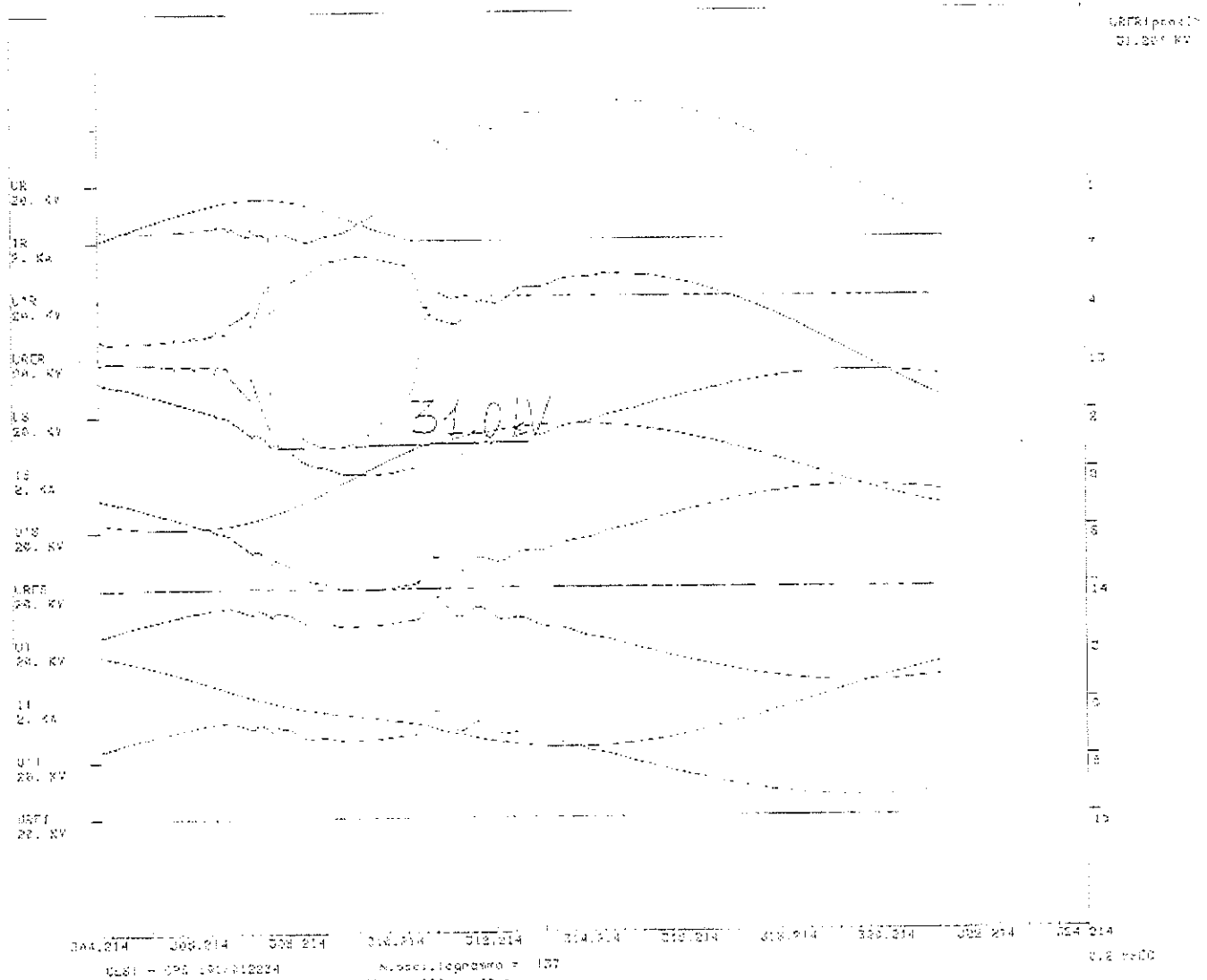
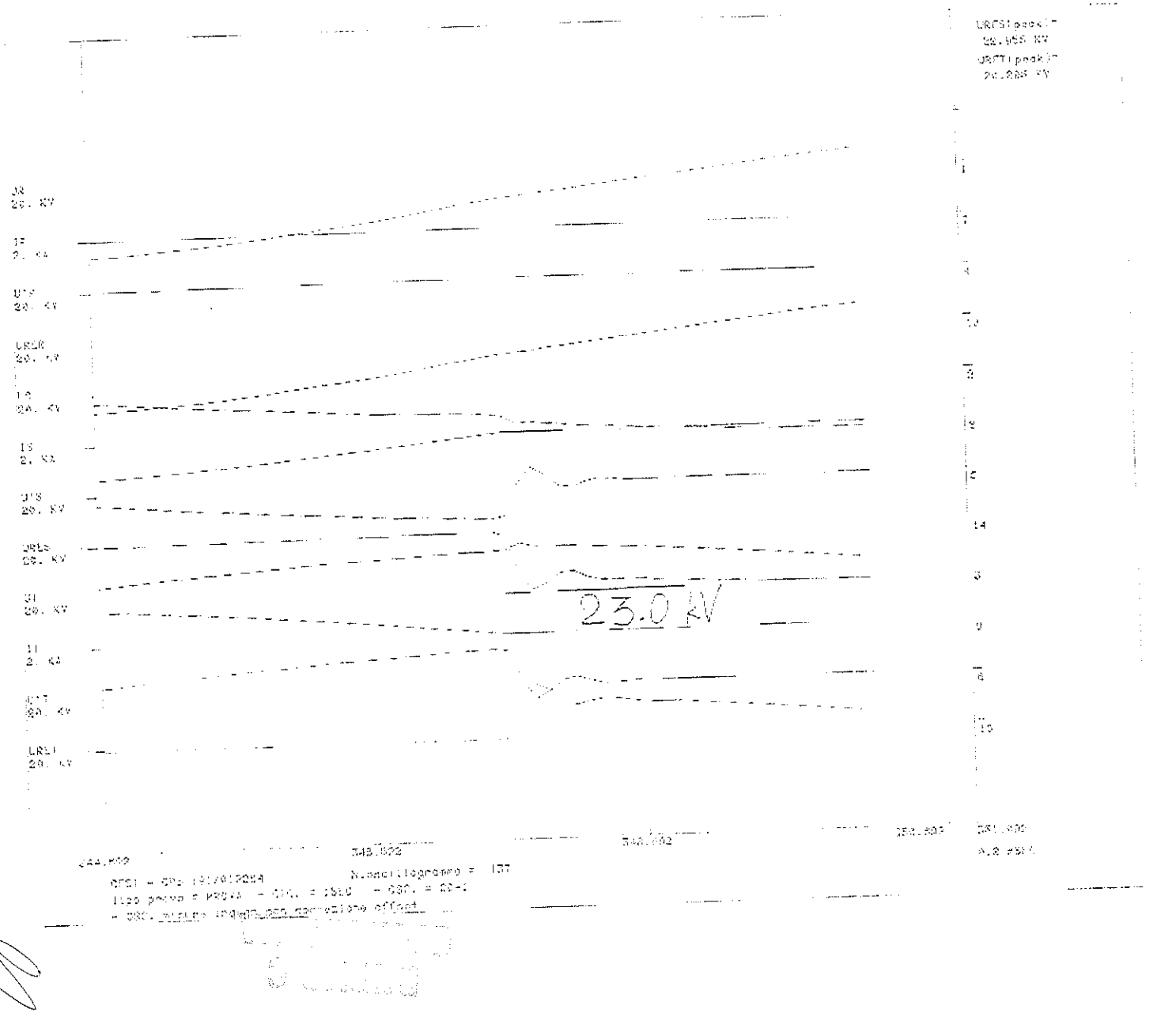
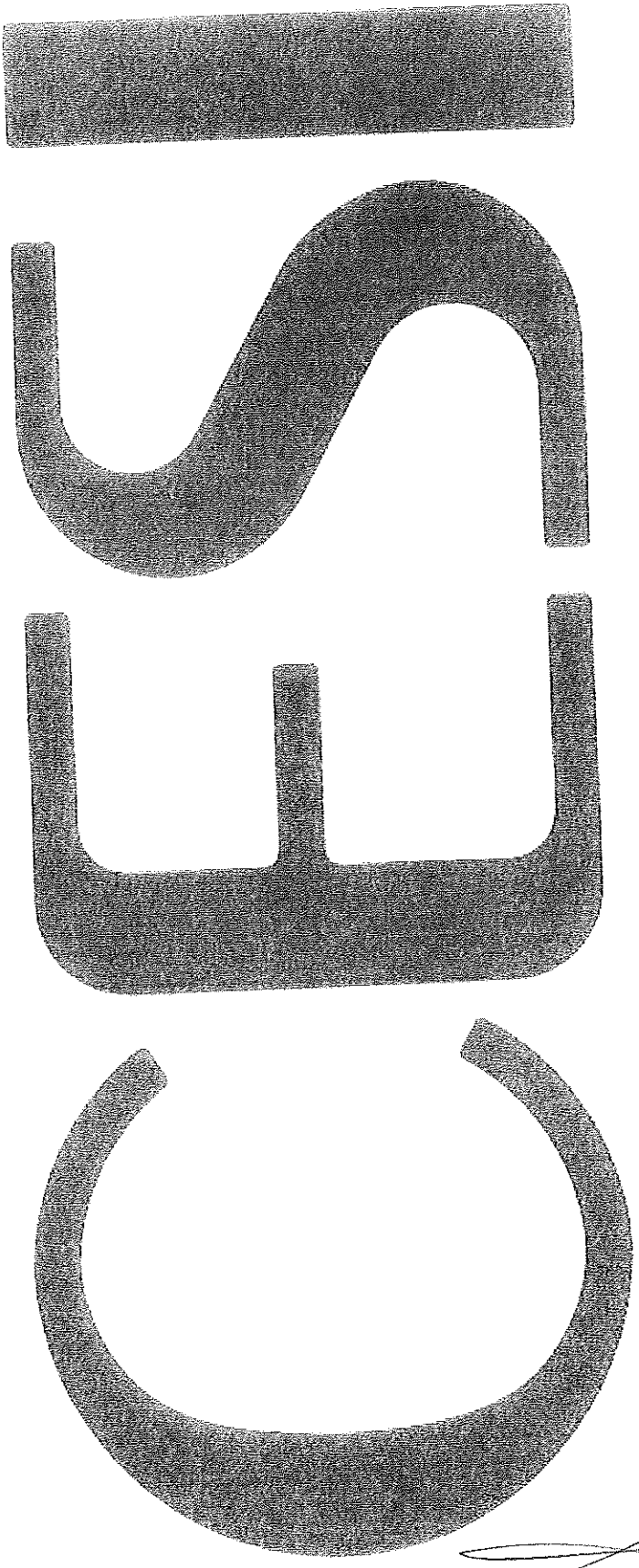

310V


23.0 kV



51249279XA

GPS91/15222

1915

CESI

test report

GP5-91/015232

client MERLIN GERIN S.A. - Grenoble (France)

object Three pole metal enclosed air insulated switchgear SM6 system type QM. Fitted with an increased operating frequency SF6 gas insulated switch type IO SM6.

characteristics of the tested object assigned by the Client

rated voltage 17.5/24 kV rated current 200 A rated frequency 50 Hz

other characteristics listed on page 2

the tests have been made in accordance with client's instructions based on IEC 420 (1990)

test date June 28th, 1991

the performance of the apparatus tested and the observations made during the tests have been recorded in the table with the test results and oscillograms

this document is composed by 7 pages, 5 oscillograms

milan, August 27th, 1991 test engineer

F.Lo Monaco

91/012285

keywords : 120100 234308 360206 450707 530010

1916

rated characteristics of the tested object assigned by the client

voltage	17.5/24	kV
frequency	50	Hz
normal current	200	A
short-circuit making current	40	kA
short-time withstand current	15	kA
short-circuit duration	1	s
gas pressure for interruption	1.4	bar abs

identification of the object effected.

The tested object truly conforms to the drawings of its type supplied by the Client. These drawings identified by CESI with embossing prefix and numbered GPS- 91/015162 1 to 13 are assembled in a folder.

