

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

Date of writing Report 20.8.1960 When handed in at Local Office 19 Port of Helsingfors  
 No. in Survey held at Helsingfors Date, First Survey 11.3.59 Last Survey 15.6.1960  
 Reg. Book. (No. of Visits 52)  
 22669 on the Icebreaker "MOSKVA" Tons Gross 9427.34 Net 34  
 Built at Helsingfors By whom built Wärtsilä-koncernen Ab, Sandvikens Skeppsdocka Yard No. 365 When built 1960  
 Owners U.S.S.R. Port belonging to Murmansk  
 Installation fitted by Siemens Sähkö Oy When fitted 1960

Is vessel equipped for carrying Petroleum in bulk no Is vessel equipped with D.F. yes E.S.D. yes Gy.C. yes Sub.Sig. Radar yes

Plans, have they been submitted and approved yes System of Distribution Three Wire A.C. Voltage of Lighting 127 V  
 Heating 220 V Power 380 V D.C. or A.C., Lighting A.C. Power A.C. If A.C. state frequency 50 Hz

Prime Movers, has the governing been found as per Rule when full load is thrown on and off yes ~~Are there emergency governors fitted with a trip switch~~

Generators, are they compound wound with exception of 62 1/2 kVA unit, and level compounded under working conditions -

Are the generators arranged to run in parallel 62 1/2 kVA unit Is the compound winding connected to the negative or positive pole -

Have machines 100 kw. and over been inspected by the Surveyors during manufacture and testing yes Have certificates of test for machines

under 100 kw. been supplied and the results found as per Rule yes Position of Generators In Fwd. Eng. Room Lower Tween Deck space: 3 generators 385 kVA each. In Aft Eng. Room Lower Tween Deck space: 2 generators 385 kVA each and one generator 215 kVA. On ps Boat Deck: One Emergency generator 62 1/2 kVA.

Is the ventilation in way of generators satisfactory yes are they clear of inflammable material and protected from mechanical injury and damage from water, steam and oil yes Switchboards, where are main switchboards placed In the Control Room in the Tween Deck space.

are they in accessible positions, free from inflammable gases and acid fumes and protected from mechanical injury and damage from water, steam and oil yes, what insulation is used for the panels dead front construction, if of synthetic insulating

material is it an Approved Type - if of semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule - Is the construction as per Rule, including locking of screws and nuts yes Description of Main Switchgear

for each generator and arrangement of equaliser switches Triple pole circuit breaker fitted with overload, reverse power and preference trips.

and the switch and fuse gear (or circuit breakers) for each outgoing circuit Triple pole switch and fuses.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule yes Instruments on main switchboard 19  
 ammeters 7 voltmeters 9 synchronising devices. For compound machines in parallel are the ammeters and reverse current

protection devices connected on the pole opposite to the equaliser connection - Earth Testing, state means provided Ohm -

meters with selector switch Preference Tripping, state if provided yes, and tested yes

Switches, Circuit Breakers and Fuses, are they as per Rule yes, are the fuses an Approved Type yes

make of fuses Siemens, are all fuses labelled yes If circuit breakers are provided for the generators, at what

overload do they operate full load current + 25% and at what current do the reverse power protective-

devices operate 15%, 8 seconds Cables, are they insulated and protected as per Rule yes

if otherwise than as per Rule are they of an Approved Type - state maximum fall of pressure between bus bars and any point

under maximum load less than 6% normal volts. Are all paper insulated and varnished cambric insulated cables sealed at the ends yes

Are all the cable runs in accessible positions not exposed to drip or accumulation of water or oil, high temperatures or risk of mechanical

damage yes, are any cables laid under machines or floorplates yes, if so, are they adequately protected yes State

type of cables (if in conduit this should also be stated) in machinery spaces LC & A cables, galleys LC & A cables

and laundries LC & A cables State how the cables are supported or protected In Machinery spaces: LCA cables

clipped to cable runners or to steel work. - In accommodations: LC cable clipped to wood-

work, or PVC cables in conduit (See Secretary's letter of 25.8.59).

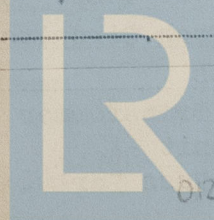
Are all lead sheaths, armouring and conduits effectually bonded and earthed yes Are all cables passing through decks and watertight

bulkheads provided with deck tubes or watertight glands yes, where unarmoured cables pass through beams, etc., are the holes

effectively bushed yes Refrigerated chambers, are the cables and fittings as per Rule yes

Have refrigeration fan motors been constructed under survey no and test certificates supplied -

Are the motors accessible for maintenance at all times yes



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Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule. Yes Emergency Supply, state position 62½ kVA unit situated on ps Boat Deck.

