

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 83637.

Port of **LIVERPOOL** Date of First Survey *6th March* Date of Last Survey *18th April* No. of Visits *17*
No. in Reg. Book on the ~~Iron~~ Steel T.S.S. "S. MARIA" Port belonging to
Built at **Birkenhead** By whom **Cammell Laird & Co. Ltd.** When built **1922**
Owners **Cunard Steam Ship Co. Ltd.** Owners' Address **Liverpool**
Yard No. **836** Electric Light Installation fitted by **Sunderland Forge & Engineering Co. Ltd.** When fitted **1922**

DESCRIPTION OF DYNAMO, ENGINE, ETC.

2 - 375 K.W. 110/220 volts 3 wire turbo generating sets complete with gearing, generator

arranged with static balancers. - 1 - 36 K.W. Emergency Generating set -do- (164 amps at 220 volts)

Capacity of Dynamos each 1700 Amperes at 220 Volts, whether continuous or alternating current Continuous

Where is Dynamo fixed **in Engine Room** & Emergency Dynamo Whether single or double wire system is used **Double**

Position of Main Switch Board **In Engine Room** Room. having switches to groups 14 of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each "A" Board "D" deck 27 switches, "B" board "D" deck 21 switches, "C" board "D" deck 23 switches, "D" board "D" deck 43 switches, "E" board Boat Deck 13 switches

If fuses are fitted on main switch board to the cables of main circuit Yes and on each auxiliary switch board to the cables of auxiliary circuits Yes and at each position where a cable is branched or reduced in size Yes and to each lamp circuit Yes

If vessel is wired on the double wire system are fuses fitted to both flow and return wires or cables of all circuits including lamp circuits. Yes

Are the fuses of non-oxidizable metal Yes and constructed to fuse at an excess of 100 per cent over the normal current

Are all fuses fitted in easily accessible positions **Yes** Are the fuses of standard dimensions **Yes** If wire fuses are used are permanent instructions fitted on or near each switch board giving particulars of proper size of fuse for each circuit **Yes**

Are all switches and fuses constructed of incombustible materials and fitted on incombustible bases **Yes**

Total number of lights provided for **3110** arranged in the following groups:—

| | | | | | | |
|----|-----------------------|---------------------|--|---|--------|---------|
| A | Beard | 606 | lights each of 16 cp & 1 at 32 | candle power requiring a total current of) | 1265.9 | Amperes |
| B | " | 712 | lights each of 16 cp & 5 at 32 | candle power requiring a total current of) | 539.5 | Amperes |
| C | " | 840 | lights each of 16 | candle power requiring a total current of) | 228.0 | Amperes |
| D | " | 731 | lights each of 16 cp & 1 at 32 | candle power requiring a total current of) | 1011.9 | Amperes |
| E | " | 12 | lights each of 16 cp & 4 at 2000 | candle power requiring a total current of) | 257.0 | Amperes |
| 2 | Mast head lights with | 1 | lamps each of 32 | candle power requiring a total current of | 1.2 | Amperes |
| 2 | Side lights with | 1 | lamps each of 32 | candle power requiring a total current of | 1.2 | Amperes |
| 14 | Cargo lights of | 6 lights each at 16 | candle power, whether incandescent or arc lights | Incandescent | | |

If arc lights, what protection is provided against fire, sparks, &c.

Where are the switches controlling the masthead and side lights placed In Navigating house

DESCRIPTION OF CABLES.

| | | | | | | | | | |
|-----------------------------|------|-----------------------|----------------------|-------------|-------------|------------------|------------------|------------------------------------|------------------------------------|
| Main cable carrying | 1700 | Amperes, comprised of | 4 cables in parallel | 91 | wires, each | 0.103" | S.W.G. diameter, | 3.0 | square inches total sectional area |
| Branch cables carrying | 228 | Amperes, comprised of | 61 | wires, each | 0.093" | S.W.G. diameter, | 0.4 | square inches total sectional area | |
| Branch cables carrying | 7 | Amperes, comprised of | 7 | wires, each | 0.036 | S.W.G. diameter, | .007 | square inches total sectional area | |
| Leads to lamps carrying | 1.8 | Amperes, comprised of | 3 | wires, each | .029" | S.W.G. diameter, | .002 | square inches total sectional area | |
| Cargo light cables carrying | 3.3 | Amperes, comprised of | 70 | wires, each | .0076" | S.W.G. diameter, | .003 | square inches total sectional area | |

