

# REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 6904

Port of Belfast Date of First Survey Oct. 14<sup>th</sup> 1910 Date of Last Survey Jan. 12<sup>th</sup> 1911 No. of Visits 12  
 No. in Reg. Book on the Iron or Steel T.S.S. THEMISTOCLES Port belonging to Harland & Wolff Ltd  
 Built at Belfast By whom Harland & Wolff Ltd When built 1911  
 Owners Aberdeen Line Owners' Address London  
 Yard No. 412 Electric Light Installation fitted by Harland & Wolff Ltd When fitted 1911

### DESCRIPTION OF DYNAMO, ENGINE, ETC.

2. Enclosed Forced Lubrication engine & dynamo, cylinder 10 1/2" dia. x 7" stroke giving output of 74 KW at 450 RPM.  
 Capacity of Dynamo 740 Amperes at 100 Volts, whether continuous or alternating current Continuous  
 Where is Dynamo fixed in fine room  
 Position of Main Switch Board in fine room having switches to groups A, B, C, D, E, F of lights, &c., as below  
 Positions of auxiliary switch boards and numbers of switches on each: 1. Box in Chart House with 14 switches; 1. Box in Starboard Corridor 7rd end containing 14 switches; 1. Box in Starboard Corridor, aft end containing 7 switches; 1. Box in 1st Class Pantry entrance containing 14 switches; 1. Box 7rd of No. 5 Hatch on Main Deck containing 10 switches; 2. C.I. Boxes in stokehold each containing 6 switches; 2. C.I. Boxes in Engine room each containing 6 switches.

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 914 including 4-12 c.p. in signals = 8-16 c.p. including Morse lamp arranged in the following groups:—

A 3 <sup>rd</sup> Class Aft	124 lights each of	16	candle power requiring a total current of	43.4	Amperes
B Daylight	235 lights each of	16	candle power requiring a total current of	86.45	Amperes
C Signals Crew Personnel	225 lights each of	16	candle power requiring a total current of	85.0	Amperes
D 1st Class	181 lights each of	16	candle power requiring a total current of	62.35	Amperes
E Cargo	48 lights each of	16	candle power requiring a total current of	26.88	Amperes
F Engine Room & Hold	101 " " each of	16	" " " " " "	56.56	"
2 Mast head lights	2 lamps each of	32	candle power requiring a total current of	2.4	Amperes
2 Side lights	2 lamps each of	32	candle power requiring a total current of	2.4	Amperes
3 Cargo lights	5000		candle power, whether incandescent or arc lights	Arc	

If arc lights, what protection is provided against fire, sparks, &c. glass globes with wire guards

Where are the switches controlling the masthead and side lights placed in Chart House switchboard

### DESCRIPTION OF CABLES.

Main cable carrying 740 Amperes, comprised of 91 wires, each 12 L.S.G. diameter, .7638 square inches total sectional area  
 Branch cables carrying 58 Amperes, comprised of 19 wires, each 14 L.S.G. diameter, .0945 square inches total sectional area  
 Branch cables carrying 22 Amperes, comprised of 7 wires, each 16 L.S.G. diameter, .0023 square inches total sectional area  
 Leads to lamps carrying 4.4 Amperes, comprised of 7 wires, each 22 L.S.G. diameter, .0042 square inches total sectional area  
 Cargo light cables carrying 4.4 Amperes, comprised of 90 wires, each 36 L.S.G. diameter, .0040 square inches total sectional area

### DESCRIPTION OF INSULATION, PROTECTION, ETC.

Cables thro' out decks 2500  $\Omega$  classed to C.M.A. quality insulated with pure rubber and vulcanised rubber braided and compounded overall. Cables in engine room and galleys further protected by lead sheathing & steel armouring braided overall  
 Joints in cables, how made, insulated, and protected soldered using resin as flux insulated with pure rubber and prepared tapes and protected by strong wood casing in accommodation & holds which is further protected in holds by galv'd iron troughing

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 Cargo, 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 Strong wood casing in accommodation & holds which is protected in holds & cargo spaces by galv'd iron troughing  
 \* Note: - one joint on No. 3 Main Luceen Deck, strongly secured by W. Brown boxing and angle irons R.M.



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 Owners Aberdeen Line Owners' Address London  
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**DESCRIPTION OF DYNAMO, ENGINE, ETC.**

2. Enclosed Forced Lubrication engine & dynamo, cylinder 10 & 15" dia. x 7" stroke giving output of 74 KW at 450 R.P.M.

Capacity of Dynamo 740 Amperes at 100 Volts, whether continuous or alternating current Continuous

Where is Dynamo fixed In fine room  
 Position of Main Switch Board In fine room having switches to groups A, B, C, D, E, F of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each 1-Box in Chart House with 14 switches; 1-Box in Starboard Corridor Forward end containing 14 switches; 1-Box in Starboard Corridor, aft end containing 7 switches; 1-Box in 1st Class Passage entrance containing 14 switches; 1-Box Forward of No. 5 Hatch on Main Deck.