Navigation Lamps, are they separately wired. Yes controlled by separate double pole switches and fuses. Yes Are the switches and fuses in a position accessible only to the officers on watch. Yes Is an automatic indicator fitted. Yes Is an alternative supply provided. Yes

Secondary Batteries, are they constructed, fitted and adequately ventilated as per Rule. - state battery capacity in ampere hours. - Where required to do so does it comply with 1948 International Convention. -

Lighting, is fluorescent lighting fitted. no If so, state nominal lamp voltage. - and compartments where lamps are fitted. -

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof. Yes

Searchlights, No. of 5, whether fixed or portable. 4 fixed, are they of the carbon arc or of the filament type. 1 carbon arc 4 filament

Heating and Cooking, is the general construction as per Rule. Yes, are the frames effectually earthed. Yes, are heaters in the accommodation of the convection type. none Motors, are all motors constructed and installed as per Rule and placed in well-ventilated compartments in which inflammable gases cannot accumulate and protected from damage from water, steam and oil. yes

Are motors coupled to oil fuel transfer and pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment. Yes Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing. yes

Have certificates of test for motors under 100 BHP intended for essential sea services been supplied and the results found as per Rule. yes

Lightning Conductors, where required are they fitted as per Rule. None

Ships carrying Oil having a Flash Point of less than 150° F. Have all the special requirements of the Rules for such ships been complied with. -, are all fuses of an Approved Cartridge Type. -, make of fuse. - Are the fittings for pump

rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships. - Are all cables lead covered as per Rule. -

E.S.D., if fitted state maker. One Kelvin Hughes Location of transmitter and receiver. Frame space 88-89

Spare Gear, if the vessel is for open sea service have spares been provided as per Rule and suitably stored in dry situations. yes

Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory. yes

#### PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	MAKER.	RATED AT				PRIME MOVER.	
			kVA per Generator.	Volts.	Ampères.	Revs. per Min.	TYPE.	MAKER.
MAIN	6	Siemens	385	400	550	600	Diesel	Wärtsilä, Vasa
	1	"	213	400	310	600	"	"
EMERGENCY ROTARY TRANSFORMER	1	"	62½	400	90	1500	"	Süddeutsche Bremsen AG

#### GENERATOR CABLES.

DESCRIPTION.	No. of	kVA	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATION.	PROTECTIVE COVERING.
			No. in Parallel per Pole.	Sectional Area or Sq. mm. or Stranding.	In the Circuit.	Rule.			
MAIN GENERATOR	6	385	3	3x150	550	600	42	VC	NCAB
Harbour	1	213	2	3x150	310	400	40	VC	NCAB
EMERGENCY GENERATOR	1	62½	1	3x150	90	200	5	VC	NCAB
ROTARY TRANSFORMER: MOTOR									
GENERATOR									

#### MAIN DISTRIBUTION CABLES (to Auxiliary Switchboards, etc.).

DESCRIPTION.									
PP 12: Propuls. mach. circuits	3	3x95	436	540	11	VC	LCAB		
PB 2: Lub. Oil Pumps	2	3x70	260	296	50	"	"		
PB 6: Bilge Pumps	1	3x35	101	93	26	"	"		
Tr 2: 380/127 V Transformer	1	2x25	85	108	12	"	"		
Tr 3: " " " " "	1	2x25	85	108	14	"	"		
PB 4: Cooling Water Pumps	1	3x10	24	44	37	"	"		
PB 34: Heating and Warm Water Pumps	1	3x2,5	3	13	50	Rubber	"		
SB 1: Search Lights	1	3x35	65	93	83	VC	"		
TC 1: Cooling Water Temp. Regul.	1	3x4	8	16	76	Rubber	"		
Tr 5: 380/220 V Transformer	3	3x70	375	444	21	VC	"		
AB 23: Unimportant Service	7	3x150	1410	1694	11	"	"		
Shore Connection 60 kVA	1	3x35	90	93	32	"	"		
TC 2: Cooling Water Temp. Regul.	1	3x2,5	8	13	58	"	"		
PP 12: Propuls. Mach. Circuits	3	3x95	436	540	17	"	"		
PB 5: Bilge Pumps	1	3x35	101	93	58	"	"		
Tr 1: 380/127 V Transformer	1	2x25	85	108	20	"	"		
DB 1: Trimming unit	1	3x4	10	16	50	"	"		
EB: Emergency Buss Bar	1	3x35	90	93	38	"	"		

EB: Emergency Buss Bar	1	3x35	101	93	58	VC	LCAB
PB 3: Units for Boilers	1	3x16	66	58	93	"	"
AB 26: Buss Bar for Unimportant Serv.	7	3x150	1410	1694	11	½	"