1917

table of tests performed

date	type of test	see page
	THREE PHASE SHORT CIRCUIT MAKING TESTS WITH FUSES	
June 28th 1991	No.3 tests with a prospective current of 53.5 kA (peak) at 24 kV	5

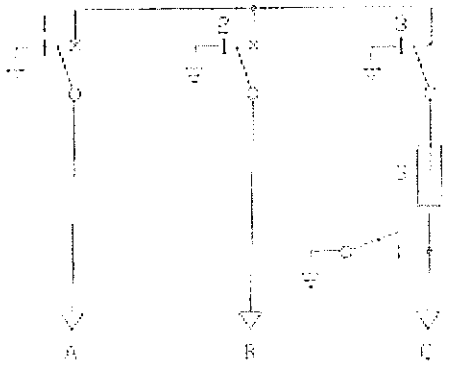
tests witnessed by

Mr. Laurens - MERLIN GERIN S.A.
Mr. Dubroqua - MERLIN GERIN S.A.

1918

Arrangement of the object for the tests

The tested apparatus was assembled with two other apparatus of SM6 system (see photo on page 7).
The figure below shows the electric diagram of the complete setting (single phase diagram of a three phase circuit) :



3 : switch-fuse combination under test

1-2 : auxiliary switches

A-B-C : cables

During the tests the cables B were connected to the supply, the switch 2 was in closed position and the cables C were short-circuited at the bottom. The earthing switch downstream the fuse and the switch 1 were in open position.

The metal enclosure was insulated from earth but connected thereto by a copper wire 0.1 mm in diameter and 30 mm long to indicate any significant leakage current to earth.

1913

three phase short circuit making tests with fuses

test duty with 20 kA at 24.0 kV

test circuit conditions:

circuit diagram see page 6 power factor < 0,15 frequency 50 Hz

transient recovery voltage (TRV)	Uc kV	t3 µs	td µs	U1 kV	t1 µs	Uc kV	t2 µs	td µs
	42	89						

conditions of the apparatus before the tests: new

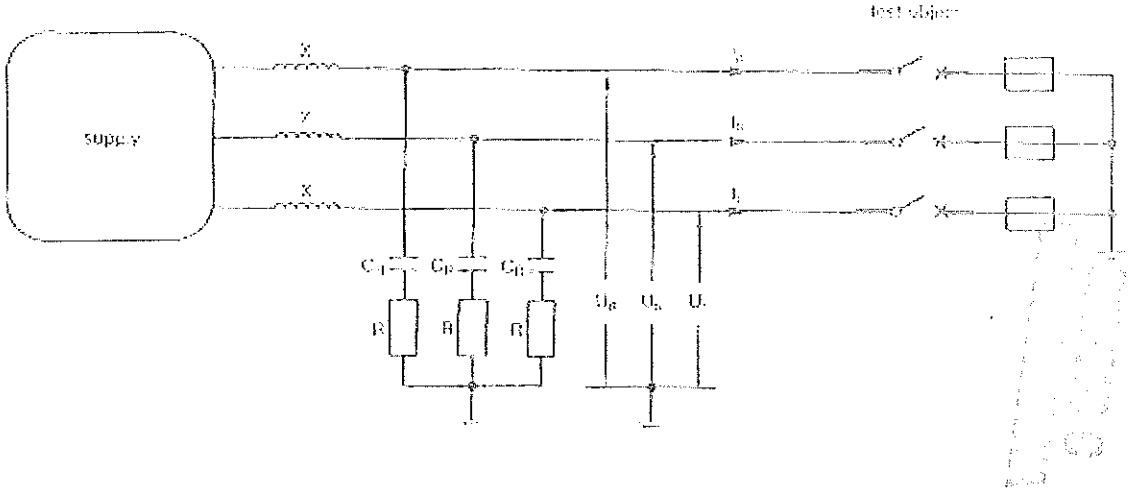
prospective current	symmetrical	kA	20.0	
	peak	kA	53.5	
	oscillogram	no.	603	
test		no.	1	2
oscillogram		no.	290	291
operating duty			O	O
applied voltage (phase value)		kV	13.9 13.9 13.9	13.9 13.9 13.9
recovery voltage (phase value)		kV	13.9 13.9 13.9	13.9 13.9 13.9
phase-to-phase voltage		kV	24.0	24.0
maximum overvoltage		kV	44.6	42.0
breaking current (fuse)	cut-off (max)	kA	12.1	12.2
	phase		T	T
fuse link current rating		A	100	100
striker operation		yes/no	yes	yes
duration of interruption		ms	8	8

conditions of the apparatus after the tests: external parts as before the tests, internal parts not inspected.

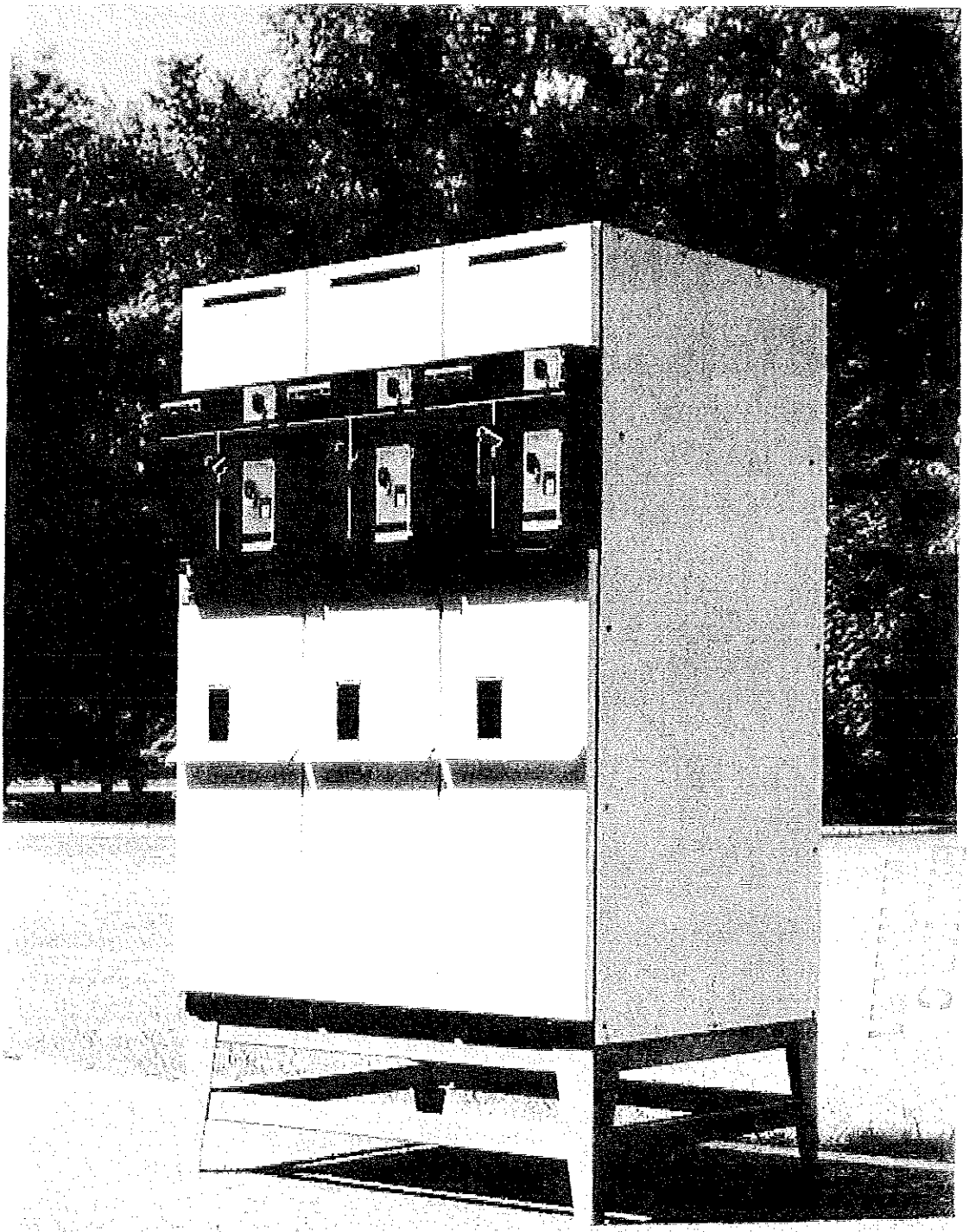
note after the tests : the performance of the apparatus is considered satisfactory for the tests performed.

