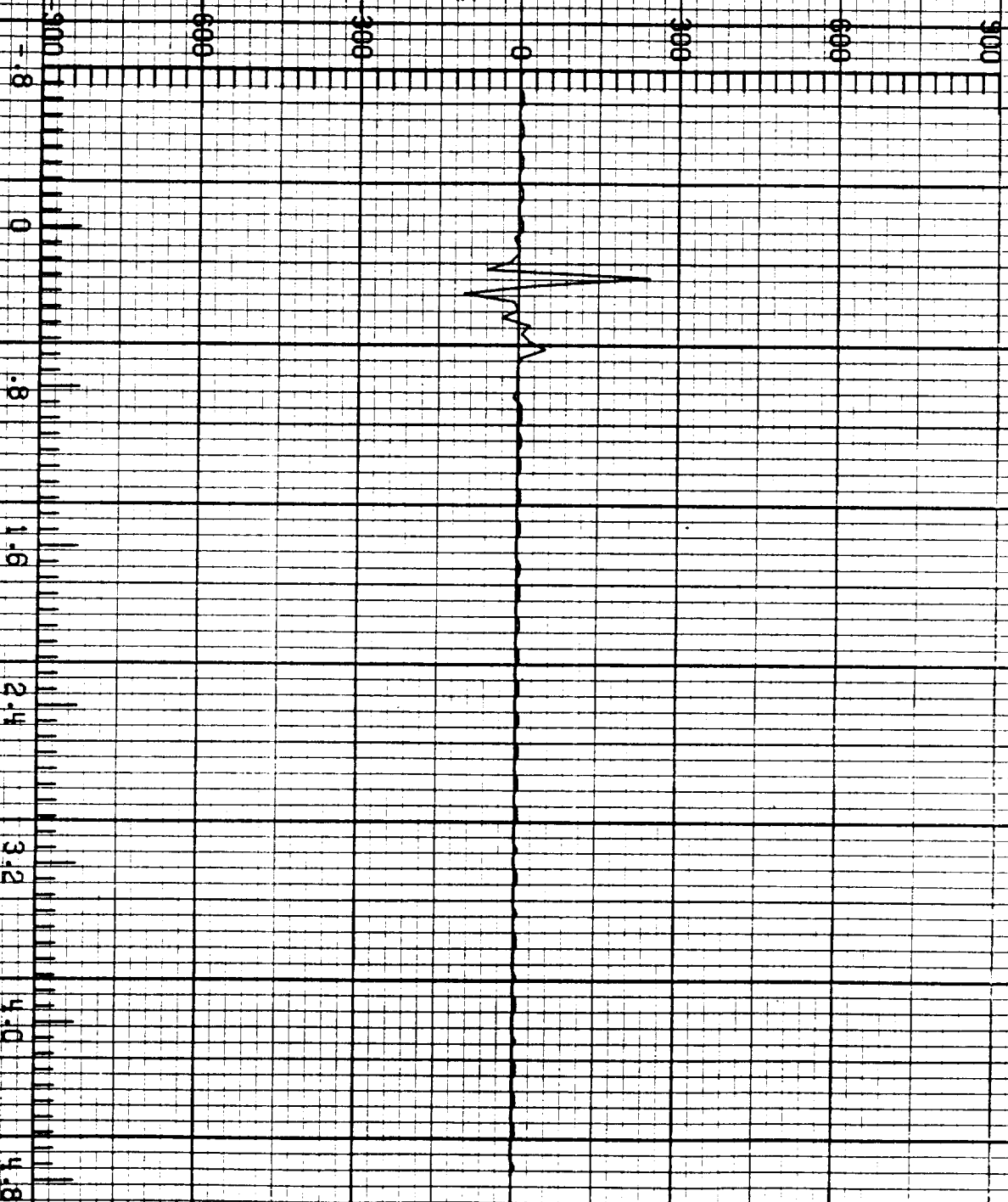
LEC 1 RUN NO. 11

5.014

B
T/s

20:02:28.6
CHANNEL NO. 1.1

MICROSECONDS



F-106 LIGHTNING/ 84-025

LFC 1 RUN NO. 11

3.014

B_{wr} T/s

900 600 300 0 -300 -600

.8

0

.8

MICROSECONDS

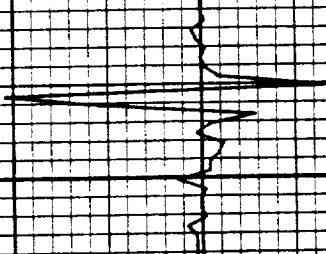
2.4

3.2

4.0

4.8

20:02:28.6
CHANNEL NO. 1.2



ORIGINAL PAGE IS
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F-106 LIGHTNING/ 84-025

