

Rpt. 13.

No. 16195

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

DEC 14 1937

Received at London Office

Date of writing Report 29th Nov, 1937 When handed in at Local Office

19

Port of *Middlesbrough*No. in Survey held at *Middlesbrough and Newcastle*
Reg. Book. *Supp.*
39039 on the S.S. "LAFIAN"Date, First Survey 28th Sept., Last Survey 29th Nov., 1937
(Number of Visits.....)Tons { Gross
NetBuilt at *Haverton Hill-on-Sea* By whom built *Furness S.B. Co. Ltd.* Yard No. 274 When built 1937

Owners

Port belonging to *Freetown, Sierra Leone*Electric Light Installation fitted by *Furness S.B. Co. Ltd.*

Contract No. 274 When fitted 1937

Is the Vessel fitted for carrying Petroleum in bulk *No*System of Distribution *Double wire*

Pressure of supply for Lighting 225

volts, Heating —

volts, Power 225

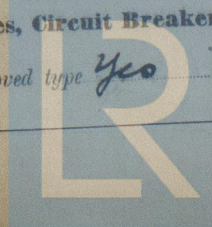
volts.

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 *Yes*, 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; Certs. furnished*Have certificates for generators under 100 kw. been supplied and approved *No; Manufacturers' certs. only supplied*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 *Engine room starboard side aft*, is the ventilation in way of the generators satisfactory *Yes*, are they clear of all inflammable material *Yes*, if situated near unprotectedwoodwork 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 *Engine room starboard side 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 —, is the non-hygroscopic insulating material of an approved type —, 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 *Triple pole circuit breakers on generator mains, one pole of each connected to equalizer bus bar; double pole switches & double pole fuses on 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

voltage meters — synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection *Yes*Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system *E lamps coupled to E through switches & fuses* 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

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current protection devices been tested under working conditions *yes* are all fuses labelled as per rule *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* are the cables insulated and protected as per Tables IV, V, X, XI, XII or XIII 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 *6.0 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 laid under machines or floorplates *no* if so, are they adequately protected —

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 *Please see note * below*

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 made*

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 —, are their connections made 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 —

are they ventilated 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 —

*note * L.C.A.B. cables run in galv. pipe in 'tween decks; — how are the cables led — L.C.A.B. cables clipped up in machy. spaces; L.C.B. cables clipped up in accom.*

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 *Please see ** whether fixed or portable —, 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*, 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 — have certificates for all motors for essential services been supplied and approved *none fitted for auxiliary 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 filled 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 flameproof type approved for use in dangerous spaces —

Spare Gear, if the vessel is for open sea service have spares been supplied as per Rule *yes* are they suitably stored in dry situations *yes*

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE	
		Kilowatts.	Volts.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	25	225	111	685	Single cylinder internal type steam engines		
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	.1	19	.083	111	118	40	V.I.R.	L.C.A.B.
EQUALISER CONNECTIONS	1	.03	19	.044	—	53	40	V.I.R.	L.C.A.B.
SHORE CONNECTION	1	.1	19	.083	—	118	180	V.I.R.	L.C.A.B.
EMERGENCY GENERATOR									
ROTARY TRANSFORMER									
MOTOR GENERATOR									
ENGINE ROOM	1	.0045	7	.029	7.5	18.2	40	V.I.R.	L.C.A.B.
BOILER ROOM	1	.0045	7	.029	7.5	18.2	40	V.I.R.	L.C.A.B.
AUXILIARY SWITCHBOARDS									
Fore. Cargo Ltg.	1	.01	7	.044	8.6	31	340	V.I.R.	L.C.A.B.
Aft Cargo Ltg.	1	.0045	7	.029	11.2	18.2	140	V.I.R.	L.C.A.B.
ACCOMMODATION	1	.0045	7	.029	14	18.2	140	V.I.R.	L.C.A.B.
Officer's	1	.01	7	.044	14.5	31	340	V.I.R.	L.C.A.B.
Officer's	1	.01	7	.044	10	31	730	V.I.R.	L.C.A.B.
Officer's	1	.01	7	.044	7	31	440	V.I.R.	L.C.A.B.
Navigation Ltg.	1	.01	7	.044	4.5	31	420	V.I.R.	L.C.A.B.
WIRELESS	1	.01	7	.044	15	31	420	V.I.R.	L.C.A.B.
SEARCHLIGHT	1	.03	19	.044	53	53	650	V.I.R.	L.C.A.B.
MASTHEAD LIGHT	1	.002	3	.029	.2	7.8	500	V.I.R.	L.C.A.B.
SIDE LIGHTS	1	.002	3	.029	.2	7.8	90	V.I.R.	L.C.B.
COMPASS LIGHTS	1	.002	3	.029	.1	7.8	50	V.I.R.	L.C.B.
STERN LIGHTS	1	.002	3	.029	.2	7.8	740	V.I.R.	L.C.A.B.
CARGO LIGHTS									
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										
VENTILATING FANS										
Refig. Machy. fed by:-	1	.01	7	.044	17	31	360	V.I.R.	L.C.A.B.	
suppg.-Compressor	1	.0045	7	.029	12	18.2	20	V.I.R.	L.C.A.B.	
Pump & Fan 2 @	1	.002	3	.029	48.1	7.8	3007.104	V.I.R.	L.C.A.B.	
Eng. Rm. Machy. fed by:-	1	.01	7	.044	27	31	50	V.I.R.	L.C.A.B.	
suppg.-Sunder, Dist 3 @	1	.003	3	.036	308	12	90,100790	V.I.R.	L.C.A.B.	
F.W. Pump	1	.002	3	.029	3	7.8	400	V.I.R.	L.C.A.B.	

The Electrical Equipment is installed in accordance with the approved plans.

All Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

FURNESS SHIPBUILDING CO. LIMITED

P. P. Glover

Electrical Engineer.

Date

9th Dec 1937.

COMPASSES.

Minimum distance between electric generators or motors and standard compass 28 feet

Minimum distance between electric generators or motors and steering compass 18 feet

The nearest cables to the compasses are as follows:—

A cable carrying 1/ Ampères on the feet from standard compass 10 feet from steering compass.

A cable carrying 1/ Ampères 10 feet from standard compass on the 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 Every course in the case of the standard compass, and Nil degrees on Every course in the case of the steering compass.

FURNESS SHIPBUILDING CO. LIMITED

J. W. Govere

Builder's Signature.

Date

9th Dec 1937.

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

General Remarks (State quality of workmanship, opinions as to class, &c. The above installation has been)

fitted out under special survey. The materials used and the workmanship are good. On completion the insulation resistance of all circuits was measured, both generators were run on all available load, all circuit breakers and main switches were operated, all lamps, motors and fans seen in operation, generator governors tested and reverse current and overload protective devices adjusted to suitable current values and adjustment checked. The complete equipment was found satisfactory in all respects and in accordance with the Rules for Electrical Equipment and is, in our opinion, suitable for a classed vessel. Direction Finding Equipment is fitted.

Noted.

14/12/37.

Total Capacity of Generators 50 Kilowatts.

For FURNESS SHIPBUILDING CO. LTD

DIRECTOR

The amount of Fee ... £ 27 : 10 : 3/12/37

Travelling Expenses (if any) £ :

When received.

1/2/38

2/2

S. Anterson & W. T. Badger

Surveyors to Lloyd's Register of Shipping.

Committee's Minute

FRI. 17 DEC 1937

Assigned

See Bldg. JE 16175



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