

# REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 7468

Port of Belfast Date of First Survey 5th Aug. Date of Last Survey Nov 3rd No. of Visits 17  
 No. in Reg. Book on the Iron or Steel T.S.S. Essequibo Port belonging to Belfast  
 Built at Belfast By whom Workman Clark & Co. Ltd. When built 1914  
 Owners Royal Mail S. P. Co. Owners' Address London  
 Yard No. 334 Electric Light Installation fitted by Lundeland & Farge Co. Ltd. When fitted 1914

**DESCRIPTION OF DYNAMO, ENGINE, ETC.** 4 Main Generating sets, each consisting of compound open type steam engine direct coupled to compound wound multipolar dynamo on combined bedplate  
 1 Emergency set consisting of oil engine direct coupled to compound wound dynamo

Capacity of Dynamo Main - 318 Amperes at 110 Volts Continuous  
 Emergency - 109 Amperes at 110 Volts, whether continuous or alternating current Continuous

Where is Dynamo fixed Main dynamo in engine room. Emergency dynamo in house on boat deck Whether single or double wire system is used Single

Position of Main Switch Board In Engine Room having switches to groups 16 of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each (1) At top of Engine casing for emergency lighting 10 switches  
(2) In chartroom for navigation lights &c. 12 switches (3) Saloon entrance port 17 switches (4) Saloon entrance starboard 17 switches (5) Smoking room entrance 24 switches (6) Forward bridge deck 17 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 —

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 1325 arranged in the following groups:—

A	62	lights each of	16	candle power requiring a total current of	13.6	Amperes
A B	173	lights each of	16	candle power requiring a total current of	35.8	Amperes
C	166	" " "	16	" " " " " " " "	33.8	"
B D	230	lights each of	16	candle power requiring a total current of	47.0	Amperes
E 4-Samp &	194	" " "	16	" " " " " " " "	64.8	"
G F	250	lights each of	16	candle power requiring a total current of	62.0	Amperes
G	90	" " "	16	" " " " " " " "	18.0	"
B H 10-Bro lamps	48	lights each of	16	candle power requiring a total current of	124.0	Amperes
I	112	" " "	16	" " " " " " " "	50.0	"
E J Wireless		lights each of		candle power requiring a total current of	27.0	Amperes
Also 6 Motor circuits				each requiring a current of approx.	107.0	"
2 Mast head light with	1	lamps each of	32	candle power requiring a total current of	2.0	Amperes
2 Side light with	1	lamps each of	32	candle power requiring a total current of	2.0	Amperes

10-Bro lamps & 24 Cargo lights of 32 candle power, whether incandescent or arc lights Both fitted

If arc lights, what protection is provided against fire, sparks, &c. Glass globe and strong galvanised iron wire guard

Where are the switches controlling the masthead and side lights placed In chartroom on bridge

## DESCRIPTION OF CABLES.

Main cable carrying 318 Amperes, comprised of 61 wires, each 13 S.W.G. diameter, 0.4 square inches total sectional area  
 Branch cables carrying 107 Amperes, comprised of 19 wires, each 14 S.W.G. diameter, 0.0937 square inches total sectional area  
 Branch cables carrying 6 Amperes, comprised of 7 wires, each 20 S.W.G. diameter, 0.007 square inches total sectional area  
 Leads to lamps carrying 1 Amperes, comprised of 7 wires, each 25 S.W.G. diameter, 0.0022 square inches total sectional area  
 Cargo light cables carrying 10 Amperes, comprised of 114 wires, each 38 S.W.G. diameter, 0.003192 square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

Tinned copper conductors, insulated with pure and vulcanising india rubber, taped, vulcanised together and finished as follows:— In accommodation—Lead covered and braided overall.

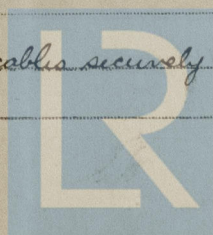
In engine room & where exposed to weather—Lead covered, armoured & braided.

Joints in cables, how made, insulated, and protected No joints

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 No

How are the cables led through the ship, and how protected Lead covered armoured & braided cables securely fastened to beams &c. with galvanised iron clips and 3/8 dia. brass screws



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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 Cables are lead-covered, armoured and braided overall.

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

What special protection has been provided for the cables near boiler casings " " " "

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

How are cables carried through beams Through holes bushed with fibre through bulkheads, &c. Through water-tight brass glands

How are cables carried through decks Through deck tubes, made water-tight

Are any cables run through coal bunkers Yes or cargo spaces Yes or spaces which may be used for carrying cargo, stores, or baggage Yes

If so, how are they protected Lead-covered, armoured and braided

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 Glass globe and strong brass guard fitted

Where are the main switches and fuses for these lights fitted In engine room

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 Attached to heavy brass water-tight plugs and sockets.

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel Screwed into heavy brass sockets and bolted to beam in engine room.

How are the returns from the lamps connected to the hull Screwed to brass washer and connected to hull by 3/8 dia. brass pins

Are all the joints with the hull in accessible positions Yes

Is the installation supplied with a voltmeter Yes, and with an amperemeter Yes, fixed in engine room.

**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 2500 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.

J. Pro Sunderland Forger Eng. Co. Ltd. Electrical Engineers Date November 18/1914  
H. Dight

**COMPASSES.**

Distance between dynamo or electric motors and standard compass 200 ft

Distance between dynamo or electric motors and steering compass 195 "

The nearest cables to the compasses are as follows:—

Cable carrying	Amperes	feet from standard compass	feet from steering compass
A cable carrying <u>5.8</u>	<u>12</u>	<u>10</u>	<u>10</u>
A cable carrying <u>0.5</u>	<u>3</u>	<u>3</u>	<u>3</u>
A cable carrying <u>1.0</u>	<u>6</u>	<u>8</u>	<u>8</u>

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 Nib degrees on all courses in the case of the standard compass and Nib degrees on all courses in the case of the steering compass.

PRO WORKMAN, CLARK & CO., LIMITED.

Pro Workman

Builder's Signature. Date

**GENERAL REMARKS.**

This installation is of good description, and has been fitted in accordance with the Rules

It is submitted that this vessel is eligible for THE RECORD. Elec. light.

JWD  
1/12/14

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

Committee's Minute