

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

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Date of writing Report 14<sup>th</sup> 11 38 When handed in at Local Office 5.12.38 Port of Glasgow  
 No. in Survey held at Greenock Date, First Survey 3.10.38 Last Survey 11-11 1938  
 Reg. Book. 2461 on the T.S.S. "CLAN FORBES" (Number of Visits.....6)  
 Built at Greenock By whom built Greenock Dockyard<sup>th</sup> Yard No. 434 When built 1938  
 Owners The Clan Line Steamers Ltd. Port belonging to Glasgow  
 Electric Light Installation fitted by Campbell & Ishenwood. Contract No. 434 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, 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 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 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 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 and fuses for each generator; D.P.CO 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 —

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, sheathed 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, laundries, bathrooms and lavatories lead covered or run in conduit yes

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

**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 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

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

**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 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

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.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	30	110	273	500	steam engine		
AUXILIARY								
EMERGENCY								
ROTARY TRANSFORMER								

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	4	61	.093	273	288	60	Rubber	L.C.B.
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER MOTOR									
ENGINE ROOM DB. STARGO	1	.01	7	.044	28	31	50	"	"
BOILER ROOM DB. PORT.	1	.01	7	.044	21	31	30	"	"
AUXILIARY SWITCHBOARDS									
NAVIGATION DB.	1	.007	7	.036	10	24	430	"	HR
FOR'D CARGO DB.	1	.01	7	.044	27	31	360	"	"
AFT CARGO DB.	1	.007	7	.036	15	24	160	"	"
ACCOMMODATION									
POOP LIGHTING DB.	1	.007	7	.036	14	24	250	"	"
SALOON OFFICER DB.	1	.01	7	.044	25	31	240	"	"
MIDSHIP DB.	1	.01	7	.044	28	31	150	"	"
WIRELESS	1	.0145	7	.052	15	37	400	"	HR & L.C.B.
SEARCHLIGHT									
MASTHEAD LIGHT	1	.002	3	.029	36	7.8	450	"	"
SIDE LIGHTS	1	.002	3	.029	36	7.8	50	"	L.C.B.
COMPASS LIGHTS	1	.002	3	.029	2	7.8	30	"	"
POOP LIGHTS									
CARGO LIGHTS									
ARC LAMPS									
HEATERS									

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	1	1	.0145	7	.052	33.5	37	100	Rubber	L.C.B.
WORKSHOP MOTOR	6	1	.0045	7	.029	14.6	18.2	80	"	"
VENTILATING FANS M.C. SPACE	—	1	.0225	7	.064	43.8	46	90	"	HR
MACHINE SPACE FAN DB. 1	—	1	.0225	7	.064	43.8	46	150	"	"
" " " 2	—	1	.0225	7	.064	43.8	46	150	"	"
PURIFIER.	1	1	.0145	7	.052	17.2	37	150	"	L.C.B.
REFRIG. COMP.	1	1	.1	19	.083	90.3	118	70	"	"
BRINE PUMP	1	1	.0045	7	.029	15.7	18.2	150	"	"
CIRCUL. PUMP	1	1	.0045	7	.029	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 & ISHERWOOD LTD.

*Campbell*

Electrical Engineers.

Date 14.11.38.

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

*McKeaney*

Builder's Signature.

Date 16<sup>th</sup> Nov 1938.

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 workmanship and materials are good.

Rob  
19/11/38

Noted  
7/12/38

Total Capacity of Generators 60 Kilowatts.

The amount of Fee ... £ 28 : 10 : { When applied for, at 4/6.

Travelling Expenses (if any) £ : 12/6 : { When received, 19/11 1938.

R. I. Hutchinson.

Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 6-DEC 1938

Assigned Su Gen 20662

799,931.—Transfer. The Signatories are requested not to write on or below the space for Committee's Minute.



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