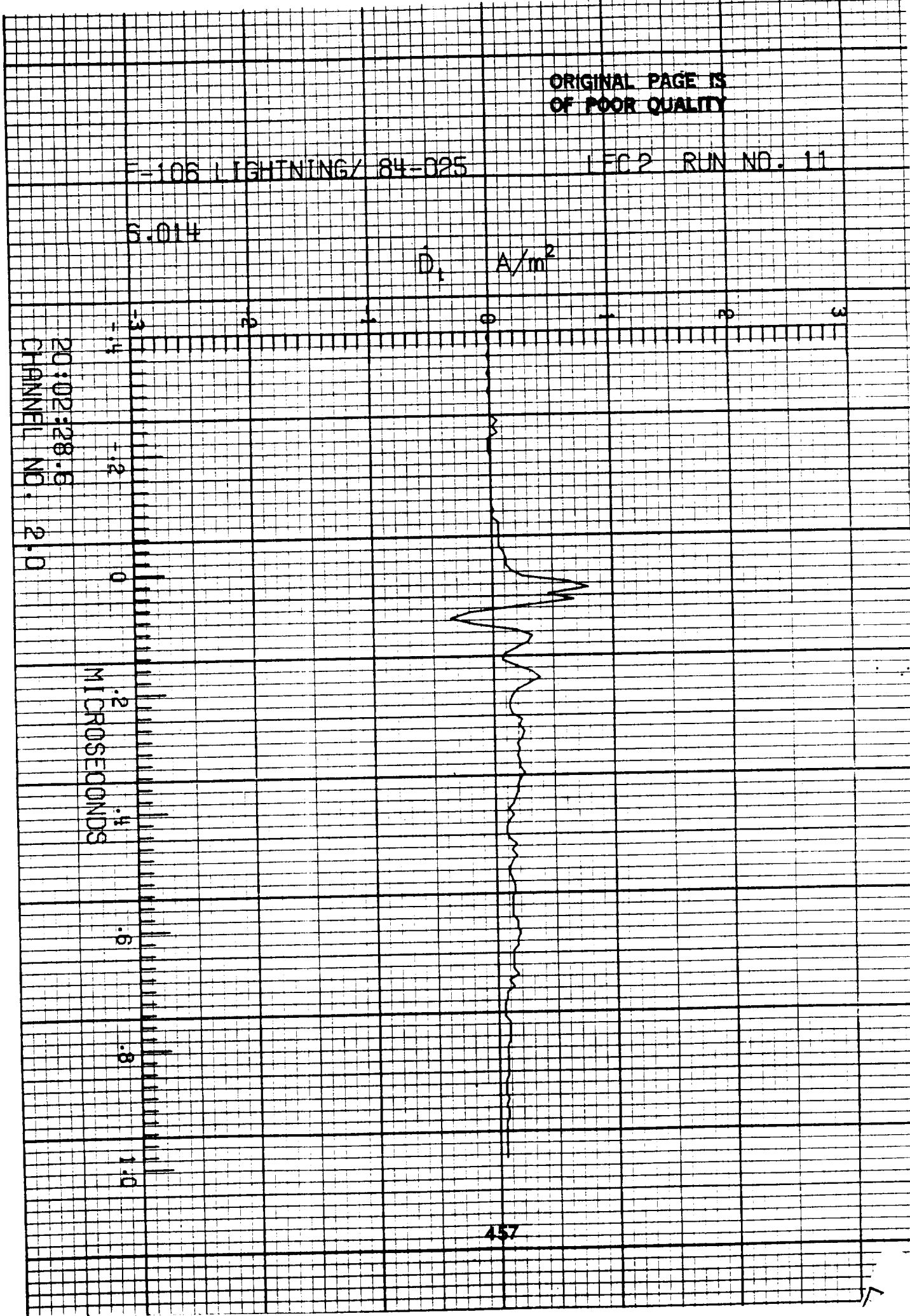
IFC 2 RUN NO. 11

6.014

D_t A/m²

20:02:28.6
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-025

REC 2 RUN NO. 11

6.014

i A/s

24 x 10¹⁰

20

10

0

10

20

30

40

50

20:02:28.8
CHANNEL NO. 2.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

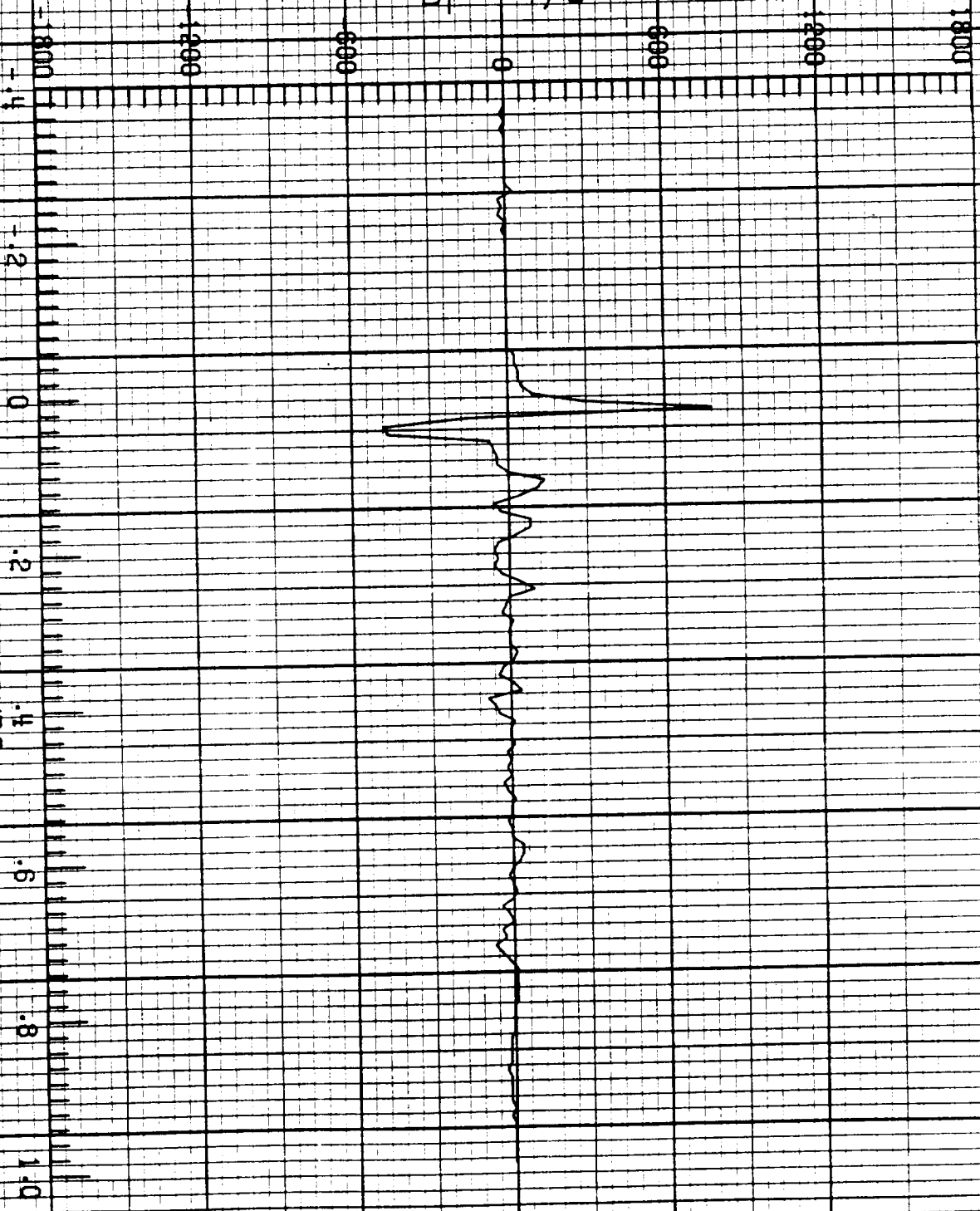
LEC 2 RUN NO. 11

5.014

\dot{B}_1 T/s

20:02:28.6
CHANNEL NO. 2.2

MICROSECONDS



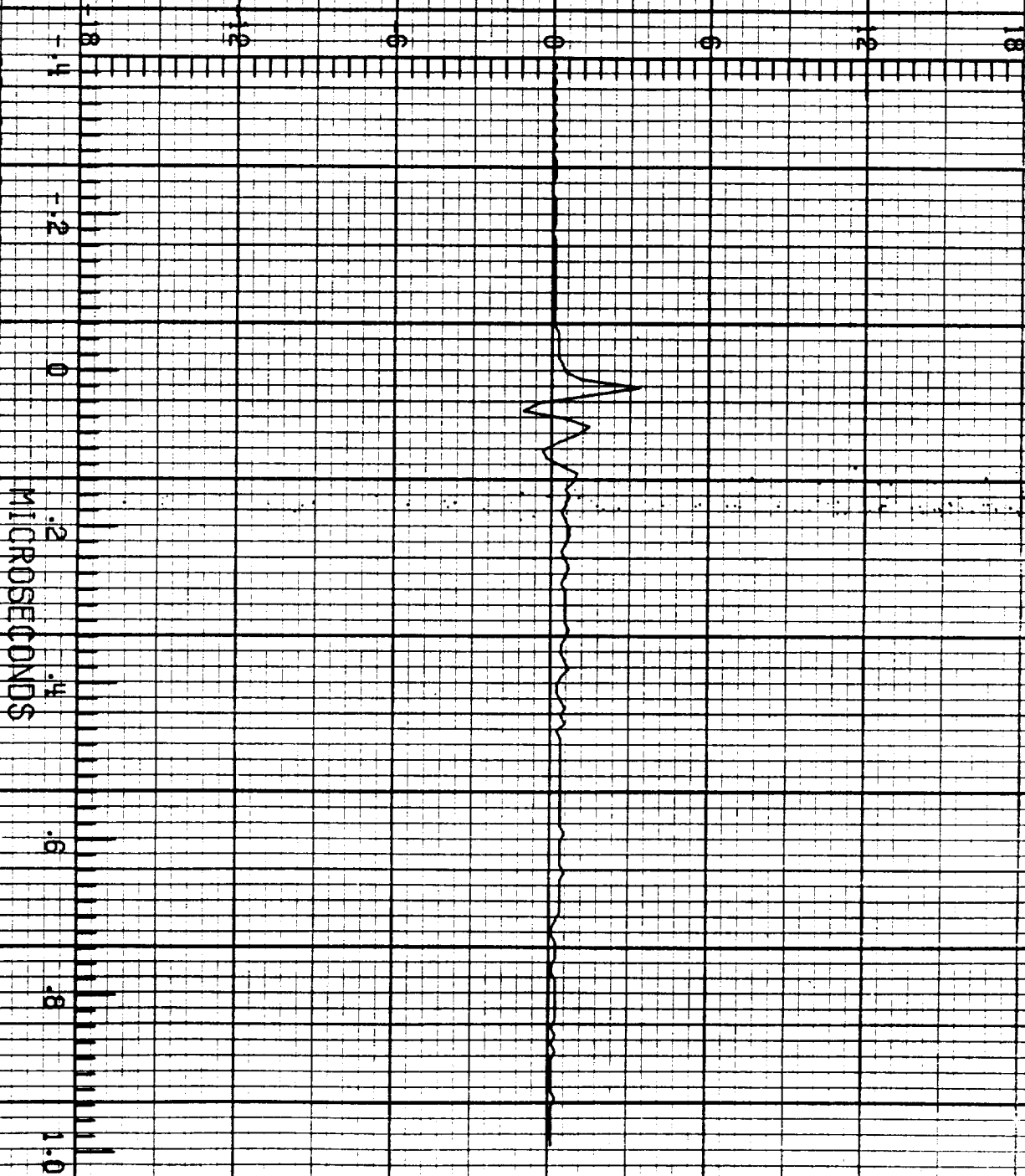
F-106 LIGHTNING/ 84-025

LFC3 RUN NO. 11

6.01#

\vec{D}_{wr} A/m²

20:02:23.8
CHANNEL NO. 3.0



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F-106 LIGHTNING/ 84-025

