

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

24 JUL 1935

Date of writing Report 19 When handed in at Local Office 17.7.35 Port of Glasgow
 No. in Survey held at Glasgow Date, First Survey 28th Mar Last Survey 14th July 1935
 Reg. Book. on the M.V. "KARU" (Number of Visits 7)
 Tons { Gross 1044.
 Net 529.
 Built at Glasgow By whom built Alex. Stephen & Sons Ltd Yard No. 546 When built 1935
 Owners Union I. S. Co. of New Zealand Port belonging to Wellington
 Electric Light Installation fitted by Alex. Stephen & Sons Ltd Contract No. 546 When fitted 1935
 Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Two wires
 Pressure of supply for Lighting 220 volts, Heating 220 volts, Power 220 volts.
 Direct or Alternating Current, Lighting Direct Power Direct

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 YesGenerators, do they comply with the requirements regarding temperature rise Yes, are they compound wound Yesare 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 YesHave certificates of test results for machines under 100 kw. been submitted and approved Yes Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing —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 YesAre the lubricating arrangements of the generators as per Rule YesPosition of Generators In main engine room bottom platform., 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 YesEarthing, are the bedplates and frames of the generating plant efficiently earthed Yes are the prime movers and their respective generators in metallic contact YesMain Switch Boards, where placed In main engine room on special platform

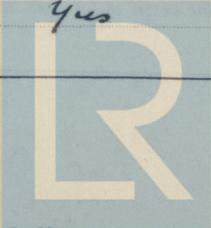
If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard —

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 Yesif situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards — and —, are they constructed wholly of durable, non-ignitable non-absorbent materials Yesis all insulation of high dielectric strength and of permanently high insulation resistance Yesis it of an approved type Yes, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Yesis the non-hygroscopic insulating material of an approved type Yes, and is the frame effectively earthed YesAre 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, temperature rise ofomnibus bars Yes, individual fuses to voltmeter, pilot or earth lamp Yes, are moving parts of switches alive in the"off" position No are all screws and nuts securing connections effectively locked Yes are any fuses fitted on the live side ofswitches No Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switchesSingle pole circuit breakers (one pole equalizer) with reverse current and o/c trips for each generator. D.P. 1/2 circuit breakers

Are turbine driven generators fitted with emergency trip switch as per rule — Are cupboards or compartments containing switchboards composed of

fire-resisting material or lined with approved material Yes Instruments on main switchboard 4 ammeters 3

voltmeters — synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection

Yes Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the systemEarth lamps Switches, Circuit Breakers and Fusible Cut-outs,do these comply with the requirements of the Rules Yes are the fusible cutouts of an approved type Yes have the reversed

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current protection devices been tested under working conditions Yes

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

Cables: Single, twin, concentric, or multicore Single are the cables insulated and protected as per Tables IV, V, X or XI of the Rules Yes

If the cables are insulated otherwise than as per Rule, are they of an approved type — Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load 4.5 Volts

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

Paper Insulated and Varnished Cambric Insulated Cables. If conductors are paper or varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound Yes, or waterproof insulating tape Yes

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 Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit Yes

Support and Protection of Cables, state how the cables are supported and protected Main V.I.R. Braided run in G.I. pipe on deck. hilly spaces L.C.A.B. clipped Accommodation L.C. Braided clipped.

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, are the cables and fittings in accordance with the special requirements —

Joints in Cables, state if any, and how made, insulated, and protected None

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 metallic sheathing of cables, leads from the boiler and caulked by means of bonding clips or glands.

are their connections made as per Rule —

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 —

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 —

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 —

are all fittings suitably ventilated Yes, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials Yes

Heating and Cooking Appliances, are they constructed and fitted as per Rule Yes, are air heaters constructed and fitted as per Rule Yes

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

Arc Lamps, other than searchlight lamps, No. of —, are their live 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 or Vertical, 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 —

if not of this type, state distance of the combustible material horizontally or vertically above the motors — and —

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing None

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 — are all fuses of the filled cartridge type — are they of an approved type —

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office —

Spare Gear, if the vessel is for open sea service have spares been supplied as per Rule Yes