#### DISTRIBUTION CABLES (to Section-Boards and Distribution-Fuse-Boards, etc.).

DESCRIPTION.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATION.	PROTECTIVE COVERING.
	No. in Parallel per Pole.	Sectional Area or Sq. mm. or Stranding.	In the Circuit.	Rule.			
PB 16: 14 Pumps	1	3x10	28	44	15	VC	LCAB
PB 17: 7 "	1	3x10	14	44	3	"	"
PB 35: 6 Motors (Boiler units)	1	3x10	36	44	9	"	"
AB 11/12: Tr 1,2 and 3: Transfor-							
meters to Lighting Buss Bar	1	2x150	256	346	12	"	"
LB 11, 18, 25 and 23: Lighting	1	2x35	84	93	78	"	"
LB 28, 29, 20 and HB 19	1	2x35	109	93	76	"	"
LB 5, 6 and 7	1	2x35	57	93	7	"	"
LB 9, 10 and 8	1	2x35	63	93	45	"	"
LB 2 and 4	1	2x35	53	93	34	½	"
LB 31 and 32	1	2x25	49	75	77	"	"
LB 33	1	2x16	29	58	78	"	"
LB 19 and 12	1	2x35	41	78	44	Rubber	"
LB 23, 13, 37, 34 and 26	1	2x35	88	93	59	VC	"
LB 24, 21 and 22	1	2x35	66	78	40	Rubber	"
2 Shore connections	1	2x70	160	148	27	VC	"
LB 1 and 3	1	2x25	48	63	20	Rubber	"
LB 35 and 36	1	2x16	39	49	35	"	"
NL Navigation Lights	1	2x4	10	22,5	42	"	"
Tr 8: 127/12 V Transformer	1	2x6	20	29	15	"	"
Shore Connection	1	2x35	80	93	27	VC	"
LB 30, 14 and 15	1	2x35	57	78	42	Rubber	"
LB 17 and 16	1	2x35	45	78	70	"	"
LB 38	1	2x35	9	78	20	"	"
PB 9: Boat Winches and Welding Tr.	1	3x25	66	75	53	VC	"
PB 38: " " " " "	1	3x25	35	75	60	"	"
PB 19: 2 Separators and Sludge Oil Pump	1	3x16	34	58	77	"	"
PB 13: 1 Sludge and 2 Condensate Pumps	1	3x4	16	16	51	Rubber	"

#### MOTOR CABLES.

PB 12: 4 Hydrofor Pumps	1	3x10	21	44	65	VC	"
PB 11: 2 Separators	1	3x10	26	44	42	"	"
PB 8: 2 Cranes & 2 Capstans (Windlass)	2	3x50	280	236	78	"	"
PB 7: 2 Cranes	2	3x50	280	236	33	"	"
PB 39: 3 Fan Motors	1	2x2,5	12	15,5	12	Rubber	"
PB 30: Ejector Pump, 2 Refr. Units	1	3x25	54	75	60	VC	"
PB 22: Ejector Pump & 3 Turning gears	1	3x16	45	58	26	"	"
PB 23: 4 Turning Gears	1	3x6	28	21	45	Rubber	"
PB 24: 4 " " "	1	3x6	28	21	13	"	"
PB 15: 4 Pumps	1	3x16	58	58	37	VC	"
PB 18: 3 F.O. Transfer Pumps.	1	3x16	29	58	55	"	"
PB 32: Workshop 39,6 KW ) 10 motors	1	3x25	88	75	41	"	"
PB 33: " 22,0 " )	1	3x16	53	58	34	"	"
PB 36: Lifting Gear for Engines (motors)	1	3x10	72	44	10	"	"
PB 37: " " " " (4 motors)	1	3x10	36	44	25	"	"
PB 10: 4 Heeling Pumps	2	3x150	457	484	17	"	"
PB 28: 4 Motors 20,5 KW	1	3x50	39	118	30	"	"
PB 29: 11 " 28,5 KW	1	3x50	61	118	38	"	"
PB 25: 6 " 42,2 KW	1	3x50	72	118	73	"	"
PB 1: 28 " 152,3 KW	2	3x70	218	296	21	"	"
PB 27: 11 " 76,0 KW	1	3x70	85	148	74	"	"
PB 26: 5 " 11,56 KW	1	3x16	22	58	30	"	"
PB 14: 10 " 20,44 KW	1	3x16	48	58	31	"	"
PB 31: 16 Fan Motors > 24,0 KW	1	3x16	60	58	18	"	"
PB 20: 6 Motors 5,0 KW	1	3x6	12	21	39	Rubber	"
PB 21: 2 Smelting Crisibles 12 kVA	1	3x6	18	21	52	"	"
OT 1: Testing Switch Board 15 KW	1	3x10	30	44	2	VC	"
PP 12: Heating of Prop. mach. 45 KW	1	3x50	120	118	6	"	"
HB 1: Cooling, heating etc.	2	3x70	310	296	69	"	"
AB 13: 380/220 V Transformer Tr. 5	3	3x150	660	726	18	"	"

NOTE.—Use Rpt. 13 Continuation Sheet if the above space is insufficient.



The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.

All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.

The foregoing is a correct description.

Electrical Contractors. Date

#### COMPASSES.

Have the compasses been adjusted under working conditions. Yes

Builder's Signature. Date

Have the foregoing descriptions and schedules been verified and found correct. Yes

Is this installation a duplicate of a previous case. no If so, state name of vessel.

Plans. Are approved plans forwarded herewith. no If not, state date of approval. Main Switchboard 6.3.59.

Certificates. Are certificates of test for motors engaged on essential sea services and generators forwarded herewith. Yes

General Remarks. (State quality of workmanship and materials, opinions as to class, etc.) The electric equipment of this ship has been fitted on board under Special Survey, tried under full working conditions and found fit for class. Material and workmanship found good.

Total Capacity of Generators. 2585 1/2 Kilowatts.