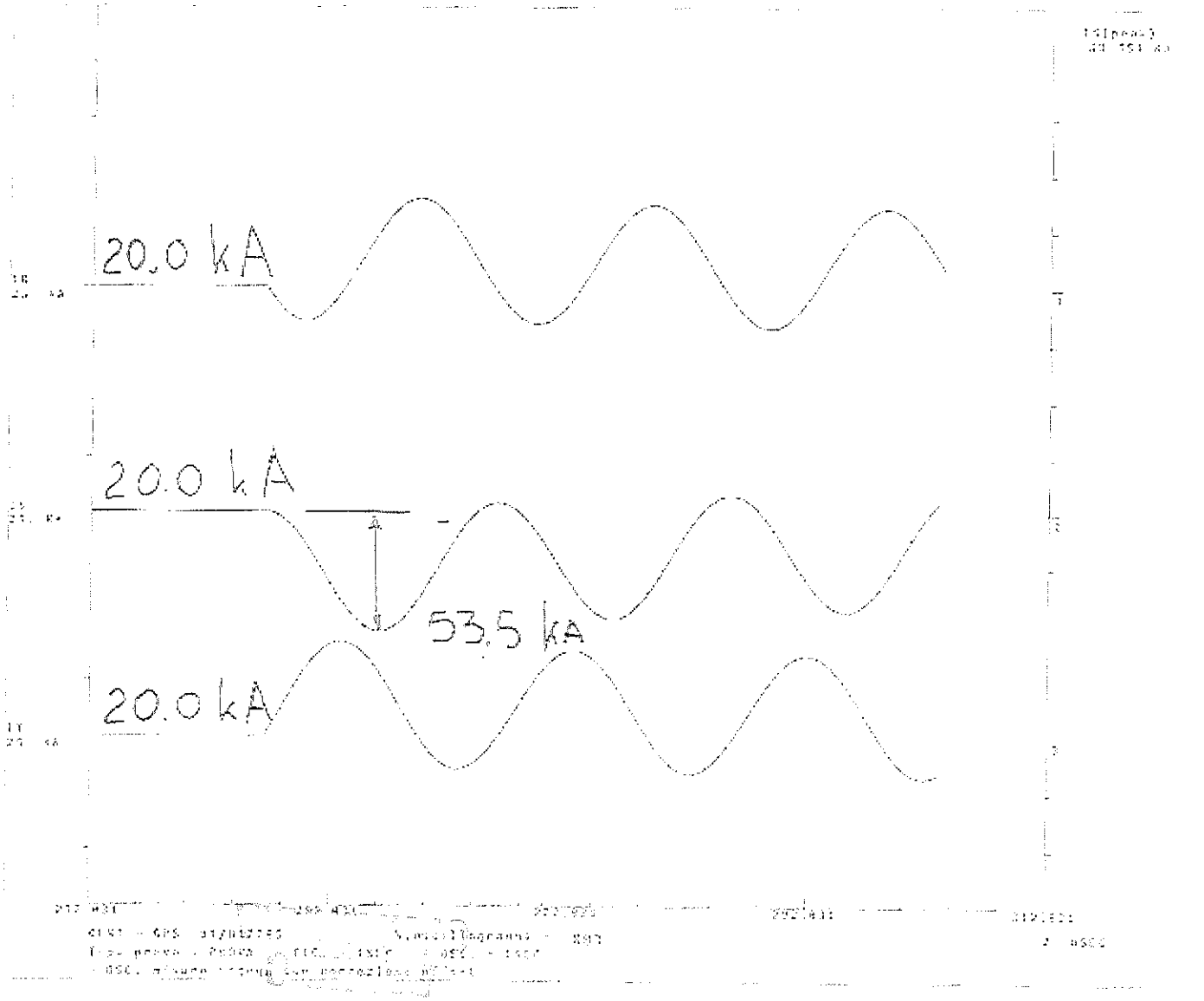
1920

circuit diagram

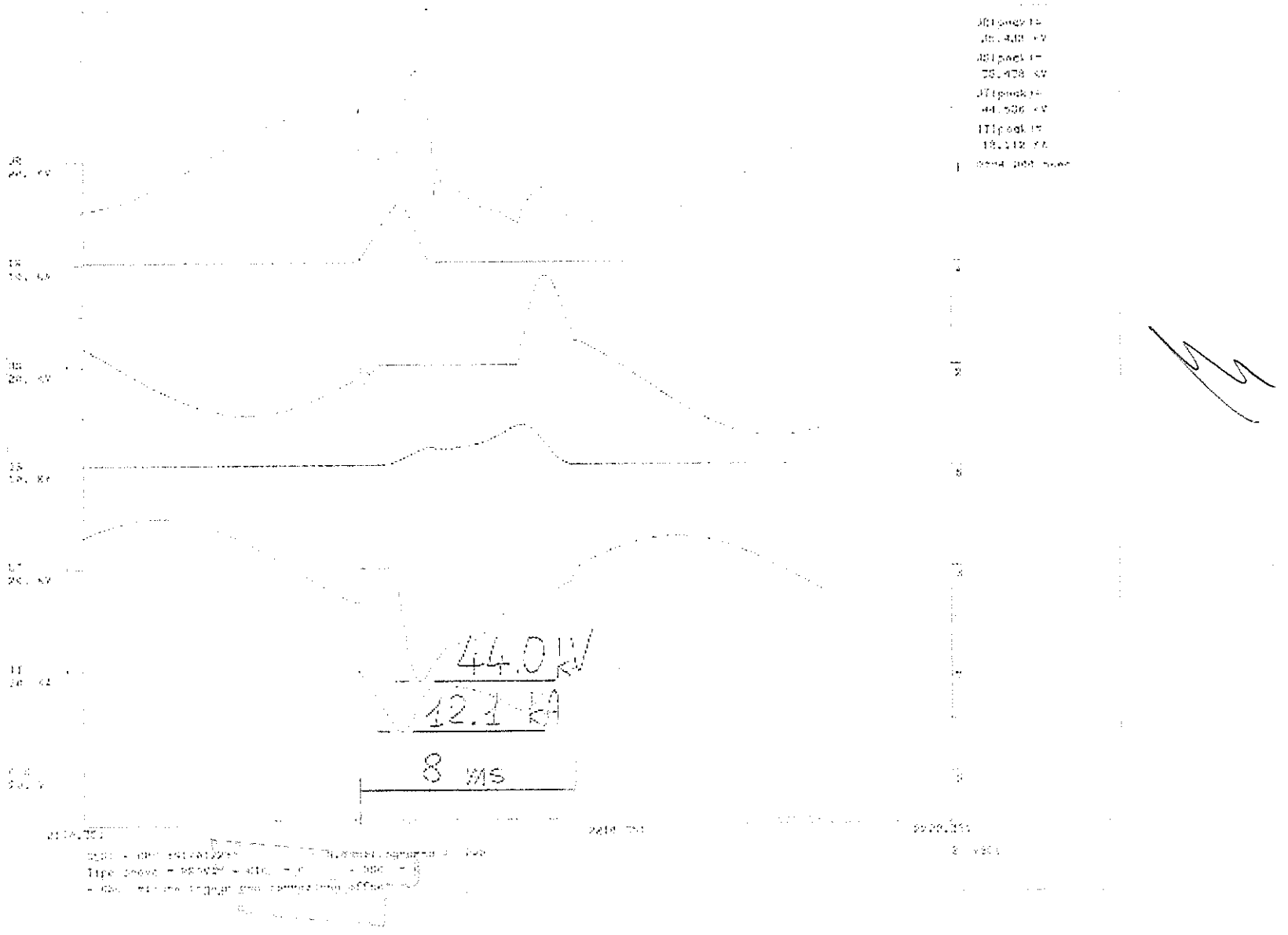


1921




20.0 kA
20.0 kA
53.5 kA
20.0 kA

1324


44.0 kW
12.1 kW
8 m/s

1926

1927

51249281XA

GPS91/15223

1928

CESI **test report** CPS-91/015223

client MERLIN GERIN S.A. - Grenoble (France)

object Three pole metal enclosed air insulated switchgear SM6 system type QM. Fitted with an increased operating frequency SF6 gas insulated switch type 1Q SM6.

characteristics of the tested object assigned by the Client

rated voltage 17.5/24 kV rated current 400 A rated frequency 50 Hz

other characteristics listed on page 2

the tests have been made in accordance with client's instructions based on IEC 420 (1990)

test date June 28th, 1991

the performance of the apparatus tested and the observations made during the tests have been recorded in the table with the test results and oscillograms

this document is composed by 7 pages, 5 oscillograms

Milan, August 27th, 1991 test engineer

F. Lo Monaco

91/012265
Keywords : 220100 23430B 36020L 456707 53001B

rated characteristics of the tested object assigned by the client

voltage	17.5/24	kV
frequency	50	Hz
normal current	200	A
short-circuit making current	50	kA
short-time withstand current	20	kA
short-circuit duration	1	s
gas pressure for interruption	1.4	bar abs

identification of the object offered.

The tested object truly conforms to the drawings of the type supplied by the Client. These drawings identified by CESI with embossing press and numbered GPS- 91/015162 1 to 17 are assembled in a folder.

1930

table of tests performed

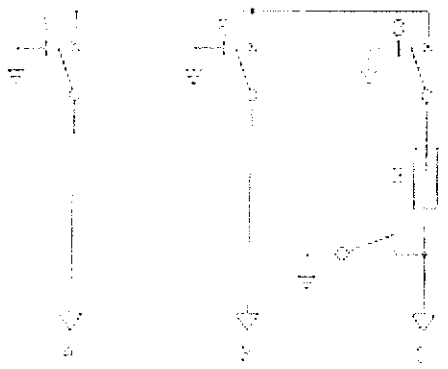
date	type of test	nos page
	THREE PHASE SHORT CIRCUIT MAKING TESTS WITH FUSES	
June 28th 1991	No.3 tests with a prospective current of 53.5 kA (peak) at 24 kV	5

tests witnessed by
Mr. Laurenon - MERLIN GERIN S.A.
Mr. Dubroqua - MERLIN GERIN S.A.

1931

Arrangement of the object for the tests

The tested apparatus was assembled with two other apparatus of SMB system (see photo on page 7).
The figure below shows the electric diagram of the complete setting (single phase diagram of a three phase circuit) :



1 : switch-fuse combination under test

1-2 : auxiliary switches

A-B-C : cables

During the tests the cables B were connected to the supply, the switch 2 was in closed position and the cables C were short-circuited at the bottom. The earthing switch downstream the fuse and the switch 1 were in open position.

The metal enclosure was insulated from earth but connected thereto by a copper wire 0.1 mm in diameter and 30 mm long to indicate any significant leakage current to earth.

1932

three phase short circuit making tests with fuses

test duty with 20 kA at 24.0 kV

test circuit conditions

circuit diagram see page 6 power factor < 0.15 frequency 50 Hz

transient recovery voltage (TRV)

Uc kV	t3 µs	td µs	U1 kV	t1 µs	Uc kV	t2 µs	td µs
42	89						

conditions of the apparatus before the tests: new

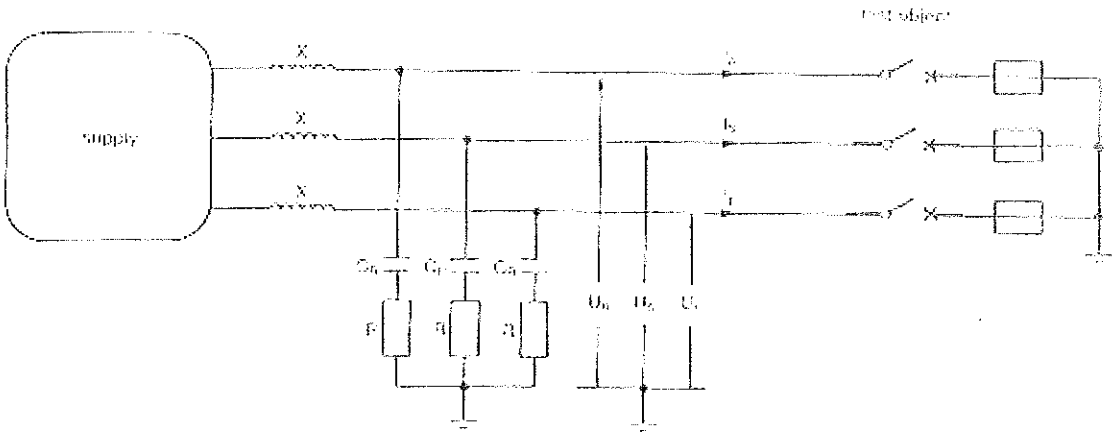
prospective current	symmetrical	kA	20.0	
	peak	kA	53.5	
	oscillogram	no.	803	
test		no.	1	2
oscillograms		no.	290	291
operating duty			C	C
applied voltage (phase value)		kV	13.9 13.9 13.9	13.9 13.9 13.9
recovery voltage (phase value)		kV	13.9 13.9 13.9	13.9 13.9 13.9
phase-to-phase voltage		kV	24.0	24.0
maximum overvoltage		kV	44.0	42.0
breaking current (fuse)	cut-off (max)	kA	12.1	12.2
	phase		T	T
fuse link current rating		A	100	100
striker operation		yes/no	yes	yes
duration of interruption		ms	8	8

conditions of the apparatus after the tests: external parts as before the tests, internal parts not inspected.

note after the tests : the performance of the apparatus is considered satisfactory for the tests performed.

1933

circuit-diagram



This test report is not a certificate of conformity, nor do the results given necessarily confirm the ratings supplied by the manufacturer.
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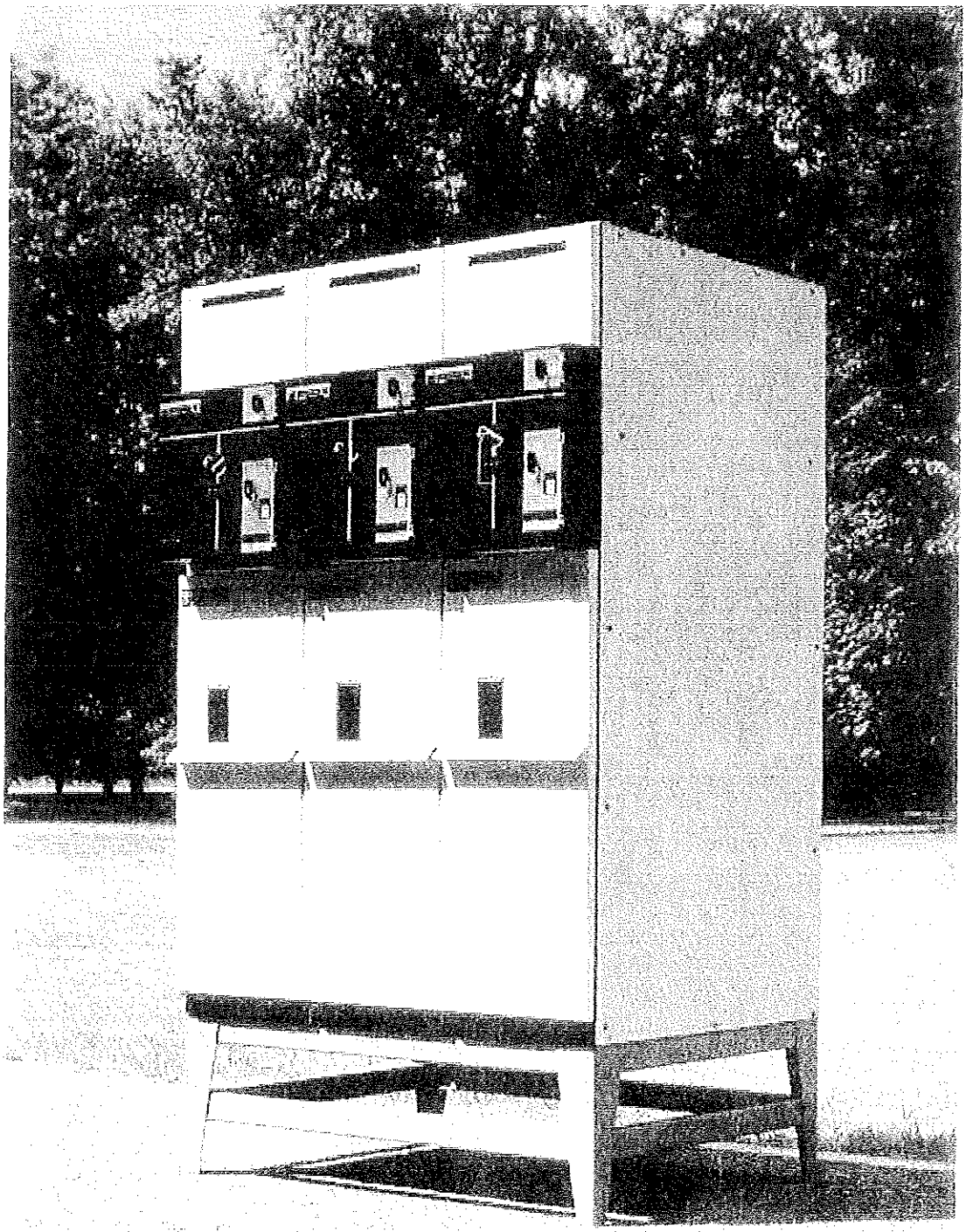
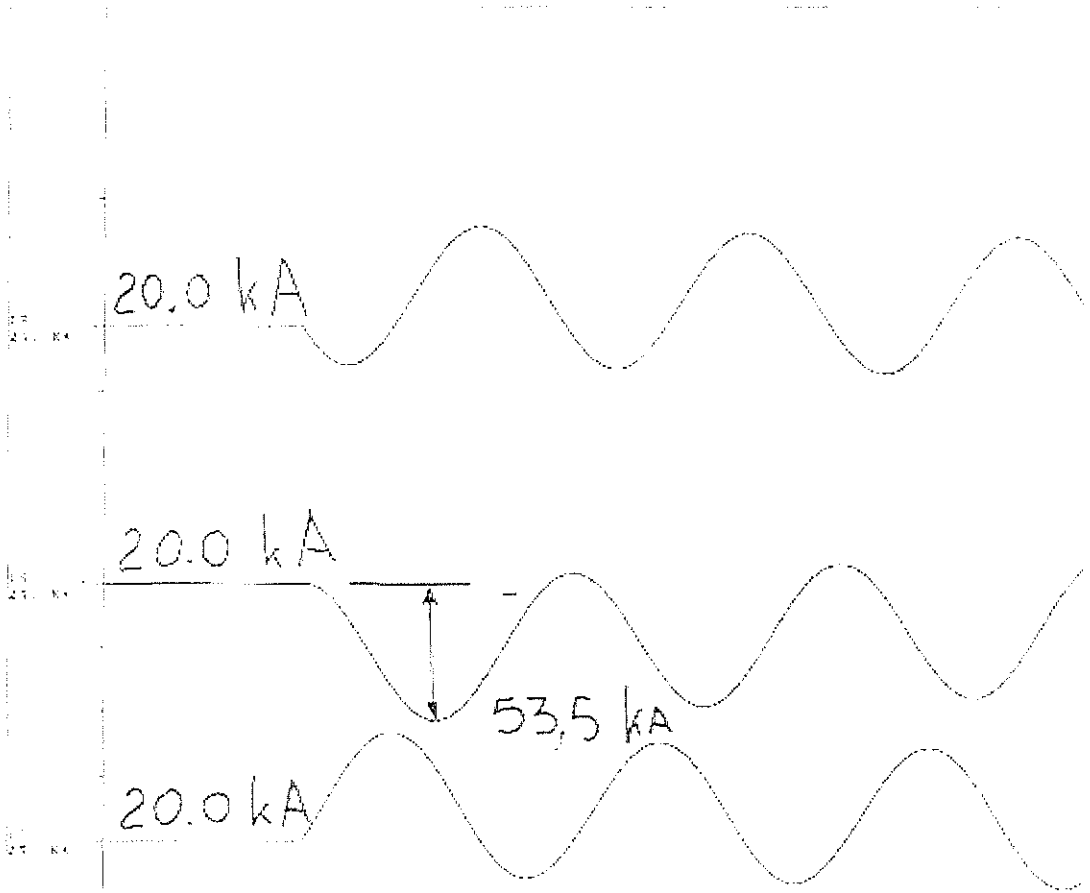
1934



