

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

16 JUN 1930

Date of writing Report 20th May 1930 When handed in at Local Office 20th May, 1930 Port of NAGASAKI.

No. in Survey held at NAGASAKI. Date, First Survey 13th Jan. 30 Last Survey 14th May, 1930. (Number of Visits 12)

Reg. Book. 42091 on the Steel Twin Sc. Motor Vessel "Rio de Janeiro Maru". Tons { Gross 9626.69 Net 5848.11 in Sup.

Built at Nagasaki. By whom built Mitsubishi Zosen Kaisha Yard No. 457. When built 1930.

Owners Osaka Shosen Kabushiki Kaisha. Port belonging to Osaka.

Electric Light Installation fitted by Mitsubishi Zosen Kaisha, Ltd.. Contract No. When fitted 1930.

System of Distribution Two wire system. Pressure of supply for Lighting 110 volts, Heating 225 volts, Power 225 volts.

Direct or Alternating Current, Lighting Direct current Power Direct current.

If alternating current system, state frequency of periods per second

Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off Yes

Generators, do they comply with the requirements regarding rating Yes, are they compound wound Yes

are they over compounded 5 per cent. Yes, if not compound wound state distance between each generator

Where more than one generator is fitted are they arranged to run in parallel Yes, is an adjustable regulating resistance fitted in series with each shunt field Yes

Are all terminals accessible, clearly marked, and furnished with sockets Yes, are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched Yes

Position of Generators In Machinery Space. Are the lubricating arrangements of the generators as per Rule Yes

is the ventilation in way of the generators satisfactory Yes, are they clear of all inflammable material Yes

if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the generators

and, are the generators protected from mechanical injury and damage from water, steam or oil Yes

are their axes of rotation fore and aft Yes

Earthing, are the bedplates and frames of the generating plant efficiently earthed Yes are the prime movers and their respective generators in metallic contact Yes

Main Switch Boards, where placed In Machinery space at fore end on 3rd Deck level.

If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard

Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes Yes

are they protected from mechanical injury and damage from water, steam or oil Yes, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards

are they constructed wholly of durable, non-ignitable non-absorbent materials Yes, is all insulation of high dielectric strength and of permanently high insulation resistance Yes

if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Yes

and is the frame effectively earthed Yes. Are the fittings as per Rule regarding:— spacing or shielding of live parts

Yes, accessibility of all parts Yes, absence of fuses on back of board Yes, proportion of omnibus bars Yes

Yes, individual fuses to voltmeter, pilot or earth lamp Yes, connections of switches Yes

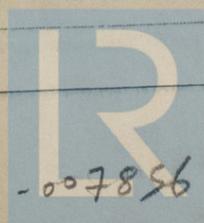
Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches. A double pole circuit breaker with overload trip, time lag device and reverse current trip & a single pole equalizer switch interlocked with the circuit breaker as per Rules, and a double pole knife switch for each generator: A double pole circuit breaker with overload trip and time lag device or a double pole knife switch and an enclosed fuse on each pole for each out-going circuit.

Instruments on main switchboard 8 ammeters 4 voltmeters / synchronising device for paralleling purposes.

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system By lamp.

Switches, Circuit Breakers and Fusible Out-outs, do these comply with the requirements of the Rules. Yes

Joint Boxes Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule. Yes



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**Cables:** Single, twin, concentric, or multicore Single and Multicore are the cables insulated and protected as per Tables IV or V of the Rules Yes  
 Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load 11 volts for Power. 6 " " Heater. 5.2 " " Lighting.