The amount of Fee ... £ 247 480 : When applied for, 19.

Travelling Expenses (if any) £ : When received, 19.

Committee's Minute FRIDAY 14 OCT 1960

Assigned

See Rpt. 1.

Rpt. 13 (cont).

#### MOTOR CABLES

DESCRIPTION.	KW	CONDUCTORS.		MAXIMUM CURRENT		APPROX. LENGTH (lead plus return) in feet.	INSULATION.	PROTECTIVE COVERING.
		No. in Parallel per Pole.	Sectional Area of Strands, sq. mm.	In the Circuit.	Rule.			
Fire Extinguishing Pump	1 30	1	3x16	59	58	16	V.C.	LC AB
Fresh Cooling Water Pump	1 22	1	3x10	41	44	50	"	"
Salt " " "	1 22	1	3x10	41	44	49	"	"
Spare " " "	1 22	1	3x10	41	44	45	"	"
Salt " " "	1 22	1	3x10	41	44	41	"	"
Fresh " " "	1 22	1	3x10	41	44	41	"	"
Starting Air Compressor	1 18 1/2	1	3x10	39	44	24	"	"
Lub. Oil Pump	1 70	1	3x70	130	148	23	"	"
" " "	1 70	1	3x70	130	148	17	"	"
Trim and Direct Bilge-Pump	1 36	1	3x25	67 1/2	75	17	"	"
Bilge Pump	1 11	1	3x10	20 1/2	44	10	"	"
Stern Tube Cooling Water Pump	1 6	1	3x6	13,2	21	8	"	"
Fuel Injection Valve Cool.	1 5 1/2	1	3x2,5	11,8	13	20	Rubber	"
" " " " "	1 5 1/2	1	3x2,5	11,8	13	16	"	"
" " " " "	1 5 1/2	1	3x2,5	11,8	13	18	"	"
Heating Water Circulating	1 0,16	1	3x1,5	0,5	7	4	"	"
" " " " "	1 0,16	1	3x1,5	0,5	7	4	"	"
Warm " " "	1 0,16	1	3x1,5	0,5	7	4	"	"
" " " " "	1 0,16	1	3x1,5	0,5	7	4	"	"
Heating " " "	1 0,16	1	3x1,5	0,5	7	4	"	"
" " " " "	1 0,16	1	3x1,5	0,5	7	4	"	"
Steering Gear Motors	2 14,215 2	98	3x120	136	210	39	V.C.	"
" " " " "	2 216,217 2	98	3x120	136	210	42	"	"
Fresh Cooling Water Pump	1 22	1	3x10	41	44	73	"	"
Salt " " "	1 22	1	3x10	41	44	71	"	"
Spare " " "	1 22	1	3x10	41	44	64	"	"
Salt " " "	1 22	1	3x10	41	44	65	"	"
Fresh " " "	1 22	1	3x10	41	44	67	"	"
Trim-and Diesel Bilge-Pump	1 36	1	3x25	67,5	75	7	"	"
Bilge Pump	1 11	1	3x10	20,5	44	12	1/2	"
Fuel Inject. Valve cooling pump	1 5,5	1	3x2,5	11,8	13	82	Rubber	"
" " " " "	1 5,5	1	3x2,5	11,8	13	82	"	"
Spare Cooling Water pump	1 5,5	1	3x2,5	11,8	13	80	"	"
Bilge pump (Prop. Motor room)	1 4,5	1	3x2,5	9,5	13	25	"	"
" " " " "	1 4,5	1	3x2,5	9,5	13	30	"	"
Fire Extinguishing Pump	1 30	1	3x16	59	58	45	V.C.	"
" " " " "	1 30	1	3x16	59	58	75	"	"
Lub. Oil Pump	1 70	1	3x70	130	148	71	"	"
" " " " "	1 70	1	3x70	130	148	68	"	"
" " " " "	1 70	1	3x70	130	148	56	"	"
2 Cooling Water Pumps	1 22	1	3x10	41	44	42	"	"
2 " " " "	1 22	1	3x10	41	44	34	"	"
Starting Air Compressor	1 18 1/2	1	3x10	39	44	60	"	"
Oil Burner Automatics	1 0,3	1	2x1,5	2	9,5	3	Rubber	"
Fan for Oil Burner	1 6,6	1	3x4	13,2	16	9	"	"
Pump for Oil Burner Start-	1 0,2	1	3x1,5	4	7	12	"	"
Oil Burner Automatic	1 0,3	1	2x1,5	2	9,5	4	"	"
Fan for Oil Burner	1 6,6	1	3x4	13,2	16	10	"	"
Pump for Oil Burn. Start. oil	1 0,2	1	3x1,5	4	7	12	"	"
Fuel Oil Burner Pump	1 0,55	1	3x1,5	2,6	7	15	"	"
" " " " "	1 0,55	1	3x1,5	2,7	7	14	"	"
Evaporator Feed Pump & Cool. p.	1 4,8	1	3x4	10	16	20	"	"
" Condensate Pump	1 0,5	1	3x1,5	1,4	7	8	"	"
Boiler Feed Pump	1 9,0	1	3x6	18	21	5	"	"
" " " " "	1 9,0	1	3x6	18	21	5	"	"
Lub. Oil Pump	1 0,75	1	3x1,5	1,75	7	13	"	"
" " " " "	1 0,75	1	3x1,5	1,75	7	15	"	"
" " " " "	1 0,75	1	3x1,5	1,75	7	17	"	"
F.O. Booster Pump	1 0,28	1	3x1,5	0,72	7	17	"	"
" " " " "	1 0,28	1	3x1,5	0,72	7	12	"	"
" " " " "	1 1,5	1	3x1,5	3,4	7	11	"	"
" " " " "	1 1,5	1	3x1,5	3,4	7	11	"	"
Lub. Oil Pump	1 0,75	1	3x1,5	1,75	7	13	1/2	"
" " " " "	1 0,75	1	3x1,5	1,75	7	19	"	"
" " " " "	1 0,75	1	3x1,5	1,75	7	17	"	"
F.O. Booster Pump	1 0,28	1	3x1,5	0,72	7	12	"	"

