

# REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 34565

Port of Glasgow Date of First Survey 16/9/14 Date of Last Survey 10/11/14 No. of Visits 17  
 No. in Reg. Book on the Iron or Steel S. S. "Mahanada" Port belonging to \_\_\_\_\_  
 Built at Scotstown, Glasgow By whom New Chat Council Co. Ld. When built 1914  
 Owners Mr J. J. Brocklebank Owners' Address \_\_\_\_\_  
 Yard No. "361" Electric Light Installation fitted by A. J. Robertson Co When fitted 1914

## DESCRIPTION OF DYNAMO, ENGINE, ETC.

Two dynamos Compound wound multipolar (4 pole) type each dynamo coupled direct to a vertical engine having cylinder 8" dia by 7" stroke @ 275 rev  
 Capacity of Dynamo each 135 Amperes at 100 Volts, whether continuous or alternating current continuous  
 Where is Dynamo fixed on the engine room top platform Whether single or double wire system is used double wire  
 Position of Main Switch Board " " near dynamo having switches to groups A, B, C, D, E, F of lights, &c., as below  
 Positions of auxiliary switch boards and numbers of switches on each No auxiliary switchboards

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 50 per cent over the normal current  
 Are all fuses fitted in easily accessible positions yes Are the fuses of standard dimensions wire 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 163 plus 2 arc arranged in the following groups:—

Group	Description	Quantity	Wattage	Candle Power	Current (Amperes)
A	Fore Cast	14	16	8.4	8.4
B	Aft Cast	28	16	60.8	16.8
C	Engine room	27	16	22.2	22.2
D	Saloon	22	32	22.8	22.8
E	Wireless	13	16	20	20
F	Two Mast head lights with	2	32	9	9
	Two Side lights with	2	32		
	Cargo lights of	6	96		
	arc	2	1500		

If arc lights, what protection is provided against fire, sparks, &c. Hexagon plated lanterns & inner glass in a double enclosure

Where are the switches controlling the masthead and side lights placed In chart room

## DESCRIPTION OF CABLES.

Main cable carrying 135 Amperes, comprised of 19 wires, each 13 S.W.G. diameter, .126 square inches total sectional area  
 Branch cables carrying 22.2 Amperes, comprised of 7 wires, each 16 S.W.G. diameter, .0225 square inches total sectional area  
 Branch cables carrying 10 Amperes, comprised of 7 wires, each 18 S.W.G. diameter, .0127 square inches total sectional area  
 Leads to lamps carrying .6 Amperes, comprised of 1 wires, each 18 S.W.G. diameter, .00187 square inches total sectional area  
 Cargo light cables carrying 3.6 Amperes, comprised of 119 wires, each 38 S.W.G. diameter, .00407 square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

Pure india rubber then vulcanising india rubber & rubber coated tape the whole vulcanised together, braided cotton & preservative compound, wires run in stray wood casing, other parts protected by arming.  
 Joints in cables, how made, insulated, and protected splice joints, solignum & re-insulated with layers of felt tape, several layers pure rubber built up finished with proof tape & varnished.

Are all the joints of cables thoroughly soldered (and the flux used not containing acids or other corrosive substances) yes 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 yes none in spaces

Are there any joints in or branches from the cable leading from dynamo to main switch board no

How are the cables led through the ship, and how protected Forward & aft under bridge deck and thro' tween decks on jirons beam port side, lead wire arming



**DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.**

Are they in places always accessible yes (except in cargo spaces)

What special protection has been provided for the cables in open alleyways, or where exposed to weather or moisture Armoured wires in galv iron pipes.

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Lead, Served & Armoured

What special protection has been provided for the cables near boiler casings Lead, Served & Armoured

What special protection has been provided for the cables in engine room Armoured

How are cables carried through beams Two five inch through bulkheads, &c. 2 1/2" plates

How are cables carried through decks in galv iron pipes

Are any cables run through coal bunkers no or cargo spaces yes or spaces which may be used for carrying cargo, stores, or baggage yes

If so, how are they protected Galv wire armouring

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage no

If so, how are the lamp fittings and cable terminals specially protected ---

Where are the main switches and fuses for these lights fitted ---

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 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 2 amperemeters all, fixed on Switchboard

**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 volts 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.

A. J. Robertson Co Electrical Engineers Date 23<sup>rd</sup> Dec 1914

**COMPASSES.**

Distance between dynamo or electric motor's and standard compass 112 Feet

Distance between dynamo or electric motors and steering compass 116 Feet

The nearest cables to the compasses are as follows:—

A cable carrying	<u>21.6</u>	Amperes	<u>30</u>	feet from standard compass	<u>24</u>	feet from steering compass
A cable carrying	<u>1.2</u>	Amperes	<u>5</u>	feet from standard compass	<u>5</u>	feet from steering compass
A cable carrying	<u>.3</u>	Amperes	<u>into</u>	feet from standard compass	<u>7 into</u>	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 1/2 degrees on every course in the case of the standard compass and 1/2 degrees on every course in the case of the steering compass.

For CHARLES CONNELL & CO., Limited.

William A. Connell Director Builder's Signature. Date ---

**GENERAL REMARKS.**

This installation has been well fitted on board and when run under ordinary working conditions was satisfactory.

It is submitted that this vessel is eligible for

THE RECORD. Elec. light. JWD 28/1/15. Surveyor to Lloyd's Register of British and Foreign Shipping.

Committee's Minute GLASGOW 26 JAN. 1915

Elec. Light



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THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

5006.12.—Transfer.

L.M. 23/1/15