**Cable Sockets and other connections,** are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets Yes

**Paper Insulated Cables.** If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound /

**Cable Runs,** are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage Yes /

**Support and Protection of Cables,** state how the cables are supported and protected Clamped on metal bracket or perforated galvanized plate by clip and protected by steel armouring or steel pipe where necessary.  
 If cables are run in wood casings, are the casings and caps secured by screws /, are the cap screws of brass /, are the cables run in separate grooves /. If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII Yes /

**Refrigerated Chambers,** if lights are fitted, are the cables and fittings in accordance with the special requirements Yes /

**Joints in Cables,** state if any, and how made, insulated, and protected In junction boxes, as per rule. /

**Watertight Glands and Deck Tubes,** are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands Yes /

**Bushes in Beams and Non-watertight Partitions,** where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed Yes / state the material of which the bushes are made Lead. /

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas. There is no earthing connection except for wireless telegraph, sectional area of which is 0.00715 square inch. /  
 are their connections made as per Rule Yes /

**Alternative Lighting,** are the groups of lights in the propelling machinery space arranged as per Rule Yes /

**Emergency Supply,** state position and method of control of the emergency supply and how the generator is driven /

**Navigation Lamps,** are these separately wired Yes, controlled by separate switch and separate fuses Yes, are the fuses double pole Yes, are the switches and fuses grouped in a position accessible only to the officers on watch Yes  
 has each navigation lamp an automatic indicator as per Rule Yes

**Secondary Batteries,** are they constructed and fitted as per Rule Yes

**Fittings,** are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight Yes, are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected Lamps in steerage are protected by strong metal guards.  
 are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected /  
 how are the cables led /  
 where are the controlling switches situated /

**Searchlight Lamps,** No. of /, whether fixed or portable /, are their fittings as per Rule /

**Arc Lamps,** other than searchlight lamps, No. of /, are their two parts insulated from the frame or case /, are their fittings as per Rule /

**Motors,** are their working parts readily accessible Yes, are the coils self-contained and readily removable for replacement Yes, are the brushes, brush holders, terminals and lubricating arrangements as per Rule Yes, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material Yes  
 are they protected from mechanical injury and damage from water, steam or oil Yes are their axes of rotation fore and aft Yes  
 if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type Totally enclosed if not of this type, state distance of the combustible material horizontally or vertically above the motors / and /

**Control Gear and Resistances,** are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule Yes

**Lightning Conductors,** where lightning conductors are required, are these fitted as per Rule /

**Ships carrying Oil having a Flash Point less than 150° F.** Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings /  
 If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office /

**PARTICULARS OF GENERATING PLANT.**

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	230	225	1022	310	Diesel Engine.	Tarakan oil.	Above 150°
AUXILIARY	2	35	110	318	1500	D.G. 220 V. 55 HP Motor.		(210 A).
EMERGENCY								
ROTARY TRANSFORMER								

**LIGHTING AND HEATING CONDUCTORS.**

Ref. No.	DESCRIPTION.	No. of Conductors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Ampères.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	MAIN GENERATOR								
	EQUALISER CONNECTIONS								PLEASE SEE SEPARATE SHEETS.
	AUXILIARY GENERATOR								
	EMERGENCY GENERATOR								
	ROTARY TRANSFORMER								
	AUXILIARY SWITCHBOARDS								
	ENGINE ROOM								
	BOILER ROOM								
	ACCOMODATION								
	WIRELESS								
	SEARCHLIGHT								
	MASTHEAD LIGHT								
	SIDE LIGHTS								
	COMPASS LIGHTS								
	POOP LIGHTS								
	CARGO LIGHTS								
	ARC LAMPS								
	HEATERS								

**MOTOR CONDUCTORS.**

Ref. No.	DESCRIPTION.	No. of Motors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Ampères.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	BALLAST PUMP								
	MAIN BILGE LINE PUMPS								PLEASE SEE SEPARATE SHEETS.
	GENERAL SERVICE PUMP								
	EMERGENCY BILGE PUMP								
	SANITARY PUMP								
	CIRC. SEA WATER PUMPS								
	CIRC. FRESH WATER PUMPS								
	AIR COMPRESSOR								
	FRESH WATER PUMP								
	ENGINE TURNING GEAR								
	ENGINE REVERSING GEAR								
	LUBRICATING OIL PUMPS								
	OIL FUEL TRANSFER PUMP								
	WINDLASS								
	WINCHES, FORWARD								
	WINCHES, AFT								
	STEERING GEAR								
	(a) MOTOR GENERATOR								
	(b) MAIN MOTOR								
	WORKSHOP MOTOR								
	VENTILATING FANS								

Steel Twin Screw Motor Vessel "Rio de Janeiro Maru".

