

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 28161

Port of SUNDERLAND Date of First Survey May 5 Date of Last Survey Sep. 21 No. of Visits 6
 No. in on the ~~Iron~~ Steel Screw Steamer "NAGINA" Port belonging to Glasgow
 Reg. Book Built at SUNDERLAND By whom The Wear Shipyard of W. Gray & Co (1918) Ltd. When built 1921
 Owners British India Steam Navigation Co. Ltd. Owners' Address 122 Leadenhall St., London E.C. 3.
 Yard No. 941 Electric Light Installation fitted by The Wear Shipyard of W. Gray & Co (1918) Ltd. When fitted 1921

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Engine Vertical open fronted double acting type cylinder 8" dia. 8" stroke 32 BHP
Dynamo H.p. compound wound 18 KW 100 volts
 Capacity of Dynamo 180 Amperes at 100 Volts, whether continuous or alternating current DC
 Where is Dynamo fixed Engine Room Whether single or double wire system is used Double
 Position of Main Switch Board near Dynamo having switches to groups Six of lights, &c., as below
 Positions of auxiliary switch boards and numbers of switches on each Engine Room 8 Char. Room 9

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 50 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 6 circuits arranged in the following groups:—

A	<u>84</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>52.</u>	Amperes
B	<u>18</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>12</u>	Amperes
C	<u>30</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>14.</u>	Amperes
D	<u>40</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>25</u>	Amperes
E	<u>24</u>	<u>7 am</u> lights each of		candle power requiring a total current of	<u>12</u>	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>2.9</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>2.9</u>	Amperes
<u>5</u>	Cargo lights of <u>6</u>		<u>16</u>	candle power, whether incandescent or are lights	<u>14.</u>	

If arc lights, what protection is provided against fire, sparks, &c. no arc

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

DESCRIPTION OF CABLES.

Main cable carrying 160 Amperes, comprised of 34 wires, each 14 S.W.G. diameter, .2000 square inches total sectional area
 Branch cables carrying 40 Amperes, comprised of 4 wires, each 15 S.W.G. diameter, .0225 square inches total sectional area
 Branch cables carrying 11 Amperes, comprised of 4 wires, each 7 S.W.G. diameter, . square inches total sectional area
 Leads to lamps carrying 3 Amperes, comprised of 3 wires, each 22 S.W.G. diameter, .0018 square inches total sectional area
 Cargo light cables carrying 8 Amperes, comprised of 110 wires, each 36 S.W.G. diameter, .00503 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Lead armoured & braided 2500 megohm grade cable

Joints in cables, how made, insulated, and protected no joints

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 none

How are the cables led through the ship, and how protected through beams & clips to deck

Cables lead covered & steel armoured.

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 & armoured*

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *Lead & armoured*

What special protection has been provided for the cables near boiler casings *Lead covered armoured & braided*

What special protection has been provided for the cables in engine room " " " " "

How are cables carried through beams *holm lined* through bulkheads, &c. *WT glands*

How are cables carried through decks *tubes 18" long. or more*

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 *Lead & steel armoured clip to deck*

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage *no*

If so, how are the lamp fittings and cable terminals specially protected

Where are the main switches and fuses for these lights fitted

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 *Portable* How fixed *WT Cast Iron boxes*

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 *" Swivel board."*

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 *4000* 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 THE WEAR SHIPYARD

W. B. Shaw

Electrical Engineers

Date *12 September 1921*

COMPASSES.

Distance between dynamo or electric motors and standard compass *40 yds*

Distance between dynamo or electric motors and steering compass " "

The nearest cables to the compasses are as follows:—

A cable carrying	Amperes	feet from standard compass	feet from steering compass
<i>9</i>	<i>18 ft</i>	<i>20 ft</i>	
<i>18</i>	<i>34 ft</i>	<i>28 ft</i>	
<i>12</i>	<i>30 ft</i>	<i>24 ft</i>	

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 *nil* course in the case of the standard compass and *nil* degrees on *nil* course in the case of the steering compass.

FOR THE WEAR SHIPYARD

W. B. Shaw

Builder's Signature

Date *12 September 1921*

GENERAL REMARKS.

The installation for this vessel has been fitted in a satisfactory manner and in accordance with the rules and on completion was tried under working conditions and found satisfactory

It is submitted that

Fu # 16-10-0 Applied for *26 SEP 1921* Elec. light *W. B. Shaw*
Paid 13/10/21 *JWD 29/9/21* Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. 30 SEP. 1921*



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