PARTICULARS OF GENERATING PLANT.										
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.			
		Kilowatts.	Volts.	Amperes.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.		
MAIN ...	THREE	60	220	272	900	Oil Engines	Diesel Oil	Above 150° F.		
AUXILIARY ...										
EMERGENCY ...										
ROTARY TRANSFORMER	ONE	20	220	91	1460	a.c. motor fed from phase supply 30.75 H.P. 230 Volts 50 per.				
GENERATOR, LIGHTING AND HEATING CONDUCTORS.										
DESCRIPTION.	No. of	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		No. per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR ...	1		30240	37	103	272	346	60	V.I.R.	L.C.A.B.
EQUALISER CONNECTIONS ...	1		10090	19	083	—	172	60	"	"
AUXILIARY GENERATOR ...										
EMERGENCY GENERATOR ...										
ROTARY TRANSFORMER MOTOR	1		03960	19	052	71	94	180	V.C.	L.C.B.
GENERATOR	1		0600	19	064	91	122	120	V.C.	L.C.A.B.
ENGINE ROOM ...	1		00455	7	029	12.6	18.2	30	V.I.R.	"
BOILER ROOM ...										
AUXILIARY SWITCHBOARDS ...										
Navigation	1		00455	7	029	7.6	18.2	210	V.I.R.	L.C.B.
ACCOMMODATION	1		00299	3	036	3.3	12	240	V.I.R.	Gal. Tubing
Household	1		00462	7	052	27.1	37	90	V.I.R.	L.C.A.B.
Officers' Mess	1		00455	7	029	9.1	18.2	18	V.I.R.	L.C.B.
Upper Deck Port.	1		00455	7	029	7.6	18.2	135	V.I.R.	Gal. Tubing
Lower Deck	1		00701	7	036	15	24	210		
WIRELESS										
SEARCHLIGHT										
MASTHEAD LIGHT	1		00194	3	029	18	7.8	300	V.I.R.	L.C.B. and Tubing
SIDE LIGHTS	1		00194	3	029	18	7.8	40	V.I.R.	L.C.B.
COMPASS LIGHTS	1		00194	3	029	10	7.8	20	V.I.R.	"
POOP LIGHTS										
CARGO LIGHTS	1		00455	7	029	10.9	18.2	135	V.I.R.	L.C.A.B.
ARC LAMPS										
HEATERS	1		03960	19	052	60	64	90	V.I.R.	L.C.A.B.
MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		No. per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	00462	7	052	26	37	135	V.I.R.	L.C.A.B.
MAIN BILGE LINE PUMPS	1	1	01462	7	052	26	37	105	"	"
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP										
SANITARY PUMP										
CIRC. SEA WATER PUMPS										
CIRC. FRESH WATER PUMPS										
AIR COMPRESSOR	1	1	0600	19	064	93	122	180	V.C.	L.C.A.B.
FRESH WATER PUMP	1	1	00299	3	036	4.5	12	40	V.I.R.	"
ENGINE TURNING GEAR										
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	1	1	03214	7	064	50	68	180	V.C.	"
OIL FUEL TRANSFER PUMP	1	1	00455	7	029	9	18.2	40	V.I.R.	"
WINDLASS	1	1	07592	19	072	89	97	150	V.I.R.	Gal. Tubing
WINCHES, FORWARD	4	1	11650	37	064	136	138(140)	60	V.I.R.	"
Hand & Wind Smelter	1	1	40640	61	093	272	35(40)	150	V.I.R.	"
WINCHES, AFT	2	1	11650	37	064	136	138(140)	45	V.I.R.	"
Hand & Wind Smelter	1	1	14750	37	072	150	164(140)	120	V.I.R.	L.C.A.B.
STEERING GEAR—										
(a) MOTOR GENERATOR	1	1	01462	7	052	22	37	360	V.I.R.	L.C.A.B.
(b) MAIN MOTOR	1	1	00455	7	029	15.6	18.2	115	V.I.R.	L.C.A.B.
WORKSHOP MOTOR										
VENTILATING FANS										
Oil Fuel Purifiers	1	1	00194	3	029	3	7.8	60	V.I.R.	"
Lab Oil	1	1	00194	3	029	3	7.8	50	V.I.R.	"
Refrigerator Motor	1	1	00299	3	036	6	12	60	V.I.R.	"

All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical Commission Publication No. 28).

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

ALEXANDER STEPHEN & SONS, LIMITED

Wm. Quarrie

Electrical Engineers.

Date

17/7/35

Asst. Secretary

COMPASSES

Distance between electric generators or motors and standard compass

80 feet

Distance between electric generators or motors and steering compass

90 feet

The nearest cables to the compasses are as follows:

A cable carrying 119 Amperes 10 feet from standard compass 10 feet from steering compass.

A cable carrying 7.6 Amperes 10 feet from standard compass 10 feet from steering compass.

A cable carrying Amperes 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

1/2

degrees on

any

course in the case of the standard

compass, and

1/2

degrees on

any

course in the case of the steering compass.

FOR:

ALEXANDER STEPHEN & SONS, LIMITED

Wm. Quarrie

Builder's Signature.

Date

17/7/35

Asst. Secretary

Is this installation a duplicate of a previous case

No.

If so, state name of vessel

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

This installation has been fitted on board under special Survey, tested under full working conditions and found satisfactory. The materials and workmanship were found to be good and sound.

17/7/35.

Wm. Quarrie

25/7/35.

Total Capacity of Generators Kilowatts.

The amount of Fee ... £ 35 : 10 :

When applied for,

17.7.35

When received,

4.9.35

Travelling Expenses (if any) £

0 : 0 : 0

Committee's Minute GLASGOW 23 JUL 1935

Assigned SEE ACCOMPANYING MACHINERY REPORT.



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