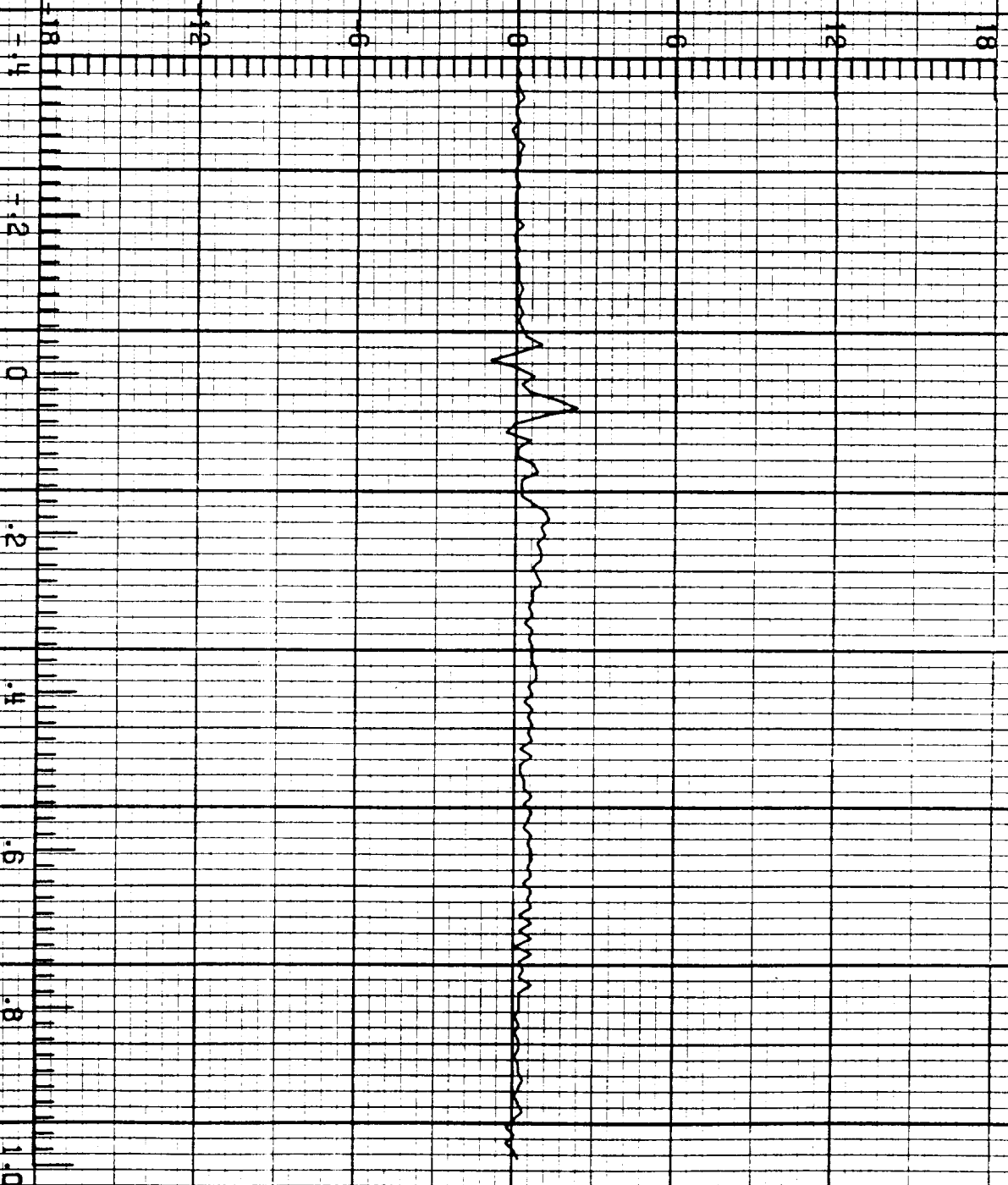
LEC 3 RUN NO. 11

6.014

\dot{D}_{wl} A/m²

20:02:28.8
CHANNEL NO. 3.1

MICROSECONDS



F=106 LIGHTNING/ 84-025

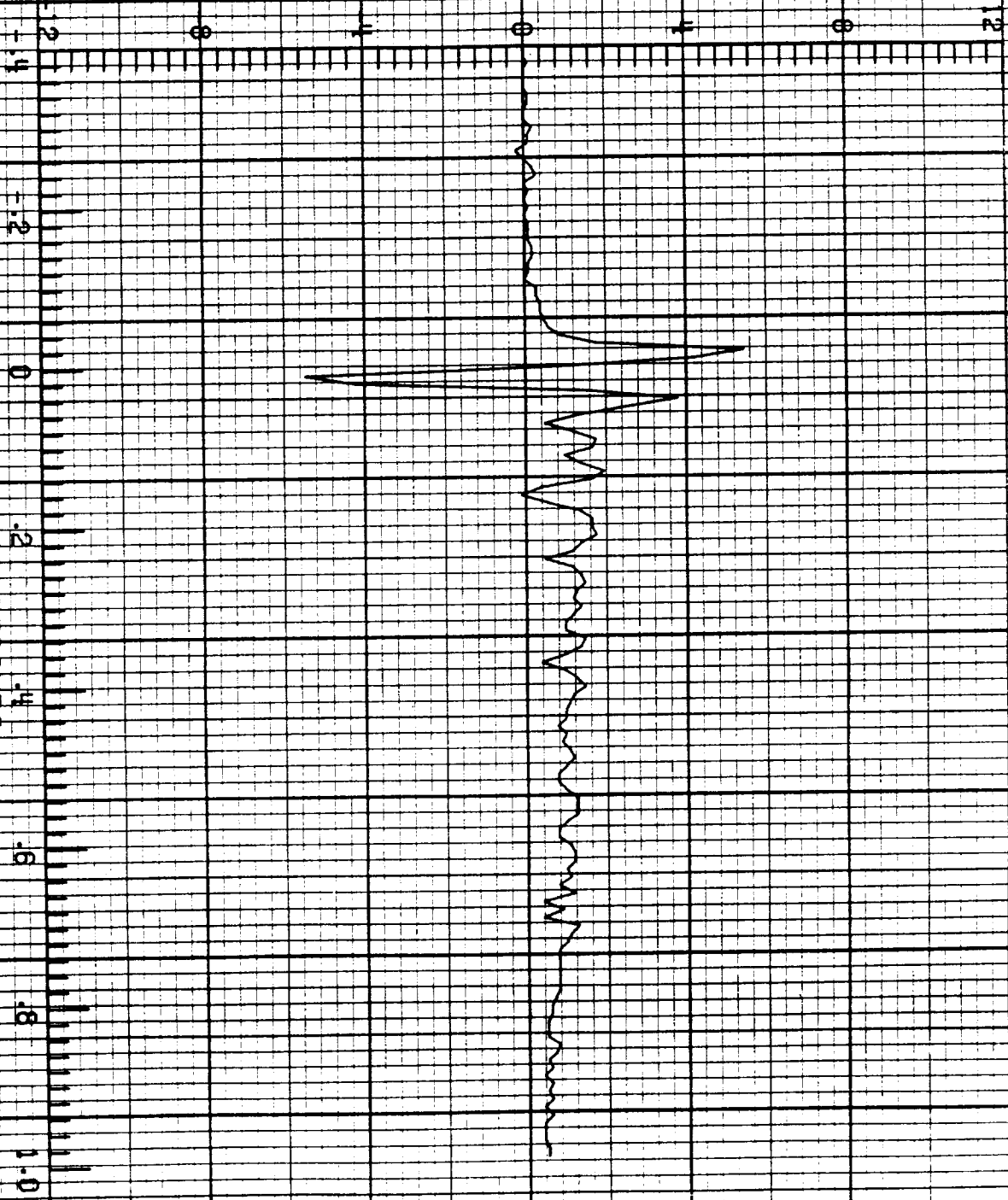
LFC 3 RUN NO. 11

5.014

D_r A/m²

20:02:28.6
CHANNEL NO. 3.2

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

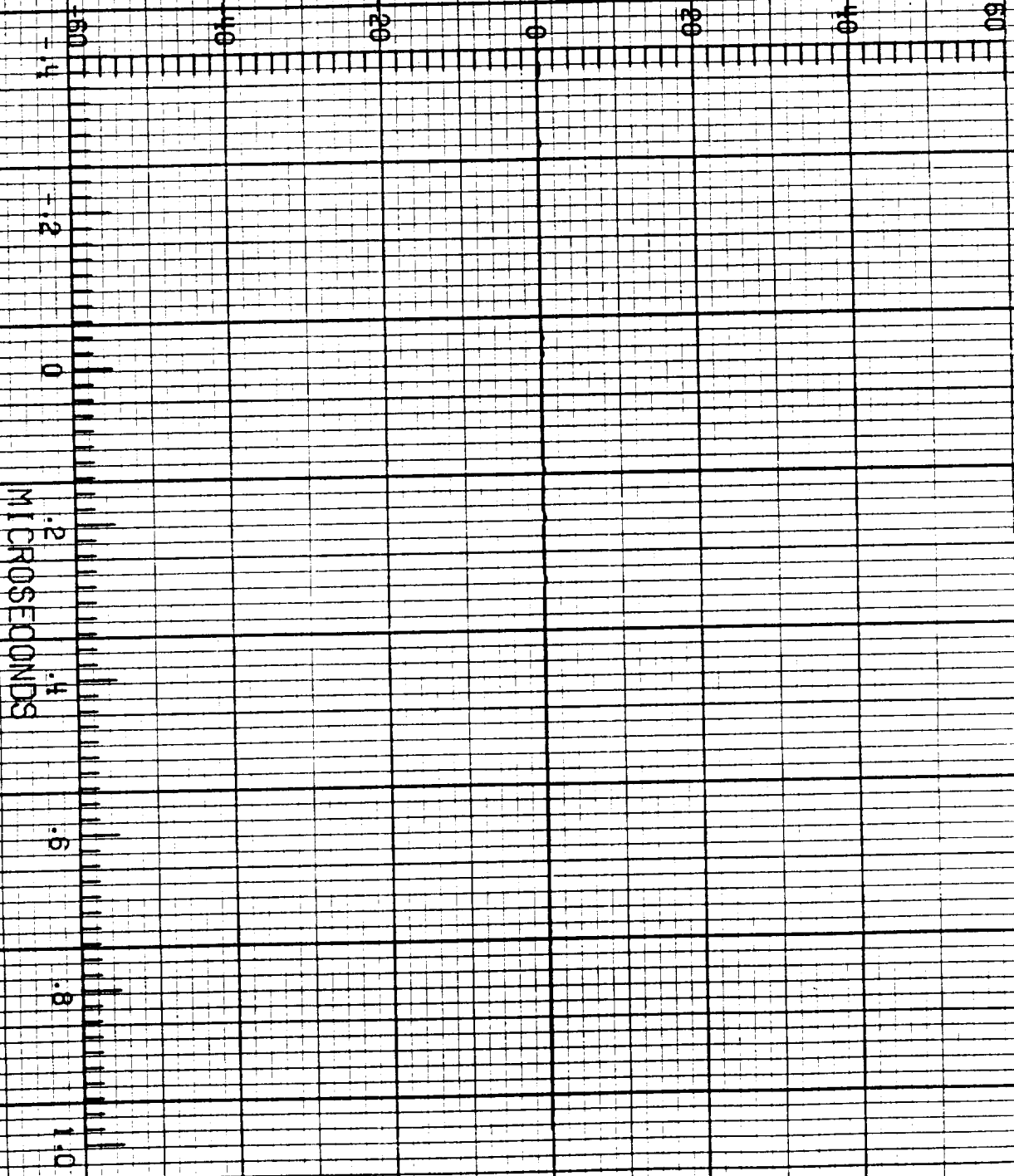
F-106 LIGHTNING/ 84-025

FC 4 RUN NO. 11

S.014

V_{ra} V

20:02:28.6
CHANNEL NO. 4.0



F=106 LIGHTNING/ 84-025

LEC 4 RUN NO. 11

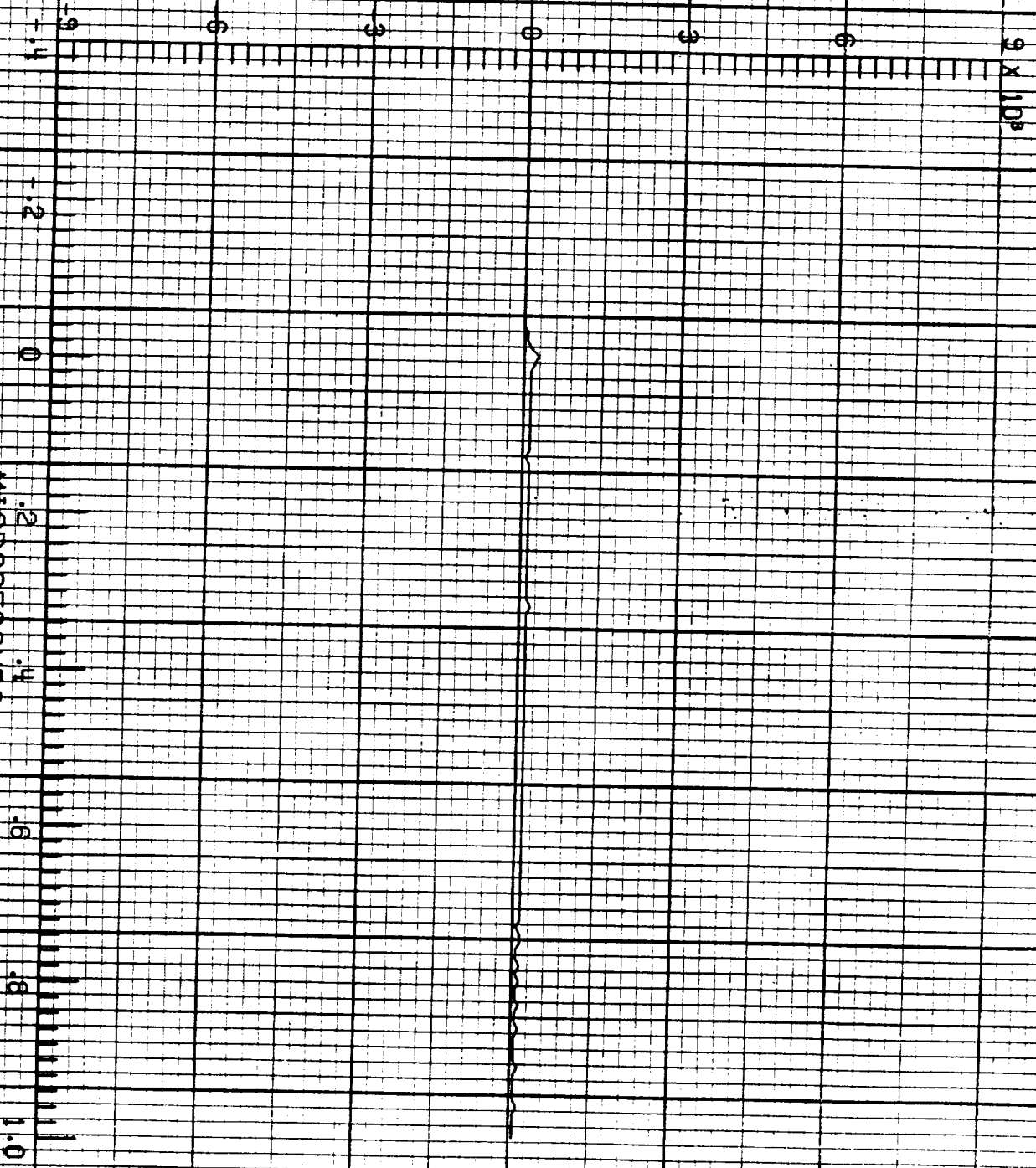
5.014

T_n A

20:02:28.6
CHANNEL NO. 4.1

MICROSECONDS

9×10^3



ORIGINAL PAGE IS
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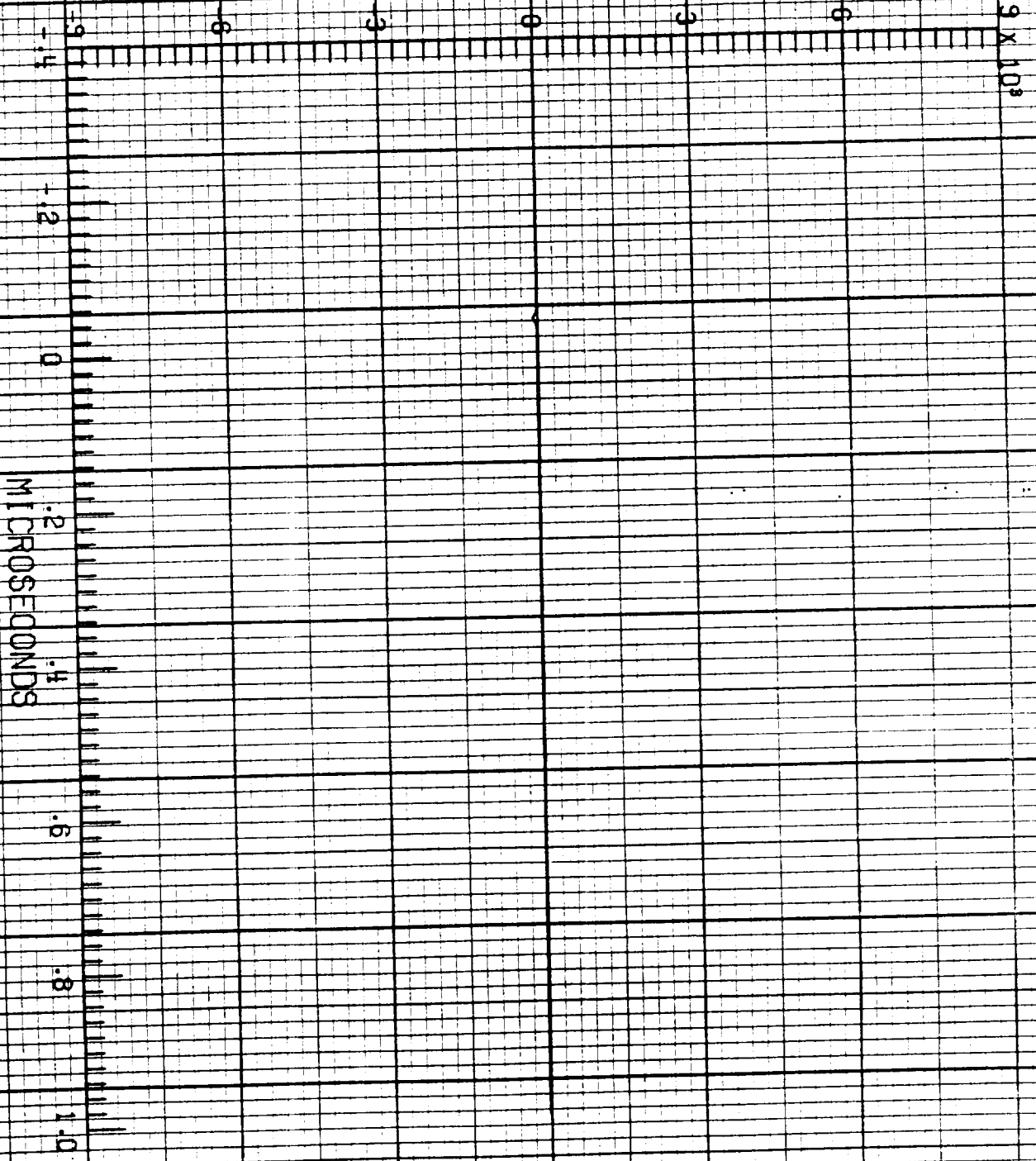