LIGHTING and HEATING CONDUCTORS.

Ref. No.	Description.	No. of Cond.	Effective Area of each Cond. Sq. in.	Composition of Strand.		Total Max. Current Amperes	Approximate Length L & R ft.	Insulated with.	How Protected.
				No.	Dia.				
1	No.3 Main Generator.	1	.00713	7	.036	1022	65	Rubber	L.C.A.
2	Equalizer for No.3 Main Gen.	1	.07985	"	"	127	130	"	"
3	Gen. side No.2 35KW.Mot-Gen.	1	.007	7	.036	"	65	"	"
4	Equalizer for Gen. of M-G.	1	.60493	91	.092	318	48	"	"
5	Motor side No.2 35KW.G-M.	2	.40551	61	"	210	96	"	"
71	No.1 Submain board.	2	.06	19	.064	78.5	48	"	"
72	No.1 Distribution board.	2	.00713	7	.036	19.2	90	"	"
73	No.2 " " "	2	"	7	"	14.3	4	"	L.C.
74	No.3 " " "	2	"	7	"	12	126	"	"
75	No.4 " " "	2	"	7	"	16.2	144	"	"
76	No.5 " " "	2	"	7	"	16.8	4	"	"
77	No.2 Submain board.	2	.06112	19	.064	65.4	4	"	L.C.A.
78	No.6 Distribution board.	2	.00701	7	.036	17.6	138	"	L.C.
79	No.7 " " "	2	"	7	"	10.4	4	"	L.C.A.
80	No.8 " " "	2	.00322	1	.064	8.2	270	"	"
81	No.9 " " "	2	.01267	7	.048	29.2	162	"	L.C.
82	No.3 Submain board.	2	"	7	"	25	168	"	L.C.A.
83	No.10 Distribution board.	2	.00322	1	.064	8.5	186	"	"
84	No.11 " " "	2	.00713	7	.036	5.8	446	"	"
85	No.12 " " "	2	"	7	"	10.3	300	"	"
86	No.4 Submain board.	2	.06112	19	.064	73.5	138	"	"
87	No.13 Distribution board.	2	.00713	7	.036	14	218	"	"
88	No.14 " " "	4	.00322	1	.064	12.6	218	"	"
89	No.15 " " "	2	"	1	"	8	110	"	L.C.
90	No.16 " " "	2	.00713	7	.036	21.1	4	"	"
91	No.17 " " "	4	.00322	1	.064	17.8	272	"	L.C.A.
92	No.5 Submain board.	2	.06112	19	"	66.8	160	"	"
93	No.18 Distribution board.	2	.00713	7	.036	10.3	130	"	"
94	Flash light for whistle.	2	"	7	"	5.2	117	"	L.C.
95	" " " " "	2	"	7	"	5	335	"	L.C.A.
96	No.19 Distribution board.	2	.00322	1	.064	10.8	4	"	L.C.
97	No.20 " " "	2	.00713	7	.036	20.2	4	"	"
98	No.21 " " "	2	"	7	"	15.7	4	"	L.C.A.
99	No.22 " " "	2	"	7	"	9.8	405	"	"
100	No.6 Submain board.	2	.02252	7	.064	39	124	"	"
101	No.23 Distribution board.	2	.00713	7	.036	14	2	"	"
102	No.24 " " "	2	"	7	"	20	2	"	"
103	Engine room cargo lamp.	2	.00181	1	.048	5	38	"	"
104	" " " " "	2	.00475	168	.006	5	40	"	H.B.F.C.
