SIEMENS

HULL 68.

Inspection and Test Report

PORT WELLER DRY DOCK

'R' CLASS ICE BREAKER.

MAIN SWITCHBOARD.

460 VOLTS & 120 VOLTS.

Customer: CANAL ELECTRIC.

Customer's Order No.

Siemens' Order No. A53-4270

SIEMENS ELECTRIC LIMITED/LIMITEE
7300 Trans Canada Highway/Route Trans-Canadienne
Pointe Claire, Québec H9R 1C7
Tel: (514) 695-7300 Telex: 05-822778

INSPECTION and TEST REPORT

Customer: CANAL ELECTRIC.
'R' CLASS ICE BREAKER.
HULL 68.

Customer Order No.:

Job No.: E59-1921. Order/Serial No.: A53-4270.

Type of Equipment: MAIN SWITCHBOARD.
SECTIONS 1 — 9 ··· 460 VOLTS.
SECTIONS 10 & 11 ··· 120 VOLTS.

Rated Supply Voltage: 460 VOLTS / 120 VOLTS 3PHASE 3WIRE 60Hz

Control Voltage: 120 VOLTS 60Hz.

Other Voltages: 120 VOLTS 60Hz — PREFERENTIAL SUPPLY.

Enclosure Type :

Enclosure: 1 WITH DRIP SHIELD

Color: ASA 61 GRAY.

Inside:

Door: ASA 61 GRAY.

Other: N. A.

Equipment examined according to: C. S. I / LLOYDS.

Layout Drawing No.: (2) G 62013 - N 1012 - V010.

Wiring Diagram No.: (3) G 62013 - N 1012 - S101 TO S111.

Remarks:

THE FOLLOWING CHECKS AND TESTS WERE CARRIED OUT.

(i) COMPONENT CHECK.

(ii) CONTINUITY CHECK - POWER AND CONTROL CIRCUITS.

(iii) FUNCTIONAL TEST - AS PER TEST PLAN ATTACHED.

(iv) CALIBRATION OF THERMAL RELEASES AND SHORT TIME INSTANTANEOUS RELEASE ON GENERATOR BREAKERS.

(v) DIELECTRIC TEST.

(a) MEGGER TEST AT 1000 VOLTS D.C. - IR VALUES ATTACHED.

(b) HI-POT.

Dielectric Tests accd'g. to CSA 22.2 No.31

2200 VOLTS 60 Hz - FOR 1 MINUTE - ON 460 VOLT CIRCUITS.

1500 VOLTS 60Hz - FOR 1 MINUTE - ON 120 VOLT POWER & CONTROL CIRCUITS.

Inspected by: _____ Tested by: N. MURZELLO / R. GEAREY

Date : 6. 10. 81. Date : OCTOBER 6 1981.

Company: : _____

SIEMENS ELECTRIC LIMITED/LIMITEE

C. S. I. MR S COWEN.
LLOYDS MR G HUBBARD
S & S (CANADA) MR ALEX HU.

SHORTAGE REPORT

CUSTOMER : _____

JOB NO : _____

ORDER NO : _____

MCC NO : _____

PROD. SPEC: _____

ITEM	QTY	MATERIAL DESCRIPTION	REMARKS
		TO BE SUBMITTED LATER. w/o Oct 12/81.	

DATE: 6. 10. 81.

SIEMENS

HULL 68.

Inspection and Test Report

PORT WELLER DRY DOCK.

'R' CLASS ICE BREAKER.

EMERGENCY SWITCHBOARD.

460 VOLTS.

Customer: CANAL ELECTRIC

Customer's Order No.

Siemens' Order No. A53-4270.

SIEMENS ELECTRIC LIMITED/LIMITEE
7300 Trans Canada Highway/Route Trans-Canadienne
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INSPECTION and TEST REPORT

Customer CANAL ELECTRIC

'R' CLASS ICE BREAKER

HULL 68 - EMERGENCY SW. BD.

Customer Order No.: _____

Job No.: E59-1921 Order/Serial No.: A53-4270

Type of Equipment: EMERGENCY SW. BD - TYPE 5404.

SECTIONS 1 - 3 --- 460 VOLTS

Rated Supply Voltage: 460 VOLTS, 3 PHASE, 3 WIRE 60 Hz.

Control Voltage: 120 VOLTS 60 Hz.

Other Voltages: 120 VOLTS 60 Hz - PREFERENTIAL SUPPLY.

Enclosure Type : _____

Enclosure: EEMAC 1 WITH DRIP SHIELD.

Color: ASA 61 GRAY.

Inside: _____

Door: ASA 61 GRAY

Other: N. A.

Equipment examined according to: C. S. I / LLOYDS REGULATIONS.

Layout Drawing No.: (3) G 62013 - N1013 - V010 - REV2.

Wiring Diagram No.: (3) G 62013 - N1013 - S121 - S123.

Remarks:

THE FOLLOWING CHECKS AND TESTS WERE CARRIED OUT.