F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 11

5.014

I_t A

20:02:28.6
CHANNEL NO. 4.2



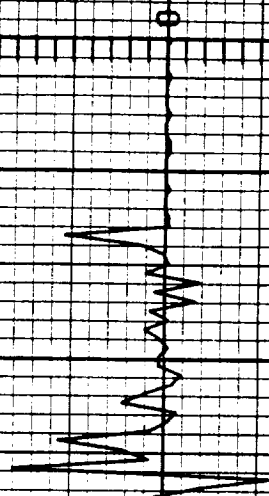
106 LIGHTNING/ 84-025

LEC.1 RUN NO. 12

5.016

B_w T/s

900 600 300 0 300 600 900



20:07:57.7
CHANNEL NO. 1.1

MICROSECONDS

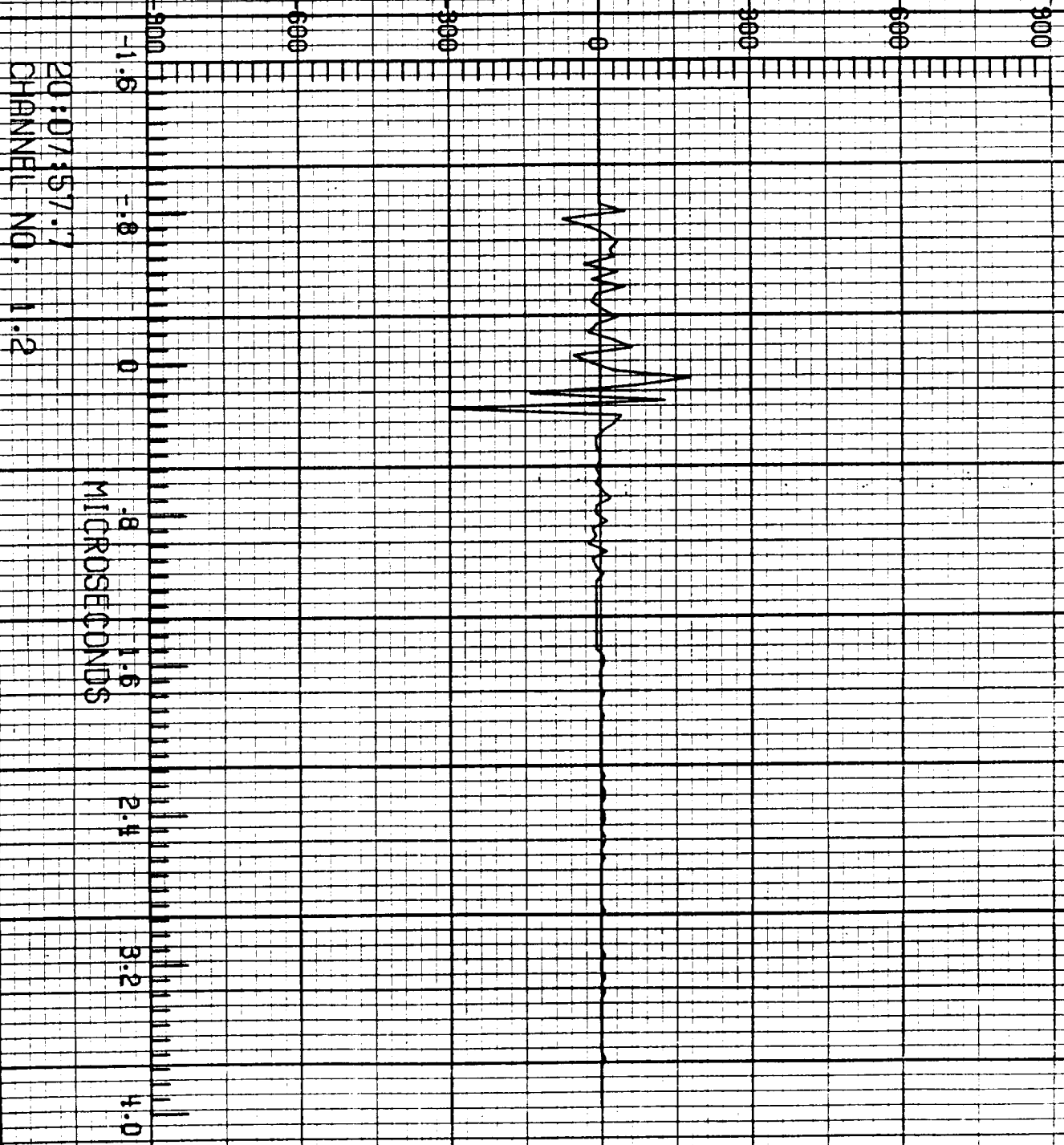
ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LFC 1 RUN NO. 12

5.016

B_{vr} T/s



20:07:57.7
CHANNEL NO. 1.2

-106 LIGHTNING/ 84-025

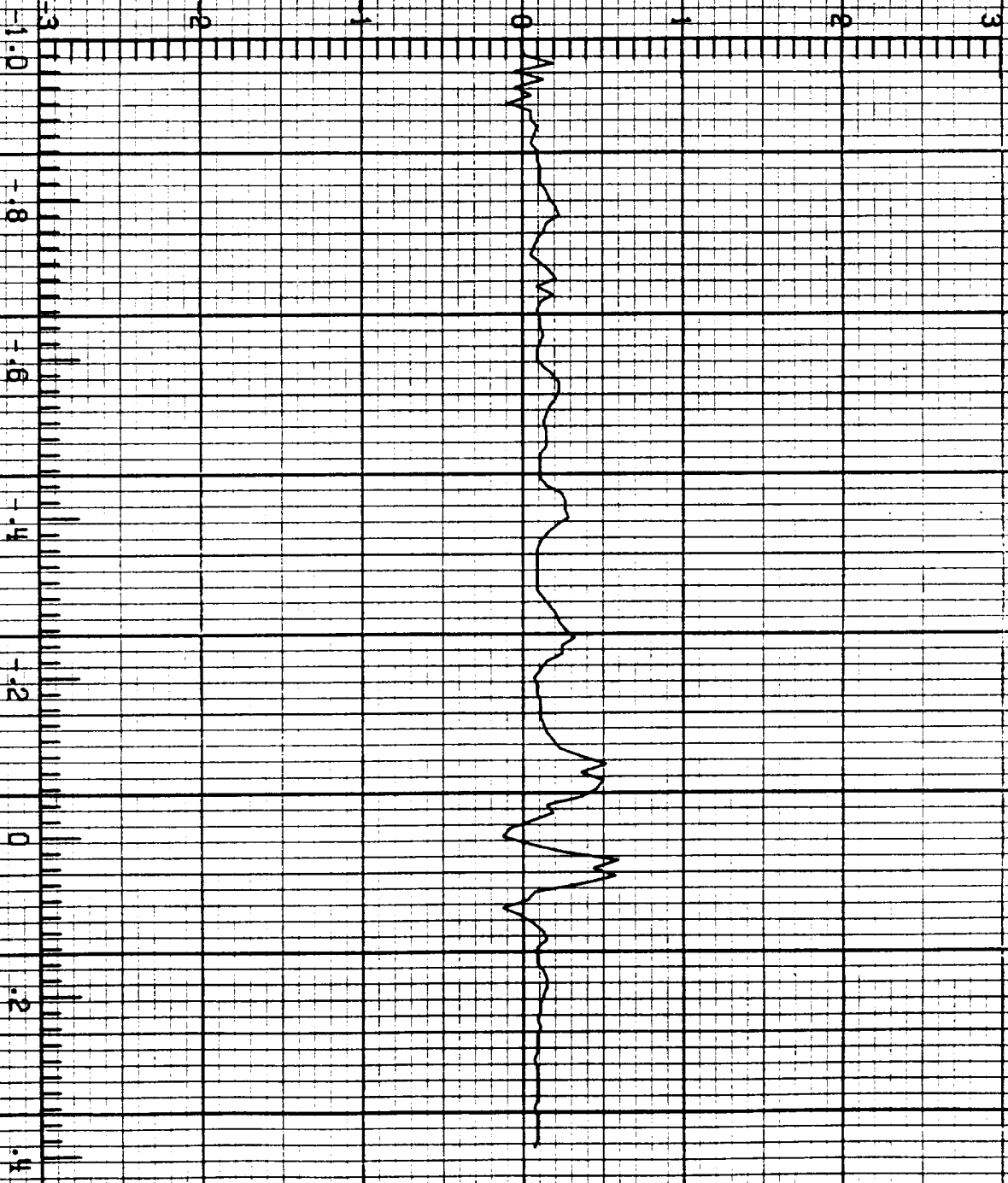
LEC 2 RUN NO. 12

6.016

D_t A/m²

20:07:57.7
CHANNEL NO. 2.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/ 84-025