105	" " Bus-bar lamp.	2	.00181	1	.048	1.2	106	"	L.C.A.
106	No.7 Submain board.	2	.01267	7	"	24.4	225	"	"
107	Cargo lamp for No.1 Hatch.	2	.00322	1	.064	4.8	40	"	"
108	" " " No.2 "	2	"	1	"	"	62	"	"
109	" " " fore mast.	2	"	1	"	10	38	"	"
110	" " " " "	2	.00475	168	.006	5	65	"	H.B.F.C.
111	" " " No.3 Hatch.	2	.00713	7	.036	4.8	264	"	L.C.A.
112	" " " " "	2	.00475	168	.006	2.4	72	"	H.B.F.C.
113	No.8 Submain board.	2	.01267	7	.048	19.6	400	"	L.C.A.
114	Cargo lamp for No.4 Hatch.	2	.00322	1	.064	4.8	50	"	"
115	" " " " "	2	.00475	168	.006	2.4	82	"	H.B.F.C.
116	" " for No.5 Hatch.	2	.00322	1	.064	4.8	48	"	L.C.A.
117	" " for main mast.	2	"	1	"	10	46	"	"
118	" " " " "	2	.00475	168	.006	5	65	"	H.B.F.C.
119	Navigation lamp.	2	.00713	7	.036	3.2	291	"	L.C.A.
120	Fore mast head lamp.	2	.00181	1	.048	0.6	491	"	"
121	Main mast head lamp.	2	"	1	"	0.6	795	"	"
122	Starboard side lamp.	2	"	1	"	0.6	177	"	"
123	" " " " "	2	.00172	61	.006	0.6	3	"	H.B.F.C.
124	Port side lamp.	2	.00181	1	.048	0.6	169	"	L.C.B.
125	" " " " "	2	.00172	61	.006	0.6	3	"	H.B.F.C.
126	Stern lamp.	2	.00181	1	.048	0.6	821	"	L.C.A.
127	No.9 Submain board.	2	.03438	19	"	49.2	138	"	"
128	No.25 Distribution board.	2	.00713	7	.036	15.6	218	"	"
129	No.26 " " "	4	.00322	1	.064	13.2	218	"	"
130	No.27 " " "	2	"	1	"	10	4	"	L.C.
131	No.28 " " "	2	"	1	"	10.4	272	"	L.C.A.
132	No.10 Submain board.	2	.01267	7	.048	19.4	148	"	"
133	No.29 Distribution board.	2	.00713	7	.036	16.2	4	"	L.C.
134	No.30 " " "	2	.00322	1	.064	3.2	606	"	L.C.A.
135	Main Dist. board for Heater.	2	.18598	37	.08	145.45	136	"	"
136	No.11 Submain board.	2	.02252	7	.064	36.36	4	"	"
137	Heater (Social hall Star).	4	.00181	1	.048	9.1	160	"	H.B.
138	No.12 Submain board.	2	.02252	7	.064	36.36	4	"	L.C.A.
139	Heater (Social hall Port).	4	.00181	1	.048	9.1	130	"	H.B.
140	No.13 Submain board.	2	.02252	7	.064	45.46	126	"	L.C.
141	Imitation fire,	6	.00181	1	.048	18.2	84	"	H.B.
142	Heater (Smoke room Star).	4	"	1	"	9.1	156	"	"
143	No.14 Submain board.	2	.01267	7	"	27.27	126	"	L.C.
144	Heater (Smoke room Port).	4	.00181	1	"	9.1	130	"	H.B.
148	Stern lamp.	2	.00172	61	.006	0.6	3	"	H.B.F.C.

