

Rpt. 13.

No. 60755

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

MAR -1 1939

Received at London Office

Date of writing Report 13-2-1939 When handed in at Local Office 27-2-1939 Port of Glasgow

No. in Survey held at Greenock Date, First Survey 2-11-38 Last Survey 30-1-1939

Reg. Book. 72462 on the T.S.S. "CLAN FRASER" (Number of Visits 5)

Tons { Gross 7529
Net 3524

Built at Greenock By whom built Greenock Dockyard Ltd. Yard No. 435. When built 1939.

Owners The Clan Line Steamers Ltd. Port belonging to Glasgow

Electric Light Installation fitted by Campbell & Islerwood. Contract No. 435. When fitted 1939

Is the Vessel fitted for carrying Petroleum in bulk no.

System of Distribution

two wire

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 compound 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

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.

Position of Generators

in engine room

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

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 near generators.

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.

is it of an approved type

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

Sindampo

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

accessibility of all parts

yes

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

D.P. switch and fuses for each generator, D.P.C.O. switch and fuses for each outgoing circuit.

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

two

ammeters

two

voltmeters — 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

earth lamps

Switches, Circuit Breakers and Fusible Cut-outs,

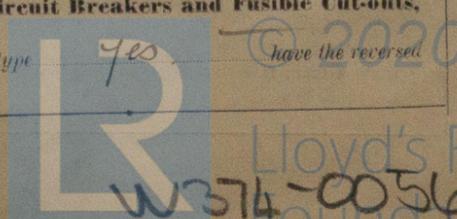
do these comply with the requirements of the Rules

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 **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 & twin* 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 **yes**. **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load *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 *trains H.R. in galvanised conduit wiring in machinery spaces L.C.B. clipped wiring in accommodation L.C.B., H.R. clipped.* 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 **yes**. **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 *lead sheath efficiently earthed by means of clips or bonding glands.* 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 **yes**.

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 **yes**.

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected **yes**, how are the cables led **yes**.

where are the controlling switches situated **yes**, 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 **yes**, whether fixed or portable **yes**, are their fittings as per Rule **yes**.

Are Lamps, other than searchlight lamps, No. of **yes**, are their live parts insulated from the frame or case **yes**, are their fittings as per Rule **yes**. **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 where possible**, 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 **yes**, if not of this type, state distance of the combustible material horizontally or vertically above the motors **yes**.

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing **yes**. **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 **yes**. **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 **yes**, are all fuses of the fitted cartridge type **yes**, are they of an approved type **yes**.

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office **yes**. **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.	Amps.	Rev. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	30	110	273	500	steam engine		
AUXILIARY								
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.	In Circuit.	Rule.				
MAIN GENERATOR	1	4	61	0.93	273	288	60	Rubber	L.C.B.	
EQUALISER CONNECTIONS										
AUXILIARY GENERATOR										
EMERGENCY GENERATOR										
ROTARY TRANSFORMER										
ENGINE ROOM	1	0.01	7	0.44	23	31	50	"	"	
BOILER ROOM	1	0.01	7	0.44	21	31	30	"	"	
AUXILIARY SWITCHBOARDS										
NAVIGATION D.B.	1	0.07	7	0.36	10	24	430	"	H.R.	
FOR'D CARGO D.B.	1	0.01	7	0.44	27	31	360	"	"	
AFT CARGO D.B.	1	0.07	7	0.36	15	24	160	"	"	
ACCOMMODATION										
POOP LIGHTING D.B.	1	0.07	7	0.36	14	24	250	"	"	
SALOON OFFICER'S D.B.	1	0.01	7	0.44	25	31	240	"	"	
MIDSHIP D.B.	1	0.01	7	0.44	28	31	150	"	"	
WIRELESS	1	0.145	7	0.52	15	37	400	"	H.R. or L.C.B.	
SEARCHLIGHT	1	0.02	3	0.29	36	7.8	450	"	"	
MASTHEAD LIGHT	1	0.02	3	0.29	36	7.8	50	"	L.C.B.	
SIDE LIGHTS	1	0.02	3	0.29	2	7.8	30	"	"	
COMPASS LIGHTS										
POOP LIGHTS										
CARGO LIGHTS										
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	1	1	0.145	7	0.52	33.5	37	100	Rubber	L.C.B.
VENTILATING FANS	2	1	0.045	7	0.29	14.6	18.2	80	"	"
" " DB	1	1	0.225	7	0.64	29.2	46	90	"	H.R.
" " DB	1	1	0.07	7	0.36	14	24	50	"	"
GYRO COMPASS.	1	1	0.145	7	0.52	17.2	37	150	"	L.C.B.
PURIFIER	1	1	1	19	0.83	90.3	118	70	"	"
REFRIG. COMP.	1	1	0.045	7	0.29	15.7	18.2	150	"	"
BRINE PUMP.	1	1	0.045	7	0.29	15.7	18.2	140	"	"
CIR. PUMP.	1	1	0.045	7	0.29	15.7	18.2	140	"	"

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 & FISHERWOOD LTD.

R. Fisherwood

Electrical Engineers.

Date

22/2/39

COMPASSES.

Distance between electric generators or motors and standard compass

100 feet.

Distance between electric generators or motors and steering compass

95 feet.

The nearest cables to the compasses are as follows:—

A cable carrying 2 Ampères led into feet from standard compass. led into feet from steering compass.

A cable carrying 10 Ampères 12 feet from standard compass. 8 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.

THE GREENOCK DOCKYARD CO. LTD.

R. Macgregor

Builder's Signature.

Date

24 Feb 1939

Is this installation a duplicate of a previous case yes. If so, state name of vessel "CLAN FORBES"

General Remarks (State quality of workmanship, opinions as to class, &c.) The electrical equipment of this vessel has been fitted on board under special survey, tested under full working conditions and found satisfactory. The materials and workmanship are good.

Pub
27/2/39

W. H.
2/3/39

Total Capacity of Generators 60 Kilowatts.

The amount of Fee ... £ 28 : 10 : 0/19

When applied for,

Travelling Expenses (if any) £ : 12/8 : 4 3 19 39 6/3

When received.

R. I. Kewchison

Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 28 FEB 1939

Assigned SEE ACCOMPANYING MACHINERY REPORT.

750,936.—Transfer.
The Surveyors are requested not to write on or below the space for Committee's Minute.



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