

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

13 JAN 1944

Date of writing Report 28 December 1943 When handed in at Local Office 10.1.44 Port of GLASGOW

No. in Survey held at GREENOCK Date, First Survey 17 June 1943 Last Survey 20 December 1943  
Reg. Book. (Number of Visits 24)

36932 on the S.S. 'CLAN URQUHART' Tons { Gross 9736  
Net 5607

Built at GREENOCK By whom built GREENOCK DOCKYARD CO. LTD. Yard No. 454 When built 1943

Owners THE CLAN LINE STEAMERS LTD. Port belonging to GLASGOW

Electrical Installation fitted by ARCHB. WATSON & DUNDAS Contract No. 454 When fitted 1943

Is vessel fitted for carrying Petroleum in bulk - Is vessel equipped with D.F. Yes E.S.D. Yes Gy.C. Yes Sub.Sig. -

Have plans been submitted and approved Yes System of Distribution two wires Voltage of supply for Lighting 220

Heating - Power 220 Direct or Alternating Current, Lighting D.C. Power D.C. If Alternating Current state periodicity - Prime Movers, -

has the governing been tested and found as per Rule when full load is suddenly thrown on and off Yes Are turbine emergency governors fitted with a trip switch as per Rule - Generators, are they compound wound Yes, are they level compounded under working conditions Yes, if not compound wound state distance between generators - and from switchboard - Where more than one generator is fitted are they arranged to run in parallel Yes, are shunt field regulators provided Yes Is the compound winding connected to the negative or positive pole negative

Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes Have certificates of test for machines under 100 kw. been supplied Yes and the results found as per rule Yes Are the lubricating arrangements and the construction of the generators as per rule Yes Position of Generators Lower deck in way of engine & boiler casing

is the ventilation in way of generators satisfactory Yes are they clear of inflammable material Yes, if situated near unprotected combustible material state distance from same horizontally - and vertically -, are the generators protected from mechanical injury and damage from water, steam and oil Yes, are the bedplates and frames earthed Yes and the prime movers and generators in metallic contact Yes Switchboards, where are main switchboards placed near generators

are they in accessible positions, free from inflammable gases and acid fumes Yes, are they protected from mechanical injury and damage from water, steam and oil Yes, if situated near unprotected combustible material state distance from same horizontally - and vertically -, what insulation material is used for the panels Insidantpa, if of synthetic insulating material is it an Approved Type Yes if of semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule - Is the frame effectually earthed Yes

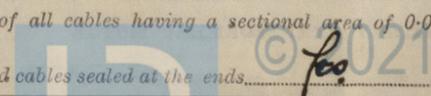
Is the construction as per Rule Yes, including accessibility of parts Yes, absence of fuses on the back of the board Yes, individual fuses to pilot and earth lamps, voltmeters, etc. Yes locking of screws and nuts Yes, labelling of apparatus and fuses Yes, fuses on the "dead" side of switches Yes Description of Main Switchgear for each generator and arrangement of equaliser switches Triple pole circuit breaker fitted with 0/2 & R/2 trips, third pole acting as equalizer

and for each outgoing circuit Supply to Refrig. Switchboard & forced draught fan controlled by C.B.'s fitted with 0/2 trips. Other circuits controlled by D.P. Switch & fuses

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule - Instruments on main switchboard 3 ammeters 3 voltmeters - synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the equaliser connection Yes Earth Testing, state means provided earth lamps

Switches, Circuit Breakers and Fuses, are they as per Rule Yes, are the fuses an approved type Yes, are all fuses labelled as per Rule Yes If circuit breakers are provided for the generators, at what overload current did they open when tested full load are the reversed current protection devices connected on the pole opposite to the equaliser connection Yes, have they been tested under working conditions, and at what current did they operate 15% FL load Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule Yes