L.C.A. - Lead covered and armoured. L.C. - Lead covered.  
H.B.F.C. - Hemp braided flex.cord. H.B. - Hemp braided.

All Conductors are of annealed copper conforming to British Standard Specification No. 7.  
The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.  
NAGASAKI WORKS, MITSUBISHI ZOSEN KAISHA, LTD.

*J. Goto*  
for GENERAL MANAGER.

Electrical Engineers. Date 21/5/30

COMPASSES.

Distance between electric generators or motors and standard compass 12 feet from gyro pilot motor.

Distance between electric generators or motors and steering compass 3.5 feet from gyro pilot motor.

The nearest cables to the compasses are as follows:-

A cable carrying 0.2 Ampères 1 feet from standard compass 1 feet from steering compass.

A cable carrying 2.5 Ampères 12 feet from standard compass 3.5 feet from steering compass.

A cable carrying / Ampères / feet from standard compass / feet from steering compass.

Have the compasses been adjusted with and without the electric installation at work at full power Yes

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted Yes

The maximum deviation due to electric currents was found to be No degrees on Any and every course in the case of the standard compass, and / degrees on / course in the case of the steering compass.

NAGASAKI WORKS, MITSUBISHI ZOSEN KAISHA, LTD.

*J. Goto*  
for GENERAL MANAGER.

Builder's Signature. Date 21/5/30

Is this installation a duplicate of a previous case Yes If so, state name of vessel "Buenos Aires Maru"  
Nagasaki Report No.1701.

General Remarks (State quality of workmanship, opinions as to class, &c.)

The materials and workmanship are good, and the installation has been fitted in accordance with the Rules, tested under working condition and found satisfactory.

Plans sent under separate cover of:- Wiring diagram (2 sheets).

It is submitted that  
this vessel is eligible for  
THE RECORD Elec. Light.

*J. Goto*  
18/6/30

Total Capacity of Generators 760 Kilowatts.

The amount of Fee ... £ 505:00 : 14. 5. 30

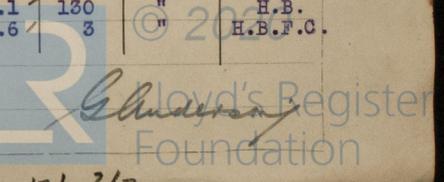
Travelling Expenses (if any) £ : 23. 7. 30

*George Anderson*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 20 JUN 1930

Assigned *Elec. Light*

Imp. 288 - Transfer. (The Surveyors are requested to write on or below the space for Committee's Minute.)



007846-007856-0121 2/3

Steel Twin Sc.Motor Vessel "Rio de Janeiro Maru".

MOTOR CONDUCTORS.