LEC 2 RUN NO. 12

6.016

I A/s

20:07:57.7
CHANNEL NO. 2.1

MICROSECONDS

24 x 10¹⁰

F-106 LIGHTNING/ 84-025

1 FC 2 RUN NO. 12

0.015

\dot{U}_1 F/s

1800
1200
600
0
-600
-1200
-1800

20:07:57.7
CHANNEL NO. 2.2

-1.0

-1.8

-1.6

MICROSECONDS

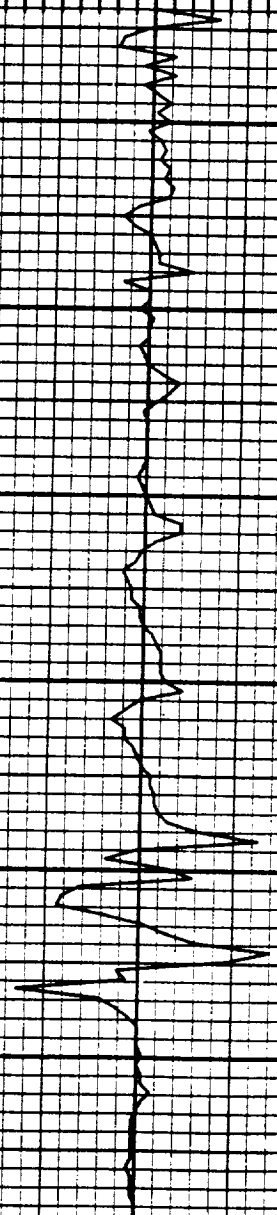
-1.4

-1.2

0

.2

.4



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OF POOR QUALITY

F-106 LIGHTNING/ 84-025

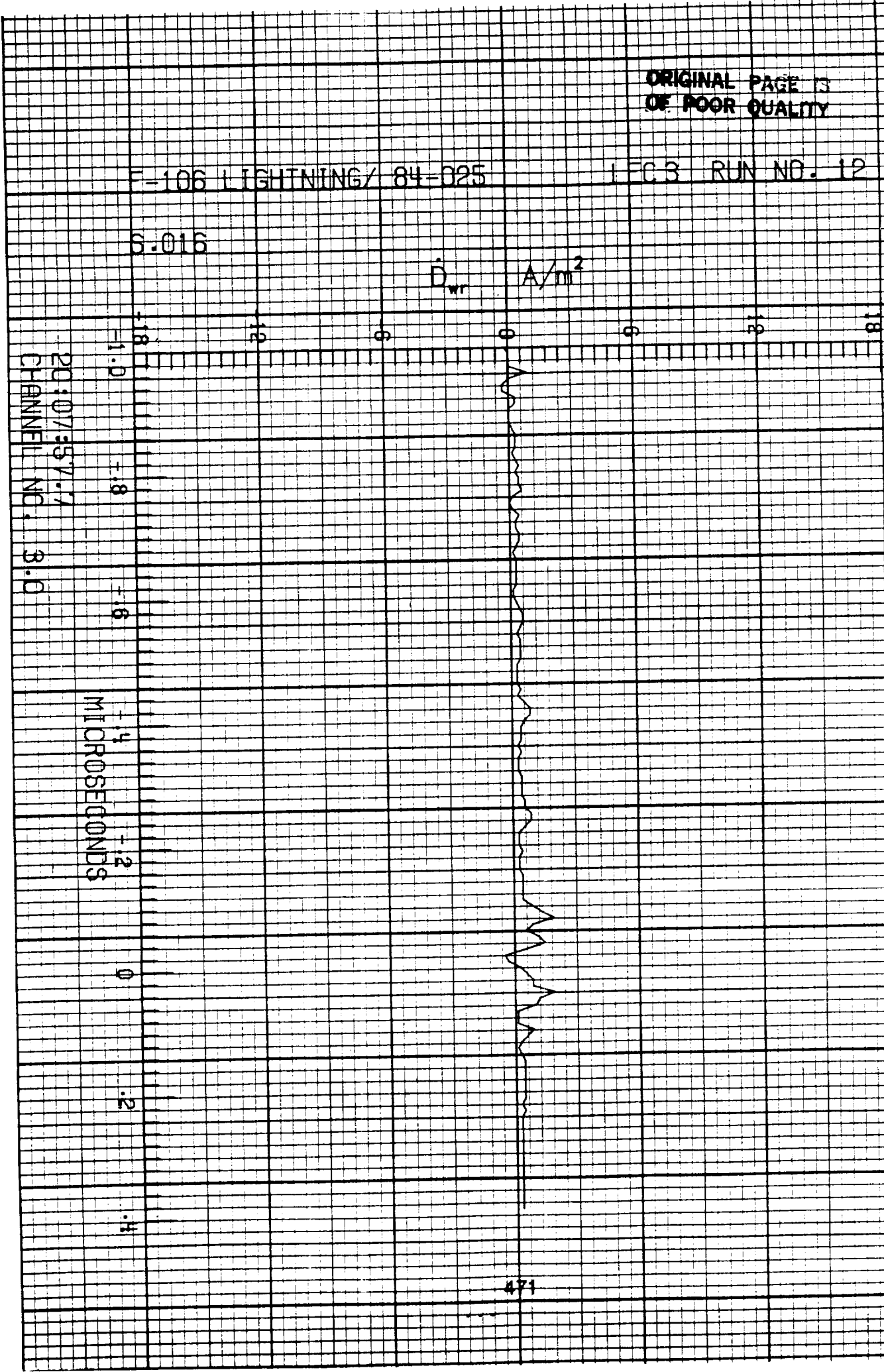
1 FC3 RUN NO. 12

6.016

\dot{D}_{wr} A/m²

20:07:57.7
CHANNEL NO. 3.0

MICROSECONDS



106 LIGHTNING/ 84-025

LEO 3 RUN NO. 12

6.016

\dot{D}_{v1} A/m²

1.8 1.2 .6 0 .6 1.2 1.8

-1.0
-1.8
-2.6
-3.4
-4.2
0
.2
.4

PG: 07:57.7
CHANNEL NO. 3.1

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

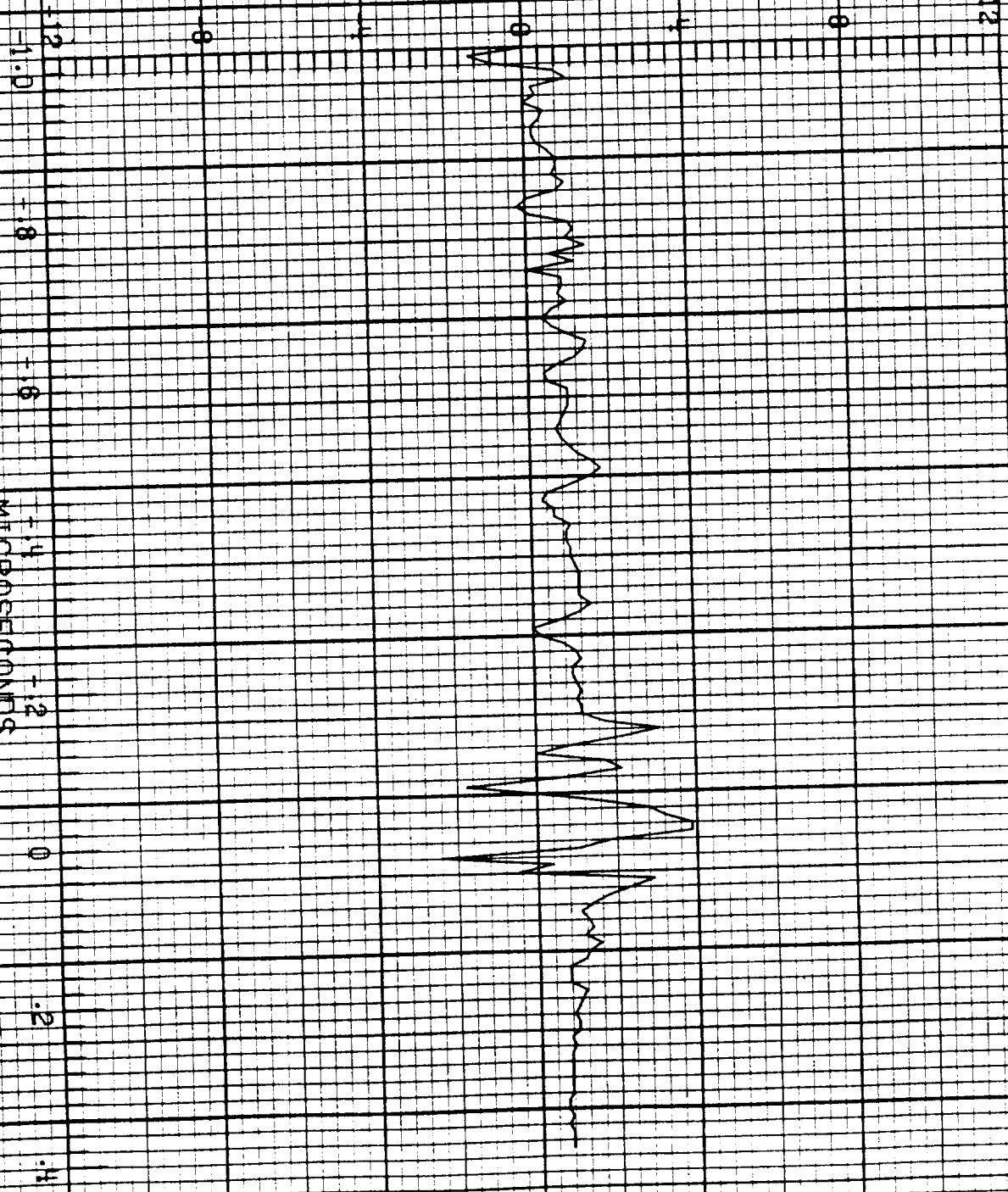
LEC3 RUN NO. 12

6.016

\dot{D}_r A/m²

20:07:35.7.7
CHANNEL NO. 3.2

MICROSECONDS

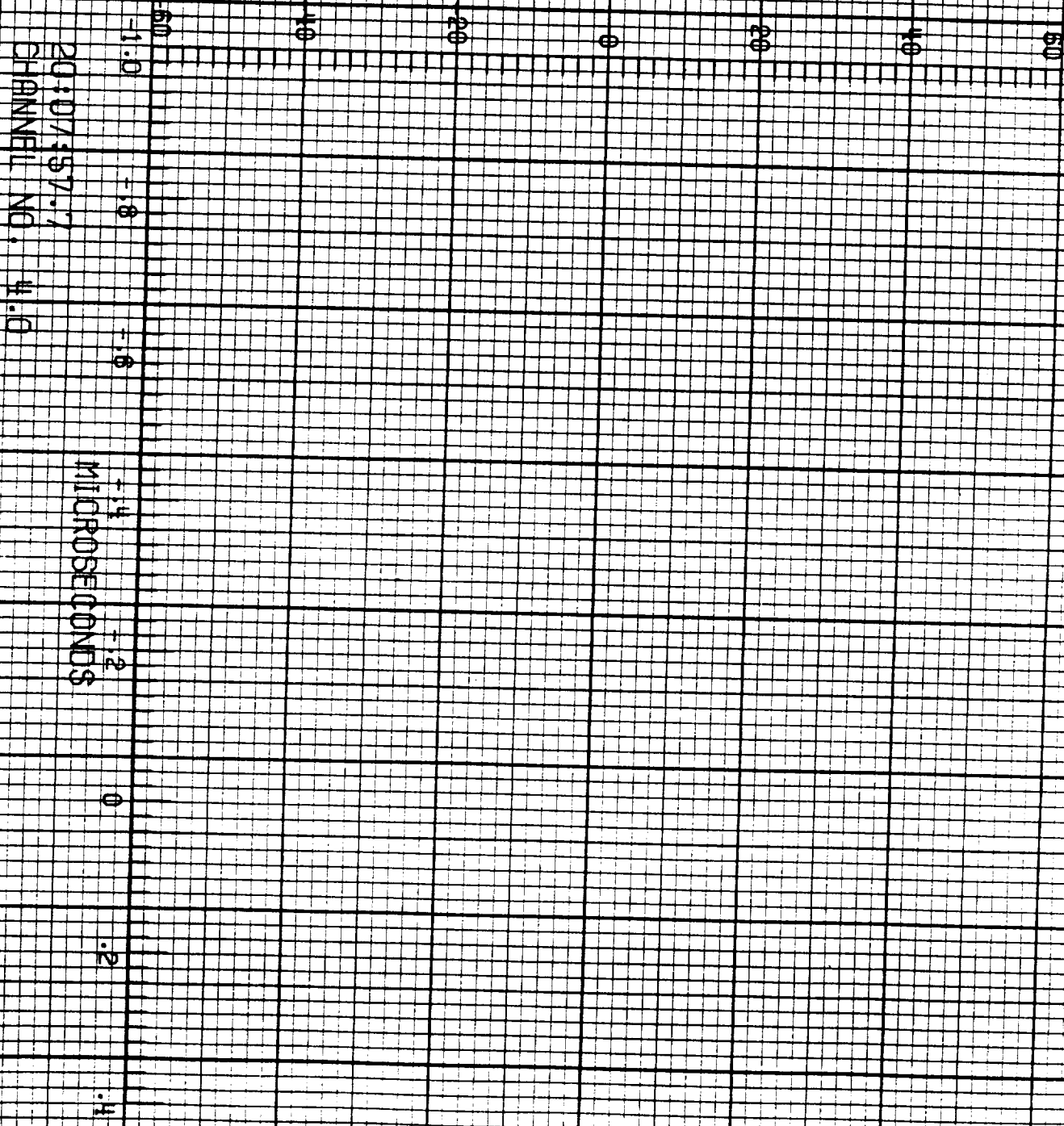


F-106 LIGHTNING/ 84-025

REF 4 RIN NO. 12

6.016

V_{ra} V



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LEC4 RUN NO. 12

3.016

T_r A

20:07:57.7
CHANNEL NO. 4.1

MICROSECONDS

9×10^3

F-106 LIGHTNING/ 84-025

LFC4 RIN NO. 12

6.016

T, A

20:07:57.7
CHANNEL NO. 4.2

9 x 10²

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/84-025

LEC1 RIN NO. 13

0.017

B_w T/s

20:11:26.1
CHANNEL NO. 1.1

MICROSECONDS



F-106 LIGHTNING/ 84-025

LFC1 RUN NO. 13

6.017

B_w T/s

5000 4000 3000 2000 1000 0

.8

0

.8

1.6

2.4

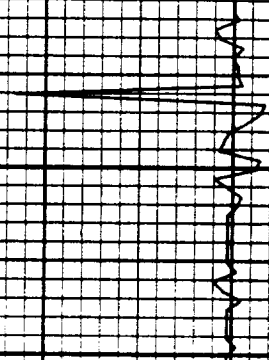
3.2

4.0

4.8

20:11:26.1
CHANNEL NO. 1.2

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

