

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 8673

Port of Belfast Date of First Survey Nov. 1 1921 Date of Last Survey Feb 23 1922 No. of Visits 14
 No. in Reg. Book on the Iron or Steel T.S.S. Sophocles Port belonging to Aberdeen
 Built at Belfast By whom Hauland & Wolff L^{rs} When built 1922
 Owners Gen. Thompson & Co L^{rs} Owners' Address London
 Yard No. 575 Electric Light Installation fitted by Hauland & Wolff L^{rs} When fitted 1922

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Two Main Dynamos, each driven by a steam turbine, giving an output of 681 Amps each at 220 volts when running at 750 R.P.M. One Emergency Diesel driven dynamo giving an output of 75 K.W. 220V at 400 R.P.M.
 Capacity of 2 Dynamos (Main) 1362 Amperes at 220 Volts, whether continuous or alternating current Continuous
 Dynamo (Emergency) 341
 Where is Dynamo fixed Dynamo Platform Pt. side of Engine Room Whether single or double wire system is used Double
 Position of Main Switch Board Dynamo Platform Pt. side of Engine Room having switches to groups A.B.C.D.E.F.G.H.I.J. K.L.M.N.O. of lights, &c., as below
 Positions of auxiliary switch boards and numbers of switches on each One Board containing 12 switches in Chart House.
One Board containing 18 switches in Port Passage Forward on Bridge Deck and
One Board containing 8 switches in Starboard Passage Aft on Bridge Deck.
 One Board containing 8 switches in Entrance to 3rd Lt. Smoke Rm and General Rm. Shelter Dr. Aft.
 One Board containing 11 switches in 1st Lt. Panty. on Upper Deck.
 One Board containing 11 switches in 3rd Lt. Dining Saloon on Upper Deck.
 Are all fuses fitted in easily accessible positions Yes
 Are permanent instructions fitted on or near each switch board giving particulars Yes
 Are all switches and fuses constructed of incombustible materials and fitted on incombustible bases Yes

Total number of lights provided for 1441 arranged in the following groups:—

A Passenger Port	<u>198</u> <u>54</u>	lights each of	<u>30</u> <u>20</u>	watts	candle power requiring a total current of	<u>32.</u>	Amperes
B Passenger Starboard	<u>173</u> <u>20</u>	lights each of	<u>30</u> <u>20</u>	watts	candle power requiring a total current of	<u>25.5</u>	Amperes
C Service	<u>507</u> <u>34</u>	lights each of	<u>30</u> <u>16 C.P.</u>	watts	candle power requiring a total current of	<u>78.6</u>	Amperes
D Emergency	<u>95</u>	lights each of	<u>30</u>	watts	candle power requiring a total current of	<u>12.5</u>	Amperes
E Cargo	<u>100</u> <u>4</u>	lights each of	<u>16</u> <u>2000</u>		candle power requiring a total current of	<u>50</u>	Amperes
F Machinery Spaces	<u>46</u> <u>132</u>	lights each of	<u>16</u> <u>30</u>	watts	candle power requiring a total current of	<u>35</u>	Amperes
G Signals	<u>5</u>	lights each of	<u>32 C.P.</u> <u>8-6 C.P.</u> <u>4-2 1/2</u> <u>6-8 C.P.</u>	and 29 lights each 30 watts	candle power requiring a total current of	<u>10.5</u>	Amperes

Where are the switches controlling the masthead and side lights placed In Chart Room.

DESCRIPTION OF CABLES.

Main cable carrying	<u>400</u>	Amperes, comprised of	<u>Two 37</u>	wires, each <u>0.103</u>	Inches S.W.G. diameter,	<u>.6</u>	square inches total sectional area
Branch cables carrying	<u>60</u>	Amperes, comprised of	<u>19</u>	wires, each <u>0.052</u>	Inches S.W.G. diameter,	<u>0.040</u>	square inches total sectional area
Branch cables carrying	<u>30</u>	Amperes, comprised of	<u>7</u>	wires, each <u>0.044</u>	Inches S.W.G. diameter,	<u>0.010</u>	square inches total sectional area
Leads to lamps carrying	<u>1.5</u>	Amperes, comprised of	<u>3</u>	wires, each <u>0.036</u>	Inches S.W.G. diameter,	<u>0.003</u>	square inches total sectional area
Cargo light cables carrying	<u>2.4</u>	Amperes, comprised of	<u>110</u>	wires, each <u>0.0076</u>	Inches S.W.G. diameter,	<u>0.0048</u>	square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Cables throughout ship are of 2500 megohm class and C.M.A. quality. Insulated with pure rubber and vulcanised rubber & protected by lead covering. Cables exposed to heat or moisture & in Engine & Boiler Rooms are further protected by steel armouring and braiding. Cables from switchboard to Decks up Engine casing are protected by lead covering only.
 Joints in cables, how made, insulated, and protected No joints in Main Cables. Joints in Branch Wiring made in properly constructed joint boxes.

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 Clipped direct to bulkhead or beams or run on perforated steel plating and protected by lead covering or lead covering, steel armouring & braiding. In Cargo Hold cables are lead covered and enclosed in galvanised iron troughing.



