ZKUŠEBNICTVÍ, a.s.

zkratovna

190 11 PRAHA 9, Běchovice
The Czech Republic

TEST REPORT

No. 96 - 079

zkratovna

ZKUŠEBNICTVÍ, a.s. - 190 11 Praha 9, Běchovice

INDEPENDENT TESTING LABORATORY, ACCREDITED ACCORDING TO ČSN EN 45 001
BY THE CZECH ACCREDITATION INSTITUTE UNDER THE NUMBER 1035

TEST REPORT

No. 96 - 079

Test object	:	Instrument current transformer
Type	:	CTS 12.S, CTS 25
Manufacturer	:	KPB INTRA, s.r.o., Bučovice, Czech Republic
Highest voltage for equipment	:	12 kV, 25 kV
Rated primary current	:	3.200 A, 800 A
Kind of test	:	Type test
Test performed	:	Short-time current test according to IEC Publ. 185/1987, ČSN 35 1360/1977
Customer	:	KPB INTRA, s.r.o., Bučovice, Czech Republic
Representative of the customer	:	Mr. Robert Knápek
Date of test	:	27.6.1996

Běchovice, 10.7.1996
Tested by:

Jiří Šustera

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190 11 Praha 9-Běchovice

Pavel Křemen
Head of the Laboratory

Test conditions

Working frequency	f = 48 Hz up to 50 Hz
Ambient air temperature	T = 18 °C - 21 °C (in the test cell)

The single phase test has been made on a single pole instrument current transformer, the secondary winding being short-circuited through a small resistor of 0.001 Ω.

The short-time test was carried out as combined test-dynamic current test and short-time thermal current test of 1s duration. The no-load supply voltage of test circuit was 230 V - 350 V.

The connection of the test circuit and measuring circuits is evident from the diagram TPV 121. The connection of the tested instrument current transformers to the test circuit is documented by photographs Fig. 1 - Fig. 4.

Description of the test object

A single phase instrument current transformer for indoor installation. The identification of the test object was made on the basis of drawings Nos. CTS 12 - T12 001, CTS 25 - T25 001.

Type		CTS 12.S	CTS 25
Serial No.		1200003	2500002
Year of manufactured		1996	1996
Rated primary current	[A]	3200	800/400
Rated secondary current	[A]	5/1	5/5
Highest voltage for equipment	[kV]	12	25
Rated insulation level	[kV]	35/75	55/125
Rated short-time current	[kA]	80	50
Rated dynamic current	[kA]	200	125
Rated frequency	[Hz]	50	50
Total mass	[kg]	-	-

Test parameters

Serial No.		1200003	2500002
Short-time current	[kA]	80	50
Dynamic current	[kA]	200	125
Short-circuit duration	[s]	1	1

Result

No mechanical damage has been revealed after the short-time current test. The instrument current transformers passed also successfully the repeated dielectric tests and the inspection accuracy class test.

The tested instrument current transformers **passed** successfully the short-time current test in compliance with IEC Publ. 185/1987 cl. 12 and ČSN 35 1360/1977 cl. 116.

More details of the tests are in the enclosed table of test results and in graphs.

List of symbols

a) used in the table of test results

^1I_m	-	dynamic current
^1I_e	-	equivalent r.m.s. value of short-time current
I_{th}	-	rated short-time current
t_i	-	short-circuit duration

b) used in the graphs

1I	-	course of primary current
1U	-	course of test circuit voltage
2IA, 2IB	-	courses of secondary currents
t	-	time

The Test report contains: **16** **sheets i.e.**

	1	introductory sheet
	1	title sheet
	2	text sheets
	3	table sheets
	1	test circuit diagram
	4	photos
	4	copies of graphs
Enclosure:	2	catalogue sheets

Table of test results: Short-time current test
Test circuit diagram: TPV121
File denomination: mtpr27fi

Test No.	^1I_m [kA]	^1I_e [kA]	t_i [ms]	$^1I_e{}^2t_i / I_{th}{}^2$	Type	Serial No.	Observations
4	203	---	124	---	CTS 12.S	1200003	no effect, no damage
5	---	895	1023	128	CTS 12.S	1200003	no effect, no damage
12	130	---	123	---	CTS 25	2500002	no effect, no damage
13	---	514	1026	108	CTS 25	2500002	no effect, no damage
Condition of test object after test: no damage							