1935



1936

1957

1938

1939

1940

51249283XA

GPS91/15224

1991

CESI

test report

GPS-91/015224

client MERLIN GERIN S.A. - Grenoble (France)

object Three pole metal enclosed air insulated switchgear SM6 system type QM. Fitted with an increased operating frequency SF6 gas insulated switch type IQ SM6.

characteristics of the tested object assigned by the Client

rated voltage 12 kV rated current 200 A rated frequency 50 Hz

other characteristics listed on page 2

the tests have been made in accordance with client's instructions based on IEC 420 (1990)

test date June 28th, 1991

the performance of the apparatus tested and the observations made during the tests have been recorded in the table with the test results and oscillograms

this document is composed by 7 pages, 5 oscillograms

Milan, August 27th, 1991 test engineer

P.Lo Monaco

91/012285
keywords : 120100 234308 360206 450707 530010

1942

rated characteristics of the tested object assigned by the client

voltage	12	kV
frequency	50	Hz
normal current	200	A
short-circuit making current	50	kA
short-time withstand current	20	kA
short-circuit duration	1	s
gas pressure for interruption	1.4	bar abs

identification of the object affected.

The tested object truly conforms to the drawings of its type supplied by the Client. These drawings identified by CESI with embossing press and numbered GPS- 91/015162 1 to 13 are assembled in a folder.

1943

table of tests performed

date	type of test	see page
	THREE PHASE SHORT CIRCUIT MAKING TESTS WITH FUSES	
June 28th 1991	No.3 tests with a prospective current of 65 kA (peak) at 12 kV	5

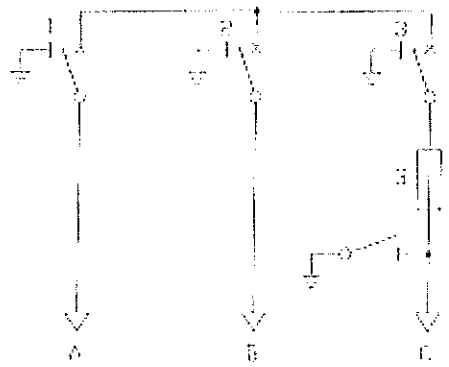
tests witnessed by

Mr. Laurens - MERLIN GERIN S.A.
Mr. Imbroqua - MERLIN GERIN S.A.

1944

arrangement of the object for the tests

The tested apparatus was assembled with two other apparatus of SM6 system (see photo on page 7).
The figure below shows the electric diagram of the complete setting (single phase diagram of a three phase circuit) :



3 : switch-fuse combination under test

1-2 : auxiliary switches

A-B-C : cables

During the tests the cables B were connected to the supply, the switch 2 was in closed position and the cables C were short-circuited at the bottom. The earthing switch downstream the fuse and the switch 1 were in open position.

The metal enclosure was insulated from earth but connected thereto by a copper wire 0.1 mm in diameter and 30 mm long to indicate any significant leakage current to earth.

1945

three phase short circuit making tests with fuses

test duty with 25 kA at 12.0 kV

test circuit conditions

circuit diagram see page 6 power factor < 0.15 Frequency 50 Hz

transient recovery voltage (TRV)	Uc kV	t3 µs	td µs	U1 kV	t1 µs	Uc kV	t2 µs	td µs
	22	60						

conditions of the apparatus before the tests: new

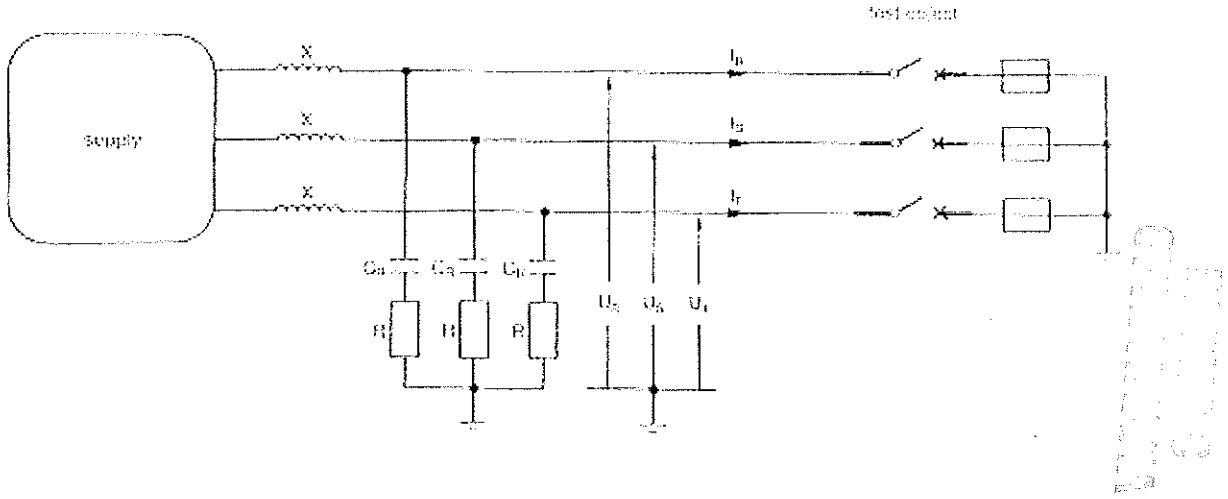
prospective current	symmetrical	kA	25.0	
	peak	kA	65.0	
	oscillogram	no.	602	
test		no.	1	2
oscillograms		no.	288	289
operating duty			C	C
applied voltage (phase value)		kV	6.90 6.90 6.90	6.90 6.90 6.90
recovery voltage (phase value)		kV	6.90 6.90 6.90	6.90 6.90 6.90
phase-to-phase voltage		kV	12.0	12.0
maximum overvoltage		kV	23.0	21.0
breaking current (fuse)	cut-off (max)	kA	19.0	18.8
	phase		T	T
fuse link current rating		A	200	200
striker operation		yes/no	yes	yes
duration of interruption		ms	6	7

conditions of the apparatus after the tests: external parts as before the tests, internal parts not inspected.

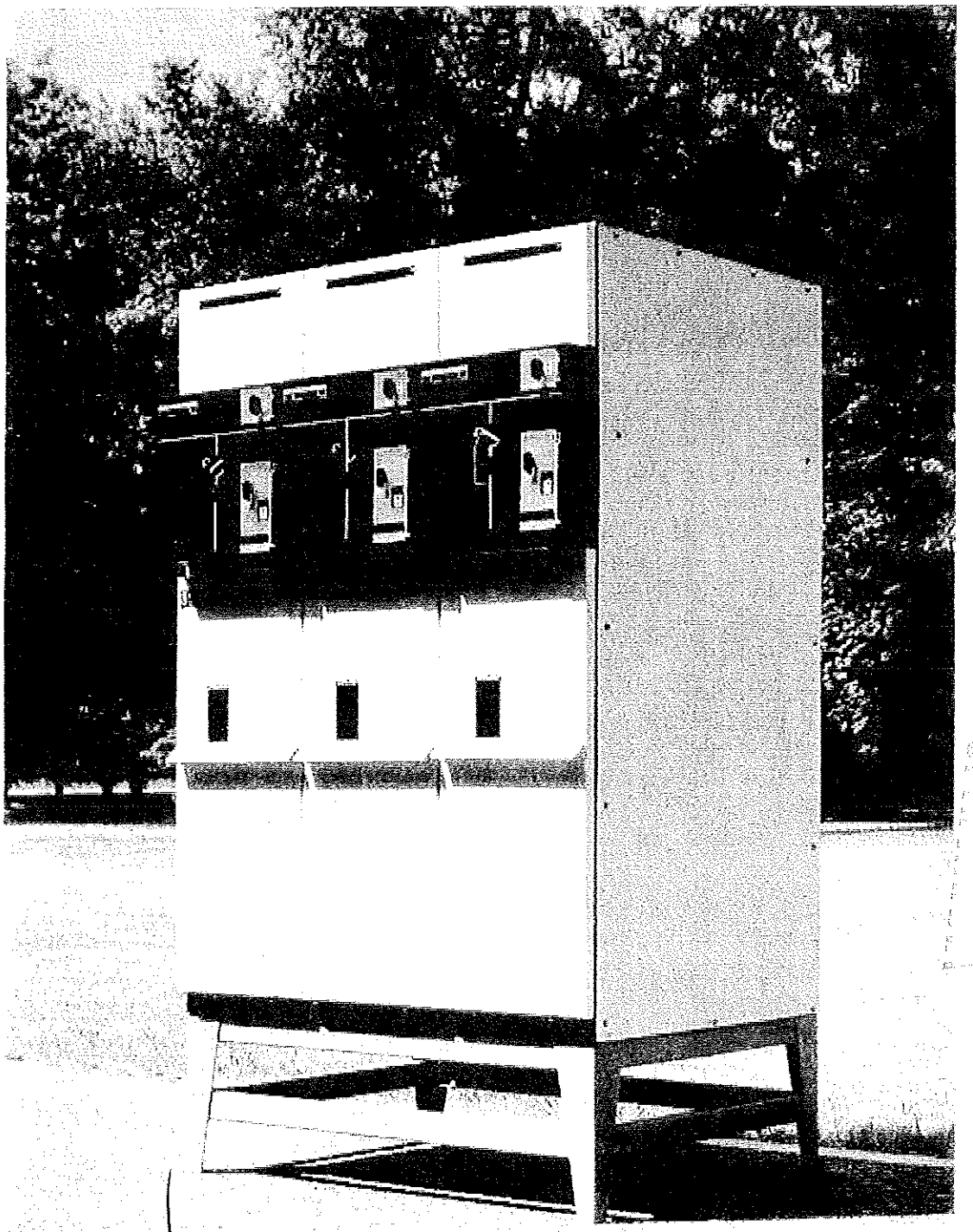
note after the tests : the performance of the apparatus is considered satisfactory for the tests performed.

