SHANGHAI JIANGNAN CHANGXING

HEAVY INDUSTRY CO., LTD

HULL NO.H2431/2432/2433

5100TEU CONTAINER VESSEL

SHORT CIRCUIT CURRENT CALCULATION

DESIGNED BY		PAGE	18
CHECKED BY		DATE	2007-8-13

TERASAKI
Ensuring Service, Maintaining Quality

TERASAKI ELECTRIC (CHINA) CO., LTD.

COMPUTATION OF MAX. SHORT CIRCUIT CURRENTS IN ELECTRICAL SHIP MAINS

A. BASE AND PARAMETER OF CALCULATION

base :	IEC Pub. 61363
modification of time constants due to passive components :	No
preload condition of single motors included :	No

B. INPUT DATA - GENERAL

name of vessel	5100TEU CONTAINER VESSEL
Yard	JIANGNAN
hull no.	2431/etc
register no.	***
Project	***
file name	5100TEU2
Operator	HUA
date of calc.	2007/8/13

INPUT DATA - MAINS FREQUENCY AND VOLTAGE AT MAIN BUS

voltage at main bus	(V)	450.000
frequency	(Hz)	60.000

INPUT DATA - MAIN GENERATORS

marking of generator	DG 1	DG 2	DG 3	DG 4
power (kVA)	2250.0000	2250.0000	2250.0000	2250.0000
voltage (V)	450.0000	450.0000	450.0000	450.0000
Power factor (/)	0.8000	0.8000	0.8000	0.8000
xd" (%)	16.0000	16.0000	16.0000	16.0000
xd` (%)	23.7000	23.7000	23.7000	23.7000
xd (%)	127.0000	127.0000	127.0000	127.0000
Ra (ohm)	0.0021	0.0021	0.0021	0.0021
Td" (ms)	10.0000	10.0000	10.0000	10.0000
Td` (ms)	91.0000	91.0000	91.0000	91.0000
tdc (ms)	35.0000	35.0000	35.0000	35.0000
Ikd/In (/)	3.0000	3.0000	3.0000	3.0000
cross section of cable (sqmm)	120.0000	120.0000	120.0000	120.0000
length of cable (m)	51.0000	62.0000	21.0000	18.0000
no. of conductors per phase	15.0000	15.0000	15.0000	15.0000
L specific r (ohm/km)	0.1640	0.1640	0.1640	0.1640
specific x (ohm/km)	0.0864	0.0864	0.0864	0.0864

INPUT DATA - SINGLE MOTOR

marking of motor	BT	
power (kW)	1900.0000	
voltage (V)	450.0000	
power factor (/)	0.8000	
efficiency (/)	0.9000	
stator resistance Rs (%)	3.4000	
rotor resistance Rr (%)	2.1000	
stator impedance Xs (%)	0.0000	
rotor impedance Xr (%)	0.0000	
Total impedance Xm=Xs+Xr (%)	15.0000	
cable from main bus		
cross section of cable (sqmm)	120.0000	
length of cable (m)	58.0000	
no. of conductors per phase	11.0000	
specific r (ohm/km)	0.1640	
specific x (ohm/km)	0.0864	
power of transformer	0.0000	
voltage at mb side (V)	0.0000	
voltage at db side (V)	0.0000	
short circuit voltage (%)	0.0000	
copper losses (kW)	0.0000	
cable to db		
cross section of cable (sqmm)	0.0000	
length of cable (m)	0.0000	
no. of conductors per phase	0.0000	
specific r (ohm/km)	0.0000	
specific x (ohm/km)	0.0000	

INPUT DATA - EQUIVALENT MOTOR

power of motor (kW)	2420.00000

INPUT DATA - DISTRIBUTIONS

marking of db	ESB	405P	409P	410P
cable from main bus				
cross section of cable (sqmm)	120.0000	50.0000	10.0000	10.0000
length of cable (m)	60.0000	45.0000	51.0000	40.0000
no. of conductors per phase	2.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	0.1640	0.3930	1.9650	1.9650
specific x (ohm/km)	0.0864	0.0900	0.1176	0.1176
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

marking of db	411P	1CGP	1RCP	2RCP
cable from main bus				
cross section of cable (sqmm)	35.0000	25.0000	70.0000	95.0000
length of cable (m)	295.0000	135.5000	200.0000	178.0000
no. of conductors per phase	1.0000	1.0000	3.0000	4.0000
specific r (ohm/km)	0.5600	0.7860	0.2800	0.2060
specific x (ohm/km)	0.0984	0.0984	0.0900	0.0900
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