Cables, are they insulated and protected as per the appropriate Tables of the Rules Yes, if otherwise than as per Rule are they of an approved type Yes, state maximum fall of pressure between bus bars and any point under maximum load 6.8 kV/11k are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets Yes Are paper insulated and varnished cambric insulated cables sealed at the ends Yes



with insulating compound or waterproof insulating tape *Yes*. Are all the cable runs in accessible positions, not exposed to drip or accumulation of water or oil, high temperatures or risk of mechanical damage. *Yes*, are cables laid under machines or floorplates *No*, if so, are they adequately protected. Are cables in machinery spaces, galleys, laundries, etc., lead covered *Yes* or run in conduit. State how the cables are supported and protected. *Main through insulating holes L.C.B. clipped to galvanized steel tray. Machinery space, r.c.l.c. & L.C.B. clipped to tray & steelwork. Accommodation L.C.B. clipped to steel and woodwork.*

Are all lead sheaths, armouring and conduits effectually bonded and earthed *Yes*. Refrigerated chambers, are the cables and fittings as per Rule *Yes*. Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands *Yes*, where unarmoured cables pass through beams, etc., are the holes effectually bushed *Yes* and with what material *Lead*. Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule *Yes*. Emergency Supply, state position and method of control.

Navigation Lamps, are they separately wired *Yes* controlled by separate double pole switches *Yes* and fuses *Yes*. Are the switches and fuses in a position accessible only to the officers on watch *Yes*, is an automatic indicator fitted *Yes*. Secondary Batteries, are they constructed and fitted as per Rule, are they adequately ventilated, what is the battery capacity in ampere hours.

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof *Yes*. Are fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present, if so, how are they protected, and where are the controlling switches fitted, are all fittings suitably ventilated *Yes*, are all fittings and accessories constructed and installed as per Rule *Yes*. Searchlight Lamps, No. of, whether fixed or portable, are their fittings as per Rule. Heating and Cooking, is the general construction as per Rule. Are the frames effectually earthed, are heaters in the accommodation of the convection type. Motors, are all motors constructed and installed as per Rule *Yes* and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil *Yes*, if situated near unprotected combustible material state minimum distance from same horizontally and vertically. Are motors coupled to oil fuel transfer and unit pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment. Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing. Have certificates of test for motors under 100 BHP intended for essential services been supplied and the results found as per Rule *Yes*. Control Gear and Resistances, are they constructed and fitted as per Rule *Yes*. Lightning Conductors, where required are they fitted as per Rule. Ships carrying Oil having a Flash Point less than 150° F. Have all the special requirements of the Rules for such ships been complied with, are all fuses of the cartridge type, are they of an approved type. Are the fittings for pump rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships. Are the cables lead covered as per Rule. Spare Gear, if the vessel is for open sea service have spares been provided as per Rule *Yes*, are they suitably stored in dry situations *Yes*. Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory *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	3	150.	220.	682	500	Steam engine		
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION.	KILOWATTS.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (load plus return feet).	INSULATED WITH.	HOW PROTECTED.
		No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
MAIN GENERATOR	150	2	37/103	682	770	150	Y.C.	L.C.B.
" " EQUALISER		1	37/103	-	385	150	Y.C.	L.C.B.
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
" " GENERATOR								

MAIN DISTRIBUTION CABLES.

DESCRIPTION.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (load plus return feet).	INSULATED WITH.	HOW PROTECTED.
	No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
AUX. SWITCHBOARDS AND SECTION BOARDS							
Main Sw. Bd. to Lighting Sw. Bd.	1	37/083	230	296	240	Y.C.	L.C.B.
Main Sw. Bd. to Refrig. Sw. Bd.	2	61/103	808	1080	120	Y.C.	L.C.B.

