

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

10 FEB 1937

Date of writing Report 27-1-1937 When handed in at Local Office 8.2.1937 Port of Glasgow.

No. in Survey held at Greenock. Date, First Survey 29.10.36 Last Survey 2.2.1937  
Reg. Book. 73213 on the T.S.S. "CLAN CAMERON" (Number of Visits.....6)Gross 7243  
Net 3659  
Tons

Built at Greenock By whom built The Greenock Dockyard Co. Ltd. No. 426 When built 1937

Owners The Clan Line Steamers Ltd. Port belonging to Glasgow.

Electric Light Installation fitted by Arch. Watson &amp; Dundas Contract No. 426 When fitted 1937.

Is the Vessel fitted for carrying Petroleum in bulk No

System of Distribution Two wire 110 volts, Heating 110 volts, Power 110

Pressure of supply for Lighting Direct Power Direct

Direct or Alternating Current, Lighting

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 on special 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 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 to 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 Sindanyo, 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

D.P. switch fuses for each generator and 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 2 ammeters 2

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

Earth Lamps. Switches, Circuit Breakers and Fusible Cut-outs. Yes. have the reversed

do these comply with the requirements of the Rules Yes, are the fusible cutouts of an approved type



current protection devices been tested under working conditions

construction, protection, insulation, material, and position of these as per rule

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

If the cables are insulated otherwise than as per Rule, are they of an approved type

any point of the installation under maximum load

area of 0.04 square inch and above provided with soldering sockets

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

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

Support and Protection of Cables, state how the cables are supported and protected

If cables are run in wood casings, are the casings and caps secured by screws

separate grooves

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

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

Bushes in Beams and Non-watertight Partitions, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed

Earthing Connections, state what earthing connections are fitted and their respective sectional areas

are their connections made as per Rule

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

Navigation Lamps, are these separately wired

are the switches and fuses grouped in a position accessible only to the officers on watch

has each navigation lamp an automatic indicator as per Rule

Fittings, are all fittings on weather decks, in storerooms and engine rooms and wherever exposed to drip or condensed moisture, watertight

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

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

Searchlight Lamps, No. of

Arc Lamps, other than searchlight lamps, No. of

Motors, are their working parts readily accessible

are the brushes, brush holders, terminals and lubricating arrangements as per Rule

inflammable gases cannot accumulate and clear of all inflammable material

water, steam or oil

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

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing

field and motor speed regulators, starters and controllers constructed and fitted as per Rule

are required, are these fitted as per Rule

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 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

Joint Boxes, Section and Distribution Boards, is the

Fall of Pressure, state maximum between bus bars and

Cable Sockets, are the ends of all cables having a sectional

Paper Insulated and Varnished Cambric Insulated Cables,

Cable Runs, are the cables fixed as far as possible in accessible positions

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

Main. H.R. banded in galvanized tubing,

Workings spaces: L.C. and B. Accommodation: L.C. clipped.

are the cap screws of brass

are the cables run in

If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII

are the cables and fittings in accordance with the special requirements

are the cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands

where unarmoured cables pass through beams and non-watertight partitions, are the

state the material of which the bushes are made

state what earthing connections are fitted and their respective sectional areas

are their connections made as per Rule

are the groups of lights in the propelling machinery space arranged as per Rule

are these separately wired

are the switches and fuses grouped in a position accessible only to the officers on watch

are they constructed and fitted as per Rule

are all fittings on weather decks, in storerooms and engine rooms and wherever exposed to drip or condensed moisture, watertight

are they protected

are they protected

are the cables led

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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.	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.	Circuit.	Rule.			
MAIN GENERATOR	1	.40	61	.093	273	500	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 ART. D.B.	1	.007	7	.036	15	24	250	Rubber	L.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 + FORTH D.B.	1	.01	7	.044	22	31	360	"	" "
WIRELESS	1	.007	7	.052	31	37	390	"	" "
SEARCHLIGHT									
MASTHEAD LIGHT	1	.002	3	.029	.36	7.8	320	"	" "
SIDE LIGHTS	1	.002	3	.029	.36	7.8	60	"	" "
COMPASS LIGHTS	1	.002	3	.029	.18	7.8	30	"	" "
POOP LIGHTS	1	.01	7	.044	29	31	350	"	" "
CARGO LIGHTS	1	.007	7	.036	17.9	24	95	"	" "
ARC LAMPS									
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	1	1	.0045	7	.029	16	18.2	300	"	" "
OIL PURIFIERS	1	1	.0045	7	.029	8	18.2	50	"	" "
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



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.

Arch<sup>d</sup> Watson & Dundas. Electrical Engineers.  
W.D.

Date 3<sup>rd</sup> Feb '37

#### 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 1/8 Ampères led into feet from standard compass led into feet from steering compass.

A cable carrying 11 Ampères 12 feet from standard compass 10 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 led degrees on any course in the case of the standard compass, and led degrees on any course in the case of the steering compass.

THE GREENOCK DOCKYARD CO. LTD

W. MacInnes

Builder's Signature.

Date 6<sup>th</sup> Feb 1937

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. 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

18/2/37

Noted

Man

11.2.37

Total Capacity of Generators 60. Kilowatts.

The amount of Fee ... £ 28 : 10 : 0 at 9/6.

Travelling Expenses (if any) £ : 9/- : 11.2.37

L. Haffner.

Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 9-FEB 1937

Assigned SEE ACCOMPANYING MACHINERY REPORT.



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Foundation