

## 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 on the Iron or Steel T.S.S. THEMISTOCLES Port belonging to Harland & Wolff Ltd.  
 Reg. Book 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 & 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 Starb. Corridor 7rd end containing 14 switches; 1. Box in Starb. 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 4-11 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 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 101 " " " " " "	" " " " " " 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 are 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 tapes and protected by strong wood casing in accommodation & holds which is further protected in holds by galv. 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. iron troughing

\* Note:—one joint in No. 3 Main Lumen Deck, strongly secured by W. Brown boxing and angle irons R.M.



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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 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 more 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 " " " " " "	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 are 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 tapes and protected by strong wood casing in accommodation & hold which is further protected in hold by galv. 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. iron troughing

\* Note:—one faint on No. 3 Main Lumen Deck, strongly secured by W. Brown 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. Flange 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

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 two earth plate on dynamo bedplate

How are the returns from the lamps connected to the hull sweated under 3/8" tinned brass top 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 supplied with a voltmeter and

two ~~an~~ 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	Amperes	feet from standard compass	feet from steering compass
12.0	15	15	
17.5	20	20	
16.0	40	32	

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 AWD 9/1/11

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

Committee's Minute

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.