

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 5420

Port of *Belfast* Date of First Survey *Jan 10 1902* Date of Last Survey *Feb 24 1902* No. of Visits *7*
 No. in Reg. Book on the *Steel* *Marwick* Ship belonging to *Liverpool*
 Built at *Belfast* By whom *Harland & Wolff L* When built *1902*
 Owners *The Ribby & S. Co. L.* Owners' Address *Liverpool*
 Yard No. *344* Electric Light Installation fitted by *N. H. Allen & Co. L.* When fitted *1902*

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Two bipolar undertype dynamos coupled direct to two double acting Compound engines having vertical cylinders 8" x 13" dia by 8" stroke

Capacity of Dynamos each *210* Amperes at *100* Volts, whether continuous or alternating current *Continuous*

Where is Dynamo fixed *In thrust room*

Position of Main Switch Board " " having switches to groups *A, B, C, D, E, F, G, H, I, J* of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each *1 for saloon fans 12 switches near pantry, 1 for smoke room fans 6 switches, smoke room entrance, 1 for library for fans, 4 switches, library entrance, 1 for saloon 10 switches saloon entrance, 1 for stateroom, 6 switches smoke room entrance, 1 for drawing room, 6 switches drawing room entrance.*

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 when disturbed*

Are the cut outs of non-oxidizable metal *yes* and constructed to fuse at an excess of *100* 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 *411* arranged in the following groups:—

<i>A</i> <i>(1)</i> <i>10</i>	lights each of	<i>16</i>	candle power requiring a total current of	<i>1/2</i>	Amperes
<i>B</i> <i>(1)</i> <i>20</i>	lights each of	<i>16</i>	" " " " " "	<i>32</i>	Amperes
<i>C</i> <i>(1)</i> <i>20</i>	lights each of	<i>16</i>	" " " " " "	<i>32</i>	Amperes
<i>D</i> <i>(1)</i> <i>55</i>	lights each of	<i>16</i>	" " " " " "	<i>33</i>	Amperes
<i>E</i> <i>(1)</i> <i>55</i>	lights each of	<i>16</i>	" " " " " "	<i>33</i>	Amperes
<i>F</i> <i>(1)</i> <i>92</i>	lights each of	<i>16</i>	" " " " " "	<i>55</i>	Amperes
<i>G</i> <i>(1)</i> <i>25</i>	lights each of	<i>16</i>	" " " " " "	<i>15</i>	Amperes
<i>H</i> <i>(1)</i> <i>Propeller</i>				<i>40</i>	Amperes
<i>I</i> <i>(1)</i> <i>Fans (33 in. Cylinders)</i>				<i>20</i>	Amperes
<i>J</i> <i>(1)</i> <i>57</i>				<i>34</i>	Amperes
<i>2</i> Mast head light with <i>1</i> lamps each of		<i>32</i>	candle power requiring a total current of	<i>2.4</i>	Amperes
<i>2</i> Side light with <i>1</i> lamps each of		<i>32</i>	candle power requiring a total current of	<i>2.4</i>	Amperes
<i>7</i> Cargo lights of <i>6</i> - <i>16 cp = 96</i>			candle power, whether incandescent or are lights <i>incandescent</i>		

If are lights, what protection is provided against fire, sparks, &c. *2 are lamps enclosed by hexagonal glass lanterns the panes protected by wire netting.*

Where are the switches controlling the masthead and side lights placed *in wheelhouse on bridge*

DESCRIPTION OF CABLES.

Main cable carrying *210* Amperes, comprised of *37* wires, each *13* L.S.G. diameter, *.250* square inches total sectional area
 Branch cables carrying *55* Amperes, comprised of *19* wires, each *16* L.S.G. diameter, *.062* square inches total sectional area
 Branch cables carrying *23* Amperes, comprised of *7* wires, each *16* L.S.G. diameter, *.023* square inches total sectional area
 Leads to lamps carrying *6* Amperes, comprised of *1* wires, each *18* L.S.G. diameter, *.0018* square inches total sectional area
 Cargo light cables carrying *3.6* Amperes, comprised of *145* wires, each *38* L.S.G. diameter, *.0042* square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Cables insulated with two layers of pure rubber, layer of vulcanizing rubber, tape, and the whole covered with a braiding of jute impregnated with preservative compound lead sheathed *Lead sheathed & covered in machines in the ship.*
 Joints in cables, how made, insulated, and protected *Splined joints, soldered, using resin as flux, insulated with two layers rubber sheet, then 3/8 inch tape & finally varnished.*

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, none in bunkers.*

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 *Through the beams, there being bushes with fibre ferrules, the wires being protected by strong wood casing.*

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 stung wood casing, lead sheathed for open deck lights, lead, sewed, & immersed where necessary

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat lead

What special protection has been provided for the cables near boiler casings lead sheathed sewed & immersed

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

How are cables carried through beams in fibre funnels through bulkheads, &c. have watertight glands

How are cables carried through decks in galvanized iron deck tubes lashed with fibre

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 —

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

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 have socket in dynamo piece

How are the returns from the lamps connected to the hull 3/8" brass screw hidden to wire, or through dis boxes outside

Are all the joints with the hull in accessible positions yes

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 installation is — supplied with 2 voltmeters and two amperemeters fixed on watchboard

The copper used is guaranteed to have a conductivity of 9800 per cent. that of pure copper.

Insulation of cables is guaranteed to have a resistance of not less than 2500 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 W. H. & S. J. S. & CO. LTD.

Electrical Engineers

Date 26. 4. 1902

COMPASSES.

Distance between dynamo or electric motors and standard compass 130 feet.

Distance between dynamo or electric motors and steering compass 130 feet.

The nearest cables to the compasses are as follows:—

A cable carrying	Amperes	feet from standard compass	feet from steering compass
50	8	6	6
23	8	6	6
23	20	12	12

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

Builder's Signature.

Date 29th April 1902

GENERAL REMARKS.

This installation is of the best description and has been fitted in accordance with the Rules.

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

Committee's Minute

It is submitted that this installation appears to meet the Rule requirements.

Lloyd's Register Foundation

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.