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DESCRIPTION.	KW	CONDUCTORS.		MAXIMUM CURRENT		APPROX. LENGTH (lead plus return feet) M.C.S.	INSULATION.	PROTECTIVE COVERING.
		No. in Parallel per Pole.	Sectional Area of Conductor, sq. mm.	In the Circuit.	Rule.			
329 F.O. Booster Pump	1 0,28	1	3x1,5	0,72	7	14	Rubber	LC AB
60 " " "	1 1,5	1	3x1,5	3,4	7	16	"	"
61 " " "	1 1,5	1	3x1,5	3,4	7	13	"	"
212 Capstan	1 11	1	3x10	25	27	60	"	"
186 Petrol Pump	1 2	1	3x1,5	4,8	7	65	"	"
MG8 Towing Winch (Motorgenerat.)	1 310	3	3x120	580	630	30	V.C.	"
155 Welding Motor Generator	1 14	1	3x10	27,5	44	3	"	"
252 Boat Winch	1 7,5	1	3x10	15,1	27	22	Rubber	"
266 " " "	1 7,5	1	3x4	15,1	16	25	"	"
242 Band Saw	1 1,5	1	3x1,5	3	7	6	"	"
331 Hearth Fan	1 0,30	1	3x1,5	1	7	6	"	"
261 Food Lift	1 1,30	1	3x1,5	1,3	7	35	"	"
343 Hearth Fan	1 0,07	1	3x1,5	0,5	7	5	"	"
258 Fan, aft Main Diesel Room	1 2,60	1	3x1,5	5,5	7	12	"	"
267 Boat Winch	1 7,5	1	3x4	15,1	16	37	"	"
332 Hangar Door	1 0,8	1	3x1,5	2	7	24	"	"
260 Motor for Sounding Lead	1 1,1	1	3x1,5	2,5	7	30	"	"
13 Separator for F.O.	1 6,2	1	3x4	13,1	16	18	"	"
12 " " Lub.Oil	1 6,2	1	3x4	13,1	16	25	"	"
14 Sludge Pump	1 2,5	1	3x1,5	7,15	7	28	"	"
54 " " "	1 2,5	1	3x1,5	7,15	7	14	"	"
55 Condensate Pump	1 2,0	1	3x1,5	4,2	7	7	"	"
38 " " "	1 2,0	1	3x1,5	4,2	7	5	"	"
16 Hydrofor Pump	1 3,0	1	3x2,5	6,4	13	4	"	"
17 " " "	1 3,0	1	3x2,5	6,4	13	4	"	"
18 " " "	1 3,0	1	3x2,5	6,4	13	8	"	"
19 " " "	1 3,0	1	3x2,5	6,4	13	7	"	"
53 Separator for F.O.	1 6,2	1	3x4	13,1	16	11	"	"
52 " " Lub.Oil	1 6,2	1	3x4	13,1	16	11	"	"
247 Fan for Windlass Unit	1 0,75	1	3x1,5	1,5	7	7	"	"
244 Crane, 1½ Tons	1 16	1	3x16	~ 60	58	32	V.C.	"
245 " " "	1 16	1	3x16	~ 60	58	27	"	"
187 ss Windlass Capstan	1 55	1	3x70	140	148	7	"	"
188 ps " " "	1 55	1	3x70	140	148	8	"	"
256 Crane, 10 Tons	1 63	1	3x95	138	180	18	"	"
257 Crane, 10 Tons	1 63	1	3x120	138	210	29	"	"
341 Hoisting Gear for Provision	1 1,2	1	3x1,5	0,3	7	8	Rubber	"
352 Fan (Petrol Cofferdam)	1 0,04	1	3x1,5	0,3	7	8	"	"
353 " " "	1 0,04	1	3x1,5	0,3	7	8	"	"
351 " " "	1 0,04	1	3x1,5	0,3	7	8	"	"
291 " (Refr. Stores)	1 0,18	1	3x1,5	1	7	12	"	"
292 " " "	1 0,18	1	3x1,5	1	7	13	"	"
293 " " "	1 0,18	1	3x1,5	1	7	14	"	"
294 " " "	1 0,18	1	3x1,5	1	7	9	"	"
295 " " "	1 0,18	1	3x1,5	1	7	13	"	"
296 " " "	1 0,18	1	3x1,5	1	7	15	"	"
297 " " "	1 0,18	1	3x1,5	1	7	8	"	"
298 " " "	1 0,18	1	3x1,5	1	7	9	"	"
123 Cooling Water Pump for Refr.	1 0,75	1	3x1,5	2,2	7	8	"	"
124 " " " " "	1 0,75	1	3x1,5	2,2	7	8	"	"
151 Refr. Unit	1 6	1	3x6	12,7	21	6	"	"
152 " " "	1 6	1	3x6	12,7	21	6	"	"
1 Sewage Ejector Pump	1 8	1	3x6	16,6	21	15	"	"
82 " " "	1 8	1	3x4	15,8	16	19	"	"
90 Turning Gear, ss Propeller	1 12	1	3x10	25	27	15	"	"
96 " " , ps "	1 12	1	3x10	25	27	25	"	"
108 " " , centre "	1 12	1	3x10	25	27	47	"	"
23 " " , Main Diesel	1 3,2	1	3x2,5	6,7	13	23	"	"
24 " " , " "	1 3,2	1	3x2,5	6,7	13	20	"	"
25 " " , " "	1 3,2	1	3x2,5	6,7	13	22	"	"
26 " " , " "	1 3,2	1	3x2,5	6,7	13	26	"	"
63 " " , " "	1 3,2	1	3x2,5	6,7	13	22	"	"
64 " " , " "	1 3,2	1	3x2,5	6,7	13	20	"	"
65 " " , " "	1 3,2	1	3x2,5	6,7	13	22	"	"
66 " " , " "	1 3,2	1	3x2,5	6,7	13	26	"	"