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Finned copper conductors insulated with pure and vulcanised india rubber, taped, braided and the whole vulcanised together and finished in Accommodation - Braided and compounded.

in Machinery spaces etc. - Lead covered armoured and braided

Joints in cables, how made, insulated, and protected

None fitted

Are all the joints of cables thoroughly soldered, and the flux used not containing acids or other corrosive substances ☒ Are all joints in accessible positions, none being made in bunkers, cargo spaces, or spaces which may at any time be used for carrying cargo, stores, or baggage ☒

Are there any joints in or branches from the cable leading from dynamo to main switch board

How are the cables led through the ship, and how protected On porcelain insulators in false ceiling
along "D" deck starboard passage.

DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible **Yes**

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture
Vulcanised india rubber cables drawn into galvanised iron piping made watertight

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat **Lead covered armoured & braided**

What special protection has been provided for the cables near boiler casings **Lead covered armoured and braided**

What special protection has been provided for the cables in engine room **Lead covered armoured and braided**

How are cables carried through beams **Holes bushed with fibre** through bulkheads, &c. **W.F. packing glands**

How are cables carried through decks **In deck tubes made watertight**

Are any cables run through coal bunkers **No** or cargo spaces **No** or spaces which may be used for carrying cargo, stores, or baggage **Yes**

If so, how are they protected **Vulcanised india rubber cables drawn into galvanised iron piping.**

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage **Yes**

If so, how are the lamp fittings and cable terminals specially protected **Cast iron covers**

Where are the main switches and fuses for these lights fitted **at Distribution boxes on deck above**

If in the spaces, how are they specially protected **---**

Are any switches or fuses fitted in bunkers **No**

Cargo light cables, whether portable or permanently fixed **Portable** How fixed **In Watertight boxes**

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel **---**

How are the returns from the lamps connected to the hull **---**

Are all the joints with the hull in accessible positions **---**

Is the installation supplied with a voltmeter **Yes**, and with an amperemeter **Yes**, fixed **Main Switch-board**

VESSELS BUILT FOR CARRYING PETROLEUM.

In vessels built for carrying petroleum, are all switches and fuses fitted in positions not liable to the accumulation of petroleum vapour or gas **---**

Are any switches, fuses, or joints of cables fitted in the pump room or companion **---**

How are the lamps specially protected in places liable to the accumulation of vapour or gas **---**

The copper used is guaranteed to have a conductivity of not less than that of the Engineering Standards Committee's standard and the wires are protected by tinning from the sulphur compounds present in the insulating material.

Insulation of cables is guaranteed to have a resistance of not less than **600** megohms per statute mile at 60° Fahrenheit after 24 hours' immersion in water, the test being made after one minute's electrification at not less than 500 volt and while the cable is still immersed.

The foregoing statements are a correct description of the Electric Light installation fitted by us on this vessel and we declare that it is at this date in good order and safe working condition.

P. Pro The Sunderland Forge & Eng. Co. Ltd.

R. H. Gough

Electrical Engineers

Date 26th April, 1922

COMPASSES.

Distance between dynamo or electric motors and standard compass **20 feet**

Distance between dynamo or electric motors and steering compass **16 feet**

The nearest cables to the compasses are as follows:—

| | | | | | | |
|------------------|-----|---------|----|----------------------------|----|----------------------------|
| A cable carrying | 10 | Ampères | 15 | feet from standard compass | 10 | feet from steering compass |
| A cable carrying | 0.3 | Ampères | 3 | feet from standard compass | 3 | 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**

The maximum deviation due to electric currents, etc., was found to be **Nil** degrees on **---** course in the case of the

standard compass and **Nil** degrees on **---** course in the case of the steering compass.

CAMMELL LARD AND COMPANY LIMITED.

Builder's Signature.

Date

GENERAL REMARKS.

The electric light installation has now been fitted on board in accordance with the rules and has been tried under full working conditions and found satisfactory in every respect. It is eligible in our opinion for modification "Electric light".

For this vessel is eligible for THE RECORD. Elec. Light. 24 John Dykes & Dykes & Dykes. Surveyor to Lloyd's Register of Shipping.

Committee's Minute

LIVERPOOL

Electric Light. 77A



© 2020

Lloyd's Register Foundation