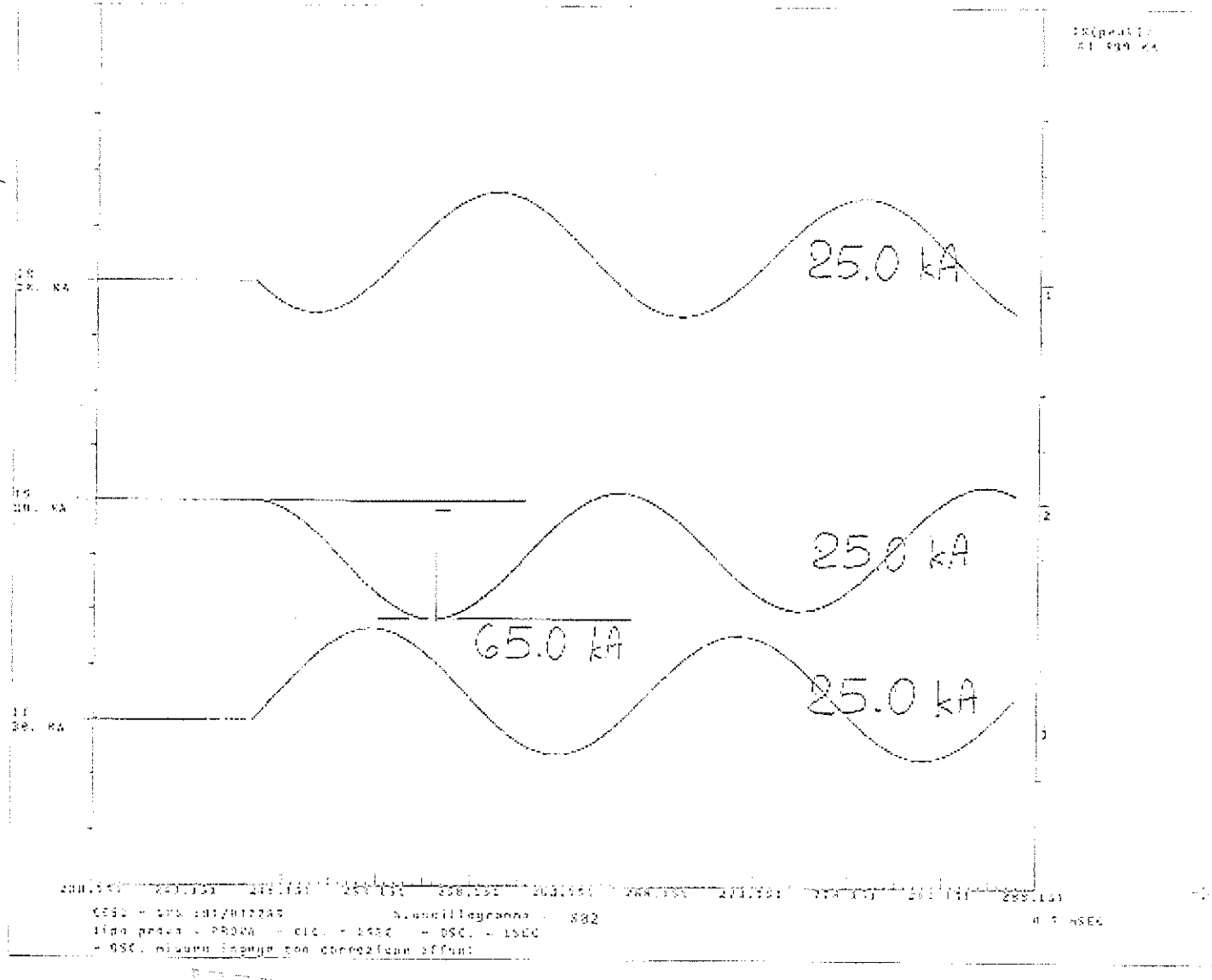
1946

circuit-diagram

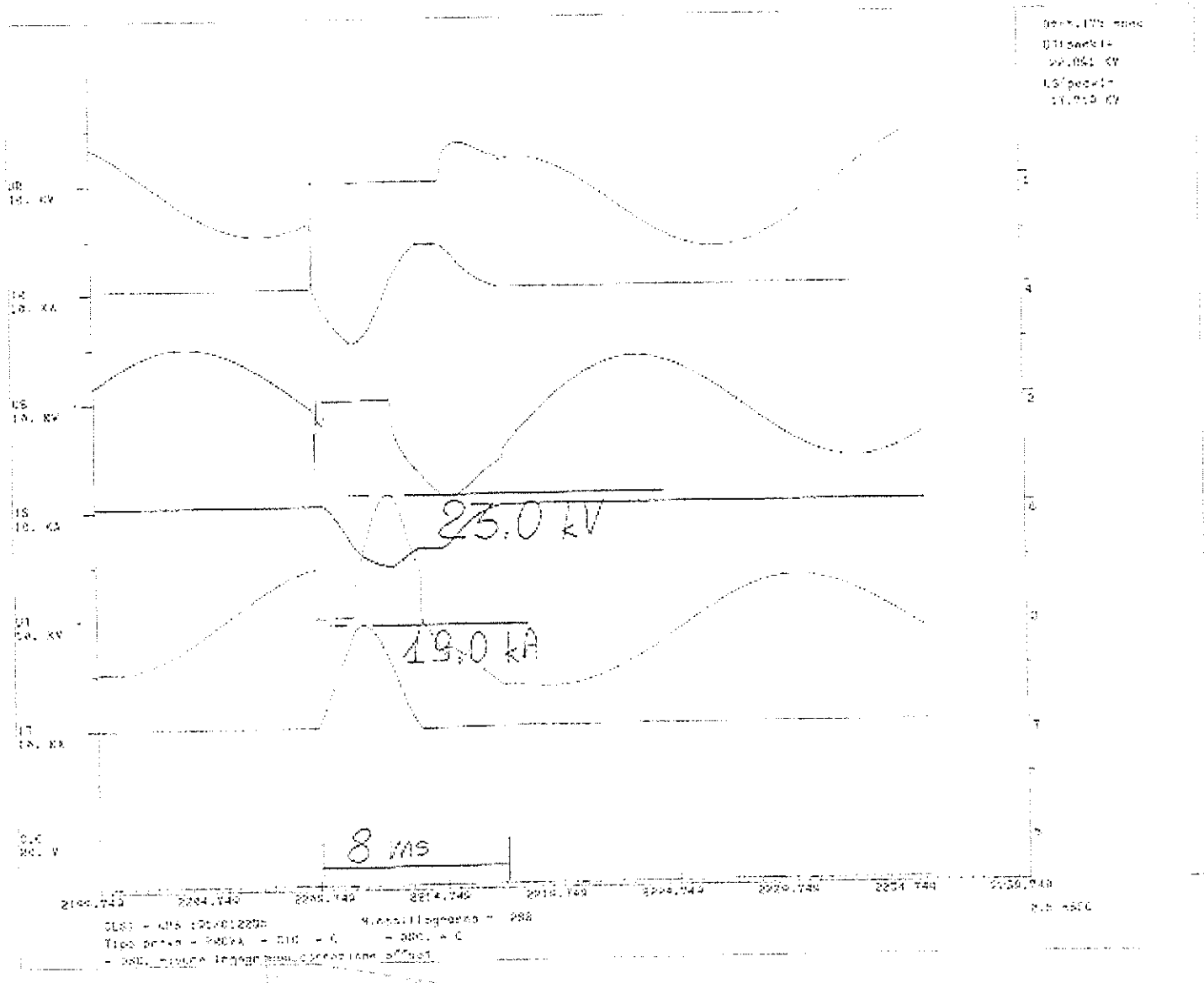


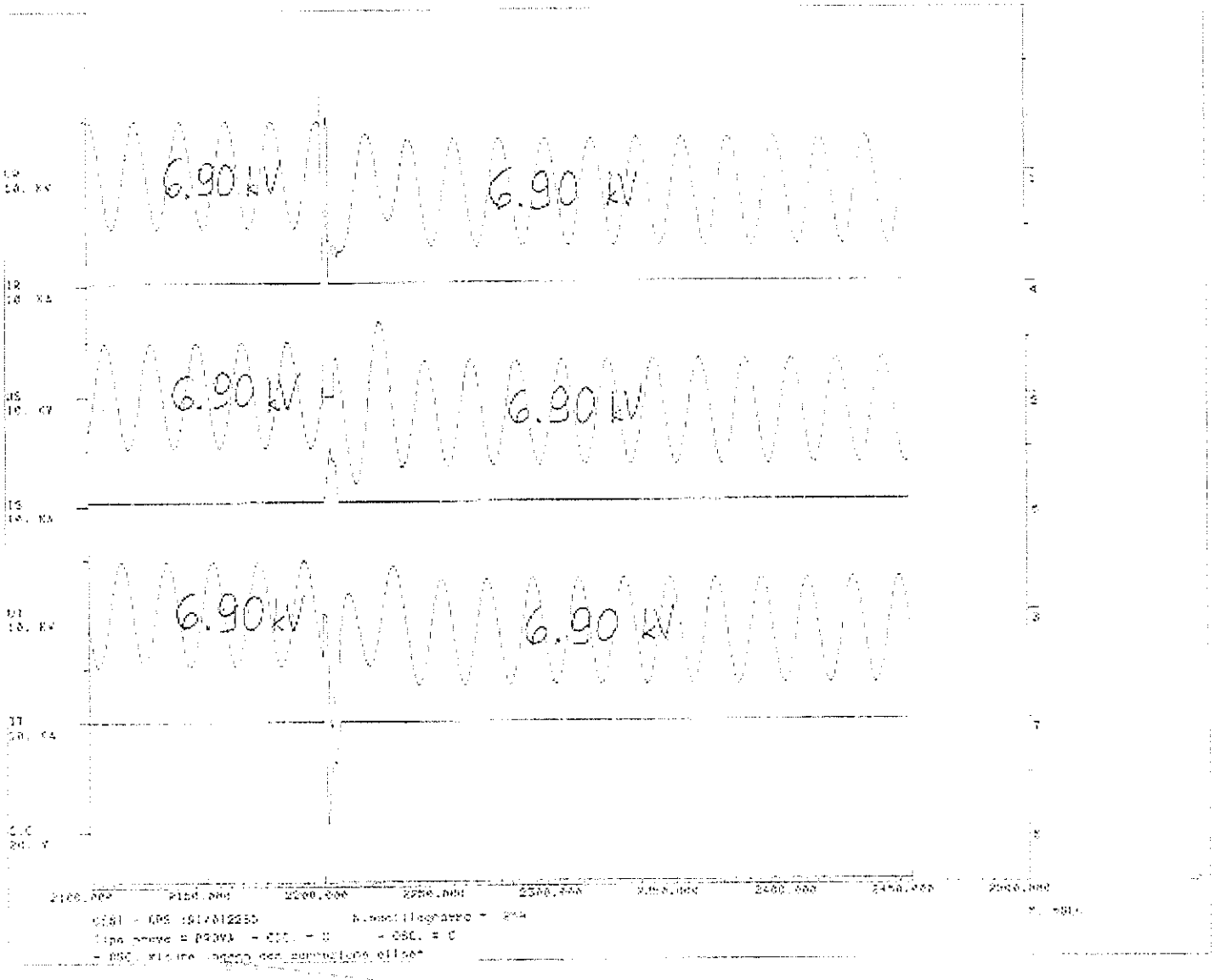
1997



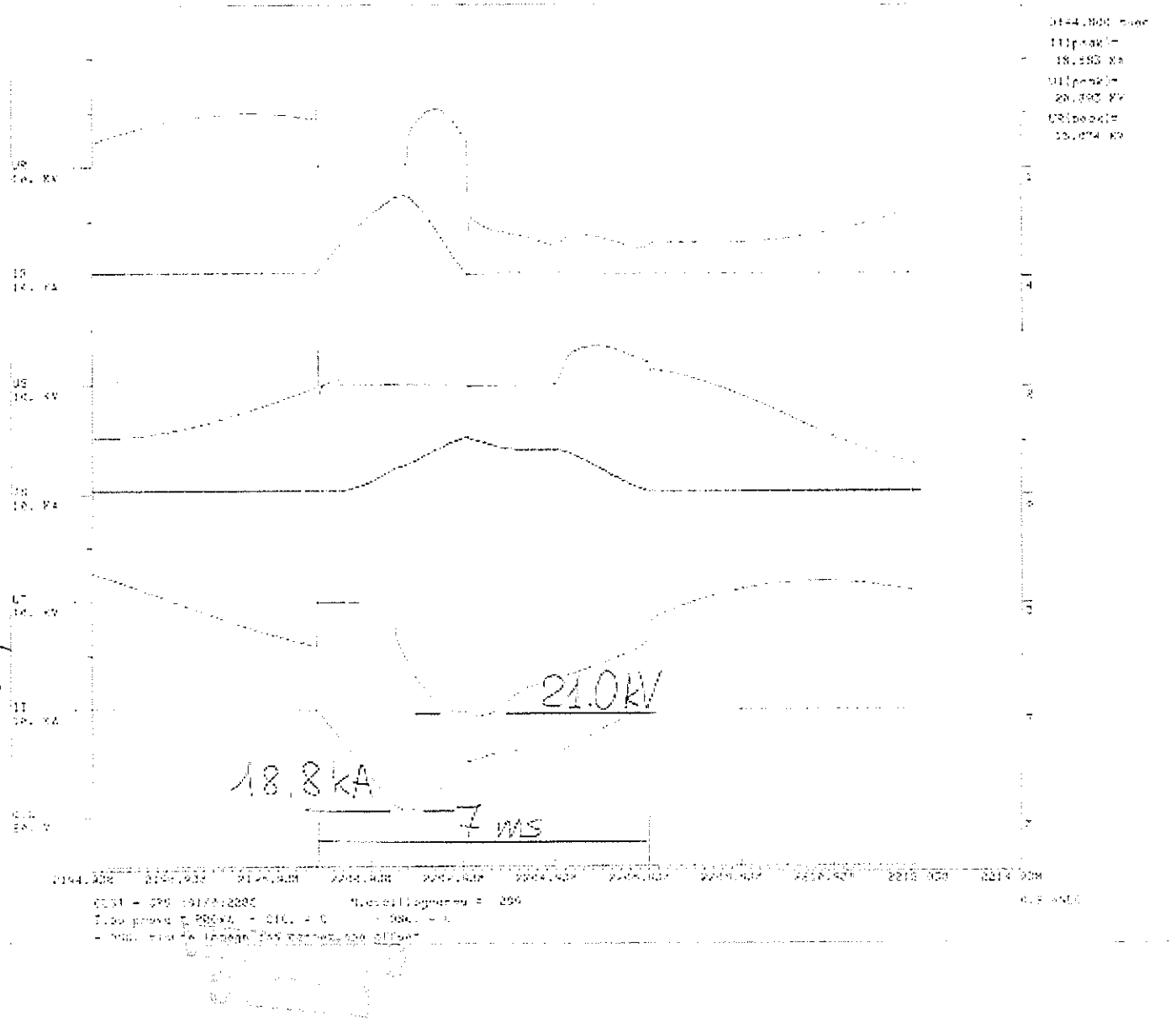

25.0 kA
25.0 kA
65.0 kA
25.0 kA

1950


25.0 kV
19.0 kA
8 ms



1952


21.0kV
18.8kA
7 ms

L.E.M.T.

TEST REPORT n°51249432EA

Apparatus : A.C. metal-enclosed switchgear and controlgear

Designation : MERLIN GERIN SM6 type IMC
Rated voltage : 24 kV Rated current : 630 A

Manufacturer : Schneider Electric Industries SA - Rueil-Malmaison - FRANCE

Object : Dielectric tests
- Lightning impulse voltage tests
- Power-frequency voltage tests

Tested for : Schneider Electric Industries SA

Date(s) of tests : 6, 8, 9 March 2000

These tests were carried out in accordance with : Customer request based on IEC 60298 (1990)
IEC 60694 (1996)

The performance of the apparatus tested and the results obtained are shown in the tables, oscillograms and photographs enclosed.
This document relate only to the items presented for testing.

The documents forming part of this test report are :

Varces, 4 April 2000

Technical manager	Testing laboratory manager
L. MANNONE	R. ANTOINE

1954

APPARATUS RATINGS

Manufacturer		:	Schneider Electric Industries SA
Designation		:	MERLIN GERIN SM6 type IMC 2 CT
Number of poles		:	3
Voltage	kV	:	24
Lightning impulse withstand voltage	kV	:	125
Power frequency withstand voltage	kV	:	50
Frequency	Hz	:	50 / 60
Normal current	A	:	630
Short time withstand current	kA	:	16 s : 1
Peak withstand current	kÂ	:	40
Short circuit breaking current	kA	:	16
Short circuit making current	kÂ	:	40
Interrupting medium		:	SF_6
Relative pressure at 20°C	bar(s)	:	0.4
Degree of protection		:	IP2XC
Drawing n°		:	3731372 ind. R

The metal-enclosed switchgear and controlgear is fitted out with :

- 2 CT ARM 2 / N2F Nuova Magrini Galliléo
  - ph 1 (n° 9843510)
  - ph 3 (n° 9843513)

1955

TEST RECORDS

Test type	Page
Lightning impulse voltage tests	6
Power-frequency voltage tests (50Hz)	7

Manufacturer's representative : J. GUADAGNINO DI-PMT / 38V