DESCRIPTION.	KW	CONDUCTORS.		MAXIMUM CURRENT		APPROX. LENGTH (lead plus return feet) M.C.S.	INSULATION.	PROTECTIVE COVERING.
		No. in Parallel per Pole.	Sectional Area of Conductor, sq. mm.	In the Circuit.	Rule.			
F.O. Transfer Pump	1 10,5	1	3x6	20	21	17	Rubber	LC AB
Boiler F.O. Pump	1 3,7	1	3x2,5	7,7	13	9	"	"
Lub. Oil Transfer Pump	1 2,8	1	3x1,5	6,1	7	39	"	"
F.O. Transfer Pump	1 1,1	1	3x1,5	2,4	7	10	"	"
" " "	1 10,5	1	3x6	20	21	6	"	"
" " "	1 1,1	1	3x1,5	2,4	7	13	"	"
Lub. Oil " "	1 2,8	1	3x1,5	6,1	7	20	"	"
Lathe	1 0,68	1	3x1,5	2	7	6	"	"
Drilling Machine	1 0,60	1	3x1,5	1,6	7	3	"	"
Grinding Machine	1 0,30	1	3x1,5	1,0	7	8	"	"
" " "	1 0,65	1	3x1,5	1,7	7	7	"	"
Lathe	1 10,00	1	3x10	19	27	8	"	"
Cutter	1 3,5	1	3x2,5	8	13	7	"	"
Grinder	1 1,0	1	3x1,5	2,2	7	4	"	"
Drilling Machine	1 1,7	1	3x1,5	4,2	7	4	"	"
Air Compressor (for workshop)	1 6,0	1	3x2,5	11,7	13	22	"	"
Hoisting Gear in Eng. Room	1 4,0	1	3x2,5	8	13	26	"	"
" " " " "	1 4,0	1	3x2,5	8	13	26	"	"
" " " " "	1 4,0	1	3x2,5	8	13	26	"	"
" " " " "	1 4,0	1	3x2,5	8	13	26	"	"
Bilge Water Decoiling Unit	1 0,37	1	3x1,5	3,6	7	7	"	"
Hoisting Gear in Eng. Room	1 4,0	1	3x2,5	8	13	26	"	"
" " " " "	1 4,0	1	3x2,5	8	13	26	"	"
" " " " "	1 4,0	1	3x2,5	8	13	26	"	"
" " " " "	1 4,0	1	3x2,5	8	13	26	"	"
Heeling Pump	1 68,0	1	3x70	134	148	65	V.C.	"
" " "	1 43,0	1	3x35	89	93	62	"	"
" " "	1 43,0	1	3x35	89	93	36	"	"
" " "	1 74,0	1	3x70	145	148	40	"	"
Fan (exhaust) for accomodat.	1 1,5	1	3x1,5	3,6	7	7	Rubber	"
" " " " "	1 3,5	1	3x2,5	8,5	13	7	"	"
" " " " "	1 0,32	1	3x1,5	1	7	13	"	"
" (intake) " " "	1 12,8	1	3x10	24,8	27	5	"	"
" " " " "	1 1,5	1	3x1,5	3,6	7	8	"	"
" " " " "	1 1,5	1	3x1,5	3,6	7	8	"	"
" (exhaust) " " "	1 1,5	1	3x1,5	3,6	7	7	"	"
" " " " "	1 0,32	1	3x1,5	1	7	23	"	"
" " " " "	1 0,32	1	3x1,5	1	7	8	"	"
" " " " "	1 0,18	1	3x1,5	0,7	7	8	"	"
" " " " "	1 0,07	1	3x1,5	0,5	7	9	"	"
" " " " "	1 2,00	1	3x1,5	4,9	7	42	"	"
" " " " "	1 3,50	1	3x2,5	8,5	13	6	"	"
" (intake) " " "	1 5,00	1	3x2,5	10	13	9	"	"
" (exhaust) " " "	1 1,50	1	3x1,5	3,7	7	36	"	"
" (intake) " " "	1 9,00	1	3x10	19	27	5	"	"
" " " " "	1 12,80	1	3x10	24,8	27	21	"	"
" (exhaust) " " "	1 1,00	1	3x1,5	2,2	7	48	"	"
" " " " "	1 1,50	1	3x1,5	3,6	7	9	"	"
" " " " "	1 5,00	1	3x2,5	11	13	21	"	"
" " " " "	1 5,00	1	3x2,5	11	13	22	"	"
" " " " "	1 2,50	1	3x2,5	5,1	13	18	"	"
" (intake) " " "	1 2,60	1	3x2,5	5,8	13	19	"	"
" " " " "	1 2,60	1	3x2,5	5,8	13	10	"	"
" " " " "	1 9,00	1	3x10	19	27	32	"	"
" " " " "	1 9,00	1	3x10	19	27	12	"	"
" (exhaust) for Refr. Space	1 0,20	1	3x1,5	0,7	7	63	"	"
Ballast and Bilge Pump	1 11,00	1	3x10	20,5	27	56	"	"
" " " " "	1 11,00	1	3x10	20,5	27	13	"	"
Fan for aft Aux. Diesel room	1 2,10	1	3x1,5	4	7	25	"	"
" " fwd " " "	1 2,10	1	3x1,5	4	7	23	"	"
" " " Main " " "	1 2,60	1	3x1,5	5,5	7	12	"	"
" " " " " " "	1 2,60	1	3x1,5	5,5	7	14	"	"
" " Boiler Room	1 1,00	1	3x1,5	2,2	7	22	"	"
" " Transformer Room	1 1,90	1	3x1,5	3,7	7	7	"	"
" " " " "	1 1,90	1	3x1,5	3,7	7	9	"	"



