

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL) Received at London Office 19 NOV 1927

Date of writing Report 19 When handed in at Local Office 16 NOV. 1927 Port of LIVERPOOL

No. in Survey held at Northwich Date, First Survey Aug 12<sup>th</sup> Last Survey Nov 2<sup>nd</sup> 1927  
Reg. Book. (Number of Visits 6)

on the S.S. 'Swazi' Tons { Gross 238  
Net

Built at Northwich By whom built Messrs W. J. Garwood & Co. Yard No. 345 When built 1927

Registered Owners; The British & South American Steam Navigation Co. Ltd.  
Owners R. P. Houston & Co. Ltd. Port belonging to London

Electric Light Installation fitted by W. J. Garwood & Co. Ltd. Contract No. When fitted 1927

System of Distribution 2 wire  
Pressure of supply for Lighting 110 volts, Heating 110 volts, Power ✓ volts.

Direct or Alternating Current, Lighting DC. 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? ✓, is an adjustable regulating resistance fitted in series with each shunt field? ✓

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  
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? Thwartships.

Earthing, are the bed-plates 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

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 insulating resistance? 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? 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? 1 x 1/8"

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? S.P. switches

D.P. fuses

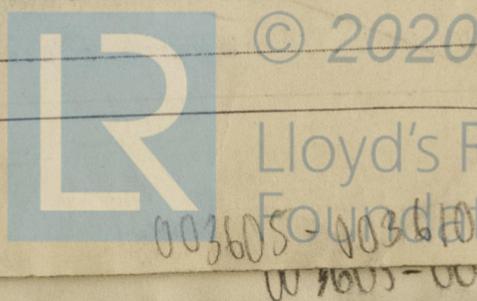
Instruments on main switchboard one ammeters one voltmeters ✓ synchronising device for paralleling purposes.

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

in series neutral earthed.

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? none



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**Cables:** Single, twin, concentric, or multicore Single 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 ✓

**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 ✓

**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 galv. steel conduit

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 ✓

**Refrigerated Chambers,** if lights are fitted, are the cables and fittings in accordance with the special requirements ✓

**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 ✓ state the material of which the bushes are made ✓

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas copper cable .06"

are their connections made as per Rule Yes

**Alternative Lighting,** are the groups of lights in the propelling machinery space arranged as per Rule ✓

**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 ✓

**Fittings,** are all fittings on weather decks, in storerooms and engine rooms and where 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 no

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected no

how are the cables led ✓

where are the controlling switches situated ✓

**Searchlight Lamps, No. of** 1, whether fixed or portable 1, are their fittings as per Rule ✓

**Arc Lamps,** other than searchlight lamps, No. of 0, are their live parts insulated from the frame or case ✓ are their fittings as per Rule ✓

**Motors,** are their working parts readily accessible ✓, are the coils self-contained and readily removable for replacement ✓

are the bases, bases, holders, terminals and lubricating arrangements as per Rule ✓, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material ✓

are they protected from mechanical injury and damage from water, steam or oil ✓ are their axes of rotation fore and aft ✓

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 ✓

**Control Gear and Resistances,** are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule ✓

**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 ✓

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office ✓

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                      | 1     | 3          | 110    | 34    | 480            | Steam engine |  |                      |
| AUXILIARY                 |       |            |        |       |                |              |  |                      |
| EMERGENCY                 |       |            |        |       |                |              |  |                      |
| ROTARY TRANSFORMER        |       |            |        |       |                |              |  |                      |

LIGHTING AND HEATING CONDUCTORS.

| Ref. No. | DESCRIPTION.           | No. of Conductors. | Effective Area of each Conductor Sq. Ins. | COMPOSITION OF STRAND. |           | Total Maximum Current Amperes. | Approximate Length (Lead and Return) Feet. | Insulated with | HOW PROTECTED. |
|----------|------------------------|--------------------|---|------------------------|-----------|--------------------------------|--|----------------|----------------|
|          |                        |                    |   | No.                    | Diameter. |                                |  |                |                |
|          | MAIN GENERATOR         | 2                  | .06                                       | 19                     | .067      | 83                             | 10   | V. I. R.       | Steel conduit  |
|          | EQUALISER CONNECTIONS  |                    |   |                        |           |                                |  |                |                |
|          | AUXILIARY GENERATOR    |                    |   |                        |           |                                |  |                |                |
|          | EMERGENCY GENERATOR    |                    |   |                        |           |                                |  |                |                |
|          | ROTARY TRANSFORMER     |                    |   |                        |           |                                |  |                |                |
|          | AUXILIARY SWITCHBOARDS |                    |   |                        |           |                                |  |                |                |
|          | ENGINE ROOM            |                    |   |                        |           |                                |  |                |                |
|          | BOILER ROOM            |                    |   |                        |           |                                |  |                |                |
|          | ACCOMMODATION          |                    |   |                        |           |                                |  |                |                |
|          | WIRELESS               |                    |   |                        |           |                                |  |                |                |
|          | SEARCHLIGHT            | 2                  | .002                                      | 3                      | .036      | 1                              | 200 ft                                     | V. I. R.       | Steel conduit  |
|          | MASTHEAD LIGHT         | 2                  | "   | "                      | "         | "                              | 20"  | "              | "              |
|          | SIDE LIGHTS            | 2                  | "   | "                      | "         | "                              | 20"  | "              | "              |
|          | COMPASS LIGHTS         | 2                  | "   | "                      | "         | "                              | 20"  | "              | "              |
|          | POOP LIGHTS            | 2                  | "   | "                      | "         | "                              | 20"  | "              | "              |
|          | CARGO LIGHTS           |                    |   |                        |           |                                |  |                |                |
|          | ARC LAMPS              |                    |   |                        |           |                                |  |                |                |
|          | HEATERS                |                    |   |                        |           |                                |  |                |                |

MOTOR CONDUCTORS.

| Ref. No. | DESCRIPTION.            | No. of Motors. | Effective Area of each Conductor Sq. Ins. | COMPOSITION OF STRAND. |           | Total Maximum Current Amperes. | 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.

W J. YARWOOD & SONS, LTD.

Electrical Engineers.

Date 12.1.27

*Albert Yarwood*

COMPASSES.

Distance between electric generators or motors and standard compass *29-0*

Distance between electric generators or motors and steering compass *29-0*

The nearest cables to the compasses are as follows:—

A cable carrying *6* Amperes *2* feet from standard compass *2* feet from steering compass.

A cable carrying *3* Amperes *2* feet from standard compass *2* feet from steering compass.

A cable carrying \_\_\_\_\_ Amperes \_\_\_\_\_ 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 \_\_\_\_\_ course in the case of the standard compass, and *nil* degrees on *any* course in the case of the steering compass.

W J. YARWOOD & SONS, LTD.

Builder's Signature.

Date 12.11.27

*Albert Yarwood*

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. *This installation has been fitted in accordance with the Rule requirements, & the workmanship is good. On completion it has been examined under working conditions & found satisfactory, & is now eligible for record of 'Elec. Light'.*

It is submitted that this vessel is eligible for THE RECORD. *Elec. Light.*

*S.A.*  
*22/11/27*

Total Capacity of Generators *3* Kilowatts.

The amount of Fee ... £ *5* : : When applied for, *10/11/19.27*

Travelling Expenses (if any) £ : : When received, *16/11/19.27*

*S. Townsend*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute *LIVERPOOL* 18 NOV. 1927

Assigned *Elec. Light.*

Impr. 20.—Transfer. (The Shareholders are requested not to write on or behind the space for Committee's Minute.)