Notice: The voltage course distortion within 5 - 6 loop caused by measurement failure

Parameters of test circuits

Direct tests

File		mtpr27fi	
Test No.		004 ÷ 013	
Test circuit diagram No.		TPV121	
Generator		S	
Rated (phase to phase) voltage	[kV]	8	
Phases connected		R, T	
Inductance per phase	[mH]	0.121	
Inductance of reactors per phase	[mH]	0.032	
Resistance of resistors per phase	[Ω]	---	
Short-circuit transformer		---	
Connection		---	
Transf. ratio		---	
Inductance per phase	[mH]	---	
High-current transformer - Connection		Dy	
Transf. ratio		12.56	
Inductance per phase	[mH]	0.649	
Total inductance per phase of supply circuit	[mH]	0.802	
Power factor		0.1	
Capacity in parallel	[μF]	---	
Resistance in series	[Ω]	---	
Neutral point of supply circuit		---	
Short-circuit point		earthed	
Load transformer		---	
Connection		---	
Transf. ratio		---	
Resistance of load resistors	[Ω]	---	
Inductance of load reactors	[mH]	---	
Capacity of load capacitors	[μF]	---	
Neutral point of load circuit		---	

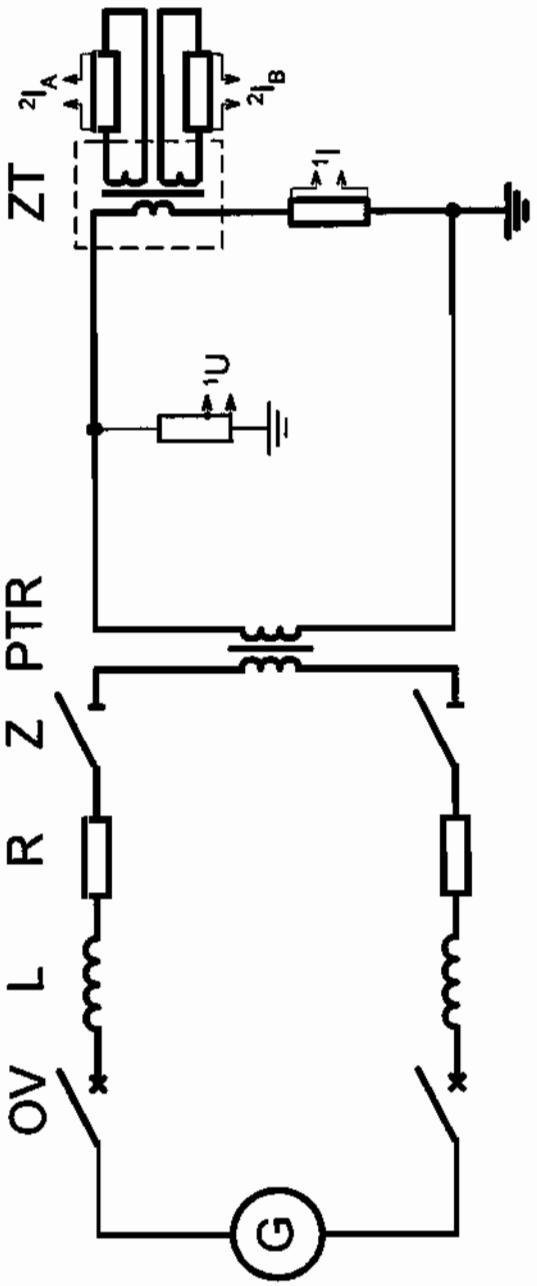
Measuring devices used

File denomination: mtpr27fi

Measured quantity	Sensor	Parameters	Serial No.	Measurement error
^{1}I	cage shunt	80 kA/ 2 V	1216079	< 2.0 %
$^{2}I_{A}$	cage shunt	0.2 kA/ 2V	517572	< 2.0 %
$^{2}I_{B}$	cage shunt	0.2 kA/ 2V	517573	< 2.0 %
^{1}U	resistor voltage divider	600 V/ 150 V	DR 001/79	< 3.5 %

