

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 65751.

Port of Liverpool Date of First Survey 25 APR 1911 Date of Last Survey 27 April 1911 No. of Visits 6
 No. in Reg. Book 46 on the Iron or Steel S.S. Highland Loch Port belonging to Liverpool
 Built at Birkenhead By whom Cammell, Laird & Co. Ltd. When built 1911
 Owners M. & W. Nelson & Co. Owners' Address Liverpool
 Yard No. 329 Electric Light Installation fitted by Cammell, Laird & Co. Ltd. When fitted 1911

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Single Cylinder, Vertical, open type Engine by Stankes & Co.
Multipolar, compound dynamo by Boothroyd & Co. 30 H.P. at 300 R.P.M.
 Capacity of Dynamo 275 Amperes at 110 Volts, whether continuous or alternating current Continuous
 Where is Dynamo fixed Starboard side of Engine Room Whether single or double wire system is used Double
 Position of Main Switch Board at dynamo having switches to groups Eleven of lights, &c., as below
 Positions of auxiliary switch boards and numbers of switches on each

If cut outs 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 cut outs fitted to both flow and return wires or cables of all circuits including lamp-circuits
 Are the cut outs of non-oxidizable metal Yes and constructed to fuse at an excess of 50 to 75 per cent over the normal current
 Are all cut outs 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 cut-outs constructed of incombustible materials and fitted on incombustible bases Yes
 Total number of lights provided for 508 arranged in the following groups:—

A	66	lights each of	16	candle power requiring a total current of	37.0	Amperes
B	14	lights each of	16	candle power requiring a total current of	7.7	Amperes
C	113	" " "	16 & 8	" " " " " "	60.0	Amperes
D	117	lights each of	16 & 8	candle power requiring a total current of	60.0	Amperes
E	32	" " "	16	" " " " " "	17.6	Amperes
F	71	lights each of	16	candle power requiring a total current of	39.0	Amperes
G	43	" " "	32 - 16 & 8	" " " " " "	22.6	Amperes
H	22	lights each of	32 - 16 & 8	candle power requiring a total current of	13.44	Amperes
2	Mast head lights with 2 lamps each of	32	candle power requiring a total current of	2.2	Amperes	
2	Side lights with 2 lamps each of	32	candle power requiring a total current of	2.2	Amperes	
30	Cargo lights of	16	candle power, whether incandescent or arc lights	Both		

If arc lights, what protection is provided against fire, sparks, &c. Lamps are of the double enclosed pattern.

Where are the switches controlling the masthead and side lights placed In Chart Room.

DESCRIPTION OF CABLES.

Main cable carrying 275 Amperes, comprised of 61 wires, each 14 L.S.G. diameter, .3007 square inches total sectional area
 Branch cables carrying 60 Amperes, comprised of 19 wires, each 16 L.S.G. diameter, .060 square inches total sectional area
 Branch cables carrying 26.6 Amperes, comprised of 7 wires, each 14 L.S.G. diameter, .3459 square inches total sectional area
 Leads to lamps carrying 1.65 Amperes, comprised of 1 wire, 18 L.S.G. diameter, .00181 square inches total sectional area
 Cargo light cables carrying 3 Amperes, comprised of 108 wires, each 38 L.S.G. diameter, .0032 square inches total sectional area

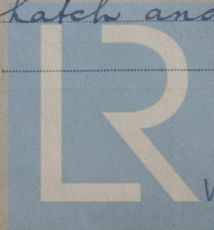
DESCRIPTION OF INSULATION, PROTECTION, ETC.

600 Megohm grade, B. & A. cable used throughout: Taped & Braided in accommodation, lead covered & armoured in machinery spaces & galleys, & taped & braided, run in galvanised steel tubing for deck work & up masts.
 Joints in cables, how made, insulated, and protected Made on special porcelain joint boxes with cast iron covers.

Are all the joints of cables thoroughly soldered, resin only having been used as a flux 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

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 Feat casing in engine hatch and galvanised piping along Shelter Deck.



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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 *Galvanised steel tubing.*

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

What special protection has been provided for the cables near boiler casings *- ditto -*

What special protection has been provided for the cables in engine room *- ditto -*

How are cables carried through beams *Through lead bushes* through bulkheads, &c. *Through lead bushes.*

How are cables carried through decks *Through galvanised tubes, bushed.*

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

If so, how are they protected *✓*

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 cut outs for these lights fitted *✓*

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

Are any switches or cut outs 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 *✓*

The installation is *✓* supplied with a voltmeter and *✓* an amperemeter, fixed *on switchboard*

VESSELS BUILT FOR CARRYING PETROLEUM.

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

Are any switches, cut outs, 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 *100* per cent. that of pure copper.

Insulation of cables is guaranteed to have a resistance of not less than *600* megohms per statute mile after 24 hours' immersion in seawater.

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.

OAMMELL LAIRD AND COMPANY LIMITED

M. J. P. MANAGER. Electrical Engineers Date *April 25th 1911.*

COMPASSES.

Distance between dynamo or electric motors and standard compass *112* feet

Distance between dynamo or electric motors and steering compass *112* feet

The nearest cables to the compasses are as follows:—

A cable carrying	Amperes	feet from standard compass	feet from steering compass
<i>8</i>	<i>7</i>	<i>7</i>	<i>7</i>
<i>17.6</i>	<i>28</i>	<i>20</i>	<i>20</i>
<i>A cable carrying</i>	<i>Amperes</i>	<i>feet from standard compass</i>	<i>feet from steering compass</i>

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

OAMMELL LAIRD AND COMPANY LIMITED

Builder's Signature. Date *April 25th 1911.*

GENERAL REMARKS.

This installation has been fitted under special survey, & is of good description, on completion it was tested under working conditions & found to be satisfactory.

A. J. Barrett.

Surveyor to Lloyd's Register of British and Foreign Shipping.

Committee's Minute

LIVERPOOL. 25 APR 1911
Electric Light.

It is submitted that this vessel is eligible for

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THE SUBVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.