

# REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 7820

Port of Belfast Date of First Survey July 24<sup>th</sup> Date of Last Survey June 21<sup>st</sup> No. of Visits 13

No. in Reg. Book 415 on the Iron or Steel S.S. Belgic Belgian Port belonging to Liverpool  
Built at Belfast By whom Harland + Wolff Ltd. When built 1917

Owners International Navy Coy. Ltd. Owners' Address Liverpool  
Yard No. 391 Electric Light Installation fitted by Harland + Wolff Ltd. When fitted 1917

### DESCRIPTION OF DYNAMO, ENGINE, ETC.

4 Enclosed Forced Lubrication engines + dynamos, with cyls 16" x 25" x 12 stroke  
Each having an output of 300 H.P. at 100 volts when running at 330 R.P.M.

Capacity of Dynamo 3000 Amperes at 100 Volts, whether continuous or alternating current continuous ✓

Where is Dynamo fixed Dynamo Room Whether single or double wire system is used Single ✓

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

Positions of auxiliary switch boards and numbers of switches on each Auxiliary Switchboard Room, having  
11 switches, and 1 Master Fuse board in Engine Room

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-oxidisable 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 1037 arranged in the following groups:—

	lights each of		candle power requiring a total current of	Amperes
	lights each of		candle power requiring a total current of	Amperes
	lights each of		candle power requiring a total current of	Amperes
	lights each of		candle power requiring a total current of	Amperes
	lights each of		candle power requiring a total current of	Amperes
<u>2</u>	Mast head light with <u>1</u> lamps each of <u>32</u>		candle power requiring a total current of <u>1.2</u>	Amperes
<u>2</u>	Side light with <u>1</u> lamps each of <u>32</u>		candle power requiring a total current of <u>1.2</u>	Amperes
<u>22</u> <u>5</u>	Cargo lights of <u>128</u> <u>2000</u>		candle power, whether incandescent or arc lights <u>Incandescent</u>	

lights, what protection is provided against fire, sparks, &c.

are the switches controlling the masthead and side lights placed Switch + Fuse box in Wheel House

### DESCRIPTION OF CABLES.

Main cable carrying 3000 Amperes, comprised of 4 wires, each 1.25 S.W.G. diameter, 5 square inches total sectional area

Branch cables carrying 247.6 Amperes, comprised of 6 wires, each 12 S.W.G. diameter, 5.18 square inches total sectional area

Branch cables carrying 632 Amperes, comprised of 2.61 wires, each 12 S.W.G. diameter, 5 square inches total sectional area

Leads to lamps carrying 2.4 Amperes, comprised of 3 wires, each 20 S.W.G. diameter, .003 square inches total sectional area

Cargo light cables carrying 4.8 Amperes, comprised of 90 wires, each 36 S.W.G. diameter, .004 square inches total sectional area

### DESCRIPTION OF INSULATION, PROTECTION, ETC.

The cables throughout are of 2500 M grade 6.6.6 Standard, the conductor is covered with 1 layer of pure rubber, 2 coats of vulcanising rubber, 1 layer of prepared tape, the whole vulcanised together + braided overall. In machinery spaces and galleys the cables are protected by lead covering + steel armouring + braided overall.  
Joints in cables, how made, insulated, and protected soldered, using resin as a flux, insulated with pure rubber + prepared tapes, and protected by strong wood casing

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

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 strong wood casing throughout accommodation, Lead covering + steel armouring + braided overall in Machinery spaces + Galleys, and by solid drawn steel tubes where exposed to weather

I	Lighting throughout Decks & Cargo Lts.	606 lts.	30 watt lamps requiring	240.6 Amps
X	" " Machinery Spaces	396 "	16 C.P.	247.6 "
	Signals, Navigation lights etc.	36 "	etc.	16.5 "
	Wireless			25.0 "
XII	Engine Room Fans & Machy.			632.0 "
XIII	Fwd. Stokehold Fans			548.0 "
XIV	Aft. " "			548.0 "
XVI	Electric Cargo Winch			200.0 "
XVIII	Ventilation Fans			297.0 "



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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 Solid drawn steel tubes

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

What special protection has been provided for the cables near boiler casings Lead covered, steel armoured + braided overall

What special protection has been provided for the cables in engine room Lead covered, steel armoured + braided overall

How are cables carried through beams In fibre bushes through bulkheads, &c. W. J. Glondas, if W. J. otherwise fibre bushes

How are cables carried through decks S. Deck pipes bushed with fibre

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

If so, how are they protected Wood casing protected by S. I. sheeting

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

If so, how are the lamp fittings and cable terminals specially protected Strong S. I. fittings with hinged covers

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

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 Permanently outside cargo spaces How fixed In wood casing to cargo couplers outside cargo spaces

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel In cables trunk with special brass clamp

How are the returns from the lamps connected to the hull Sweated to 3/8 turned brass earth screws

Are all the joints with the hull in accessible positions Yes

Is the installation supplied with Yes voltmeters and with Yes amperemeters, fixed Main 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. 100% P. Cu.

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.

For **HARLAND & WOLFF LTD.**

Electrical Engineers

Date 30th June 1917.

**COMPASSES.**

Distance between dynamo or electric motors and standard compass 36 ft. to nearest motor

Distance between dynamo or electric motors and steering compass 27 " " " "

The nearest cables to the compasses are as follows:—

A cable carrying	Amperes	feet from standard compass	feet from steering compass
<u>16.5</u>	<u>13.5</u>	<u>9.0</u>	<u>9.0</u>
<u>25.0</u>	<u>16.0</u>	<u>8.5</u>	<u>8.5</u>
<u>14.4</u>	<u>28.0</u>	<u>22.0</u>	<u>22.0</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 Nil degrees on all courses in the case of the standard compass and Nil degrees on all courses in the case of the steering compass.

For **HARLAND & WOLFF LTD.**

Builder's Signature.

Date 30th June 1917.

**GENERAL REMARKS.**

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

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

J.W.D. 5/7/17

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

Committee's Minute

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