marking of db	3RCP	4RCP	5RCP	6RCP
cable from main bus				
cross section of cable (sqmm)	95.0000	95.0000	95.0000	95.0000
length of cable (m)	150.0000	122.0000	94.0000	64.0000
no. of conductors per phase	4.0000	4.0000	4.0000	4.0000
specific r (ohm/km)	0.2060	0.2060	0.2060	0.2060
specific x (ohm/km)	0.0900	0.0900	0.0900	0.0900
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

marking of db	7RCP	8RCP	9RCP	10RCP
cable from main bus				
cross section of cable (sqmm)	95.0000	95.0000	70.0000	95.0000
length of cable (m)	36.0000	51.0000	72.0000	72.0000
no. of conductors per phase	4.0000	4.0000	3.0000	3.0000
specific r (ohm/km)	0.2060	0.2060	0.2800	0.2060
specific x (ohm/km)	0.0900	0.0900	0.0900	0.0900
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

marking of db	2CGP	BP	FBP	220V MSB
cable from main bus				
cross section of cable (sqmm)	25.0000	120.0000	50.0000	70.0000
length of cable (m)	135.5000	17.0000	17.0000	55.0000
no. of conductors per phase	1.0000	1.0000	2.0000	2.0000
specific r (ohm/km)	0.7860	0.1640	0.3930	0.2800
specific x (ohm/km)	0.0984	0.0864	0.0900	0.0900
power of transformer	0.0000	0.0000	0.0000	200.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	450.0000
voltage at db side (V)	0.0000	0.0000	0.0000	230.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	3.4700
copper losses (kW)	0.0000	0.0000	0.0000	2.6510
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	120.0000
length of cable (m)	0.0000	0.0000	0.0000	55.0000
no. of conductors per phase	0.0000	0.0000	0.0000	3.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.1640
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0864

marking of db	401P	402P	403P	404P
cable from main bus				
cross section of cable (sqmm)	95.0000	50.0000	16.0000	10.0000
length of cable (m)	42.0000	42.0000	20.0000	28.0000
no. of conductors per phase	1.0000	2.0000	1.0000	1.0000
specific r (ohm/km)	0.2060	0.3930	1.2300	1.9650
specific x (ohm/km)	0.0900	0.0900	0.1092	0.1176
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

marking of db	406P	407P	408P	
cable from main bus				
cross section of cable (sqmm)	25.0000	70.0000	50.0000	
length of cable (m)	45.0000	28.0000	45.0000	
no. of conductors per phase	1.0000	1.0000	1.0000	
specific r (ohm/km)	0.7860	0.2800	0.3930	
specific x (ohm/km)	0.0984	0.0900	0.0900	
power of transformer	0.0000	0.0000	0.0000	
voltage at mb side (V)	0.0000	0.0000	0.0000	
voltage at db side (V)	0.0000	0.0000	0.0000	
short circuit voltage (%)	0.0000	0.0000	0.0000	
copper losses (kW)	0.0000	0.0000	0.0000	
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	
length of cable (m)	0.0000	0.0000	0.0000	
no. of conductors per phase	0.0000	0.0000	0.0000	
specific r (ohm/km)	0.0000	0.0000	0.0000	
specific x (ohm/km)	0.0000	0.0000	0.0000	

INPUT DATA - SUBDISTRIBUTION

connected to db	ESB	ESB	ESB	ESB
marking of sdb	ST/EFP	ST/4ERF	ST/EGRF	220V ESB
cable from main bus				
cross section of cable (sqmm)	50.0000	35.0000	1.5000	35.0000
length of cable (m)	288.0000	13.0000	13.0000	12.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	0.3930	0.5600	13.1000	0.5600
specific x (ohm/km)	0.0900	0.0984	0.1512	0.0984
power of transformer	0.0000	0.0000	0.0000	50.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	450.0000
voltage at db side (V)	0.0000	0.0000	0.0000	230.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	3.4800
copper losses (kW)	0.0000	0.0000	0.0000	0.9760
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	95.0000
length of cable (m)	0.0000	0.0000	0.0000	12.0000
no. of conductors per phase	0.0000	0.0000	0.0000	1.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.2060
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0900

connected to db	409P	1RCP	2RCP	3RCP
marking of sdb	ST/SGF	RCS（1RCP）	RCS（2RCP）	RCS（3RCP）
cable from main bus				
cross section of cable (sqmm)	1.5000	25.0000	25.0000	25.0000
length of cable (m)	103.0000	15.0000	15.0000	15.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	13.1000	0.7860	0.7860	0.7860
specific x (ohm/km)	0.1512	0.0984	0.0984	0.0984
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	4RCP	5RCP	6RCP	7RCP
marking of sdb	RCS（4RCP）	RCS（5RCP）	RCS（6RCP）	RCS（7RCP）
cable from main bus				
cross section of cable (sqmm)	25.0000	25.0000	25.0000	25.0000
length of cable (m)	15.0000	15.0000	15.0000	15.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	0.7860	0.7860	0.7860	0.7860
specific x (ohm/km)	0.0984	0.0984	0.0984	0.0984
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	8RCP	9RCP	10RCP	401P
marking of sdb	RCS（8RCP）	RCS（9RCP）	RCS（10RCP）	ST（401P）
cable from main bus				
cross section of cable (sqmm)	25.0000	25.0000	25.0000	25.0000
length of cable (m)	15.0000	15.0000	15.0000	16.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	0.7860	0.7860	0.7860	0.7860
specific x (ohm/km)	0.0984	0.0984	0.0984	0.0984
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	402P	403P	404P	405P
marking of sdb	ST（402P）	ST（403P）	ST（404P）	ST（405P）
cable from main bus				
cross section of cable (sqmm)	25.0000	6.0000	6.0000	10.0000
length of cable (m)	16.0000	10.0000	10.0000	17.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	0.7860	3.2800	3.2800	1.9650
specific x (ohm/km)	0.0984	0.1200	0.1200	0.1176
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	406P	406P	407P	408P
marking of sdb	ST（406P）	ST/103	ST（407P）	ST（408P）
cable from main bus				
cross section of cable (sqmm)	10.0000	10.0000	10.0000	25.0000
length of cable (m)	12.0000	15.0000	17.0000	27.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	1.9650	1.9650	1.9650	0.7860
specific x (ohm/km)	0.1176	0.1176	0.1176	0.0984
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	409P	410P	411P	203P
marking of sdb	ST（409P）	ST（410P）	ST（411P）	220V MSB
cable from main bus				
cross section of cable (sqmm)	1.5000	4.0000	4.0000	6.0000
length of cable (m)	31.0000	43.5000	125.0000	20.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	13.1000	4.9100	4.9100	3.2800
specific x (ohm/km)	0.1512	0.1284	0.1284	0.1200
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	204P	205P	206P	207P
marking of sdb	220V MSB	220V MSB	220V MSB	220V MSB
cable from main bus				
cross section of cable (sqmm)	25.0000	25.0000	2.5000	6.0000
length of cable (m)	28.0000	37.0000	51.0000	41.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	0.7860	0.7860	7.8600	3.2800
specific x (ohm/km)	0.0984	0.0984	0.1404	0.1200
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	01L	02L	03L	04L
marking of sdb	220V MSB	220V MSB	220V MSB	220V MSB
cable from main bus				
cross section of cable (sqmm)	35.0000	4.0000	16.0000	6.0000
length of cable (m)	37.0000	37.0000	54.0000	51.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	0.5600	4.9100	1.2300	3.2800
specific x (ohm/km)	0.0984	0.1284	0.1092	0.1200
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	05L	06L	07L	08L
marking of sdb	220V MSB	220V MSB	220V MSB	220V MSB
cable from main bus				
cross section of cable (sqmm)	16.0000	6.0000	6.0000	6.0000
length of cable (m)	43.0000	45.0000	42.0000	39.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	1.2300	3.2800	3.2800	3.2800
specific x (ohm/km)	0.1092	0.1200	0.1200	0.1200
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	09L	10L	11L	12L
marking of sdb	220V MSB	220V MSB	220V MSB	220V MSB
cable from main bus				
cross section of cable (sqmm)	6.0000	35.0000	10.0000	10.0000
length of cable (m)	37.0000	47.0000	47.0000	18.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	3.2800	0.5600	1.9650	1.9650
specific x (ohm/km)	0.1200	0.0984	0.1176	0.1176
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

connected to db	13L	14L	15L	16L
marking of sdb	220V MSB	220V MSB	220V MSB	220V MSB
cable from main bus				
cross section of cable (sqmm)	4.0000	2.5000	4.0000	10.0000
length of cable (m)	24.0000	28.0000	32.0000	247.0000
no. of conductors per phase	1.0000	1.0000	1.0000	1.0000
specific r (ohm/km)	4.9100	7.8600	4.9100	1.9650
specific x (ohm/km)	01284	0.1404	0.1284	0.1176
power of transformer	0.0000	0.0000	0.0000	0.0000
voltage at mb side (V)	0.0000	0.0000	0.0000	0.0000
voltage at db side (V)	0.0000	0.0000	0.0000	0.0000
short circuit voltage (%)	0.0000	0.0000	0.0000	0.0000
copper losses (kW)	0.0000	0.0000	0.0000	0.0000
cable to db				
cross section of cable (sqmm)	0.0000	0.0000	0.0000	0.0000
length of cable (m)	0.0000	0.0000	0.0000	0.0000
no. of conductors per phase	0.0000	0.0000	0.0000	0.0000
specific r (ohm/km)	0.0000	0.0000	0.0000	0.0000
specific x (ohm/km)	0.0000	0.0000	0.0000	0.0000

C. CONTRIBUTION OF COMPONENTS (dimension of currents: kA)

	Ip	Iac(0.5T)	Inom
DG 1	43.446	15.361	2.887
DG 2	43.223	15.289	2.887
DG 3	44.058	15.556	2.887
DG4	44.119	15.576	2.887
BT	31.973	12.788	3.386
equ. motor	34.498	13.799	

D. FAULT POINTS (dimension of currents: kA)

p.f.: power factor / brk.:breaker / term.: terminals

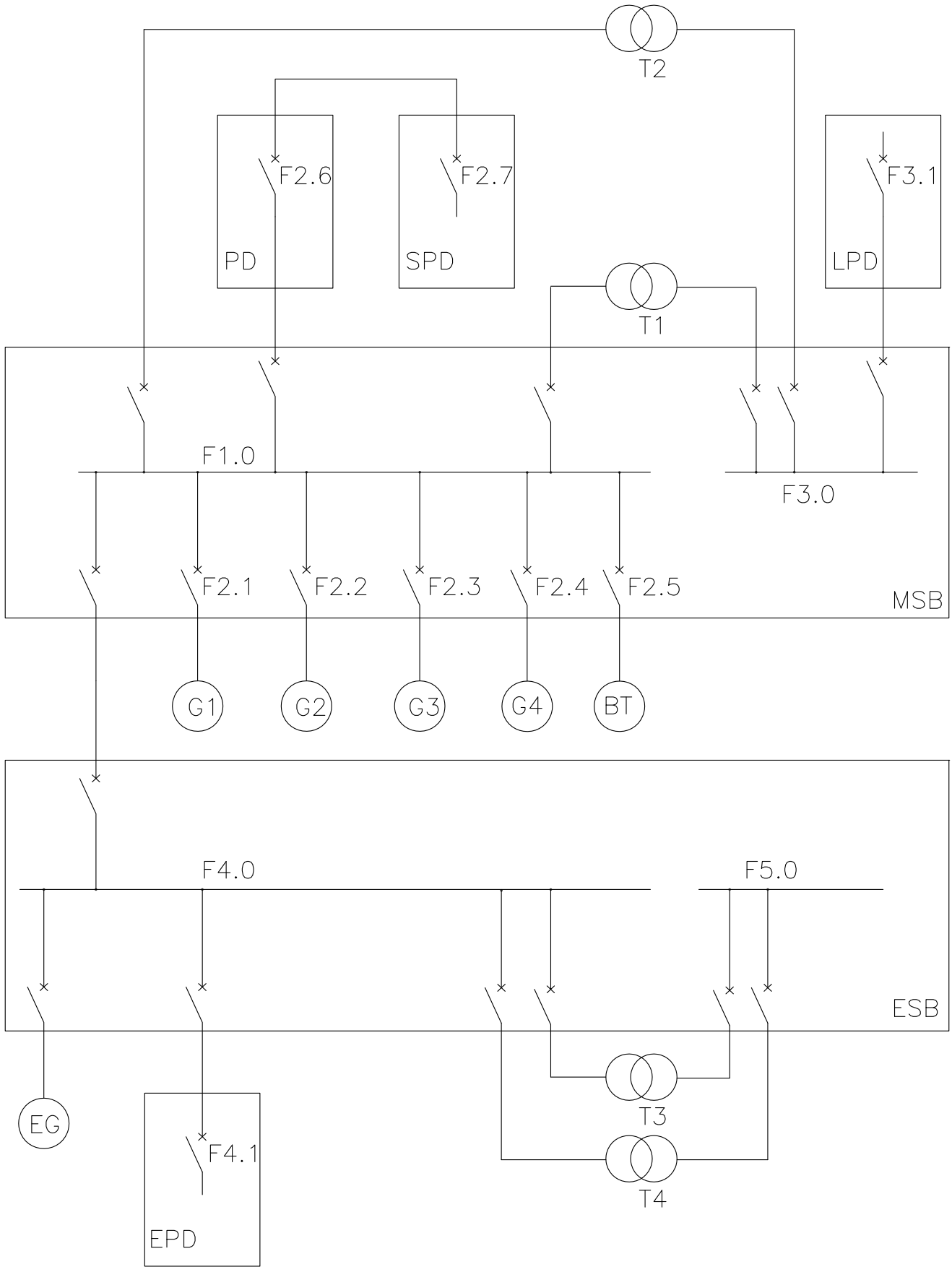
	Ip	Iac(0.5T)	p.f.
main bus	241.316	88.369	0.119
brk. of DG 1	197.870	73.008	0.119
brk. of DG 2	198.094	73.080	0.119
brk. of DG 3	197.259	72.813	0.119
brk. of DG 4	197.198	72.793	0.119
brk. of BT	209.344	75.581	0.102
trm. of BT	170.854	62.783	0.349
ESB	81.769	32.455	0.738
405P	31.993	13.242	0.945
409P	6.137	2.573	0.997
410P	7.813	3.275	0.996
411P	3.674	1.540	0.983
1CGP	5.732	2.403	0.990
1RCP	29.452	12.183	0.918
2RCP	52.568	21.351	0.837
3RCP	60.484	24.426	0.822
4RCP	71.145	28.509	0.801
5RCP	86.227	34.182	0.767
6RCP	111.094	43.301	0.704
7RCP	150.090	57.149	0.581
8RCP	126.588	48.860	0.659
9RCP	71.152	28.599	0.851
10RCP	84.947	33.705	0.770
2CGP	5.732	2.403	0.990
BP	117.813	45.655	0.644
FBP	120.934	47.058	0.777
220V MSB	22.030	9.156	0.606
401P	55.149	22.358	0.833
402P	62.692	25.427	0.903
403P	24.318	10.138	0.985
404P	11.123	4.659	0.995
406P	16.988	7.097	0.983
407P	62.923	25.443	0.866
408P	31.993	13.242	0.945
ST/EFP	5.054	2.117	0.968
ST/4ERF	43.321	17.762	0.900
ST/EGRF	3.525	1.479	0.999
220V ESB	7.459	3.119	0.621
RCS（1RCP）	19.044	7.934	0.954
RCS（2RCP）	27.018	11.206	0.941

RCS（3RCP）	29.006	12.020	0.943
RCS（4RCP）	31.309	12.962	0.945
RCS（5RCP）	34.008	14.064	0.947
RCS（6RCP）	37.467	15.472	0.950
RCS（7RCP）	41.394	17.067	0.953
RCS（8RCP）	39.194	16.174	0.951
RCS（9RCP）	30.985	12.842	0.956
RCS（10RCP）	33.800	13.979	0.947
203P	4.193	1.758	0.983
204P	9.373	3.924	0.909
205P	7.793	3.264	0.930
206P	0.772	0.324	0.999
207P	2.198	0.922	0.994
01L	9.590	4.014	0.891
02L	1.658	0.695	0.996
03L	4.110	1.723	0.975
04L	1.791	0.751	0.995
05L	4.978	2.087	0.968
06L	2.015	0.845	0.994
07L	2.149	0.901	0.994
08L	2.302	0.966	0.993
09L	2.417	1.014	0.993
10L	8.228	3.446	0.910
11L	3.092	1.297	0.986
12L	6.876	2.882	0.957
13L	2.487	1.043	0.994
14L	1.381	0.579	0.998
15L	1.092	0.798	0.996
16L	0.639	0.268	0.997
ST（401P）	26.778	11.110	0.944
ST（402P）	27.979	11.624	0.966
ST（403P）	10.668	4.469	0.995
ST（404P）	7.003	2.936	0.997
ST（405P）	11.867	4.966	0.987
ST（406P）	10.338	4.329	0.991
ST/103	9.413	3.943	0.992
ST（407P）	14.664	6.133	0.987
ST（408P）	15.326	6.402	0.975
ST（409P）	1.222	0.513	1.000
ST/SGF	0.427	0.179	1.000
ST（410P）	2.115	0.887	0.999
ST（411P）	0.793	0.333	0.998

