

## REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 6116.

Port of *Copenhagen* Date of First Survey *5<sup>th</sup> August 1920* Date of Last Survey *7<sup>th</sup> April 1921* No. of Visits *11*  
 No. in on the ~~Iron or Steel~~ *L. S.* *AVANTI* Port belonging to *Copenhagen*  
 Reg. Book *77415* Built at *Fredrikshavn* By whom *Fredrikshavns Værft og Flydedok* When built *1921*  
 Owners *Det Forenede Dampskibs Selskab* Owners' Address *København 9, Copenhagen*  
 Yard No. *162* Electric Light Installation fitted by *Fredrikshavns Værft og Flydedok* When fitted *1921*

## DESCRIPTION OF DYNAMO, ENGINE, ETC.

*A compound wound dynamo directly coupled to a vertical single cylinder steam engine.*

Capacity of Dynamo *1/3* Amperes at *100* Volts, whether continuous or alternating current *continuous*

Where is Dynamo fixed *in the engine room.* Whether single or double wire system is used *double wire*

Position of Main Switch Board *in the engine room* having switches to groups *B-C-D-E-F* of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each *B: chart room, 7 groups; C: alleyway to saloon, 4 groups; D: engine casing top, 5 groups; E: engine room, 4 groups; F: alleyway to crewspace forward, 3 groups.*

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

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 *Edison's tools used.*

Are all switches and fuses constructed of incombustible materials and fitted on incombustible bases *yes*

Total number of lights provided for *143* arranged in the following groups:—

<i>A.F.</i> <i>13 + 2 cargo</i> lights each of <i>16</i>	candle power requiring a total current of <i>8</i>	Amperes
<i>B</i> <i>5</i> lights each of <i>16-25</i>	candle power requiring a total current of <i>8</i>	Amperes
<i>C GROUP F + 20 + 2 cargo</i> lights each of <i>16-25</i>	candle power requiring a total current of <i>25</i>	Amperes
<i>D</i> <i>31 + 4 - 0 -</i> lights each of <i>16-25</i>	candle power requiring a total current of <i>22</i>	Amperes
<i>E</i> <i>30</i> lights each of <i>40 100 + 26 1/2 16</i>	candle power requiring a total current of <i>12</i>	Amperes
<i>2</i> Mast head light with <i>1</i> lamps each of <i>25</i>	candle power requiring a total current of <i>1</i>	Amperes
<i>2</i> Side light with <i>1</i> lamps each of <i>25</i>	candle power requiring a total current of <i>2</i>	Amperes
<i>8</i> Cargo lights of <i>8 x 16</i>	candle power, whether incandescent or arc lights <i>incandescent.</i>	

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

Where are the switches controlling the masthead and side lights placed *in the chart room, switchboard B.*

## DESCRIPTION OF CABLES.

Main cable carrying <i>1/3</i> Amperes, comprised of <i>19</i> wires, each <i>.064</i> S.W.G. diameter, <i>.06039</i> square inches total sectional area
Branch cables carrying <i>25</i> Amperes, comprised of <i>7</i> wires, each <i>.072</i> S.W.G. diameter, <i>.028</i> square inches total sectional area
Branch cables carrying <i>12</i> Amperes, comprised of <i>7</i> wires, each <i>.040</i> S.W.G. diameter, <i>.0087</i> square inches total sectional area
Leads to lamps carrying <i>4</i> Amperes, comprised of <i>1</i> wires, each <i>.056</i> S.W.G. diameter, <i>.00246</i> square inches total sectional area
Cargo light cables carrying <i>2</i> Amperes, comprised of <i>80</i> wires, each <i>0.2</i> <i>mm</i> S.W.G. diameter, <i>2.5</i> <i>mm</i> square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

*I: The copper wires are tinned and insulated with pure and vulcanized india rubber, taped and lead covered.*

*II: then taped and armoured with galvanized steel wire.*

Joints in cables, how made, insulated, and protected *No joints in cables.*

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 *No.*

How are the cables led through the ship, and how protected *secured by screwed clips; in cargo spaces and where not necessary the cables are led through galvanized iron tubes.*



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

Are they in places always accessible *yes, except in cargo spaces when the vessel is loaded.*

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *The cables are lead covered and armoured with steel wire, where necessary they are led through iron tubes.*

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *do. do.*

What special protection has been provided for the cables near boiler casings *do. do.*

What special protection has been provided for the cables in engine room *do. do.*

How are cables carried through beams *do. do.* through bulkheads, &c. watertight screwed glands.

How are cables carried through decks *through iron tubes.*

Are any cables run through coal bunkers *No* or cargo spaces *yes* or spaces which may be used for carrying cargo, stores, or baggage *-*

If so, how are they protected *armoured cables led through iron tubes.*

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 *-*

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 on 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 *600* 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.

*Frederikshavns Værft & Flydedok A/s.*

Electrical Engineers

Date *14<sup>th</sup> April, 1921.*

**COMPASSES.**

Distance between dynamo or electric motors and standard compass *abt. 64'*

Distance between dynamo or electric motors and steering compass *71'*

The nearest cables to the compasses are as follows:—

A cable carrying	Amperes	feet from standard compass	feet from steering compass
<i>0.2</i>	<i>Amperes</i>	<i>to the lamp in the feet from standard compass</i>	<i>and the lamp in the feet from steering compass</i>
<i>8</i>	<i>Amperes</i>	<i>9</i>	<i>9</i>
<i>1</i>	<i>Amperes</i>	<i>10</i>	<i>4</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 *0* degrees on *all* courses in the case of the standard compass and *0* degrees on *all* courses in the case of the steering compass.

*Frederikshavns Værft & Flydedok A/s.*

Builder's Signature.

Date *14<sup>th</sup> April, 1921.*

**GENERAL REMARKS.** *The Electric Lighting installation as above described is in accordance with the Rule requirements, the approved plan and letter 2 dated 14<sup>th</sup> November 1920, the material used being of good description and the workmanship high class. After completion the whole installation was tried under full working power and found to work satisfactorily.*

*Recommend the vessel to have notation of ELECTRIC LIGHT in the Register Books.*

*It is submitted that this vessel is eligible for THE RECORD. Elec Light Reg 24/4/21.*

*A.O. [Signature]*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute