

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 8673

Port of *Belfast* Date of First Survey *1921 Nov 1* Date of Last Survey *1922 Feb 2* No. of Visits *14*
 No. in Reg. Book on the *Iron or Steel* *T.S.S. Sophocles* Port belonging to *Therden*
 Built at *Belfast* By whom *Kauland & Wolff L^{rs}* When built *1922*
 Owners *Gen. Thompson & Co L^{rs}* Owners' Address *London*
 Yard No. *575* Electric Light Installation fitted by *Kauland & 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.
 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.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.
 Cables of main circuit *Yes* and on each auxiliary switch board to the cables of auxiliary *Yes*
 One Board containing 8 switches in Entrance to 3rd Lt. Smoke Rm. and General Rm. *Yes*
 One Board containing 11 switches in 1st Lt. Panty. on Upper Deck. *Yes*
 One Board containing 11 switches in 3rd Lt. Dining Saloon on Upper Deck. *Yes*
 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	<i>198</i>	lights each of	<i>30</i> watts	candle power requiring a total current of	<i>32.</i>	Amperes
	<i>54</i>	"	<i>20</i> "	"	"	"
B Passenger Starboard	<i>173</i>	lights each of	<i>30</i> watts	candle power requiring a total current of	<i>25.5</i>	Amperes
	<i>20</i>	"	<i>20</i> "	"	"	"
C Service	<i>507</i>	lights each of	<i>30</i> watts	candle power requiring a total current of	<i>78.6</i>	Amperes
	<i>34</i>	"	<i>16 C.P.</i>	"	"	"
D Emergency	<i>95</i>	lights each of	<i>30</i> watts	candle power requiring a total current of	<i>12.5</i>	Amperes
E Cargo	<i>100</i>	lights each of	<i>16</i>	candle power requiring a total current of	<i>50</i>	Amperes
	<i>4</i>	"	<i>2000</i>	"	"	"
F Machinery Spaces	<i>46</i>	lights each of	<i>16</i>	candle power requiring a total current of	<i>35</i>	Amperes
	<i>132</i>	"	<i>30</i> watts.	"	"	"
G Signals	<i>5</i>	lights each of <i>32 C.P.</i>	<i>8-6 C.P.</i>	candle power requiring a total current of	<i>10.5</i>	Amperes
		<i>and 29 lights each 30 watts</i>				

Where are the switches controlling the masthead and side lights placed

In Chart Room

DESCRIPTION OF CABLES.

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

No. 8673

Port of Belfast Date of First Survey 1921 Nov. 1 Date of Last Survey 1922 Feb. 2 No. of Visits 14
No. in Reg. Book on the Iron or Steel T.S.S. Sophocles Port belonging to Therden
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 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? Platform Pt. side of Engine Room Whether single or double wire system is used Double

Position of Main Switch Board? 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.P.Q.R.S.T.U.V.W.X.Y.Z. 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:—

	No. of Lights	Candle Power	Watts	Amps.
A Passenger Port	198 54	lights each of	30 watts	candle power requiring a total current of 32 Amperes
B Passenger Starboard	173 20	lights each of	30 watts	candle power requiring a total current of 25.5 Amperes
C Service	507 34	lights each of	30 watts 16 C.P.	candle power requiring a total current of 78.6 Amperes
D Emergency	95	lights each of	30 watts	candle power requiring a total current of 12.5 Amperes
E Cargo	100 4	lights each of	16 2000	candle power requiring a total current of 50 Amperes
2 Mast head lights with	1 lamp each of	32		candle power requiring a total current of 1.2 Amperes
2 Side lights with	1 lamp each of	32		candle power requiring a total current of 1.2 Amperes
12 Cargo lights of		128		
5 Cargo lights of		2000		
1		64		

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.

Main cable carrying	400	Amperes, comprised of	Two 37	wires, each	0.103	^{Inches} S.W.G. diameter,	0.6	✓	square inches total sectional area
Branch cables carrying	60	Amperes, comprised of	19	wires, each	0.052	^{Inches} S.W.G. diameter,	0.040	✓	square inches total sectional area
Branch cables carrying	30	Amperes, comprised of	7	wires, each	0.044	^{Inches} S.W.G. diameter,	0.010	✓	square inches total sectional area
Leads to lamps carrying	1.5	Amperes, comprised of	3	wires, each	0.036	^{Inches} S.W.G. diameter,	0.003	✓	square inches total sectional area
Cargo light cables carrying	2.4	Amperes, comprised of	110	wires, each	0.0076	^{Inches} S.W.G. diameter,	0.0048	✓	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 ordanised 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 Racks 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

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

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. by 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.T. Shelter On Amidst. switch in Baggage Rm. for Special Cargo, fuses in Passage under Forele. 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	Amperes	feet from standard compass	feet from steering compass
10	6	14	
12	16	36	
140	26	14	

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.

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

R. J. D. Smith

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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