Short circuit calculation	Yard :JIANGNAN		
	Hull-No.: H2431/etc		
	Ship-mode:		
Nominal voltage: 450V/60Hz	Class :GL		
SHORT CIRCUIT VALUES			
SHORT CIRCUIT CASE	SYMBOL	PEAK SHORT CIRCUIT CURRENT Is (kA)	AC COMPONENT OF THE SHORT CIRCUIT CURRENT Iac (kA)
Three diesel generators in parallel operation:			
F1.0	main bus	241.316	88.369
F2.1	DG1	197.870	73.008
F2.2	DG2	198.094	73.080
F2.3	DG3	197.259	72.813
F2.4	DG4	197.198	72.793
F2.5	BT	209.344	75.581
F2.6	405P	31.993	13.242
F2.6	409P	6.137	2.573
F2.6	410P	7.813	3.275
F2.6	411P	3.674	1.540
F2.6	1CGP	5.732	2.403
F2.6	1RCP	29.452	12.183
F2.6	2RCP	52.568	21.351
F2.6	3RCP	60.484	24.426
F2.6	4RCP	71.145	28.509
F2.6	5RCP	86.227	34.182

F2.6	6RCP	111.094	43.301
F2.6	7RCP	150.090	57.149
F2.6	8RCP	126.588	48.860
F2.6	9RCP	71.152	28.599
F2.6	10RCP	84.947	33.705
F2.6	2CGP	5.732	2.403
F2.6	BP	117.813	45.655
F2.6	FBP	120.934	47.058
F2.6	401P	55.149	22.358
F2.6	402P	62.692	25.427
F2.6	403P	24.318	10.138
F2.6	404P	11.123	4.659
F2.6	406P	16.988	7.097
F2.6	407P	62.923	25.443
F2.6	408P	31.993	13.242
F3.0	220V MSB	22.030	9.156
F3.1	203P	4.193	1.758
F3.1	204P	9.373	3.924
F3.1	205P	7.793	3.264
F3.1	206P	0.772	0.324
F3.1	207P	2.198	0.922
F3.1	01L	9.590	4.014
F3.1	02L	1.658	0.695
F3.1	03L	4.110	1.723
F3.1	04L	1.791	0.751
F3.1	05L	4.978	2.087
F3.1	06L	2.015	0.845
F3.1	07L	2.149	0.901
F3.1	08L	2.302	0.966
F3.1	09L	2.417	1.014
F3.1	10L	8.228	3.446
F3.1	11L	3.092	1.297
F3.1	12L	6.876	2.882
F3.1	13L	2.487	1.043

F3.1	14L	1.381	0.579
F3.1	15L	1.092	0.798
F3.1	16L	0.639	0.268
F4.0	ESB	81.769	32.455
F4.1	ST/EFP	5.054	2.117
F4.1	ST/4ERF	43.321	17.762
F4.1	ST/EGRF	3.525	1.479
F5.0	220V ESB	7.459	3.119
F2.7	RCS（1RCP）	19.044	7.934
F2.7	RCS（2RCP）	27.018	11.206
F2.7	RCS（3RCP）	29.006	12.020
F2.7	RCS（4RCP）	31.309	12.962
F2.7	RCS（5RCP）	34.008	14.064
F2.7	RCS（6RCP）	37.467	15.472
F2.7	RCS（7RCP）	41.394	17.067
F2.7	RCS（8RCP）	39.194	16.174
F2.7	RCS（9RCP）	30.985	12.842
F2.7	RCS（10RCP）	33.800	13.979
F2.7	ST（401P）	26.778	11.110
F2.7	ST（402P）	27.979	11.624
F2.7	ST（403P）	10.668	4.469
F2.7	ST（404P）	7.003	2.936
F2.7	ST（405P）	11.867	4.966
F2.7	ST（406P）	10.338	4.329
F2.7	ST/103	9.413	3.943
F2.7	ST（407P）	14.664	6.133
F2.7	ST（408P）	15.326	6.402
F2.7	ST（409P）	1.222	0.513
F2.7	ST/SGF	0.427	0.179
F2.7	ST（410P）	2.115	0.887
F2.7	ST（411P）	0.793	0.333


T2
F2.6
F2.7
F3.1
PD
SPD
LPD
T1
F1.0
F3.0
F2.1
F2.2
F2.3
F2.4
F2.5
MSB
G1
G2
G3
G4
BT
F4.0
F5.0
ESB
EG
F4.1
EPD
T3
T4