

# 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.....0.....)

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 & Dundas Contract No. 426 When fitted 1937.

Is the Vessel fitted for carrying Petroleum in bulk No

System of Distribution Two wire  
Pressure of supply for Lighting 110 volts, Heating - colts, Power 110 colts.

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

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 micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework No, 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

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. Yes. have the reversed

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

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 + twin of 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 5 Volts **Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load Yes

**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, 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. in R. banded in galvanized tubing, Machinery spaces. L.C. and B. Accommodation. L.C. 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 None

**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 + armouring of cables efficiently bonded together.

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 stowholds 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 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 Yes

if not of this type, state distance of the combustible material horizontally or vertically above the motors Yes and 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.	Ampere.	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. 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	.40	61	.093	273	500	50	Rubber.	L.C.B.
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER MOTOR GENERATOR									
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	Rubber	L.C.B. 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	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. 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	.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	.083	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 .18 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

W.D. 8/2/37

Noted

W.D.

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 W.D. 12/2

W. Stappert  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 9-FEB 1937

Assigned SEE ACCOMPANYING MACHINERY REPORT.



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