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 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 914 including 4-55 c.p. in signals = 8-16 c.p. including Morse lamp arranged in the following groups:—

A 3 <sup>rd</sup> Class Aft	124 lights each of	16	candle power requiring a total current of	43.4	Amperes
B Daylight	235 lights each of	16	candle power requiring a total current of	86.45	Amperes
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F Engine Room Hold	101 " " "	16	" " " " " "	56.56	"
2 Mast head lights	with 2 lamps each of	32	candle power requiring a total current of	2.4	Amperes
2 Side lights	with 2 lamps each of	32	candle power requiring a total current of	2.4	Amperes
3 Cargo lights	of	5000	candle power, whether incandescent or arc lights	Arc	

If are lights, what protection is provided against fire, sparks, &c. glass globes with wire guards

Where are the switches controlling the masthead and side lights placed in Chart House switchbox

**DESCRIPTION OF CABLES.**

Main cable carrying 740 Amperes, comprised of 91 wires, each 12 L.S.G. diameter, .7638 square inches total sectional area

Branch cables carrying 58 Amperes, comprised of 19 wires, each 14 L.S.G. diameter, .0945 square inches total sectional area

Branch cables carrying 22 Amperes, comprised of 7 wires, each 16 L.S.G. diameter, .0023 square inches total sectional area

Leads to lamps carrying 4.4 Amperes, comprised of 7 wires, each 22 L.S.G. diameter, .0042 square inches total sectional area

Cargo light cables carrying 4.4 Amperes, comprised of 90 wires, each 36 L.S.G. diameter, .0040 square inches total sectional area

**DESCRIPTION OF INSULATION, PROTECTION, ETC.**

Cables thro' out decks 2500  $\Omega$  classed to C.M.A. quality insulated with pure rubber and vulcanised rubber, braided and compounded overall. Cables in engine room and galleys further protected by lead sheathing & steel armouring braided overall

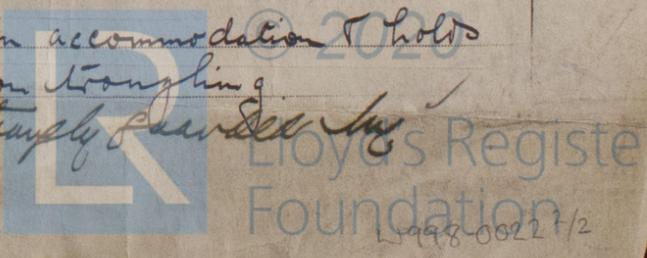
Joints in cables, how made, insulated, and protected soldered using resin as flux insulated with pure rubber and prepared tape and protected by strong wood casing in accommodation & hold which is further protected in hold by galv'd iron troughing

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 \* Cargo, 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 Strong wood casing in accommodation & hold which is protected in hold & cargo spaces by galv'd iron troughing

\* Note:— one faint on No. 3 Main Deck, strongly secured by U-bolts boxing and angle irons R.M.



**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 *Steel tube*

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *lead & iron sheathing braided overall*

What special protection has been provided for the cables near boiler casings *steel tube*

What special protection has been provided for the cables in engine room *lead & iron sheathing braided overall*

How are cables carried through beams *beams bushed with fibre through bulkheads, &c. W.I. stand for W.T. Bulkhead*

How are cables carried through decks *iron deck tube bushed with fibre bulkheads otherwise bushed with fibre*

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 *Bunkers:—Steel tube. Cargo spaces:—wood casing in fabric iron troughing*

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

If so, how are the lamp fittings and cable terminals specially protected *Strong C.I. fittings with glasses & C.I. hinged covers*

Where are the main switches and cut outs for these lights fitted *in stokehold*

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 *permanently* How fixed *in wood casing &c*

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel *thro' earth plate on dynamo bedplate*

How are the returns from the lamps connected to the hull *sweated under 3/8" tinned brass tap screws*

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 *two* supplied with a voltmeter and *two* amperemeters fixed *on main switch*

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 *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 Harland & Wolff Ltd.* Electrical Engineers Date *24.1.11*

**COMPASSES.**

Distance between dynamo or electric motors and standard compass *80 ft to nearest motor*

Distance between dynamo or electric motors and steering compass *88 ft*

The nearest cables to the compasses are as follows:—

A cable carrying	12.0	Amperes	15	feet from standard compass	15	feet from steering compass
A cable carrying	17.5	Amperes	20	feet from standard compass	20	feet from steering compass
A cable carrying	16.0	Amperes	40	feet from standard compass	32	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 *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.

*For Harland & Wolff Ltd.* Builder's Signature. Date *24/1/11*

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

REPORT FORM No. 13.

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

Committee's Minute