Test manager : J. GALAN L.E.M.T / 38V

1956

TEST CONDITIONS

Condition before tests

- Relative test pressure at 20 °C : 0.4 bar
- The power supply is carried out with 1 cable 240 mm² Alu per phase

Ambient air conditions during the tests

Date		03/06/00	03/08/00	03/09/00
Pressure	MmHg	750	753	748
Dry temperature	°C	20.0	18.0	20.0
Correction factor	K	0.9868	0.9976	0.9842

For a test, the test voltage is equal to the specified voltage multiplied by K.

Mesuring uncertainty

Mesuring uncertainty	Date					
	03/06/00		03/08/00		03/09/00	
$U_0 = k \times U_{service}$	ΔU_0 (kV)	%	ΔU_0 (kV)	%	ΔU_0 (kV)	%
Lightning impulse	2.1	1.7	2.1	1.7	2.1	1.7
Power-frequency	1.1	2.1	1.1	2.1	1.1	2.1

1957

TEST CONDITIONS

Tests and measurements facilities

- Lightning impulse :

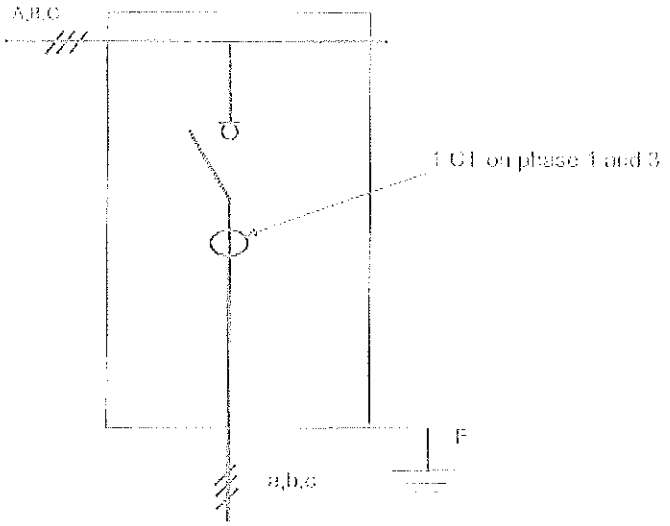
	Platform B
Haefely generateur 400kV, coupling 200kV 4kJ	DGE4
Haefely damped capacitive divider 400kV 2nF	DDC2
Haefely peak voltmeter 64M	DVO5
Oscilloscope Tektronix 2235	DOS2
390 AD programmable digitizer Tektronix	DAN1

- Power frequency :

Transformer American Test System 150kV - 0,4A	DGE5
Resistive divider American Test System 10 MΩ - 2,4kΩ	DGE5
Voltmeter American Test System 600	DPU2

1958

RESULTS OF THE LIGHTNING IMPULSE VOLTAGE TESTS



Test voltage (kV) : 125 x K

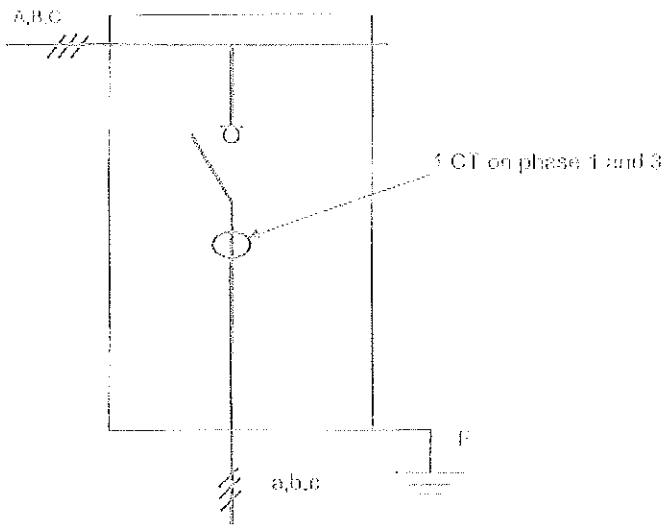
Wave shape (µs) : 1.2 / 50 µs

Fifteen consecutive lightning impulses at the rated withstand voltage are applied for each test condition and each polarity, preceded of 2 conditioning shocks to 80 % and 100 % of the test voltage.

Test n°	Switching device	Voltage applied to	Earth connected to	Disruptive discharge	
				polarity +	polarity -
1	Closed	aA	bcBCF	0	0
2	Closed	bB	acACF	0	0
3	Closed	cC	abABF	0	0
4	Open	A	BCabcF	0	0
5	Open	B	ACabcF	0	0
6	Open	C	ABabcF	0	0
7	Open	a	bcABCF	0	0
8	Open	b	acABCF	0	0
9	Open	c	abABCF	0	0

1959

RESULTS OF THE POWER FREQUENCY VOLTAGE TESTS



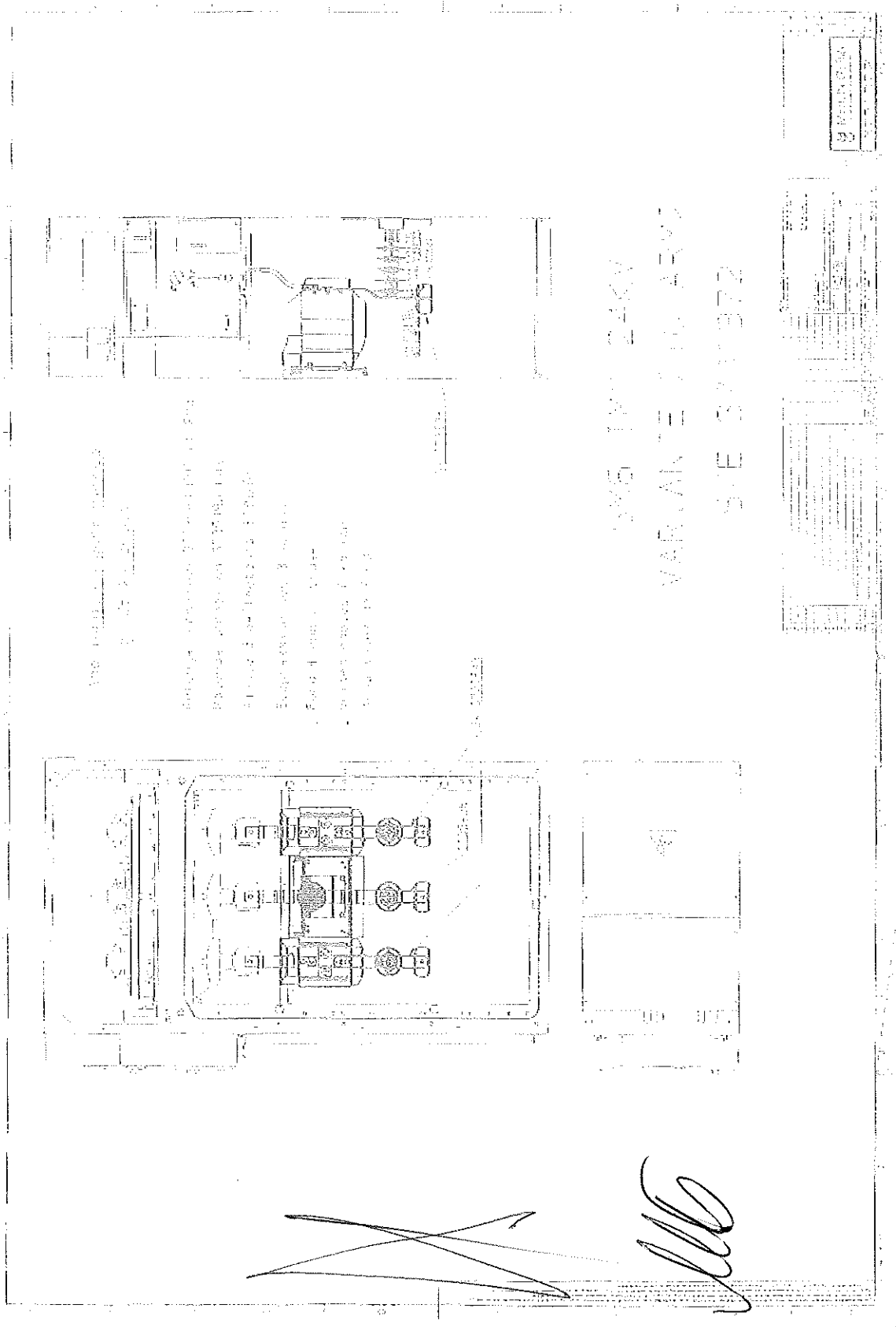
Test voltage (kV) : 50 x K

The test voltage is raised for each test condition to the rated withstand voltage and is maintained for one minute.

