

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

25 SEP 1935

Received at London Office

Date of writing Report 10.9.1935 When handed in at Local Office 21.9.1935 Port of Glasgow
 No. in Survey held at Glasgow Date, First Survey 30.7.35 Last Survey 11th Sept 1935
 Reg. Book. 38654 on the S.S. 'INVENTOR' (Number of Visits 7)
 Tons { Gross 6210
 Net 3840
 Built at Glasgow By whom built D.W. Henderson & Co. Ltd. Yard No. 953M. When built 1935
 Owners Glasgow S.S. Co. Ltd. (J. F. Harrison - Mgrs) Port belonging to Liverpool
 Electric Light Installation fitted by Campbell & Jackson Ltd Contract No. 953 When fitted 1935
 Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Single wire with hull return

Pressure of supply for Lighting 110 volts, Heating - volts, Power 110 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 Yes

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

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

Where more than one generator is fitted are they arranged to run in parallel No is an adjustable regulating resistance fitted in

series with each shunt field Yes Have 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 Yes Are the lubricating arrangements of the generators as per Rule Yes

Position of Generators 12 1/2 K.W. generators in Eng. Room, 5 K.W. generators in compartment outside Eng. Room, 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 12 1/2 K.W. set Yes, 5 K.W. set No

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 Main switchboard in Engine Room near to generators.

Aux. Switchboard in Aux. Gen. Compartment. 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 Yes

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 - and - 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.

is 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 Sindano's, is the non-hygroscopic insulating material of an approved

type 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, temperature rise of

omnibus 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 of

switches No Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

Single pole switch for each generator, S.P. switch for each outgoing circuit, S.P. change-over switch for interconnecting between main & auxiliary switchboards

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

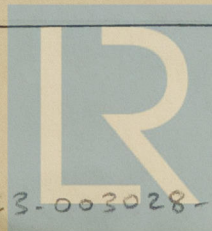
fire-resisting material or lined with approved material - Instruments on main switchboard 1 ammeters 1

voltage meters - synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection

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

None - Single wire system. 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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Lloyd's Register
Foundation

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current protection devices been tested under working conditions — **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 *2. 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 —, or waterproof insulating tape — **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
Support and Protection of Cables, state how the cables are supported and protected. *Mains L.C.B. laid in galv. tubing, Machinery*
Spaces L.C.B. Branded Clipped Accommodation V.R. B. B. B. in wood casings.
If cables are run in wood casings, are the casings and caps secured by screws *Yes*, are the cap screws of brass *Yes*, are the cables run in
separate grooves *Yes*. 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 *Each conductor carrying the*
working current connected to ship's structure is of the same sectional area as the
corresponding conductors of the insulated portion, 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** —
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 —
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 —, are air heaters constructed and fitted as per Rule —
Searchlight Lamps, No. of — *Correction only*, 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 *small motor only* 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 — **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.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.	
MAIN ...	1	12.5	110	114	450	Steam Engine	—	—	
AUXILIARY ...	1	5	110	45.5	1100	Oil Engine	Paraffin	Below 150° F.	
EMERGENCY ...									
ROTARY TRANSFORMER									

GENERATOR, LIGHTING AND HEATING CONDUCTORS.									
DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR ...	1	11680	37	.064	114	130	22.	Rubber.	L. C. A. B.
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR ...	1	0600	19	.064	45.5	83	24	"	L. C. B.
EMERGENCY GENERATOR									
ROTARY TRANSFORMER									
ENGINE ROOM... BOILER ROOM... AUXILIARY SWITCHBOARDS	1 1 1	.00701 .0600 .0600	7 19 19	.036 .064 .064	12.4 46 46	24 83 83	4 70 70	" " "	L. C. A. B. L. C. B. L. C. B.
ACCOMMODATION									
ENGINEERS D.B.	1	.00701	7	.036	18	24	40	"	L. C. B.
SALOON D.B.	1	.00701	7	.036	15.3	24	100	"	L. C. B.
NAVIGATION D.B.	1	.00701	7	.036	5.2	24	140	"	L. C. B.
WIRELESS	1	.00701	7	.036	13	24	70	"	L. C. B.
SEARCHLIGHT	1	.02214	7	.064	—	46	250	"	L. C. B.
MASTHEAD LIGHT	1	.00194	3	.029	.36	7.8	210	"	L. C. B.
SIDE LIGHTS	1	.00194	3	.029	.36	7.8	60	"	L. C. B.
COMPASS LIGHTS	1	.00194	3	.029	.18	7.8	20	"	L. C. B.
POOP LIGHTS	1	.00455	7	.029	7	18.2	200	"	L. C. B.
CARGO LIGHTS	1	.00701	7	.036	10.3	24	50	"	L. C. B.
ARC LAMPS									
HEATERS									

MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		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										
MAIN BILGE LINE PUMPS										
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										
REFRIGERATOR MOTOR	1	1	.01046	7	.044	22.6	31	30	Rubber	L. C. B.
ASH HOIST MOTORS	2	1	.01046	7	.044	18.8	31	110	"	L. C. A. B.

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.

CAMPBELL & ISHERWOOD, LTD

R. Campion

Electrical Engineers.

Date 12-9-35

COMPASSES.

Distance between electric generators or motors and standard compass

90 feet

Distance between electric generators or motors and steering compass

75 feet

The nearest cables to the compasses are as follows:—

A cable carrying 36 Ampères 64 inches feet from standard compass 64 inches feet from steering compass.

A cable carrying 5.2 Ampères 6 feet from standard compass 6 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 Nil degrees on any course in the case of the standard compass, and Nil degrees on any course in the case of the steering compass.

For DAVID & WILLIAM HENDERSON & CO, Limited (In Liquidation)

A.S. Mackenzie

Builder's Signature.

Date 17-9-35

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 & found satisfactory. The materials & workmanship were found good & sound.

21/9/35.

Noted

27/9/35.

Total Capacity of Generators 17.5 Kilowatts.

The amount of Fee ... £ 16 : 5 : 0

When applied for,

17/9/35.

Travelling Expenses (if any) £ — : —

When received,

8.11.19.35

Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 24 SEP 1935

Assigned SEE ACCOMPANYING MACHINERY REPORT.