(i) COMPONENT CHECK.

(ii) CONTINUITY CHECK - POWER AND CONTROL CIRCUITS.

(iii) FUNCTIONAL TEST. - AS PER TEST PLAN ATTACHED.

(iv) CALIBRATION OF THERMAL RELEASES AND SHORT TIME INSTANTANEOUS RELEASE ON EMERGENCY GEN. BREAKER.

(v) DIELECTRIC TEST

(a) MEGGER TEST AT 1000 VOLTS D.C — I.R. VALUES ATTACHED.

Dielectric Tests accd'g. to CSA 22.2 No.31

2200 VOLTS 60Hz - FOR 1 MINUTE - ON POWER CIRCUITS.

1500 VOLTS 60Hz - FOR 1 MINUTE - ON CONTROL CIRCUITS

Inspected by: C.S.I / LLOYDS. S+S (CAN) / CANAL ELEC. Tested by: N MURZELLO / R. GEAREY.

Date : 6. 10. 81. Date : OCTOBER 6th 1981

Company: :

SIEMENS ELECTRIC LIMITED/LIMITEE

SHORTAGE REPORT

CUSTOMER : _____

JOB NO : _____

ORDER NO : _____

MCC NO : _____

PROD. SPEC; _____

ITEM	QTY	MATERIAL DESCRIPTION	REMARKS
		TO BE SUBMITTED LATER.	

DATE: 6-10-81.

SIEMENS ELECTRIC LIMITED

BREAKER TEST CERTIFICATE

Panel No. GEN. # 1. MAIN. SW. E

Breaker Type : 3WE 5355 - 2T J06

Volts : 120 VOLTS

Serial No. :

(i) A "(overload) ⌐¬ : Range THERMAL 320 — 1600 AMPS. = I_N

(ii) Short Circuit >: Range 2 --- 8 x I_N

: Time 50 — 500 M.S.

(iii) Rating : 20 KA

A. Overload Test ..... A Set 1180 Amps. = In.

	Observed Time			Specified Time - Secs.
	L1	L2	L3	
In X.15 = 1770A	←	26 secs	→	20 - 30 SECS.

B. Short Circuit Test — Remarks

Set 6 x IN ~~K A~~.

Time 500 M.S. OPERATES IN 530 m.s.

C. Function Test — Satisfactory

D. Dielectric Test — Satisfactory

SIEMENS ELECTRIC LIMITED

BREAKER TEST CERTIFICATE

Panel No. GEN #2 MAIN SW. BD.

Breaker Type : 3WE 53 55 - 2T J06

Volts : 120 VOLTS

Serial No. : .....

(i) A (overload) ⌐¬ : Range THERMAL 320 — 1600 AMPS. = I_N

(ii) Short Circuit ⟩ : Range 2 --- 8 x I_N.

: Time 50 — 500 M.S.

(iii) Rating : 20 KA

A. Overload Test ..... A Set 1180 Amps. = In.

Observed Time			Specified Time - Secs.
L1	L2	L3	
In X 1.5 ⟵ = 1770A	20 secs	⟶	20 — 30 SECS.

B. Short Circuit Test — Remarks

Set ....6. x IN..... KA. = 7080 A

Time .....500..... M.S. OPERATES IN 580 m.s.

C. Function Test — Satisfactory

D. Dielectric Test — Satisfactory

SIEMENS ELECTRIC LIMITED

BREAKER TEST CERTIFICATE

Panel No. GEN 3. MAIN SW. BD.

Breaker Type : 3WE 53 55 - 2T J06

Volts : 120 VOLTS

Serial No. :

(i) A (overload) ⎍: Range THERMAL 320 — 1600 AMPS. = I_N.

(ii) Short Circuit >: Range ± 2 --- 8 x I_N.

: Time 50 — 500 M.S.

(iii) Rating : 20 KA

A. Overload Test ..... A Set 1180 Amps. = In.

Observed Time			Specified Time - Secs.
L1	L2	L3	
In X. 1·5 = 1770. ←	21·5 secs	→	20 — 30 secs.

B. Short Circuit Test

Set ... 6 x I_N ..... = 7080 A. ~~K~~.

Time ..... 500 ..... M.S.

Remarks

OPERATES IN 560 m.s.

C. Function Test — Satisfactory

D. Dielectric Test — Satisfactory

SIEMENS ELECTRIC LIMITED

BREAKER TEST CERTIFICATE

Panel No. EMERG. GEN.

Breaker Type : 3WE 53 55 - 2T J06

Volts : 120 VOLTS

Serial No. : .....

(i) A (overload) ⌐¬ : Range THERMAL 320 — 1600 AMPS. = I_N

(ii) Short Circuit >: Range - 2 --- 8 x I_N.

: Time 50 — 500 M.S.