Test n°	Switching device	Voltage applied to	Earth connected to	Disruptive discharge
1	Closed	aA	bcBCF	0
2	Closed	bB	acACF	0
3	Closed	cC	abADF	0
4	Open	A	BCabcF	0
5	Open	B	ACabcF	0
6	Open	C	ABabcF	0
7	Open	a	bcABCF	0
8	Open	b	acABCF	0
9	Open	c	abABCF	0

1960

DRAWING



centre d'essais
station d'essais à grande puissance
38950 Grenoble cedex 9 France

COFRAC ESSAIS

51249695XB

TEST REPORT No. AC 2499 b

Apparatus : *Metal-enclosed switchgear*

Designation : *MERLIN GERIN SM6 type IM*

Rated voltage 12 kV - Rated normal current 630 A - Rated frequency 50/60 Hz

Manufacturer : *SCHNEIDER ELECTRIC - Boulogne Billancourt - FRANCE*

Object : *Tests of the short-circuit making capacity of switch and earthing switch rated at 25 kA - 62.5 kA peak - 12 kV*

Tested for : *SCHNEIDER ELECTRIC*

Date(s) of tests : *19/09/1998*

These tests were carried out in accordance with : On standards IEC 60298 (1996) and CEI 129 (1984) § 6.101

The performance of the apparatus tested and the results obtained are shown in the tables, oscillograms and photographs enclosed.

The responsibility for conformity of any apparatus having the same designation with that tested rests with the Manufacturer.

The documents forming part of this report are :

Ratings of the apparatus	3 page(s)
Record of proving tests	1 page(s)
Conditions of proving tests	2 page(s)
Test result tables	4 page(s)
Photographs	0 page(s)
Oscillograms	10 page(s)
Drawings of the apparatus	1 page(s)
The test report comprises	22 pages

This record of proving test shall only be reproduced in the form of a complete photographic fac simile.

The accreditation by the COFRAC Testing section attests only of the laboratory technical competence in tests covered by the accreditation. The french version is legally acceptable.

Grenoble 01/06/1999

Test Manager

P. JACQUET

Technical Manager

D. FERNANDEZ

1962

RATINGS OF THE METAL-ENCLOSED SWITCHGEAR ACCORDING TO IEC 298

Manufacturer	: SCHNEIDER ELECTRIC
Designation	: MERLIN GERIN SM6 type IM
Number of phases	: 3
Voltage	kV : 12
Power frequency withstand voltage (1 min)	
- to earth and between poles	kV : 28
- accross the isolating distance	kV : 32
Lightning impulse withstand voltage	
- to earth and between poles	kV peak : 75
- accross the isolating distance	kV peak : 85
Frequency	Hz : 50/60
Normal current	A : 630
Peak withstand current	kA : 62.5
Short-time withstand current (duration)	
- main circuit	kA : 25 (1 s)
- earthing switch	kA : 25 (1 s)
- earth bar	kA : 25 (1 s)
Arcing withstand due to an internal fault	kA : /
- duration	s : /
- type of accessibility (A or B)	: /
Degree of protection	: IP2XC
Dimensions (H x W x D)	mm : /
Weight	kg : /
Drawing(s) No	: 3 730 457 - D page 1/17
Metal-enclosed switchgear equipped with	- 1 switch - earthing switch

1963

RATINGS OF THE HV SWITCH

ACCORDING TO IEC 265

Manufacturer	:	SCHNEIDER ELECTRIC
Designation		MERLIN GERIN SM6
Increased operating frequency switch		☒
	other :	
Installation	indoor :	☒
	outdoor	
Interrupting medium	gas SF6	☒
	other	
Absolute pressure at 20 °C	bar	0.4
Number of poles	:	3
Voltage	kV	12
Power frequency withstand voltage (1 min)	kV :	28
Lightning impulse withstand voltage	kV peak	75
Frequency	Hz :	50/60
Normal current	A :	630
Peak withstand current	kA	62.5
Short-time withstand current	kA	25
- duration	s	1
Breaking capacity		
- mainly active load	A	630
- no-load transformer	A :	16
- closed loop	A :	630
cable-charging	A :	31.5
- line-charging	A :	?
- earth-fault	A :	95
- cable-charging under earth-fault conditions	A :	55
Short-circuit making current	kA peak	62.5
Number of operations with mainly active load		120
Mechanical endurance	operating cycles :	1000
Operating temperature	minimum °C :	-15
	maximum °C :	+55
Degree of protection		IP2XC
Drawing(s) No		3 730 457 - 0 page 1/17

1964

centre d'essais
station d'essais à grande puissance
[illegible]

RATINGS OF THE EARTHING SWITCH

ACCORDING TO IEC 129

Manufacturer				SCHNEIDER ELECTRIC
Designation				MERLIN GERIN SM6
Installation			indoor outdoor	☒ ☐
Method of closing			manual electrical	☒ ☐
Method of opening			manual electrical	☒ ☐
Number of poles				3
Voltage			kV	12
Power frequency withstand voltage				
- to earth and between poles		1 min	kV	28
		1 min wet	kV	/
Lightning impulse withstand voltage				
- to earth and between poles			kV peak	75
Switching impulse withstand voltage				
- class for U = 300 kV (A or B)				/
- to earth			kV peak	/
Frequency			Hz	50/60
Peak withstand current			kA	62.5
Short-time withstand current			kA	25
- duration			s	1
Short circuit making current			kA peak	62.5
Supply voltage	- control motor		Vac	/
	- closing mechanism		Vac	/
	- opening mechanism		Vac	/
Operating mechanism supply pressure			bar gauge	/
Contact zone			m	1 = / 5 = / 10 = /
Mechanical terminal load	straight load		N	/
	- cross-load		N	/
Control mechanism type				CI2
Drawing(s) No.				/

1965

RECORD OF PROVING TESTS

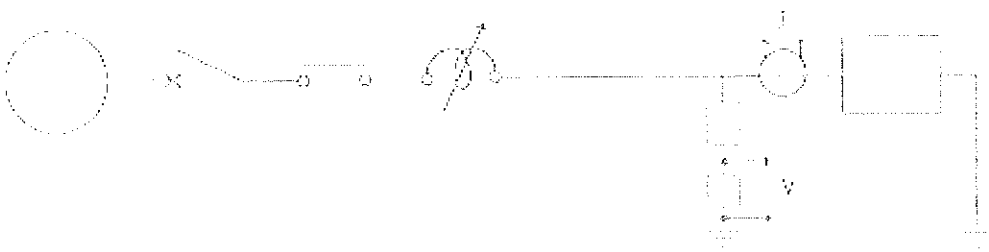
Apparatus No : 1

Test type and test-duty	Page
- 5 short-circuit making tests of earthing switch at : 25.2/26.0 kA - 65.4/62.9 kA peak - 12.1/12.2 kV	8 - 9
- 5 short-circuit making tests of switch at 25.7/25.9 kA - 65.0/6[illegible].1 kA peak - 12.1/12.2 kV	10 - 11

Manufacturer : SCHNEIDER ELECTRIC
Representative(s) : M. MESTRALLET

1966

TEST CIRCUIT



CONDITIONS OF PROVING TESTS

- Supply by cables 150 mm²
- The apparatus is equipped with control device (130 Vca)

1967

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station d'essais à grande puissance
F - 38240 Meylan cedex

No. AC 2493 b

page 7

UNCERTAINTIES OF MEASURING CHAINS

Type of measurement	Range	Type of indication	Total uncertainty (2σ - %)	Remarks
Current by coaxial shunt	0 - 5 A	Peak or r.m.s. value	1.2	
Current by coaxial shunt	0 - 5 A	Peak value	3.7	
Current from probe	> 5 A	Peak or r.m.s. value	3.5	
Current from probe	> 5 A	Peak value	4.7	
Current from probe (LEM) with galvanic insulation	0 - 60 A	Peak or r.m.s. value	4	
Current from probe	> 100 A	Peak or r.m.s. value	3.2	
Current from probe	> 100 A	r.m.s. value (peak to peak < 2 √2)	4.7	■■
Current from probe	> 100 A	Peak value	5.0	■■
Current from probe	> 100 A	Low frequency	3.5	
Current from probe	> 100 A	Overshoot coverage (pause 1/2 peak / 10)	3.3	
Power (pc)	> 100 A	Peak value	4.7	
Voltage from CD or MCD	< 1000 V	Instantaneous value	1.2	
Voltage from CD or MCD	< 1000 V	r.m.s. value (peak to peak < √2)	1.4	
Voltage from CD or MCD	< 1000 V	Peak value	1.5	
Voltage from CD or MCD	> 1000 V and < 10 kV	Instantaneous value	< 20 kHz > 20 kHz	2. 3.4
Voltage from CD or MCD	> 1000 V and < 10 kV	r.m.s. value peak to peak < √2	< 20 kHz > 20 kHz	2.2 2.9
Voltage from CD or MCD	> 1000 V and < 10 kV	Peak value	< 20 kHz > 20 kHz	3.6 3.9
Voltage from CD or MCD	> 10 kV	Instantaneous value	< 20 kHz > 20 kHz	4.1 3.08
Voltage from CD or MCD	> 10 kV	r.m.s. value (pause 1/2 peak / √2)	< 20 kHz > 20 kHz	1.93 3.07
Voltage from CD or MCD	> 10 kV	Peak value	< 20 kHz > 20 kHz	1.55 3.05
Low voltage from CD or MCD	< 1000 V	Peak value		1.53
Low energy measured from CD or MCD	U ≥ 10 kV I measured with CME > 100 A	Instantaneous value		2.83
Pressure	0.5 to 1 bar 1 to 2 bars 2 to 5 bars 5 to 10 bars	Peak value		4.5 2.5 1.0 0.75
Time	10 to 200 ms			3
Time	200 ms to 1 s			5 ms

CD : capacitive divider MCD : mixed capacitive divider

1968

station d'essais à grande puissance

RESULTS OF THE SHORT-CIRCUIT MAKING TESTS

Apparatus under test : Earthing switch of the outside NMR type AM

Operating conditions of the apparatus : See page 5

Test conditions : See pages 6 and 7

Apparatus condition before tests : new
: having performed the previous tests

		No.						
Operating voltage								
Applied voltage								
Peak current	I'	kA						
	I2	kA						
	I3	kA						
Making current	I'	kA						
	I2	kA						
	I3	kA						
	average	kA						
arc	preigniting	ms						
	closing	ms						
	current	ms						
Test								
Remarks								

Apparatus condition after tests : No deterioration was noted.