E-106 LIGHTNING/ 84-025

LEC2 RUN NO. 13

S.017

D_x A/m²

20:11:26.1
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-025

LEC 2 RUN NO. 13

3.017

I A/s

20:11:26.1
CHANNEL NO. 2.1

24×10^{10}

MICROSECONDS

24
16
8
0
8
16
24

-.4
-.2
0
.2
.4
.6
.8
1.0

ORIGINAL PAGE IS
OF POOR QUALITY

E=106 LIGHTNING/ 84-025

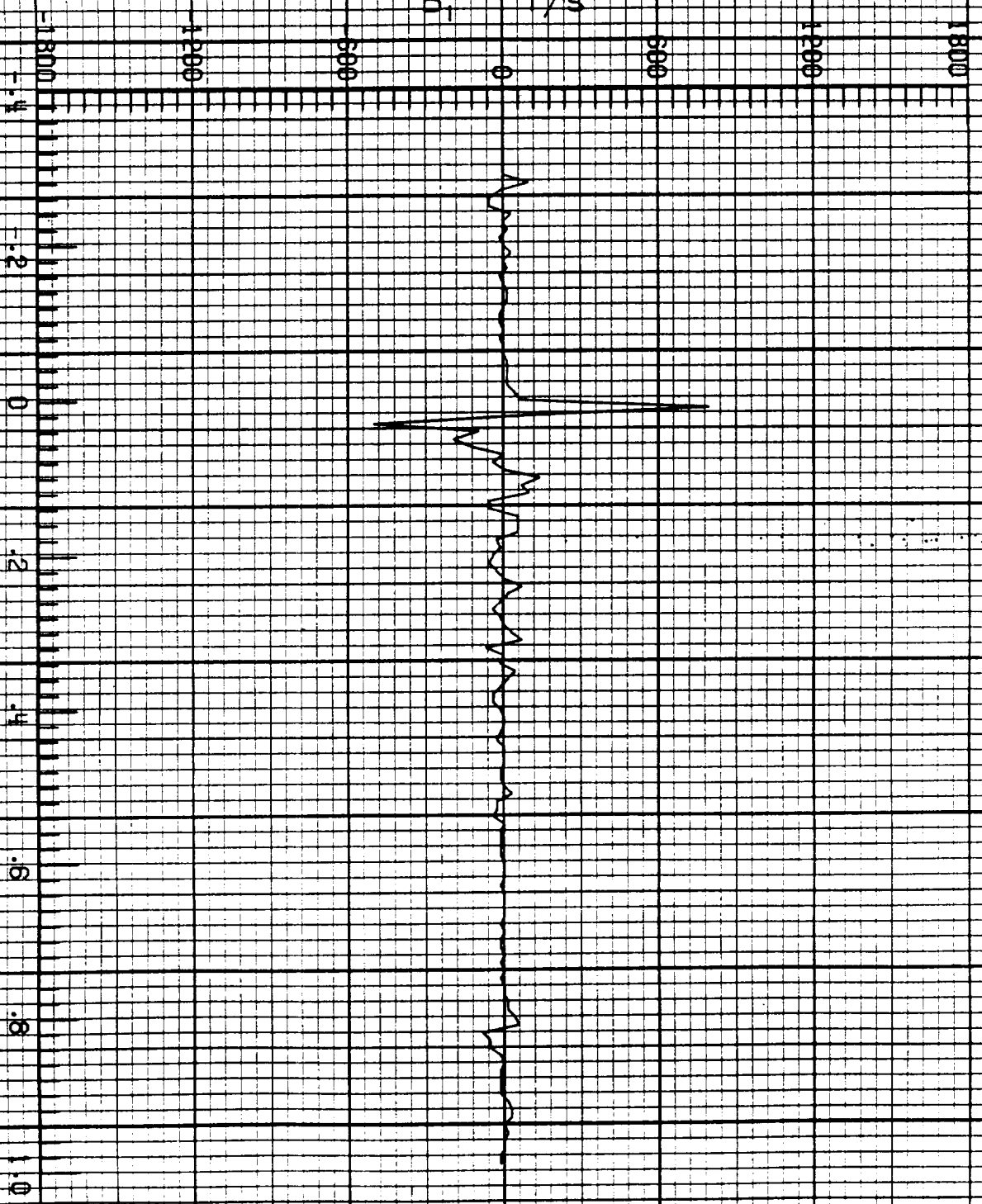
LEC 2 RUN NO. 13

S.017

$\frac{V}{s}$

20:11:29.1
CHANNEL NO. 2.2

MICROSECONDS



F=106 LIGHTNING/ 84-025

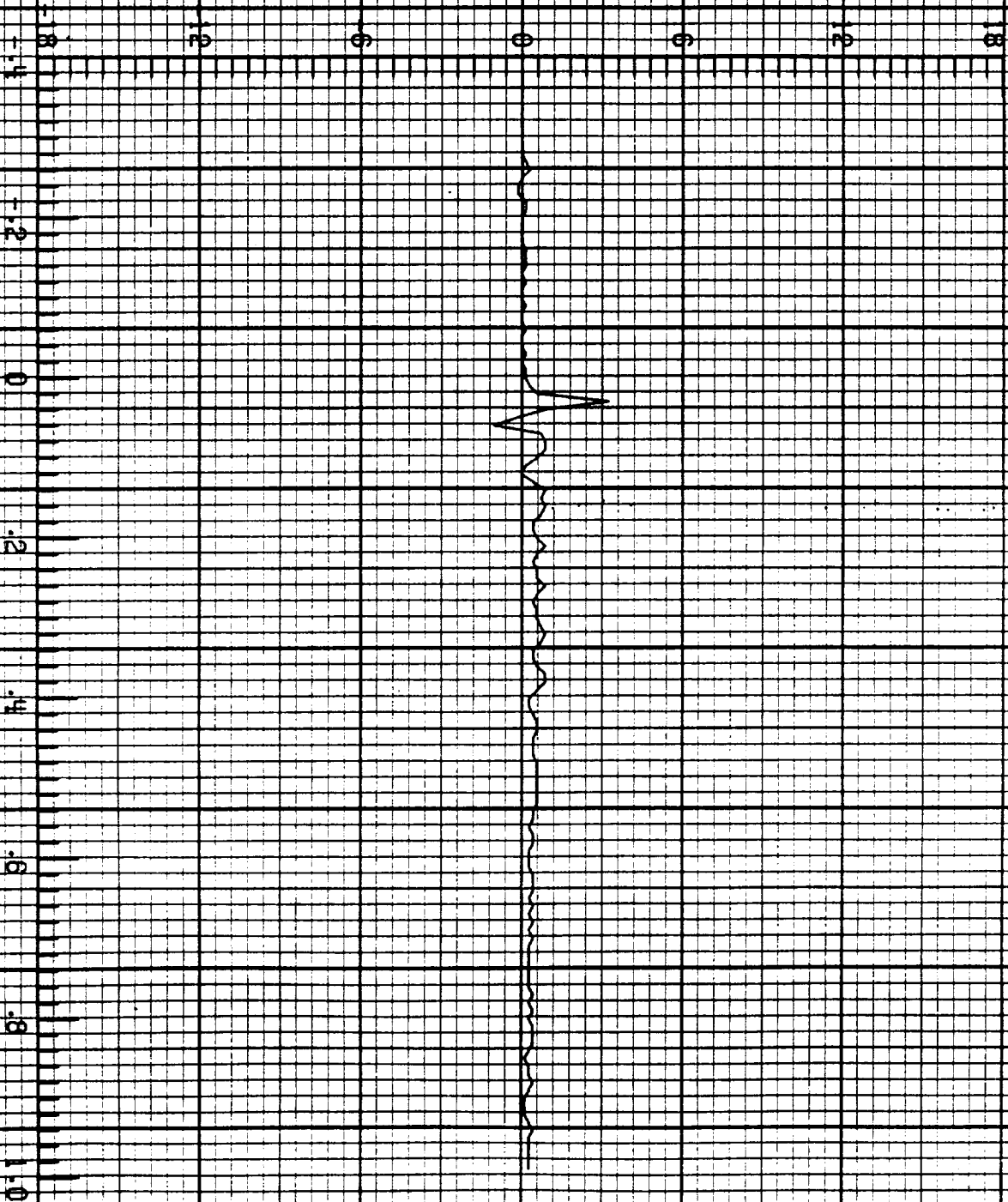
LEC 3 RUN NO. 13

3.017

\dot{D}_{wr} A/m²

20:11:25.1
CHANNEL NO. 3.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

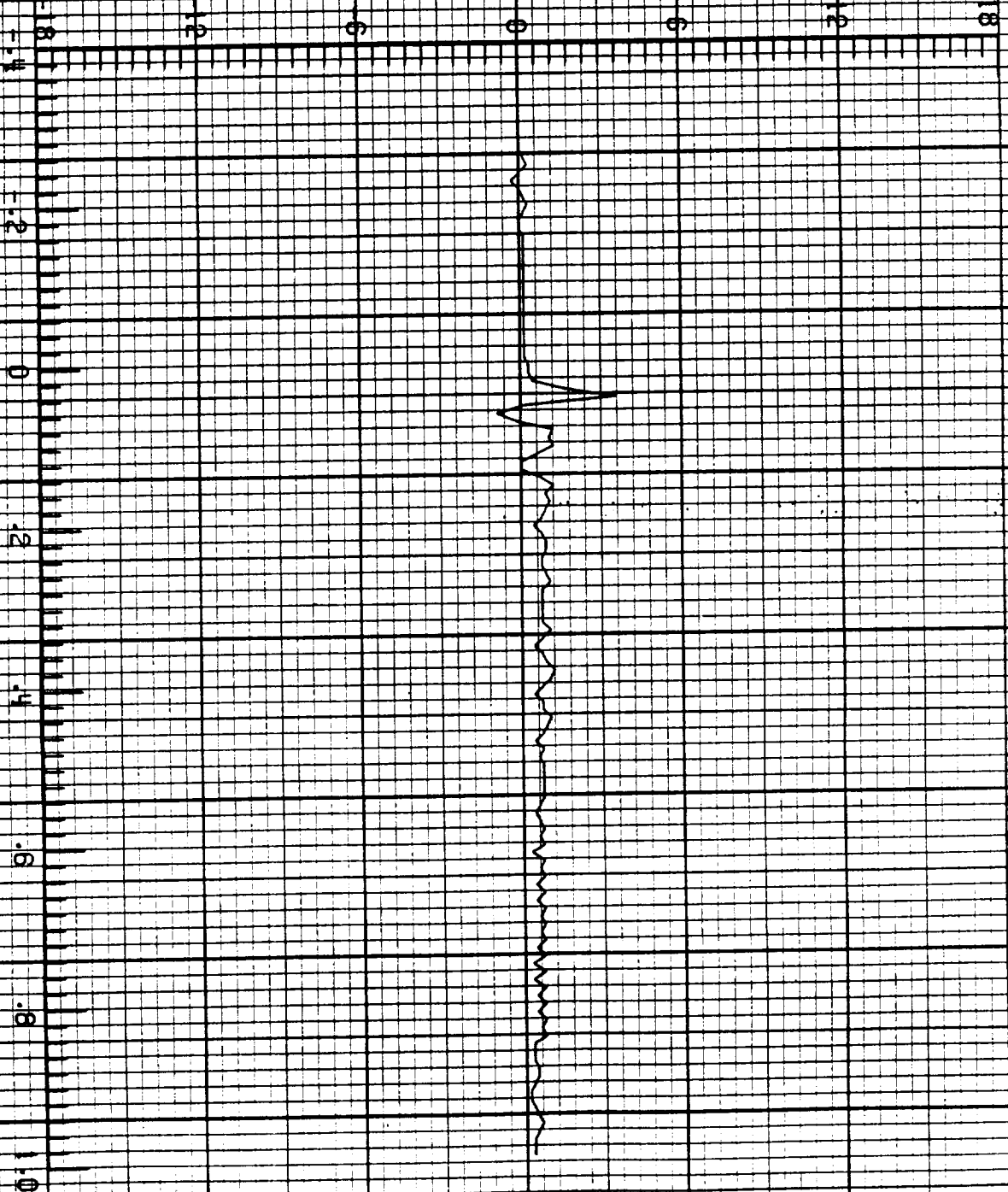
LEC 3 RUN NO. 13

S.017

\dot{D}_{WI} A/m²

20:11:26.1
CHANNEL NO. 3.1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

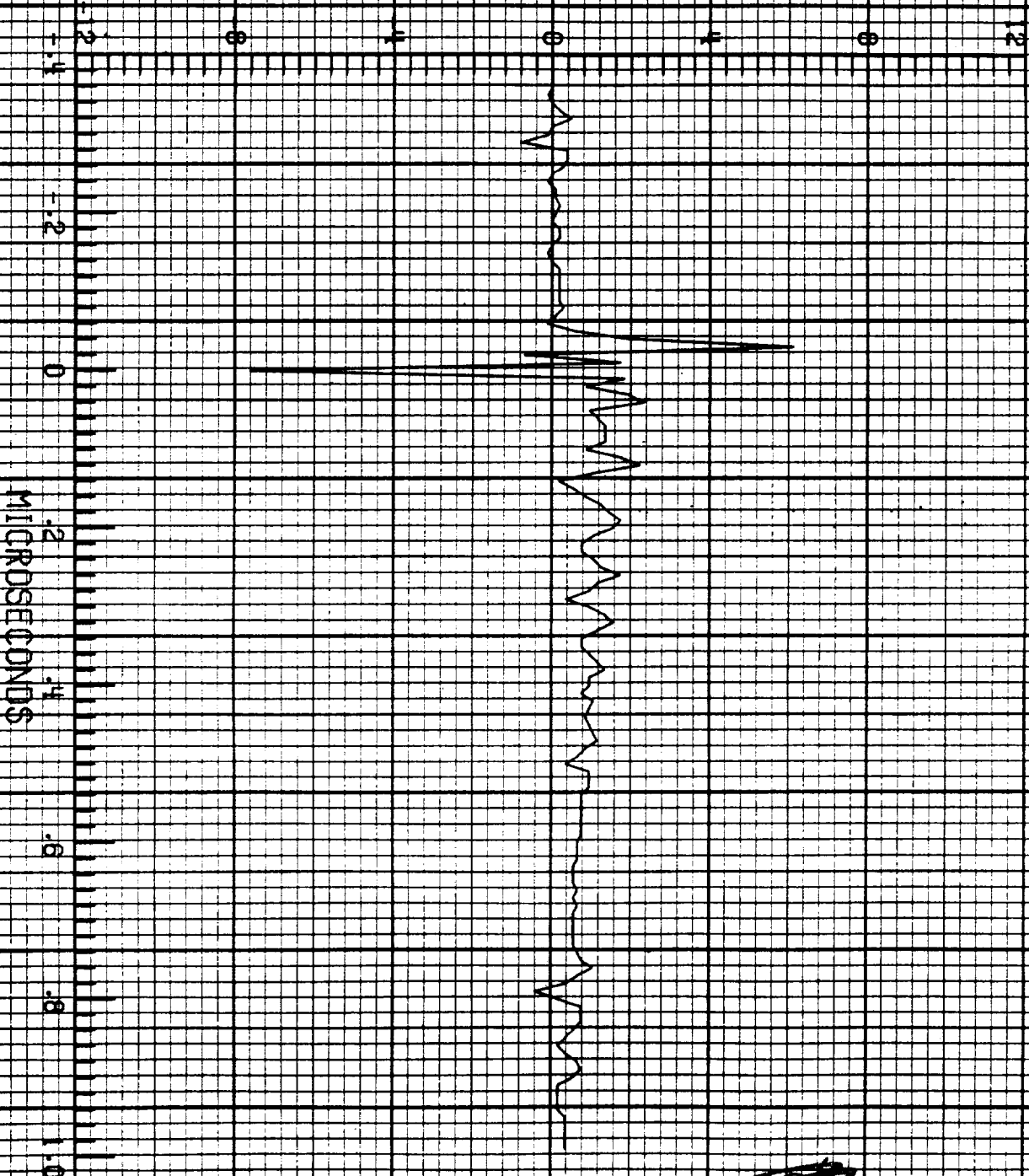
E-106 LIGHTNING/ 84-025

LEC 3 RUN NO. 13

8.017

D_r A/m²

20:11:25.1
CHANNEL NO. 8.2



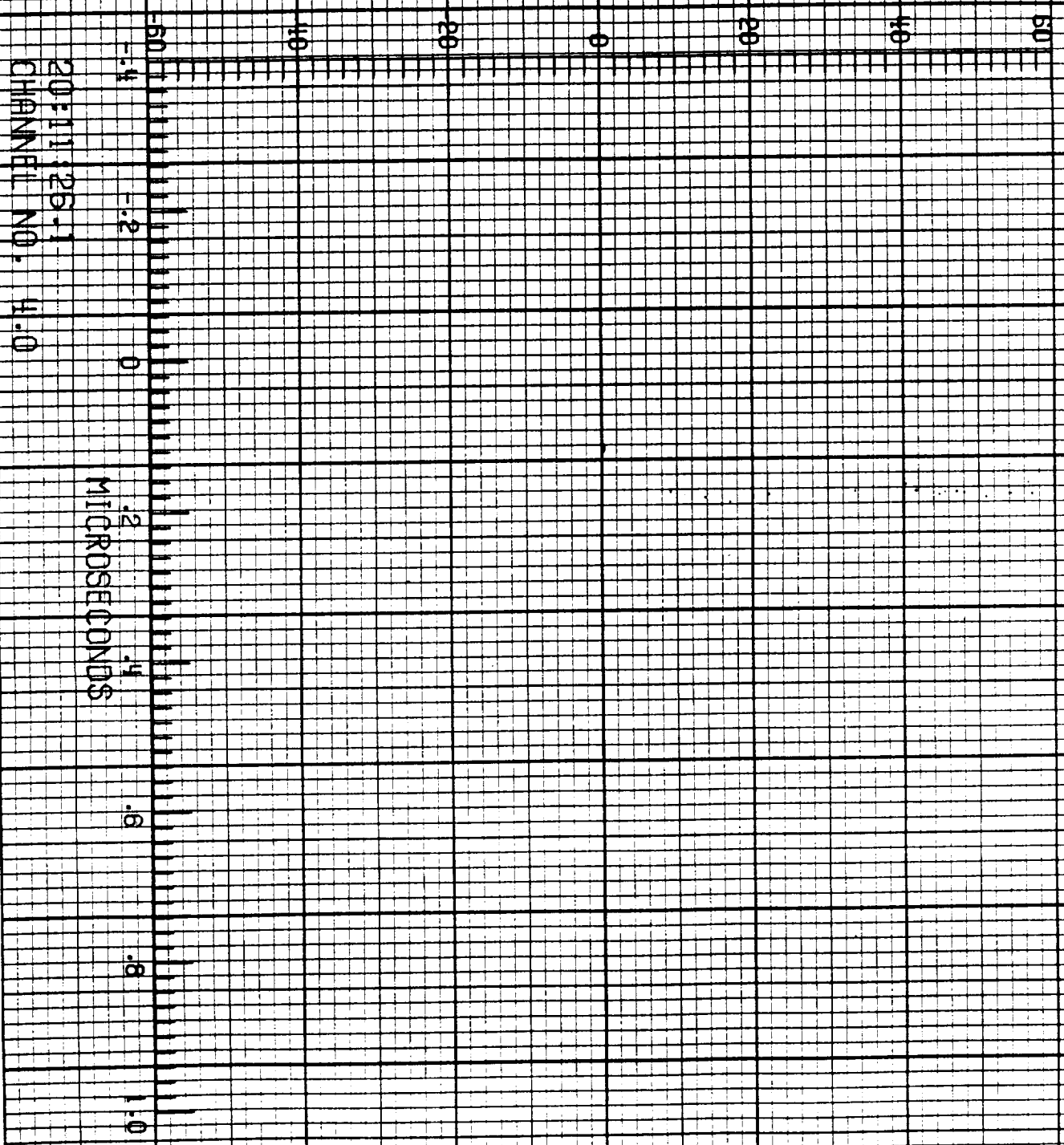
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OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LEC4 RUN NO. 13

S-017

V_{TQ} V



20:11:26.1
CHANNEL NO. 4.0

F-106 LIGHTNING/ 84-025

LECH RUN NO. 13

S.017

I_n A

20:11:26.1
CHANNEL NO. 4.1

MICROSECONDS

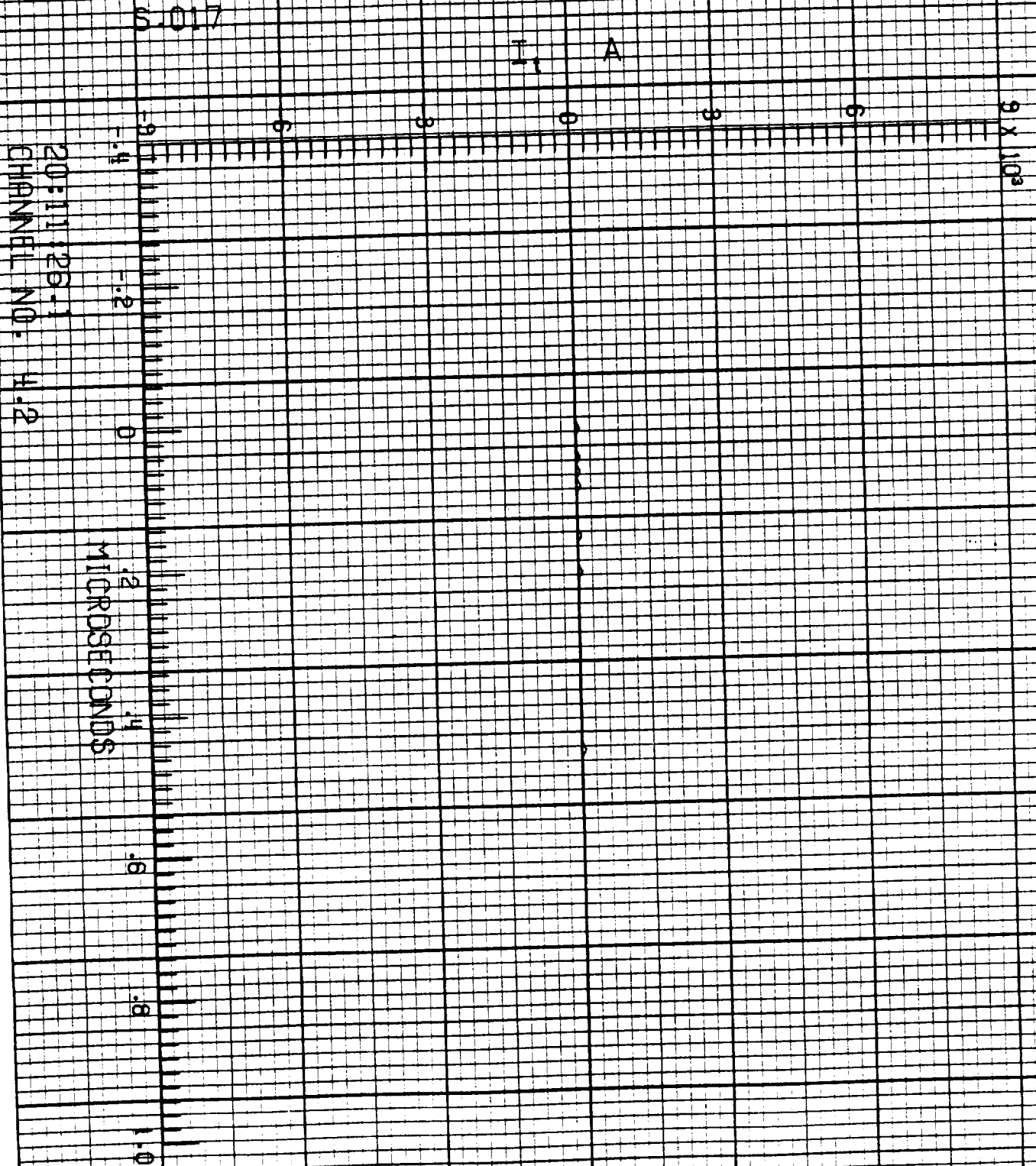
1.0
.8
.6
.4
.2
0
-.2
-.4

9 x 10⁸

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LEC 4 RUN NO. 13



20:11:29.1
CHANNEL NO. 4.2

F-106 LIGHTNING / 84-025

LEC 1 RUN NO 14

0.018

B_v T/s

20:16:58.4
CHANNEL NO. 1.1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LEC 1 RUN NO. 14