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 No. in Reg. Book on the Iron or Steel T.S.S. Sophocles Port belonging to Thurber
 Built at Belfast By whom Haulands & Wolff L³ When built 1922
 Owners Gen. Thompson & Co L³ Owners' Address London
 Yard No. 575 Electric Light Installation fitted by Haulands & Wolff L³ When fitted 1922

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Two Main Dynamos, each driven by a steam turbine, giving an output of 681 Amperes each at 220 volts when running at 750 R.P.M. One Emergency Diesel driven dynamo giving an output of 75 K.W. 220V at 400 R.P.M.

Total Capacity of 2 Dynamos (Main) 1362 Amperes at 220 Volts, whether continuous or alternating current Continuous
 Dynamo (Emergency) 341

Where is Dynamo fixed Dynamo Platform Pt. side of Engine Room Whether single or double wire system is used Double

Position of Main Switch Board Dynamo Platform Pt. side of Engine Room having switches to groups A.B.C.D.E.F.G.H.I.J. K.L.M.N.P.Q. of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each One Board containing 12 switches in Chart House

One Board containing 18 switches in Port Passage Forward on Bridge Deck and
One Board containing 8 switches in Starboard Passage Aft on Bridge Deck.

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-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 1441 arranged in the following groups:—

Group	Description	Number of Lights	Watts per Light	Candle Power	Current (Amperes)
A	Passenger Port	198	30	32	32
B	Passenger Starboard	173	30	25.5	25.5
C	Service	507	30	78.6	78.6
D	Emergency	95	30	12.5	12.5
E	Cargo	100	16	50	50
	2 Mast head lights with 1 lamp each of	2	32	1.2	1.2
	2 Side lights with 1 lamp each of	2	32	1.2	1.2
	12 Cargo lights of	12	128		
	5 Cargo lights of	5	2000		
	1	1	64		

candle power, whether incandescent or arc lights Incandescent

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

Where are the switches controlling the masthead and side lights placed In Chart Room

DESCRIPTION OF CABLES.

Description	Amperes	Wires	Wires per Cable	Inches S.W.G. diameter	Square inches total sectional area
Main cable carrying	400	Two 37	74	0.103	0.6
Branch cables carrying	60	19	19	0.052	0.040
Branch cables carrying	30	7	7	0.044	0.010
Leads to lamps carrying	1.5	3	3	0.036	0.003
Cargo light cables carrying	2-4	110	110	0.0076	0.0048

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Cables throughout ship are of 2500 megohm class and C.M.A. quality. Insulated with pure rubber and vulcanised rubber & protected by lead covering. Cables exposed to heat or moisture & in Engine & Boiler Rooms are further protected by steel armouring and braiding. Cables from switchboard to Decks up Engine casing are protected by lead covering only.
 Joints in cables, how made, insulated, and protected No joints in Main Cables. Joints in Branch Wiring made in properly constructed joint boxes.

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 Clipped direct to bulkhead or beams or run on perforated steel plating and protected by lead covering or lead covering, steel armouring & braiding. In Cargo Hold cables are lead covered and enclosed in galvanised iron troughing.



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 Lead covered, ^{sewed} steel armoured & braided overall.

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Lead covered, ^{sewed} steel armoured & braided.

What special protection has been provided for the cables near boiler casings Lead covered, ^{sewed} steel armoured and braided.

What special protection has been provided for the cables in engine room Lead covered, ^{sewed} steel armoured & braided overall. Cables from Switchboard to Decks up Engine casing protected by lead covering.

How are cables carried through beams Bushed with lead. through bulkheads, &c. In glands where watertight otherwise lead bushed.

How are cables carried through decks In iron deck tubes bushed with fibre and cable ducts.

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 sewed, steel armoured & braided overall. through Cargo Hold, lead covered cables enclosed in galvanised iron troughing. In Bunkers, lead covered

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 In coal bunkers by strong C.I. covers. In Baggage Rm. & Special Cargo Rm. by steel guards.

Where are the main switches and fuses for these lights fitted for bunker lights, in Boiler Room. In Baggage Rm. fuses in Passage P. Shelter Dr. Amidst. switch in Baggage Rm. for Special Cargo, fuses in Passage under Fore's. Switch in Special Cargo Room.

If in the spaces, how are they specially protected by C.I. covers.

Are any switches or fuses fitted in bunkers No.

Cargo light cables, whether portable or permanently fixed permanently. How fixed Clipped to beams or bulkheads or to perforated steel plating.

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel _____

How are the returns from the lamps connected to the hull _____

Are all the joints with the hull in accessible positions _____

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

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.



Electrical Engineers

Date 11/2/22

COMPASSES.

Distance between dynamo or electric motors and standard compass 176 ft to nearest dynamo. 26 ft to nearest motor.

Distance between dynamo or electric motors and steering compass 180 ft to nearest dynamo. 36 ft to nearest motor.

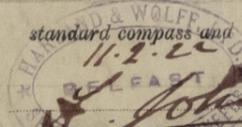
The nearest cables to the compasses are as follows:—

A cable carrying	10	Amperes	6	feet from standard compass	14	feet from steering compass
A cable carrying	12	Amperes	16	feet from standard compass	36	feet from steering compass
A cable carrying	140	Amperes	26	feet from standard compass	14	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 courses in the case of the

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



Johnston

Builder's Signature.

Date

GENERAL REMARKS.

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

*Feb £ 40-17-0 Applied for 13-2-22
Elec. Light.
27. 16/2/22.*

R. J. D. Merritt

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE. 21 FEB. 1922

FRI. MAR. 10 1922

FRI. AUG. 4 1922

FRI. 15 DEC. 1922

FRI. 3 NOV. 1922



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