(iii) Rating : 20 KA

A. Overload Test ..... A Set 550 Amps. = In.

	Observed Time			Specified Time - Secs.
	L1	L2	L3	
In X. 1.5 = 825 A	←	17*	→	20 - 30 SECS

B. Short Circuit Test — Remarks

Set ..... K.A.

Time ..... M.S.

C. Function Test — Satisfactory

D. Dielectric Test — Satisfactory

* 17 SECS MEASURED AFTER INMEDIATELY. THE BKR TRIPPED IN 20 SECS AT 1.5 IN

CANAL ELECTRIC

W/S NO. E-591921
Order No. A-534270

"R" CLASS ICE BREAKER
HULL 68

INSULATION RESISTANCE VALUES ON MAIN AND EMERGENCY SWITCHBOARD

	MEGGER VALUE BEFORE HI-POT	MEGGER VALUE AFTER HI-POT	REMARKS
SECTIONS 1 - 9 + CORNER SECTION + EMERG.SW.BD.	>60 MEG OHMS	>60 MEG OHMS	460V SECTION
SECTION 10	>150 MEG OHMS	>150 MEG OHMS	460V SECTION
SECTION 11	>200 MEG OHMS	>200 MEG OHMS	120V SECTION
SECTION 12	>200 MEG OHMS	>200 MEG OHMS	120V SECTION

Witnessed by: CSI - Mr. S. Cowen
Lloyds - Mr. G. Hubbard
S & S(Can) - Mr. A. Hu
Canal - Mr. E. Reimer

Tested by: N. Murzello
Date: Oct. 6, 1981

Dycll

CANAL ELECTRIC

HULL 68 W/S No. E-591921
Order A-534270

TEST PLAN Date: 6 September, 1981

A. METERING

A-I GENERATORS 1, 2 & 3 - MAIN SWITCHBOARD

(i) Check Voltmeter, Hz meter
(ii) Check P.F. & Wattmeter
(iii) Check Ammeter
(iv) Set overcurrent relay for preferential trip at 1200 Amps --- 4 Amps on sec.
(v) Set reverse power relay at 10% = 75KW with 10 secs. time delay
(vi) Check temperature indicator.

A-II SHORE SUPPLY

(i) Check Voltmeter, Hz meter
(ii) Check Phase sequence indicator and phase reversal relay
(iii) Check Ammeter
(iv) Check P.F. meter, Wattmeter and Watthour meter.

A-III EMERGENCY GEN. --- (and Sec.5)

(i) Check Voltmeter, Hz meter
(ii) Check P.F. Meter and Wattmeter
(iii) Check Ammeter
(iv) Set overcurrent relay at 540 Amps -- 3.6 amps on sec
(v) Set reverse power relay at 10% = 35 KW with 10 secs. time delay
(vi) Check temperature indicator
(vii) Check voltage sensing relay.

A-IV METERING CHECK ON REMAINING SECTIONS

# 6	Ammeter
# 7	"
# 8	"
# 9	"
#10	Ammeter/Voltmeter --- 120 volts
#11	Ammeter/Voltmeter --- 120 volts

B. FUNCTION TEST

1. Check manual closing of Main Generators
2. Check tripping with reverse power.
3. Check manual synchronizing of Main Generators
4. Check closing of shore supply
5. Check tripping of shore supply when Main Generator is switched "IN"
6. Check manual start of Emergency Generator
7. Check Auto start of Emergency Generator --- (energise 21 ESA by jumpering 2101-2147)
8. Check tripping of Emergency Generator when Main Gen/Shore Supply is switched in --- TR2 set at 180 secs.

C. BOW THRUSTER --- SECTION 6

(i) Check closing of B.T. Breaker --- at least 2 Generators "IN"

(ii) Check "Trip" manually and when one Generator is in service.

D. TIE TO NON-ESSENTIAL --- SECTION 9

(i) Check manual closing/tripping

(ii) Check tripping through 110% overload on service generator

E. TIE BREAKER - EMERGENCY SECTION

(i) Check closing/tripping
(ii) Check Interlock with Main/Shore
(iii) Check tripping with 98% load on Emergency Gen. --- 6 secs.
(iv) Check Interlock with RTIE -

F. TIE BREAKER - SEC. 5

(i) Check manual closing/tripping

G. Check Ground Fault Relay and Alarm

H. DIELECTRIC TESTS

(i) Megger Test at 1000 volts D.C.
(ii) Hi-pot.
a) 2200 volts 60 Hz -- 1 minute - on 460V circuits
b) 1500 volts 60 Hz -- 1 minute - on 120V circuits
(iii) Megger Test at 1000 volts.

I. GENERATOR BREAKER CALIBRATION

(i) Main Generators 1, 2 & 3

a) Thermal set at 1180 Ams = In
Tripping time at 1.5 x In -- 20-30 secs.
b) Short time instantaneous
set at 6 x In = 7080 Amps
tripping time --- 500 m.s.

J. Remarks: (1) SOF Relay removed from Section 5T. 7/10/81

6/10/1981