Recording devices:

- measuring system with digital optoelectronic transmission (type TR - 01M)



G - Short-circuit generator
OV - Master breaker
L, R - Reactors and resistors
Z - Make switch

PTR - High-current transformer
ZT - Transformer tested
I, U - Current and voltage measurement

Test circuit diagram TPV121

Fig. 1
Instrument current transformer CTS 12.S serial No. 1200003 before test
(photo 96-079/11)

Fig. 2
Instrument current transformer CTS 12.S serial No. 1200003 after test
(photo 96-079/12)

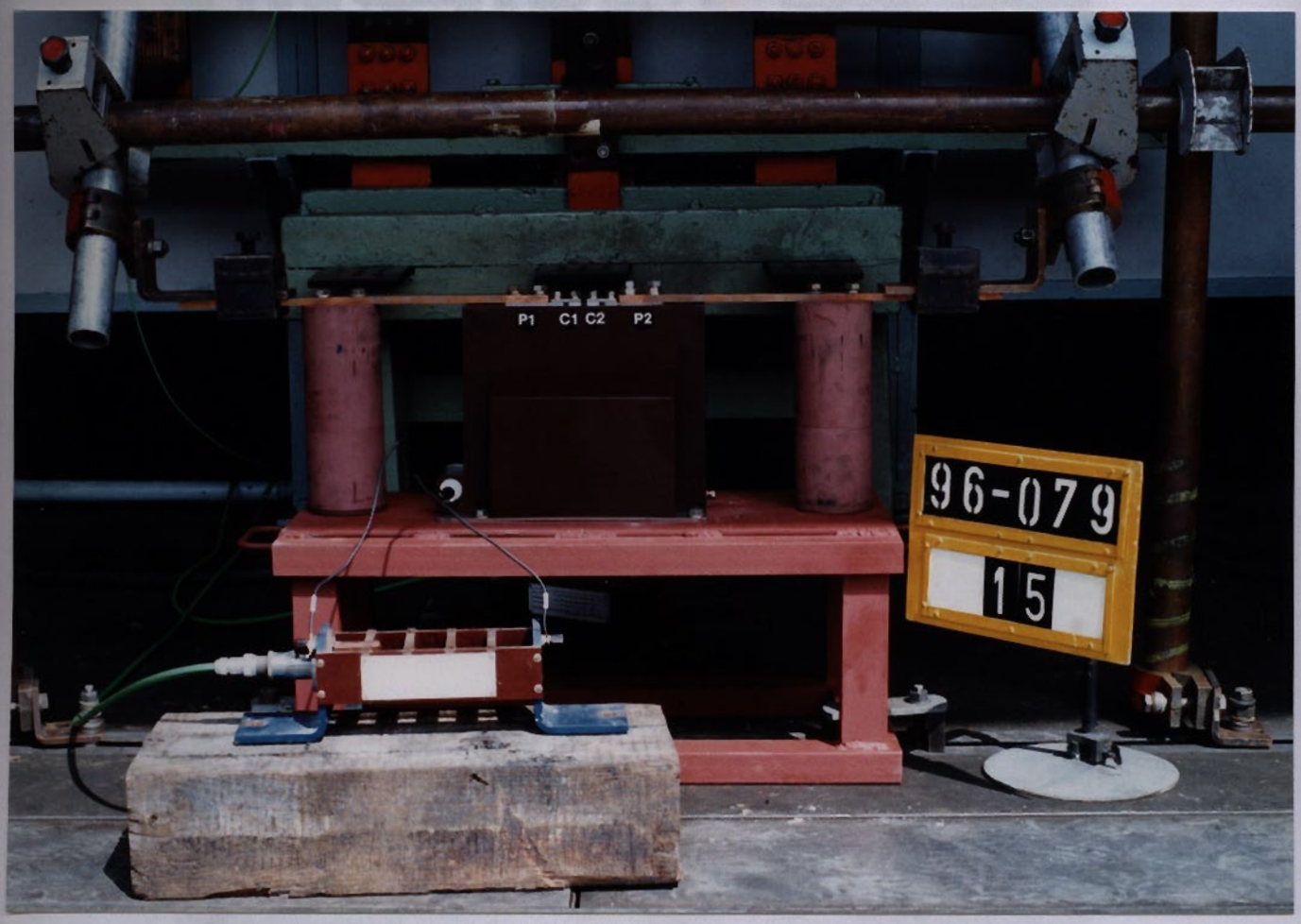


Fig. 3
Instrument current transformer CTS 25 serial No. 2500002 before test
(photo 96-079/15)

Fig. 4
Instrument current transformer CTS 25 serial No. 2500002 after test
(photo 96-079/16)

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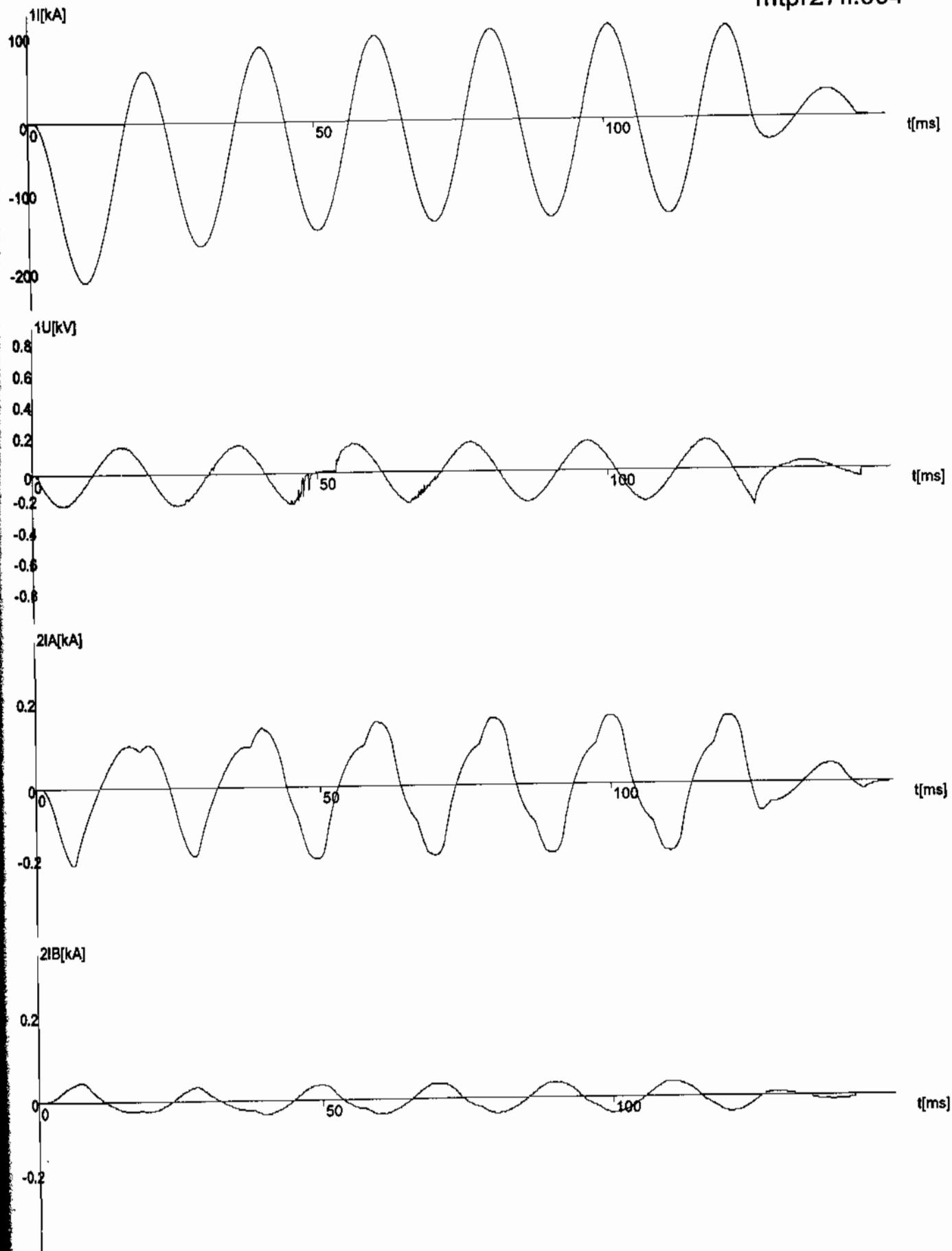