1969

Station d'essais à grande puissance

No AC 2439 B page 5

RESULTS OF THE SHORT-CIRCUIT MAKING TESTS

Apparatus under test : Earthing switch of the cubicle SM6 type IM

Operating conditions of the apparatus : See page 6

Test conditions : See pages 6 and 7

Apparatus condition before tests : new

having performed the previous tests ☒☒

Test oscillogram		No.	C 2439.90.09.13					
			060		061			
Operating sequence			O	4 min	O	min		O
Applied voltage		kV	12.1		12			
Peak	I	kA	52.3		67.4			
Current	I2	kA	44.3		44.7			
	I3	kA	49.0		52.9			
Making current	I1	kA	23.6		25.5			
	I2	kA	24.1		24.4			
	I3	kA	25.6		25.6			
	average	kA	24.9		25.2			
Times	pre-strike	ms	/		/			
	closing	ms	/		/			
	current	ms	120		121			
Fuses								
Remarks								

Apparatus condition after tests : No deterioration was noted

1970

RESULTS OF THE SHORT-CIRCUIT MAKING TESTS

Apparatus under test : Switch of the cubicle SM6 type IM

Operating conditions of the apparatus : See page 6

Test conditions : See pages 6 and 7

Apparatus condition before tests : - new
- having performed the previous tests

Test number			[illegible] 17-03-93 09.15		
			020	021	022
Oscillogram number			[illegible]	[illegible]	[illegible]
Applied voltage		kV	12.1	12.2	12.2
Peak current	I1	kA	64.5	51.1	[illegible]
	I2	kA	[illegible]	64.7	[illegible]
	I3	kA	46.[illegible]	50.5	[illegible]
Making current	I1	kA	26.0	[illegible]	[illegible]
	I2	kA	25.1	[illegible]	[illegible]
	I3	kA	[illegible]	25.6	[illegible]
	average	kA	25.7	25.9	[illegible]
Time	pre-arcing	ms	[illegible]	[illegible]	[illegible]
	closing	ms	[illegible]	[illegible]	[illegible]
	current	ms	152	151	151
Fuse					
Remarks					

Apparatus condition after tests : No deterioration was noted

1971

RESULTS OF THE SHORT-CIRCUIT MAKING TESTS

Apparatus under test : Switch of the cubicle SM6 type IM

Operating conditions of the apparatus : See page 6

Test conditions : See pages 5 and 7

Apparatus condition before tests : - new
- having performed the previous tests

Oscillograms		No.	C 2469/15.09 to			
			65 kA	*	65 kA	*
Closing operation			°C	3 min	°C	min
Arcing voltage		kV	12 *		12 *	
Peak current	I1	kA	65.7		65.0	
	I2	kA	64.7		63.9	
	I3	kA	52.3		48.6	
Arcing time	t1	ms	25.4		24.9	
	t2	ms	26.0		25.7	
	t3	ms	25.7		25.6	
	Operating time	ms	25.9		26.6	
Timing	Drop-out relay	ms	/		/	
	Closing	ms	*		/	
	Command	ms	1.02		1.07	
Loop						
Remarks						

Apparatus condition after tests : No deterioration was noted.

1972

1973

VOLTA C2499 98/09/15/049

1974

VOLTA C2499 98/09/15/050

1975

VOLTA c2499 98/09/15/051

1976

1977

VOLTA C2499 98/09/15/053

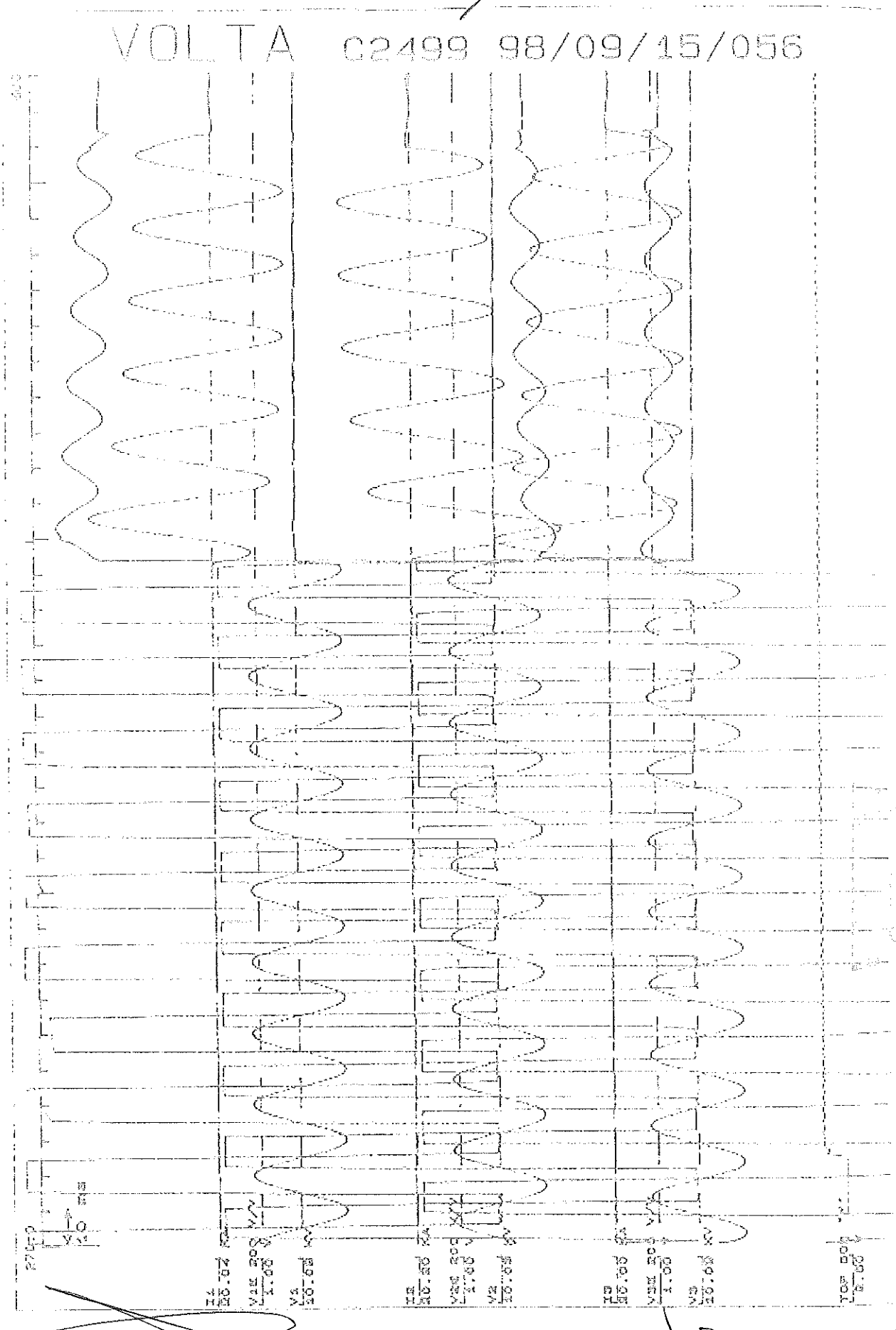
1978

VOLTA C2499 98/09/15/054

1979

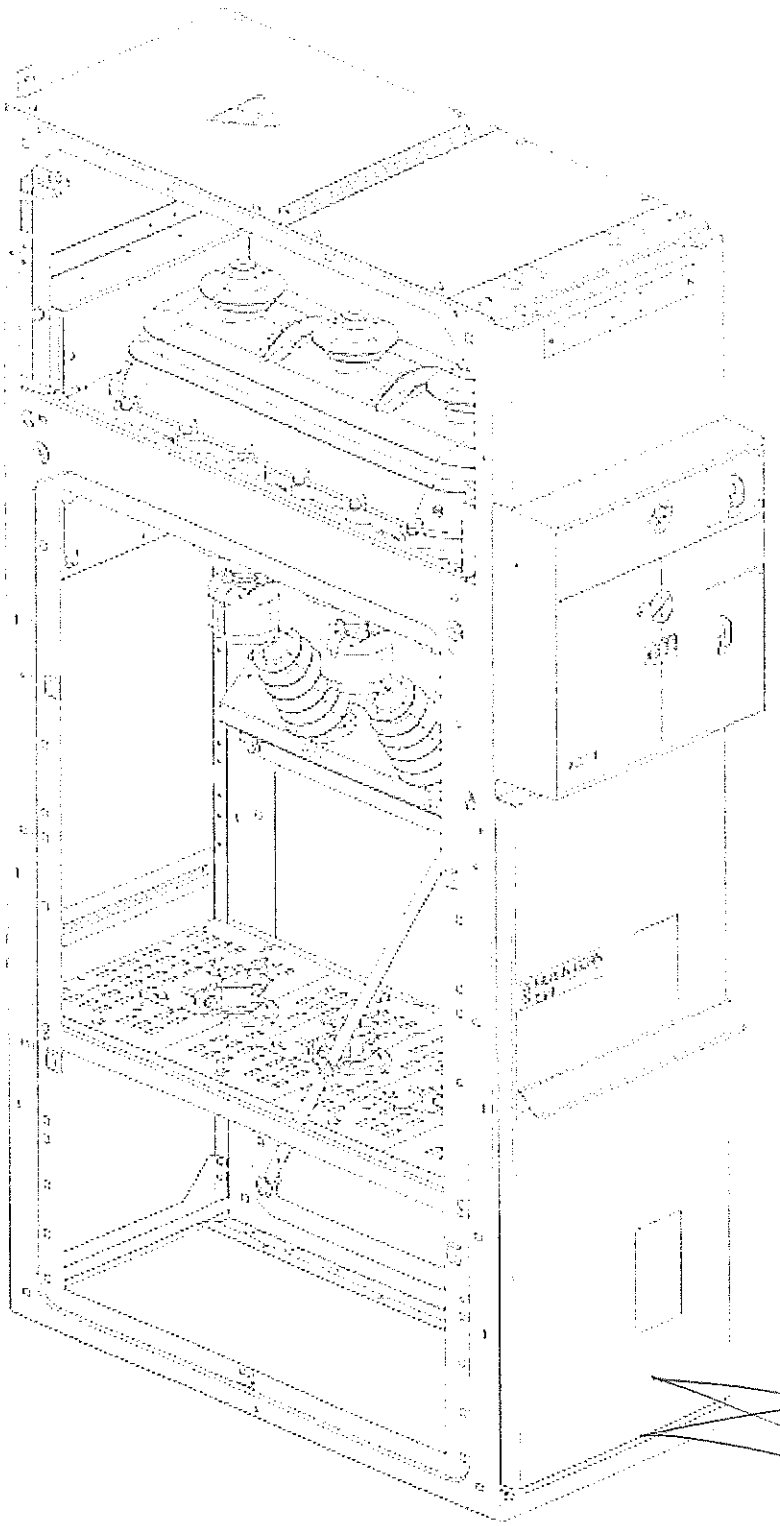
VOLTA C2199 98/09/15/055

1982


VOLTA C2499 98/09/15/056

VOLTA C2499 98/09/15/057

1962



SCIASCIA	SM6	MERLIN GERIN	
ST-IDMT	CELLULE TM		
	CELLULES SM6	3730457	

1983

L.E.M.T.

Laboratoire d'essais moyenne tension
Usine 38V
Z.A.C Champ saint-ange
38760 Varces
tél. : 04 76 39 62.01
fax : 04 76 39 13 01

TEST REPORT n°51252688EA

Apparatus : Metal-enclosed switchgear and controlgear

Designation : MERLIN GERIN SM6 type IM 500
Rated voltage : 24 kV Rated current : 630 A

Manufacturer : Schneider Electric Industries SAS - Rueil-Malmaison - FRANCE

Object : Temperature-rise tests at rated current 630 A

Tested for : Schneider Electric Industries SAS

Date(s) of tests : 01 April 2004

These tests were carried out in accordance with : Customer request based on IEC 62271-200(2003)

The performance of the apparatus tested and the results obtained are shown in the tables, oscillograms and photographs enclosed.
This document relate only to the items presented for testing.

The documents forming part of this test report are :

Varces, 08 April 2004

Technical manager

B. VANDENBERGUE

Testing laboratory manager

JM ANSELMETTI

1984

APPARATUS RATINGS

Manufacturer			:	Schneider Electric Industries SAS
Designation			:	MERLIN GERIN SM6 type IM 500
Number of poles			:	3
Voltage		**kV**	:	24
Lightning impulse withstand voltage		**kV**	:	125
Power frequency withstand voltage		**kV**	:	50
Frequency		**Hz**	:	50 / 60
Normal current		**A**	:	630
Short time withstand current		**kA**	:	20 **s :** 1
Peak withstand current		**kÂ**	:	50
Short circuit breaking current		**kA**	:	20
Short circuit making current		**kÂ**	:	50
Interrupting medium	**Disconnector**		:	SF_6
Relative pressure at 20°C		**bar(s)**	:	0.4
Control mechanism type			:	CIT
Degree of protection			:	IP2XC
Drawing n°			:	3730457 ind. H

1965