

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office MAR -2 1938

Date of writing Report 16. 2. 1938 When handed in at Local Office 25. 2. 1938 Port of Glasgow.

No. in Survey held at Greenock

Date, First Survey 6. 1. 38 Last Survey 23. 2. 1938

Reg. Book.

(Number of Visits.....6.....)

37658 on the T.S.S. "CLAN BUCHANAN."

Tons { Gross 7266
Net 3692

Built at Greenock.

By whom built Greenock Dockyard & Ltd No. 431 When built 1938

Owners The Clan Line Steamers Ltd Port belonging to Glasgow.

Electric Light Installation fitted by Arch. Watson & Dundas.

Contract No. 431 When fitted 1938

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 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

In Engine Room ✓

in way of the generators satisfactory Yes ✓ are they clear of all inflammable material Yes ✓, is the ventilation 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 Engine Room 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 — 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! ✓, 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

ammeter 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 fuses for generators & all outgoing circuits. ✓

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 2 ✓ ammeters 2 ✓

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

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 *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, 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, lavatories, bathrooms and lavatories lead covered or run in conduit *Yes*

Support and Protection of Cables, state how the cables are supported and protected *Main H.R. in galvanized conduits, machinery spaces L.C.B. Accommodation L.C. 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 *Lead covering of cables, efficiently bonded & secured*

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, are air heaters constructed and fitted as per Rule

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

Are 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 when 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

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 fitted 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	2	30	110	273	500	Steam Engine		
AUXILIARY								
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	No. per Pole.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.				
MAIN GENERATOR	1	.40	61	.093	273	288	✓	50	Rubber.	L.C.B.
EQUALISER CONNECTIONS										
AUXILIARY GENERATOR										
EMERGENCY GENERATOR										
ROTARY TRANSFORMER										
ENGINE ROOM	1	.01	7	.044	22	31	✓	50	"	"
BOILER ROOM	1	.01	7	.044	22	31	✓	25	"	"
AUXILIARY SWITCHBOARDS										
ACCOMMODATION										
CREW AFT D.B.	1	.007	7	.036	15	24	✓	250	"	H.R. in tubing
SIDE HOUSES D.B.	1	.007	7	.036	18	24	✓	95	"	"
NAVIGATION D.B.	1	.007	7	.036	11	24	✓	290	"	"
BRIDGE, SALOON, FORWARD D.B.	1	.01	7	.044	22	31	✓	350	"	"
WIRELESS	1	.0145	7	.052	31	37	✓	390	"	"
SEARCHLIGHT	1	.002	3	.029	.36	7.8	✓	320	"	"
MASTHEAD LIGHT	1	.002	3	.029	.36	7.8	✓	50	"	L.C.
SIDE LIGHTS	1	.002	3	.029	.18	7.8	✓	30	"	L.C.
COMPASS LIGHTS	1	.002	3	.029	.18	7.8	✓	30	"	L.C.
POOP LIGHTS	1	.01	7	.044	29	31	✓	350	"	H.R. in tubing
CARGO LIGHTS	1	.007	7	.036	17.9	24	✓	95	"	"
HEATERS										

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										
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	.0145	7	.052	32	37	✓	30	Rubber. L.C.B.
VENTILATING FANS	4	1	.61	7	.044	14.6	31	✓	80	" H.R. in tubing
OIL PURIFIER	1	1	.0045	7	.029	17.2	18.2	✓	50	" L.C.B.
REFRIG. PUMPS	2	1	.0045	7	.029	16	18.2	✓	45	"
REFRIG. MOTOR	1	1	.10	19	.053	96	118	✓	50	" H.R. in tubing
VENT. FANS BOILER RM	2	1	.01	7	.044	14.6	31	✓	120	"

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.

Robert Lindsay

Electrical Engineers.

Date 18.2.38.

COMPASSES.

Distance between electric generators or motors and standard compass

80 ft.

Distance between electric generators or motors and steering compass

75 ft.

The nearest cables to the compasses are as follows:—

A cable carrying 18 Amperes led into feet from standard compass led into feet from steering compass.

A cable carrying 11 Amperes 12 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 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. Macrae

Builder's Signature.

Date

21st Feb 1938

Is this installation a duplicate of a previous case Yes. If so, state name of vessel "Blair Cameron"

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.

25/2/38

Noted.
3.3.38

Total Capacity of Generators 60. Kilowatts.

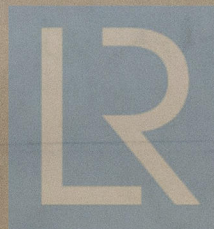
The amount of Fee ... £ 28 : 10 : ac 4k.

Travelling Expenses (if any) £ - : 12/9 : 3/5 19 38

Committee's Minute GLASGOW 1-MAR 1938

Assigned THE ACCOMPANYING MACHINERY REPORT

L.I. Hinchison *H. Haffner*
Surveyors to Lloyd's Register of Shipping.



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