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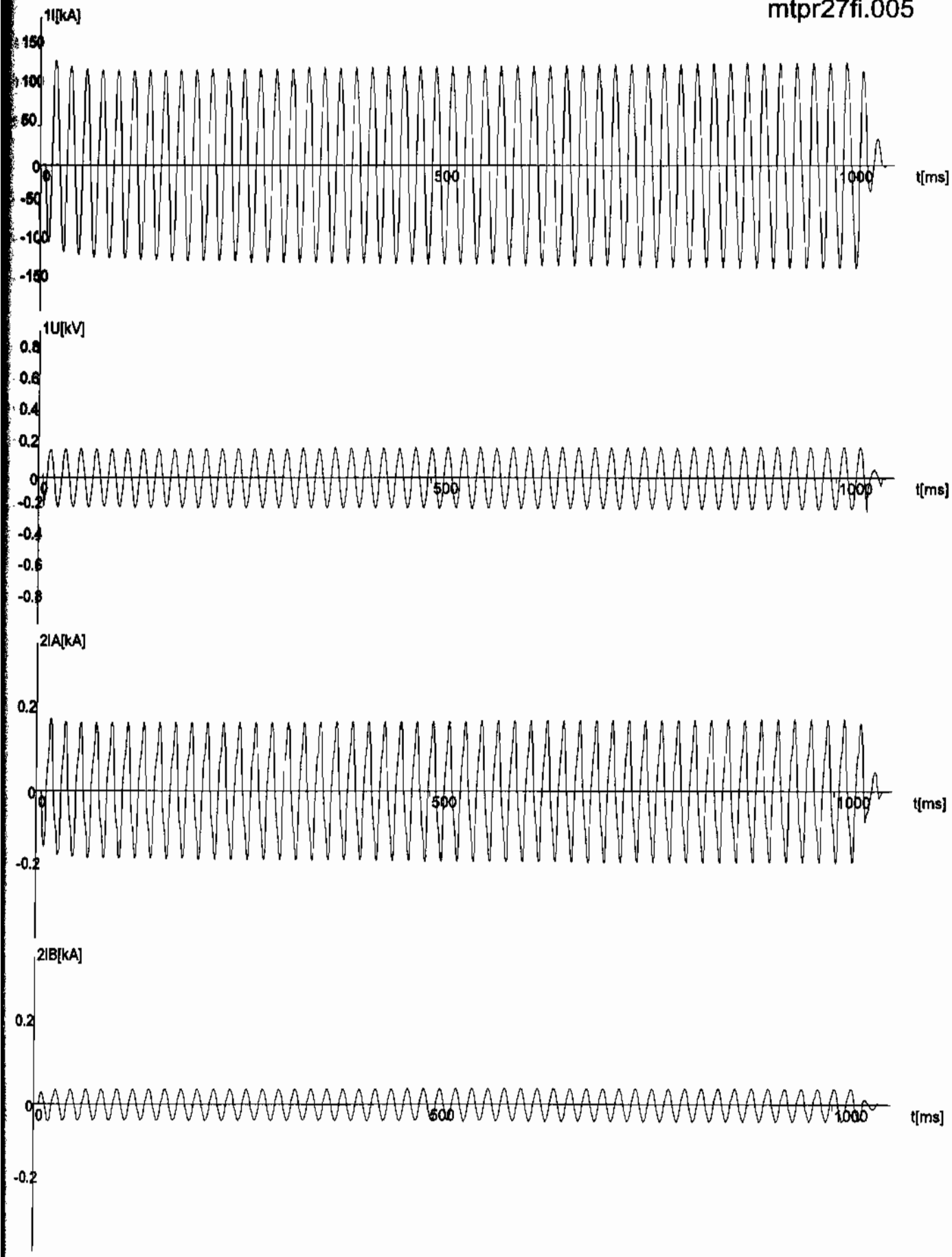

