

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 4169.

Port of Liverpool Date of First Survey 23rd Dec/08 Date of Last Survey 5th March/10 No. of Visits 5
 No. in Reg. Book 73 on the Iron or Steel S.S. Highland Laddie Port belonging to London
 Built at Tranmere Shipyard Birkenhead By whom Cammell Laird & Co When built 1910
 Owners Mr W. Nelson, Ltd. Owners' Address 20 Water Street Liverpool.
 Yard No. 327 Electric Light Installation fitted by Cammell Laird & Co When fitted 1910

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Engine of single cylinder open type, running at 300 R.P.M. Maker, Shanks & Co ✓
 Dynamo of compound multipolar type, direct coupled. Maker, Boothroyd & Co ✓
 Capacity of Dynamo 245 Amperes at 110 Volts, whether continuous or alternating current Continuous ✓
 Where is Dynamo fixed Engine Room. Starboard side ✓ Whether single or double wire system is used Double ✓
 Position of Main Switch Board Beside Dynamo ✓ having switches to groups 10 in No. ✓ of lights, &c., as below
 Positions of auxiliary switch boards and numbers of switches on each, Ordinary section & distribution boards,
fitted with master switches for passenger accommodation only. ✓

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 Yes ✓
 Are the cut outs of non-oxidizable metal Copper fuses ✓ and constructed to fuse at an excess of 50 ✓ 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 476, 1 Morse & 2 arc arranged in the following groups:—

A	<u>83</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>44.5</u>	Amperes
B	<u>207</u>	lights each of	<u>16 & 8</u>	candle power requiring a total current of	<u>112.0</u>	Amperes
C	<u>46</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>41.5</u>	Amperes
D	<u>32</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>17.5</u>	Amperes
E	<u>44</u>	lights each of	<u>32, 16 & 8</u>	candle power requiring a total current of	<u>24.0</u>	Amperes
	<u>2</u>	Mast head lights with <u>1</u> lamp each of	<u>32</u>	candle power requiring a total current of	<u>5-10</u>	"
	<u>2</u>	Side lights with <u>1</u> lamp each of	<u>32</u>	candle power requiring a total current of	<u>2.2</u>	Amperes

5 Cargo lights of 6 lights each of 16 candle power, whether incandescent or arc lights Both kinds fitted
 If arc lights, what protection is provided against fire, sparks, &c. Lamps are of the enclosed type,
with inner globe & outer lantern. ✓
 Where are the switches controlling the masthead and side lights placed Chart House ✓

DESCRIPTION OF CABLES.

Main cable carrying 245 Amperes, comprised of 61 wires, each 13 L.S.G. diameter, .4 square inches total sectional area ✓
 Branch cables carrying 50 Amperes, comprised of 19 wires, each 16 L.S.G. diameter, .06 square inches total sectional area ✓
 Branch cables carrying 32 Amperes, comprised of 7 wires, each 14 L.S.G. diameter, .034 square inches total sectional area ✓
 Leads to lamps carrying 2.2 Amperes, comprised of 1 wires, each 17 L.S.G. diameter, .0024 square inches total sectional area ✓
 Cargo light cables carrying 10 Amperes, comprised of 7 wires, each 18 L.S.G. diameter, .0124 square inches total sectional area ✓

DESCRIPTION OF INSULATION, PROTECTION, ETC.

All cables of 600 Meg. Assoc. quality, braided finish in ordinary places.
In machinery spaces, lead covered and armoured and clipped to ship. ✓
 Joints in cables, how made, insulated, and protected No joints ✓
 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 In wood casing and iron piping ✓



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. Protected by steel or iron tubing. If in casing lead covered cable is fitted. & armoured

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat In Galley cable is lead covered

What special protection has been provided for the cables near boiler casings Run in tubing & armoured

What special protection has been provided for the cables in engine room Mains in heavy teak casing, small cables lead covered

How are cables carried through beams Through fibre bushes through bulkheads, &c. In fibre bushes

How are cables carried through decks In W.I. deck pipes " W.I. glands thro. W.I. Bulkheads

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 —

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 Yes supplied with a voltmeter and Yes 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.

For **CAMMELL LAIRD AND COMPANY LIMITED**

J. W. Wilson

Electrical Engineers

Date 9th May 1910.

COMPASSES.

Distance between dynamo or electric motors and standard compass About 105 ft.

Distance between dynamo or electric motors and steering compass " 100 ft.

The nearest cables to the compasses are as follows:—

A cable carrying <u>7.5</u> Amperes <u>8</u> feet from standard compass <u>10</u> feet from steering compass
A cable carrying <u>✓</u> Amperes <u>✓</u> feet from standard compass <u>✓</u> feet from steering compass
A cable carrying <u>✓</u> Amperes <u>✓</u> feet from standard compass <u>✓</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 _____ degrees on _____ course in the case of the standard compass and _____ degrees on _____ course in the case of the steering compass.

Builder's Signature. Date

GENERAL REMARKS. This installation has been fitted under Special Survey. The materials and workmanship are good. On completion it has been examined at work satisfactorily.

It is submitted that this vessel is eligible for **THE RECORD, Elec. light.** 1/5/10 *R.D. Shilston & Richard King*
Surveyor to Lloyd's Register of British and Foreign Shipping.

Committee's Minute **LIVERPOOL 10 MAY 1910**
Electric Light.

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.



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