DESCRIPTION.				CONDUCTORS.		MAXIMUM CURRENT		APPROX. LENGTH (lead plus return feet) M.T.S.	INSULATION.	PROTECTIVE COVERING.
				No. in Parallel per Pole.	Sectional Area of Strands sq. mm.	In the Circuit.	Rule.			
258	Fan for aft Main dieselroom	1	2,6	1	3x1,5	5,5	7	12	Rubber	LC AB
254	" " " " " "	1	2,6	1	3x1,5	5,5	7	18	"	"
354	" " Heating unit room	1	0,1	1	3x1,5	0,4	7	65	"	"
218	"Towing Winch Motor genr.	1	0,5	1	3x1,5	1,2	7	22	"	"
149	"Wing Prop. Motor room	1	0,95	1	3x1,5	2,0	7	19	"	"
153	"Centre Prop. " "	1	0,95	1	3x1,5	2,0	7	22	"	"
184	"Wing Prop. " "	1	0,95	1	3x1,5	2,0	7	33	"	"
185	"Centre Prop. " "	1	0,95	1	3x1,5	2,0	7	33	"	"
259	"Switch Board Room	1	1,60	1	3x1,5	3,1	7	33	"	"
HA 27:	Smelting Crucible	1	6,00	1	3x2,5	9,1	13	6	"	"
HA 28:	" " " "	1	6,00	1	3x2,5	9,1	13	7	"	"
324	Immerged Emergency Pump	1	50,0	1	3x50	98	118	105	V.C.	"
MG 2.	Motor for Exciter	1	50,0	1	3x50	96	118	12	"	"
MG 5.	" " " "	1	50,0	1	3x50	96	118	15	"	"
MG 1.	" " " "	1	50,0	1	3x50	96	118	15	"	"
168	Fan Motor for Prop. Generator	1	7,0	1	3x4	14	16	35	Rubber	"
167	" " " " " "	1	7,0	1	3x4	14	16	35	"	"
166	" " " " " "	1	7,0	1	3x4	14	16	34	"	"
165	" " " " " "	1	7,0	1	3x4	14	16	34	"	"
164	" " " " " "	1	7,0	1	3x4	14	16	34	"	"
163	" " " " " "	1	7,0	1	3x4	14	16	34	"	"
162	" " " " " "	1	7,0	1	3x4	14	16	35	"	"
161	" " " " " "	1	7,0	1	3x4	14	16	35	"	"
140	" " "ps " Motor	1	11,0	1	3x10	24	27	18	"	"
139	" " "ps " " "	1	11,0	1	3x10	24	27	11	"	"
138	" " "ss " " "	1	11,0	1	3x10	24	27	13	"	"
137	" " "ss " " "	1	11,0	1	3x10	24	27	10	"	"
34	Lub. Oil Pump for Prop. Gen.	1	0,4	1	3x1,5	1,1	7	47	"	"
33	" " " " " " "	1	0,4	1	3x1,5	1,1	7	47	"	"
32	" " " " " " "	1	0,4	1	3x1,5	1,1	7	33	"	"
31	" " " " " " "	1	0,4	1	3x1,5	1,1	7	33	"	"
30	" " " " " " "	1	0,4	1	3x1,5	1,1	7	33	"	"
29	" " " " " " "	1	0,4	1	3x1,5	1,1	7	33	"	"
28	" " " " " " "	1	0,4	1	3x1,5	1,1	7	36	"	"
27	" " " " " " "	1	0,4	1	3x1,5	1,1	7	36	"	"
87	" " " " " motor	1	2,2	1	3x1,5	5,7	7	30	"	"
86	" " " " " " "	1	2,2	1	3x1,5	5,7	7	28	"	"
85	" " " " " " "	1	2,2	1	3x1,5	5,7	7	28	"	"
84	" " " " " " "	1	2,2	1	3x1,5	5,7	7	27	"	"
93	Cooling Waterpump	1	11,0	1	3x10	20,5	27	38	"	"
92	" " " " " " "	1	11,0	1	3x10	20,5	27	38	"	"
MG 3	Motor for Exciter	1	96,0	1	3x120	185	210	28	V.C.	"
MG 4	" " " " " "	1	96,0	1	3x120	185	210	29	"	"
183	Fan Motor for Prop. Generator	1	7,0	1	3x4	14	16	15	Rubber	"
182	" " " " " " "	1	7,0	1	3x4	14	16	15	"	"
181	" " " " " " "	1	7,0	1	3x4	14	16	15	"	"
180	" " " " " " "	1	7,0	1	3x4	14	16	15	"	"
179	" " " " " " "	1	7,0	1	3x4	14	16	15	"	"
178	" " " " " " "	1	7,0	1	3x4	14	16	15	"	"
177	" " " " " " "	1	7,0	1	3x4	14	16	15	"	"
176	" " " " " " "	1	7,0	1	3x4	14	16	15	"	"
148	" " for Centre Prop. motor	1	11,0	1	3x10	24	27	13	"	"
147	" " " " " " "	1	11,0	1	3x10	24	27	11	"	"
146	" " " " " " "	1	11,0	1	3x10	24	27	13	"	"
145	" " " " " " "	1	11,0	1	3x10	24	27	13	"	"
74	Lub. Oil Pump for Prop. gen.	1	0,40	1	3x15	1,1	7	16	"	"
73	" " " " " " "	1	0,40	1	3x1,5	1,1	7	16	"	"
72	" " " " " " "	1	0,40	1	3x1,5	1,1	7	16	"	"
71	" " " " " " "	1	0,40	1	3x1,5	1,1	7	16	"	"
70	" " " " " " "	1	0,40	1	3x1,5	1,1	7	22	"	"
69	" " " " " " "	1	0,40	1	3x1,5	1,1	7	16	"	"
68	" " " " " " "	1	0,40	1	3x1,5	1,1	7	16	"	"
67	" " " " " " "	1	0,40	1	3x1,5	1,1	7	16	"	"
107	" " " " " motor	1	4,0	1	3x2,5	9,3	13	16	"	"
106	" " " " " " "	1	4,0	1	3x2,5	9,3	13	16	"	"