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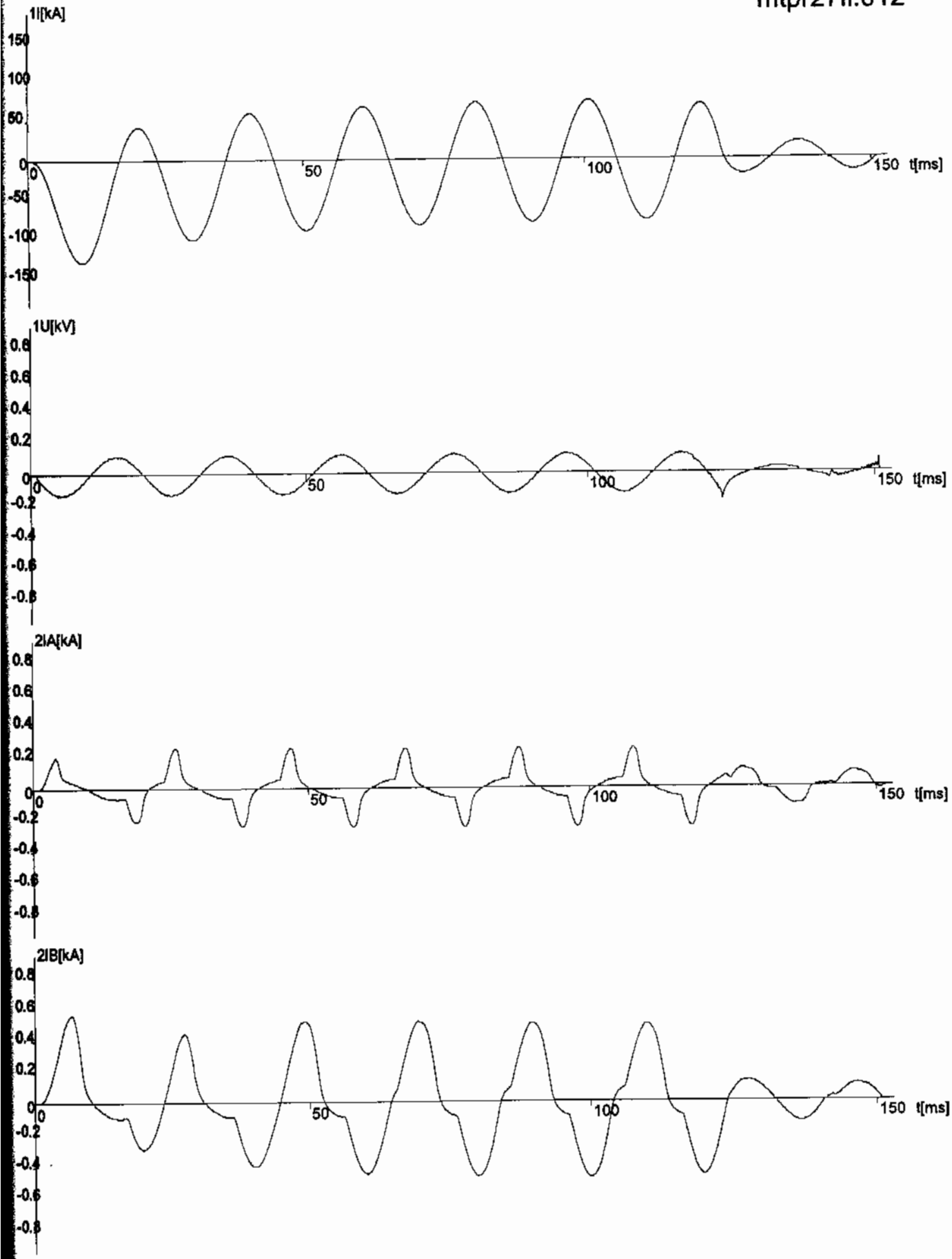

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