

Rpt. 13.

No. 2714.

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

31 MAY 1928

Date of writing Report 17/5 1928. When handed in at Local Office 10 Port of Copenhagen
 No. in Survey held at Aalborg Date, First Survey 2/5 Last Survey 12/5 1928
 Reg. Book. 16802 on the Sw. S. S. "Bolivia" (Number of Visits 4)
 Tons { Gross 1677
 Net 1021
 Built at Newcastle. By whom built Edwards & Co. Ltd. Yard No. ✓ When built 1890
 Owners Rederiakt. Selskabet Port belonging to Göteborg
 Electric Light Installation fitted by F. W. BROE, AALBORG Contract No. ✓ When fitted 1928

System of Distribution 2-conductor insulated system

Pressure of supply for Lighting 110 volts, Heating ✓ volts, Power ✓ volts.

Direct or Alternating Current, Lighting direct Power ✓

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 rating 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 only on generator fitted, is an adjustable regulating resistance fitted in series with each shunt field No

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, stb. side, 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 the engine room, near the generator
 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 of malleable steel, is all insulation of high dielectric strength and of permanently high insulation resistance 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 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, proportion of omnibus bars yes, individual fuses to voltmeter, pilot or earth lamp yes, connections of switches yes

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

A 2-pole pole linked switch with a fuse on each pole fitted for the generator and for each outgoing circuit

Instruments on main switchboard 1 ammeters 1 voltmeters — synchronising device for paralleling purposes.

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system 2 earth lamps fitted

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules yes

Joint Boxes Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule yes



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Cables: Single, twin, concentric, or multicore *single & twin* are the cables insulated and protected as per Tables IV or V of the Rules *yes*

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load *3 volts*

Cable Sockets and other connections, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets *yes*

Paper Insulated Cables. If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *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*

Support and Protection of Cables, state how the cables are supported and protected *armoured cables used, supported by clips, through boiler space protected by a galvanized iron tube*

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, if lights are fitted, are the cables and fittings in accordance with the special requirements *yes*

Joints in Cables, state if any, and how made, insulated, and protected *joints effected in cast iron joint boxes with screw glands and watertight packed covers*

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 *yes*

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

Searchlight Lamps, No. of *yes*, whether fixed or portable *yes*, are their fittings as per Rule *yes*

Arc 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* 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*

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* If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office *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 ...	1	385	110	35	480	1/2 cf. steam engine.		
AUXILIARY ...								
EMERGENCY ...								
ROTARY TRANSFORMER								

LIGHTING AND HEATING CONDUCTORS.

Ref. No.	DESCRIPTION.	No. of Conductors.	Effective Area of each Conductor. Sq. inches.	COMPOSITION OF STRAND.		Total Maximum Current. Ampères.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	MAIN GENERATOR...	2	25	7	2.13	35	4	rubber	lead covered and steel wire braided.
	EQUALISER CONNECTIONS								
	AUXILIARY GENERATOR								
	EMERGENCY GENERATOR								
	ROTARY TRANSFORMER...								
	AUXILIARY SWITCHBOARDS								
	ENGINE ROOM								
	BOILER ROOM								
	ACCOMMODATION								
	AFT	1	2.5	7	0.67	7.6	64	rubber	lead covered and steel wire armoured.
	CREW SPACE	1	2.5	7	0.67	5	35	"	lead covered and steel wire armoured.
	AMIDSHIPS	1	4	7	0.85	9.5	50	"	lead covered and steel wire armoured.
	NAVIGATION	1	2.5	7	0.67	4.1	50	"	lead covered and steel wire armoured.
	WIRELESS								
	SEARCHLIGHT								
	MASTHEAD LIGHT...	1	1.5	1	1.38	1	80-70	rubber	lead covered and steel wire.
	SIDE LIGHTS ...	1	1.5	1	1.38	0.2	24	"	and steel wire.
	COMPASS LIGHTS ...	1	1.5	1	1.38	0.2	5	"	steel wire.
	POOP LIGHTS ...	1	1.5	1	1.38	1	65	"	wire.
	CARGO LIGHTS ...	1	1.5	1	1.38	1.4	8-15	"	armoured.
	ARC LAMPS ...								
	HEATERS								

MOTOR CONDUCTORS.

Ref. No.	DESCRIPTION.	No. of Motors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Ampères.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	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 ...								

All Conductors are of annealed copper conforming to British Standard Specification No. 7.
 The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.
 The foregoing is a correct description.

F. Wibroe Electrical Engineers Date *19/5-28*

COMPASSES.

Distance between electric generators ~~or motors~~ and standard compass *ca. 80'* ✓
 Distance between electric generators ~~or motors~~ and steering compass *ca. 75'* ✓
 The nearest cables to the compasses are as follows:—
 A cable carrying *0.1* Ampères ✓ feet from standard compass *10"* ~~feet~~ from steering compass. ✓
 A cable carrying *1* Ampères *8* feet from standard compass *6* feet from steering compass. ✓
 A cable carrying *4.1* Ampères *11* feet from standard compass *5* 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 *0* degrees on *any* ✓ course in the case of the standard compass, and *0* degrees on *any* ✓ course in the case of the steering compass.

F. Wibroe Builder's Signature. Date *19/5-28*

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 Electric Light Installation as above described is an improvement and increase of the old installation, which was mainly used for wireless telegraphy and of which only the generator, the main switch board and one outgoing feed cable (4 mm²) have been retained. The wireless telegraph has now been removed, the main switch board overhauled and enlarged and the whole installation brought in accordance with the Rule requirements.

The materials used in the installation are of good description throughout and the workmanship good.

After completion the whole installation was tested under full power working conditions and found to work satisfactorily.

Recommend the vessel to have notation of "ELECTRIC LIGHT" in the Register Book and the record of "WIRELESS" to be removed from same.

It is submitted that this vessel is eligible for THE RECORD. The light *19/5/28*

Total Capacity of Generators *3.85* Kilowatts.

The amount of Fee ... *£. 70.00* When applied for, *27.5.19.28.*

Travelling Expenses (if any) £ : : When received, *8.8.19.28*

Chubb
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI 15 JUN 1928*

Assigned *Electric Light*

Im. 1. 27.—Transfer. (The Surveys are requested not to write on or below the space for Committee's Minutes.)