DESCRIPTION.				CONDUCTORS.		MAXIMUM CURRENT		APPROX. LENGTH (lead plus return feet) M.T.S.	INSULATION.	PROTECTIVE COVERING.
				No. in Parallel per Pole.	Sectional Area of Strands sq. mm.	In the Circuit.	Rule.			
103	Cooling water pump for prop. motor	1	11,0	1	3x10	20,5	27	15	Rubber	LC AB
G2	From Exciter for Prop. Generator to Switchboard PP 9	1		1	2x25	100	108	18	V.C.	"
G2	Ditto to PP 9 (spare)	1		1	2x25	100	108	9	"	"
G2	" " PP 10	1		1	2x70	200	212	23	"	"
G2	" " PP 10	1		1	2x70	200	212	28	"	"
G2	" " PP 11	1		1	2x25	100	108	11	"	"
G3	From Basic Exciter for prop. motor to Switchboard PP 9	1		1	2x10	55	63	21	"	"
G3	Ditto to PP 9 (spare)	1		1	2x10	55	63	12	"	"
G3	" " PP 11	1		1	2x10	55	63	13	"	"
G3	" " PP 10	1		1	2x25	110	108	20	"	"
G3	" " PP 10	1		1	2x25	110	108	22	"	"
G4	From Second Exciter for prop. motor to Switchboard PP 9	1		1	2x10	41	63	18	"	"
G4	Ditto to PP 9	1		1	2x10	41	63	11	"	"
G4	" " PP 11	1		1	2x10	41	63	14	"	"
G4	" " PP 10	1		1	2x16	82	84	19	"	"
G4	" " PP 10	1		1	2x16	82	84	26	"	"