

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 6099.

Port of Copenhagen Date of First Survey 19th Jan. 21 Date of Last Survey 24th Febr. 21 No. of Visits 7
 No. in on the Iron or Steel S.S. "Frederiksborg" Yard No. 4 Port belonging to Copenhagen
 Reg. Book 78935 Built at Copenhagen By whom Baltica Værftet, A/S. When built 1920
 Owners Det Københavnske Dampskibsselskab. Owners' Address Copenhagen.
 Yard No. 4 Electric Light Installation fitted by Laur. Kundsens Installationsforret. When fitted 1921.

DESCRIPTION OF DYNAMO, ENGINE, ETC.

1 compound wound dynamo directly coupled to a de Laval Turbine and 1 comp. wound dynamo driven thro' gear from the turbine for the circulating pump.

Capacity of Dynamo 290 x 185 Amperes at 110 Volts, whether continuous or alternating current continuous.

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

Position of Main Switch Board in engine room having switches to groups eight of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each A: accommodations aft, 3 switches; B engine room, 3 groups, main switchboard; C: Pantry, 3 switches; D: bridge space, stb. passage aft, 2 switches; E: do. do forward, 4 switches; F: chartroom, 6 switches.

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 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 129 arranged in the following groups:—

A	<u>20</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>4.1</u>	Amperes		
B	<u>16</u>	lights each of	<u>16 - 25 - 200</u>	candle power requiring a total current of	<u>5.</u>	Amperes		
C	<u>21</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>4.15</u>	Amperes		
D	<u>21</u>	lights each of	<u>16 - 25</u>	candle power requiring a total current of	<u>5.71</u>	Amperes		
E	<u>7 cargo</u>	lights each of	<u>6 x 16</u>	candle power requiring a total current of	<u>12</u>	Amperes		
F	<u>2</u>	Mast head light with	<u>1</u>	lamps each of	<u>32</u>	candle power requiring a total current of	<u>1.5</u>	Amperes
	<u>2</u>	Side light with	<u>1</u>	lamps each of	<u>25</u>	candle power requiring a total current of	<u>1.5</u>	Amperes
	<u>1</u>	Star " "	<u>1</u>	lamps each of	<u>25</u>	candle power requiring a total current of	<u>1</u>	Amperes
	<u>7</u>	Cargo lights of	<u>6 x 16</u>	candle power, whether incandescent or arc lights	<u>incandescent.</u>			

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.

DESCRIPTION OF CABLES.

Main cable carrying	<u>290</u>	Amperes, comprised of	<u>2 x 19 #</u>	wires, each	<u>2.52 #</u>	m/w	<u>2 x 95 #</u>	square inches total sectional area
" " "	<u>185</u>	" " " "	<u>1 x 19 #</u>	" " " "	<u>2.16 #</u>	" " "	<u>1 x 70 #</u>	" " "
Branch cables carrying	<u>5.71</u>	Amperes, comprised of	<u>37</u>	wires, each	<u>2.52</u>	" " "	<u>185</u>	" " "
Branch cables carrying	<u>12</u>	Amperes, comprised of	<u>1</u>	wires, each	<u>1.38</u>	" " "	<u>1.5</u>	" " "
Leads to lamps carrying	<u>1.5</u>	Amperes, comprised of	<u>1</u>	wires, each	<u>1.78</u>	" " "	<u>2.5</u>	" " "
Cargo light cables carrying	<u>2</u>	Amperes, comprised of	<u>1</u>	wires, each	<u>1.38</u>	" " "	<u>1.5</u>	" " "
			<u>48</u>	wires, each	<u>0.2</u>	" " "	<u>1.5</u>	" " "

DESCRIPTION OF INSULATION, PROTECTION, ETC.

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

II The copper wires are tinned and insulated with pure and vulcanized india rubber, taped and lead covered, then taped and armoured with galv. steel wire or with 2 layers of steel tape and braided. —

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 ✓ 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 Secured by screwed clips and where necessary protected by iron casings or iron-tubes.



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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 *The cables are lead covered and armoured.*

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

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

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

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

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

Are any cables run through ^{space} coal bunkers *yes* or cargo spaces *yes* or spaces which may be used for carrying cargo, stores, or baggage *✓*

If so, how are they protected *armoured cables protected by iron casings.*

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 switch 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 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 this date in good order and safe working condition.

Baltica Værftet
Aktieselskab.
A. J. JENSEN
INSTALLATIONSFØRER
H. LANGSZARD

Electrical Engineers

Date *29/3.21*

COMPASSES.

Distance between dynamo or electric motors and standard compass *ca. 65'*

Distance between dynamo or electric motors and steering compass *ca. 60'*

The nearest cables to the compasses are as follows:—

A cable carrying	Amperes	to lamp in the	feet from standard compass	and to lamp in the	feet from steering compass
<i>1/4</i>					
A cable carrying	<i>3.6</i>	Amperes	<i>8</i>	feet from standard compass	<i>10</i> feet from steering compass
A cable carrying	<i>1/4</i>	Amperes	<i>3</i>	feet from standard compass	<i>3</i> 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 *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.

Builder's Signature. Date

GENERAL REMARKS. The Electric Lighting Installation as above described and the Electric Power installation are in accordance with the Rule requirements, the approved plans and letters E dated 29/3 & 1/12 20. The material used is of good description and the workmanship high class. On the trial trip 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 Book.

A. O. Jensen
Surveyors to Lloyd's Register of Shipping.

Committee's Minute *FRI. 22 APR. 1921*

TUE SEP. 20 1921

FRI. SEPT. 1922

TUE APR. 4 1922



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