5.018

B_{wr} T/s

20:16:58.4
CHANNEL NO. 1.2

MICROSECONDS



F-106 LIGHTNING / 84-025

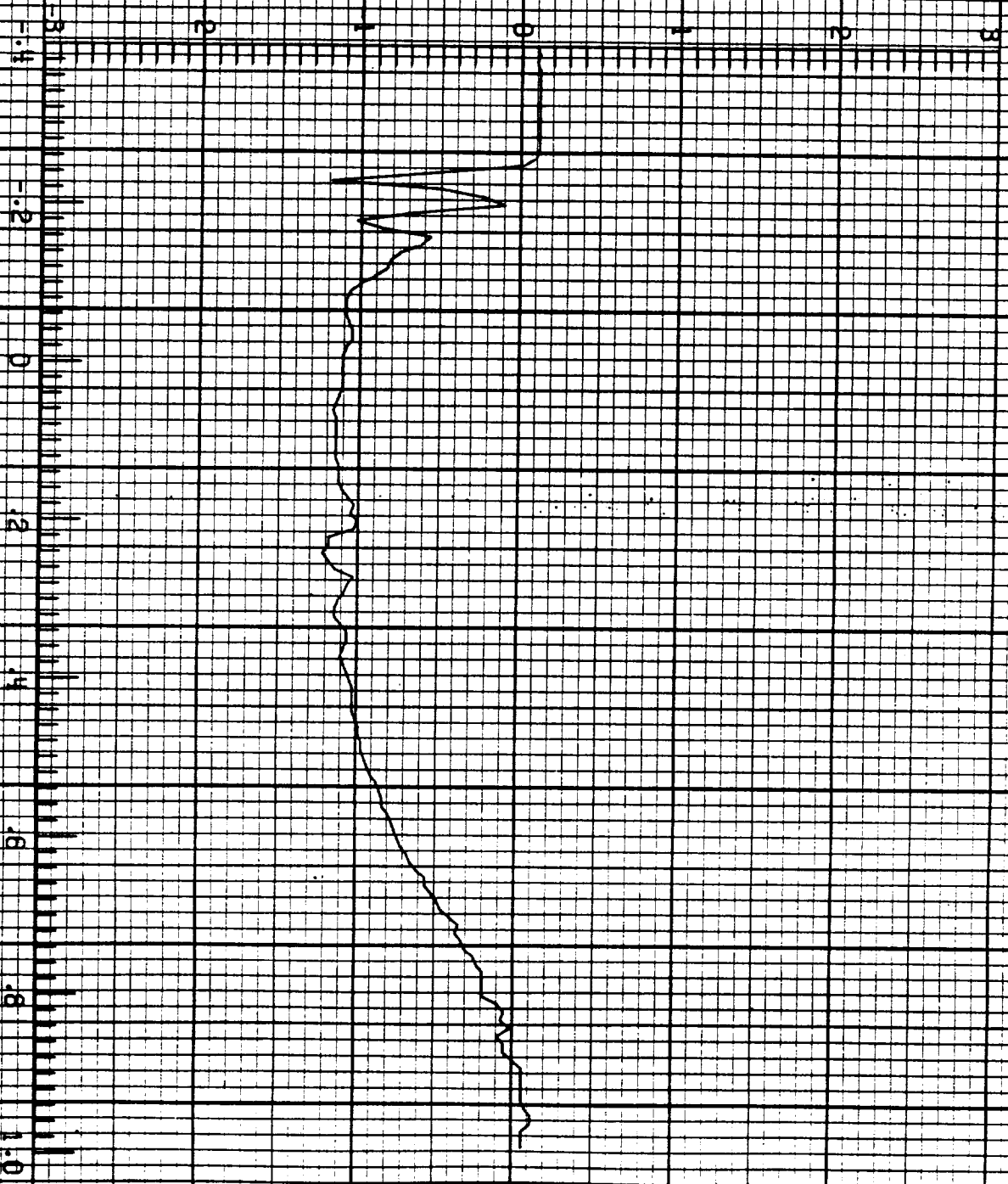
LEC 2 RUN NO 14

S 018

D_t A/m²

20:16:58.4
CHANNEL NO. 2.0

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

LEC 2 RUN NO. 14

S. 018

I A/S

20:15:58.4
CHANNEL NO. 2.1

MICROSECONDS

24 X 10¹⁰

F-106 LIGHTNING/ 84-025

LEC 2 RUN NO 14

0.018

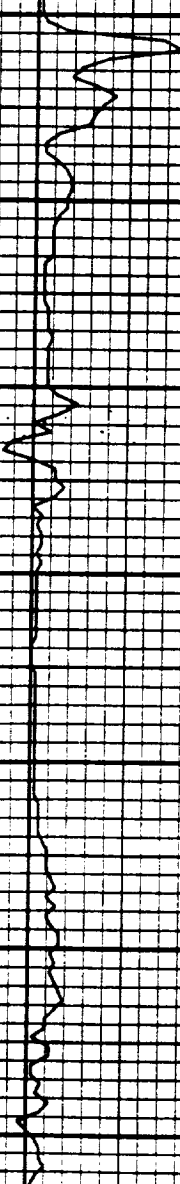
0.01
T/s

1800 1299 999 0 999 1299 1800

20:16:58.11
CHANNEL NO. 2.2

MICROSECONDS

0.4 0.2 0 0.2 0.4 0.6 0.8 1.0



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OF POOR QUALITY

F-106 LIGHTNING/ 84-025

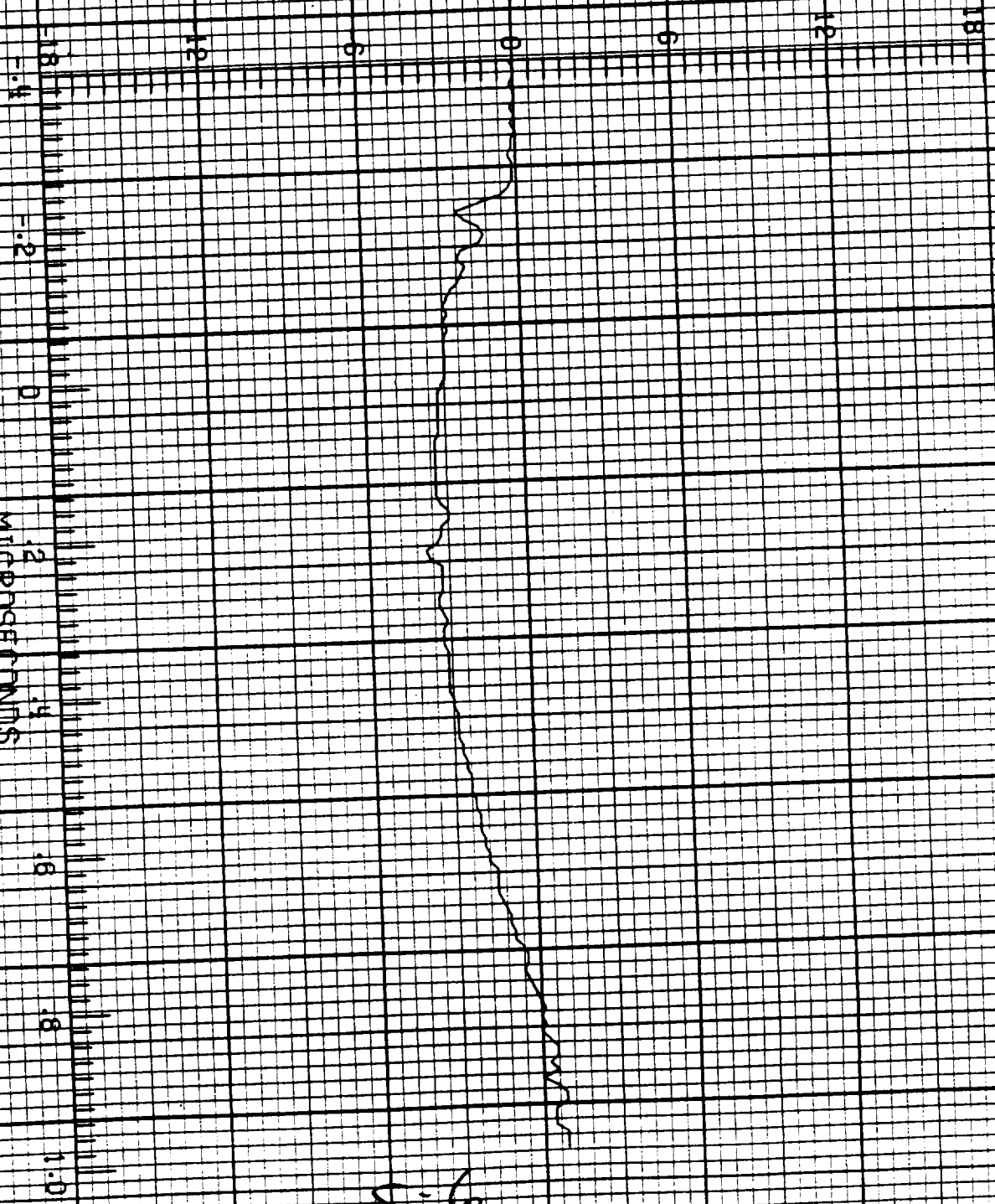
LEC 3 RUN NO. 14

S.018

\dot{D}_{wr} A/m²

20:16:58.4
CHANNEL NO. 3.0

MICROSECONDS



7-6

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

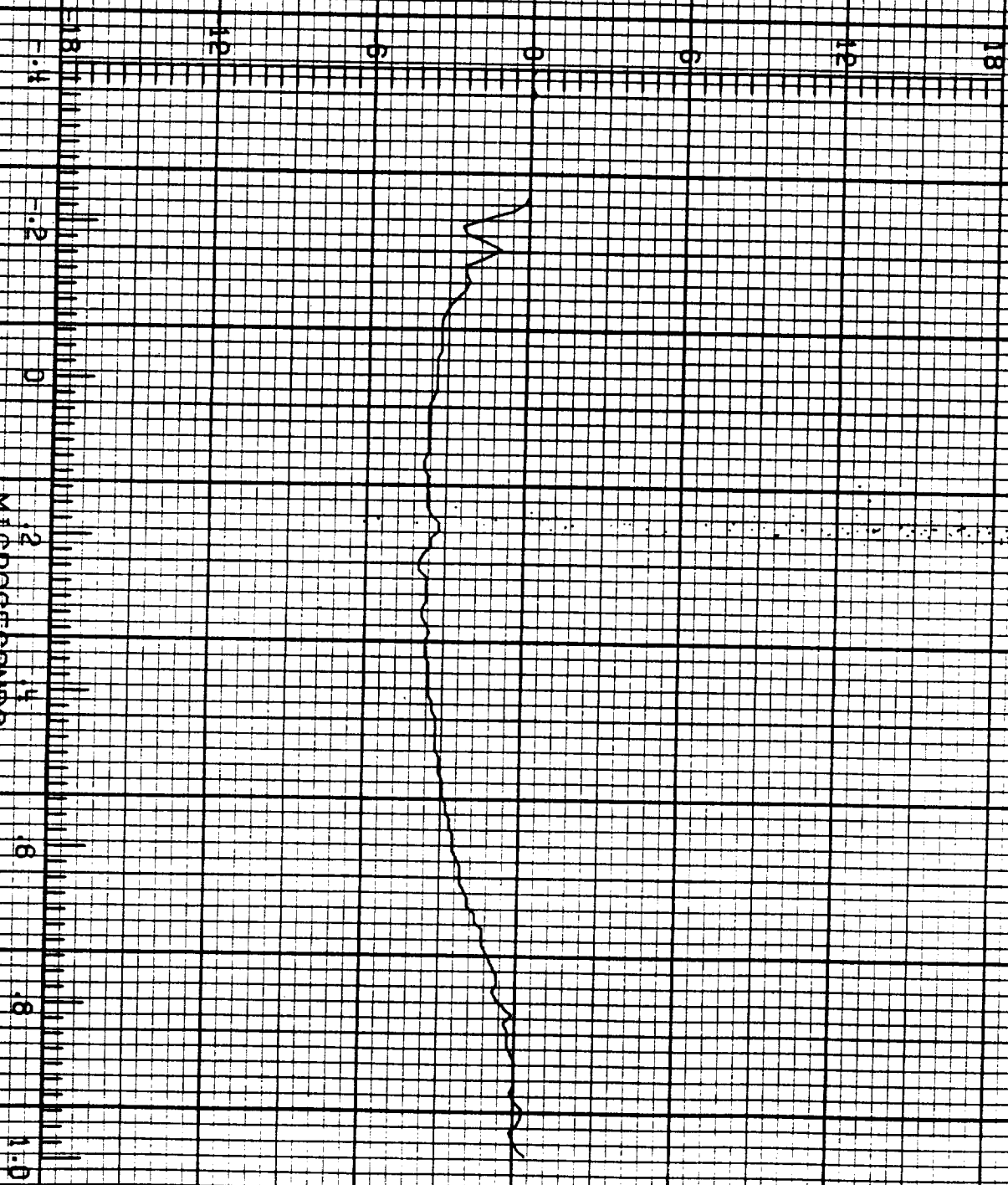
LEC 3 RUN NO 14

5.018

D_{wl} A/m²

20:16:58.14
CHANNEL NO. 3.1

MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING / 84-025

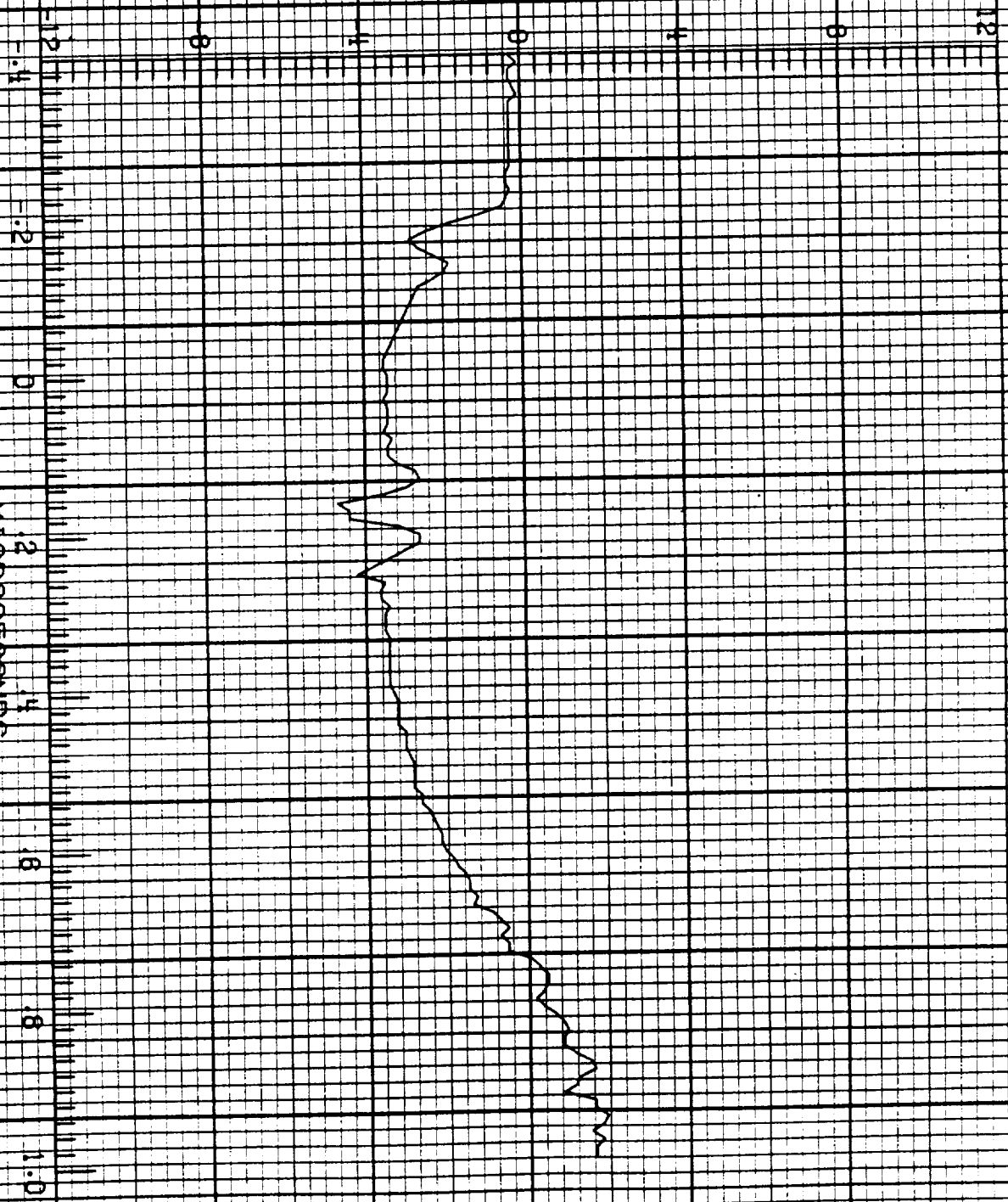
LEC3 RUN NO. 14

5.018

D_r A/m²

20:16:58.14
CHANNEL NO. 3.2

MICROSECONDS



F 106 LIGHTNING/ 84 025

LEC 4 RUN NO. 14

6.018

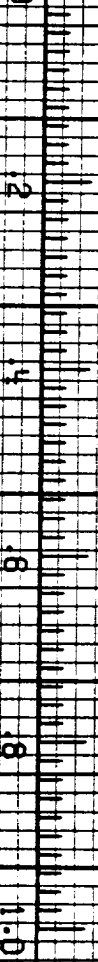
V_{fo} V



20:16:58.4
CHANNEL NO. 4.0



MICROSECONDS



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING / 84-025

LECH RUN NO 14

S-018

I_n A

20:16:58.14
CHANNEL NO. 4.1

MICROSECONDS

9×10^3

F-106 LIGHTNING/ 84-025

LEC 1 RUN NO. 14

0.018

I, A

2×10^3

20:18:58.14
CHANNEL NO. 4.2

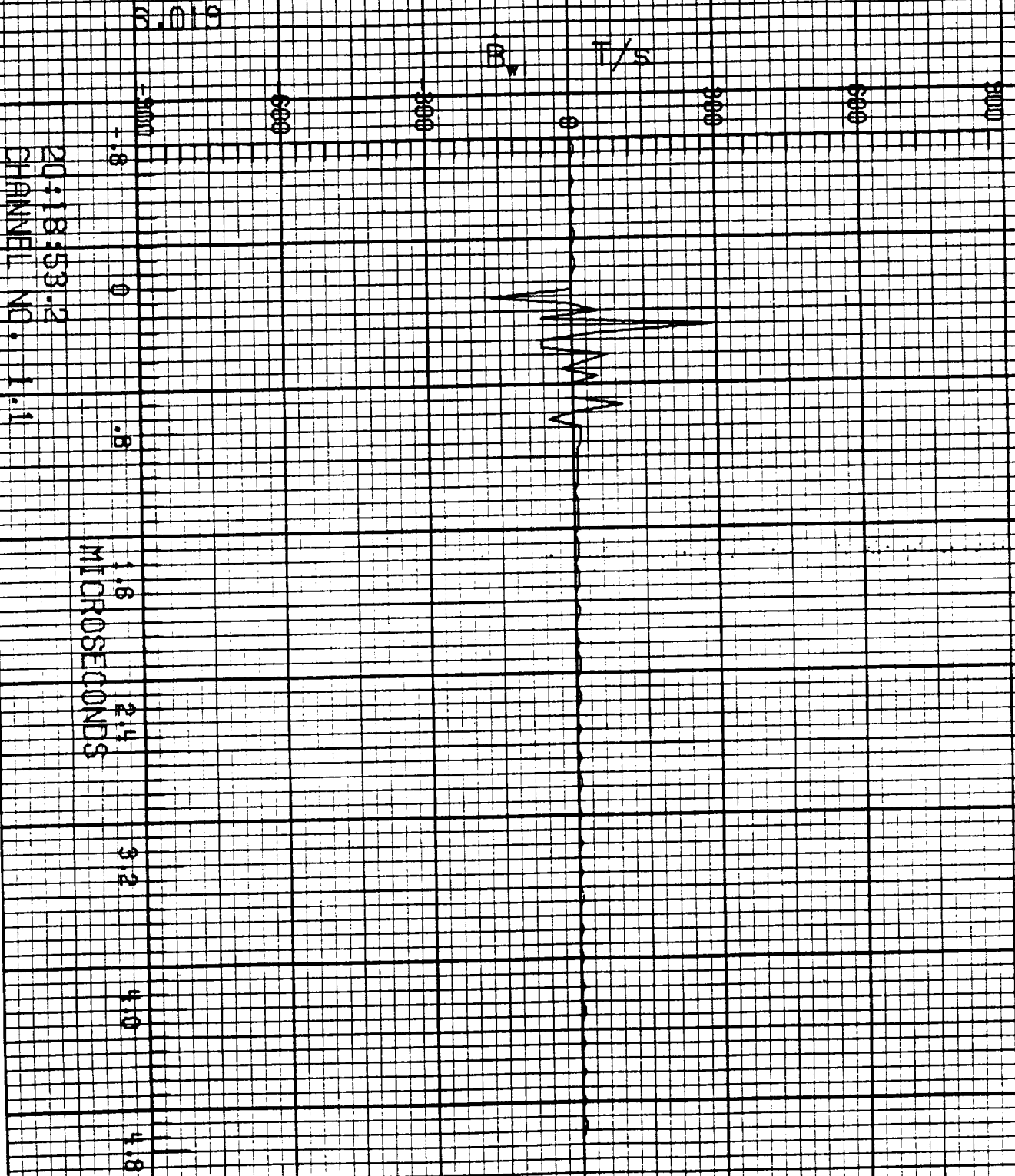
MICROSECONDS

0.4
0.2
0
0.2
0.4
0.6
0.8
1.0

ORIGINAL PAGE IS
OF POOR QUALITY

E=106 LIGHTNING/ 84-025

LEC 1 RUN NO. 15



20:18:53.2
CHANNEL NO. 1.1

F-106 LIGHTNING/ 84-025