Ref. No.	Description.	No. of Mot.	Effective Area of Each Cond. Sq.in.	Composition of Strand		Total Max. Current Amperes	Approximate Length L & R Ft.	Insulated with	How Protected.
				No.	Dia.				
6	No.1 Auxiliary Switchboard.	9	.60493	91	.092	703	520	Rubber	L.C.A.
7	Windlass motor.	1	.40551	61	"	264	240	"	"
8	No.7 winch motor.	1	.11903	37	.064	120	350	"	"
9	No.2 Auxiliary Switchboard.	6	.40551	61	.092	519	460	"	"
10	No.9 winch motor.	1	.11903	37	.064	120	80	"	"
11	Mooring winch motor.	1	.18598	37	.08	172	190	"	"
12	No.1 Steering motor.	2	.11903	37	.064	138	650	"	"
13	Junct.box for Laundry machy.&c		.03438	19	.048	45	550	"	"
14	Washing machine.	1	.00713	7	.036	13.5	38	"	"
15	Hadro extractor.	1	"	7	"	20	50	"	"
16	Electric iron &c.		"	7	"	11.5	57	"	"
17	Junct.box for Ref.Machine.		.60493	91	.092	320	160	"	"
18	No.2 Ref.comp.motor.	2	.18598	37	.08	173	70	"	"
19	No.2 Brine pump motor.	2	.01267	7	.048	23	90	"	"
20	3 HP Ordnance fan motor.	1	.00713	7	.036	13.5	150	"	"
21	.35 HP " " " "	1	"	7	"	1.8	140	"	"
22	Junct.box for Vent.fan motor.		.02252	7	.064	36.8	150	"	"
23	No.3 General vent.fan motor.	3	.00713	7	.036	9.2	280	"	"
24	Switchboard for Wl. tel.		"	7	"	16	220	"	"
25	Secondary battery.		"	7	"	16	122	"	"
26	Motor side, 2 KVA. M-alt.	1	"	7	"	15	70	"	L.C.
27	Gen.side " " "	1	.01267	7	.048	10	70	"	L.C.A.
28	Motor side 1/4 KVA. M-alt.	1	.00713	7	.036	16	80	"	"
29	Gen. side " " "	1	"	7	"	5	80	"	"
30	Junct.box for Gyro-comp.		"	7	"	6.4	230	"	"
31	Fresh W.Cir.pump M.Gyro-comp.	1	.00322	1	.064	1.4	40	"	L.C.
32	Motor alternator, Gyro-comp.	1	"	1	"	2.5	40	"	L.C.A.
33	Fresh hot W.Cir.P.M.carelif.	1	.00713	7	.036	3.45	140	"	"
34	Junct.box Cooking Apparatus.		.11903	37	.064	64.86	140	"	"
35	Habert mixer.	1	.00713	7	.036	5.6	90	"	"
36	No.2 Ord.fan M.Galley Exh.	2	"	7	"	9.2	40	"	"
37	No.1 cooking fan motor.	1	"	7	"	4.58	16	"	"
38	Baker's oven.		.06112	19	.064	40.9	60	"	"
39	Junct.box for cooking app.		.01267	7	.048	29.3	140	"	"
40	Baggage lift.	1	.00713	7	.036	11	30	"	"
41	Tofu making motor.	1	"	7	"	5.9	80	"	"
42	Potato peeler.	1	"	7	"	2.4	10	"	"
43	Toaster.		"	7	"	16	130	"	"
44	Cocktail mixer.	1	.00322	1	.064	1	90	"	"
45	Aut.egg boiler.		.00713	7	.036	8	40	"	"
46	No.3 Aux. Switchboard.	1	.60493	91	.092	670	110	"	L.C. L.C.A.
47	Fuel oil service pump M.	1	.00713	7	.036	6.2	180	"	"
48	No.1 Lub. oil purifier.	2	"	7	"	12.3	280	"	"
49	Fire & Sanitary pump motor.	1	.18598	37	.08	137	220	"	"
50	Junct.box for F.O.purifier.		.02252	7	.064	36.9	150	"	"
51	No.3 Fuel oil purifier.	3	.00713	7	.036	12.3	40	"	"
52	No.3 Aux. Switchboard.		1.07985	127	.104	610	110	"	"
53	No.2 Jacket cooling W.P.	2	.40551	61	.092	190	140	"	"
54	No.2 piston cooling W.P.	2	.11903	37	.064	109	120	"	"
55	No.2 Lub. oil pump motor.	2	.15898	37	.08	128	60	"	"
56	F.O.transfer Pump for purifier	1	.00713	7	.036	11	160	"	"
57	Lub.oil shifting P.M.	1	"	7	"	6.2	350	"	"
58	No.2 F.O.shift P.M.	2	.11903	37	.064	97	76	"	"
59	No.2 Bilge pump motor.	2	.03438	19	.048	44	160	"	"
60	Fire & general service P.M.	1	.18598	37	.08	137	250	"	"
61	Hot sanitary pump motor.	1	.06112	19	.064	62	220	"	"
62	No.2 Fresh water pump M.	2	.01267	7	.048	30	300	"	"
63	No.1 Turbo blower motor.	2	.60493	91	.092	1250	90	"	"
64	No.2 Aux.air comp.motor.	2	"	91	"	745	260	"	"
65	Work shop motor.	1	.00713	7	.036	22	110	"	"
66	Motor siren.	1	.02252	7	.064	35	800	"	"
67	Junct.box Main Eng.turning M		.06112	19	"	84	300	"	"
68	No.1 Main Eng.turning motor	2	.02252	7	"	42	30	"	"
69	Junct.box Eng.Rm.Vent.fan M.		.06112	19	"	68	210	"	"
70	No.1 Eng.Rm.Vent fan motor.	2	.02252	7	"	34	50	"	"
145	Self steerer.	3	.00322	1	"	10	50	"	L.C.
146	Ext.box for cocktail mixer and fountain motor.	2	"	1	"	2.3	168	"	L.C.A.
147	Fountain pump motor.	2	"	1	"	1.3	156	"	L.C.

L.C.A. - Lead covered and armoured.  
L.C. - Lead covered.

*G. Anderson*

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Conductors