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	7/044	20	31	450	Rubber	L.C.B.
NAVIGATION LIGHTS	1	7/036	12	24	420	.	.
LIGHTING AND HEATING							
Engine Room L <sup>th</sup> DB Port.	1	7/036	15	24	90	.	.
" " " Starb.	1	7/036	11	24	90	.	.
Side Houses L <sup>th</sup> DB	1	7/052	37	37	60	.	.
Crew. Aft. L <sup>th</sup> DB	1	7/044	18	31	450	"	L.C.B. & H.R.
Saloon L <sup>th</sup> DB	1	7/052	31	37	360	.	L.C.B.
Cargo L <sup>th</sup> DB. Ford.	1	7/036	12	24	360	.	L.C.B.
" " " Aft.	1	7/036	12	24	240	.	L.C.B.
Refrig. Eng. Room L <sup>th</sup> DB	1	7/036	6	24	90	.	L.C.B.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
Forced Draught Fan	1	55	1	37/083	206	296	210	Y.C. L.C.B.
Oil Fuel Plant	1	5	1	7/036	19	24	240	Rubber L.C.B.
Engine Room Vent Fans	2	4	1	7/036	14.5	24	72	Rubber L.C.B.
" " " "	2	1.6	1	7/036	6	24	60	Rubber L.C.B.
CARGO FAN:-								
N <sup>o</sup> 2 Hold	2	14	1	19/052	51	64	270	Rubber L.C.B.
N <sup>o</sup> 2 LT Deck	2	7.5	1	7/052	28	37	270	.
N <sup>o</sup> 2 UT Deck	2	6.5	1	7/044	24	31	276	.
N <sup>o</sup> 3 Hold	2	7.5	1	7/052	28	37	270	.
N <sup>o</sup> 3 LT Deck	2	6.5	1	7/044	24	31	270	.
N <sup>o</sup> 3 UT Deck	2	4.25	1	7/036	16	24	270	.
N <sup>o</sup> 4 Hold	2	4.25	1	7/036	16	24	240	.
N <sup>o</sup> 4 LT Deck	2	4.25	1	7/036	16	24	240	.
N <sup>o</sup> 4 UT Deck	2	4.25	1	7/036	16	24	240	.
N <sup>o</sup> 5 Hold	2	6.5	1	7/052	24	37	240	.
N <sup>o</sup> 5 LT Deck	2	6.5	1	7/044	24	31	240	.
N <sup>o</sup> 5 UT Deck	2	6.5	1	7/044	24	31	240	.
Brinc. Pumps	3	12	1	7/064	44	46	150	.
Refrig. Sw. Pumps	2	11	1	7/064	40	46	180	.
Refrig. Eng. Room Vent Fan	1	1.6	1	7/036	6	24	180	.

The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.  
 All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.  
 The foregoing is a correct description.

*Arch Watson Dundas* Electrical Engineers. Date *4/1/44*.

COMPASSES.

Minimum distance between electric generators or motors and standard compass *27 feet*  
 Minimum distance between electric generators or motors and steering compass *20 feet*

The nearest cables to the compasses are as follows:—

A cable carrying *12* Ampères *led into* feet from standard compass *led into* feet from steering compass.  
 A cable carrying *12* Ampères *18* feet from standard compass *12* 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 DOCK CO. LTD.  
*W. H. Maclean* Secretary

Builder's Signature. Date *6/1/44*.

Is this installation a duplicate of a previous case *no* If so, state name of vessel \_\_\_\_\_

Plans. Are approved plans forwarded herewith *no* If not, state date of approval *18<sup>th</sup> May 43*

Certificates. Are certificates of test for motors engaged on essential services and generators forwarded herewith *Yes*

General Remarks (State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.)

*The electrical equipment of this vessel has been fitted on board under special survey tested under working conditions and found satisfactory. The materials and workmanship are good.*

*Noted*  
*L.P.*  
*31/1/44*

Total Capacity of Generators *450* Kilowatts.

The amount of Fee ... £ *55* : : When applied for, *at Gt.*  
*1/5 Birmingham* £ *11* : :  
*4/5 Glasgow* £ *44* : :  
 Travelling Expenses (if any) £ *3* : *1/6* : : When received. *19* : :  
 ..... 19 .....

*S. G. Findlay*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute *GLASGOW 11 JAN 1944*

Assigned .....

5th Ed., 1938.—Transfer. (MADE AND PRINTED IN ENGLAND.)  
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)