1 FC1 RUN NO. 15

3.019

B

T/s

0

-2000

-600

000

600

1200

1800

.18

0

.8

1.6

2.4

3.2

4.0

4.8

DU: 18:53.2
CHANNEL NO. 1.2

MICROSECONDS

ORIGINAL PAGE IS
OF POOR QUALITY

F=106 LIGHTNING/84=025

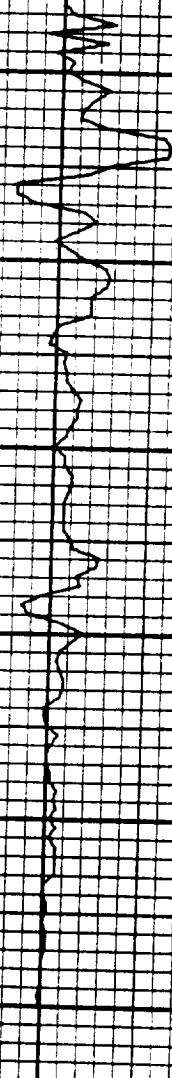
IFC2 RUN NO. 15

6.019

D_t A/m²

20:18:53.2
CHANNEL NO. 2.0

MICROSECONDS



F-106 LIGHTNING/ 84-025

1 EC 2 RUN NO. 15

5.010

I A/s

25 X 10¹⁰

20:18:53.2
CHANNEL NO. 2.1

MICROSECONDS

20

16

12

8

4

0

14

12

0

.2

.1

.6

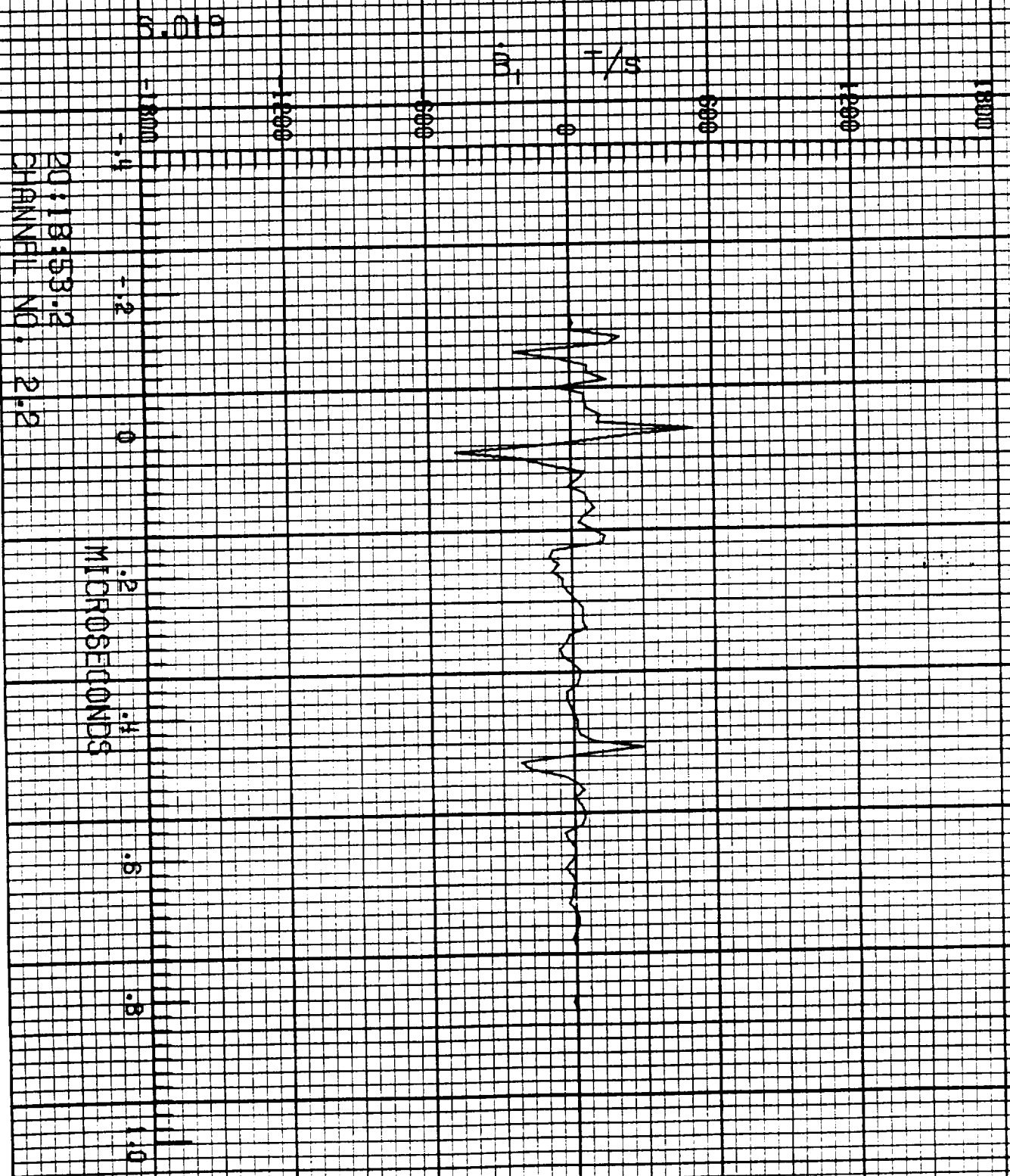
.8

1.0

ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

FC-2 RUN NO. 15



20:18:53.2
CHANNEL NO. 2.2

#=106 LIGHTNING/ 84-025

LFCB RUN NO. 15

3.013

D_{wr} A/m²

18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18

20:18:53.2
CHANNEL NO. 3.0

MICROSECONDS
.2
.4
.6
.8
1.0



ORIGINAL PAGE IS
OF POOR QUALITY

F-106 LIGHTNING/ 84-025

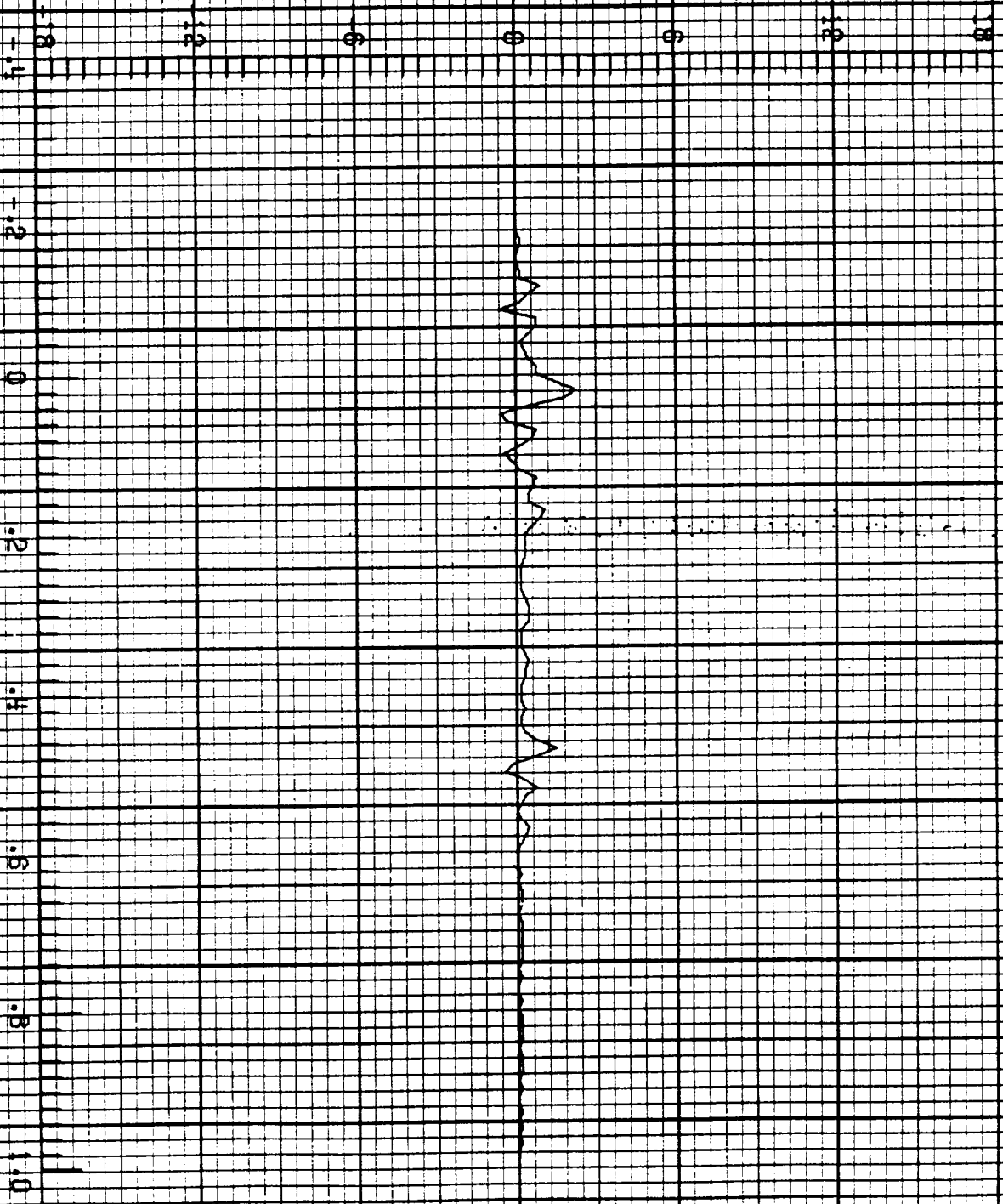
JFC3 RUN NO. 15

S.019

\dot{D}_w A/m²

20:18:53.2
CHANNEL NO. 3.1

MICROSECONDS



F=106 LIGHTNING/ 84-025

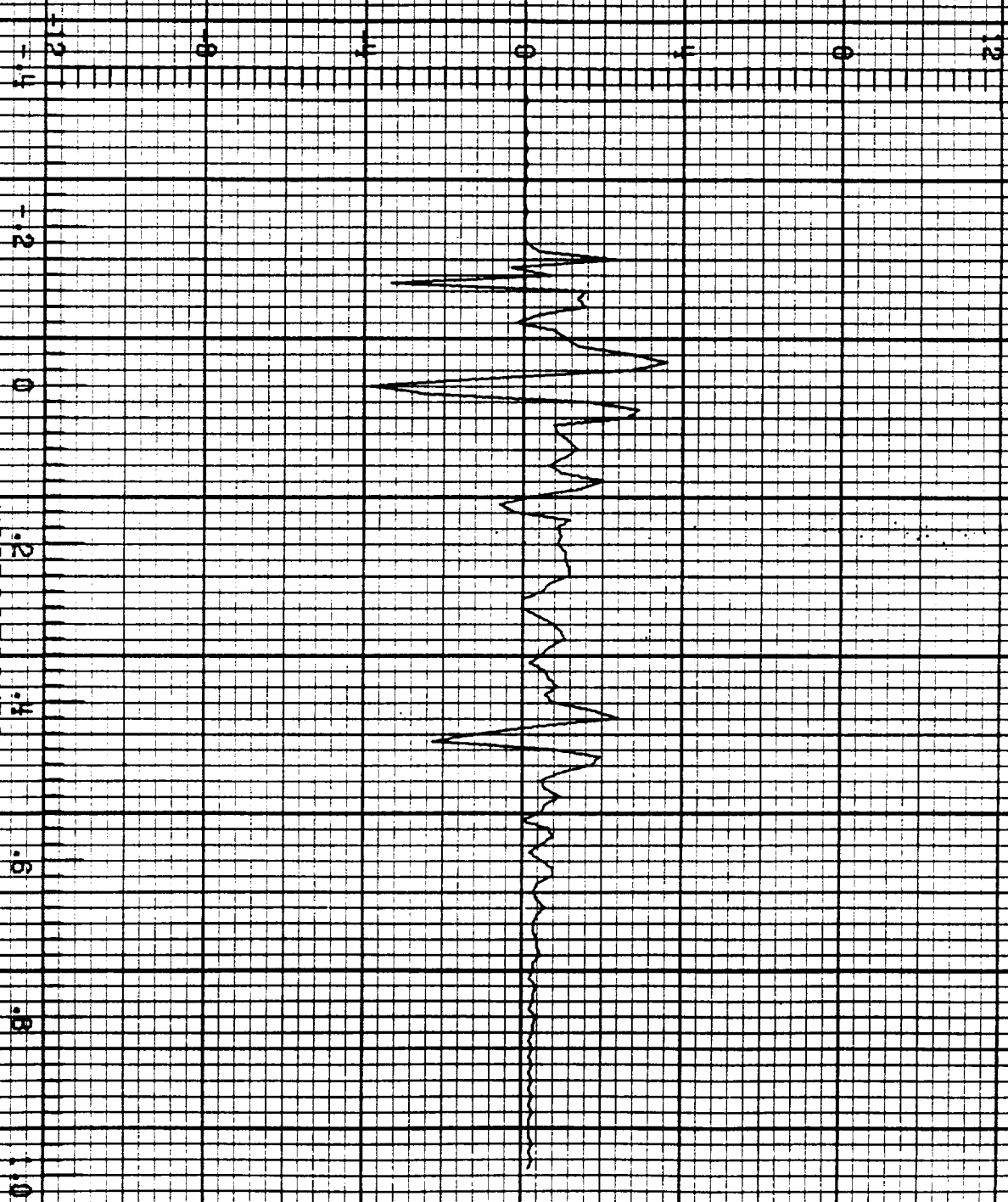
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MICROSECONDS



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F=106 LIGHTNING/ 84-025

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CHANNEL NO. 4.0

MICROSECONDS

F-105 LIGHTNING/ 84-025

LFC4 RUN NO. 15

3.019

\bar{T}_r A

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CHANNEL NO. 4.1

MICROSECONDS

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F-106 LIGHTNING/ 84-025

LECH RUN NO. 15

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T_t A

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CHANNEL NO. 4.2


MICROSECONDS

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