

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 325.

Port of *Malmö* Date of First Survey *21st July 1921* Date of Last Survey *8th October 1921* (No. of Visits *4*)
 No. in Reg. Book *39944* on the ~~Iron~~ *Steel* *Ship* "Waterway" Port belonging to *Cardiff*
 Built at *Limhamm* By whom *Limhamms Skeppvarv, AB* When built *1921*
 Owners *Cox & Blundell* Owners' Address *Cardiff*
 Yard No. *175* Electric Light Installation fitted by *Limhamms Skeppvarv, AB* When fitted *1921*

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Compound wound dynamo & De Laval's turbine.

Capacity of Dynamo *29* Amperes at *110* Volts, whether continuous or alternating current *continuous*
 Where is Dynamo fixed *Engine room* Whether single or double wire system is used *Double*
 Position of Main Switch Board *Engine room* having switches to groups *five* of lights, &c., as below
 Positions of auxiliary switch boards and numbers of switches on each *Auxiliary switch board in chart house with 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 *yes*

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

Total number of lights provided for *65* arranged in the following groups:—

A Boiler room	5 lights each of	25	candle power requiring a total current of	1.5	Amperes
B Engine room	5 lights each of	25	candle power requiring a total current of	1.5	Amperes
C Engineers <i>Officers and</i> accommod.	32 lights each of	16-25	candle power requiring a total current of	4	Amperes
D Chart house	10 lights each of	32	candle power requiring a total current of	3	Amperes
E Forecastle	9 lights each of	16	candle power requiring a total current of	2	Amperes
2 Mast head light with	1 lamps each of	32	candle power requiring a total current of	0.5	Amperes
2 Side light with	1 lamps each of	32	candle power requiring a total current of	0.5	Amperes
Four	Cargo lights of $5 \times 16 = 80$		candle power, whether incandescent or arc lights	<i>incandescent</i>	

If arc lights, what protection is provided against fire, sparks, &c. *None.*

Where are the switches controlling the masthead and side lights placed *Auxiliary switch board in chart house.*

DESCRIPTION OF CABLES.

Main cable carrying	40 Amperes, comprised of	7 wires, each	1.71 ^{mm} S.W.G. diameter,	16	square ^{mm} inches total sectional area
Branch cables carrying	9 Amperes, comprised of	7 wires, each	0.86 S.W.G. diameter,	4	square inches total sectional area
Branch cables carrying	5 Amperes, comprised of	7 wires, each	0.67 S.W.G. diameter,	2.7	square inches total sectional area
Leads to lamps carrying	2 Amperes, comprised of	7 wires, each	0.52 S.W.G. diameter,	1.5	square inches total sectional area
Cargo light cables carrying	3 Amperes, comprised of	7 wires, each	0.52 S.W.G. diameter,	1.5	square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Vulcanized rubber, lead armouring. Where required steel wire armouring.

Joints in cables, how made, insulated, and protected *Porcelain boxes and where required watertight metal joint boxes.*

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 *screw clips. Protection and armouring as above.*

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 and steel wire armouring also iron pipes where required*

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 *in drilled holes* through bulkheads, &c. *watertight glands*

How are cables carried through decks *through iron pipes*

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

If so, how are they protected *Steel wire armouring & where required iron pipes*

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 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 *1200* megohms per *kilometre* ^{15° Celsius} ~~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.

Nils Andersen
Linnhans Skeppsvärv, Aktieföretag

Electrical Engineers

Date *15 Oct. 1921*

COMPASSES.

Distance between dynamo or electric motors and standard compass *Engine room to flying bridge.*

Distance between dynamo or electric motors and steering compass *Engine room to flying bridge.*

The nearest cables to the compasses are as follows:—

A cable carrying <i>✓</i>	Amperes <i>✓</i>	feet from standard compass <i>✓</i>	feet from steering compass <i>✓</i>
A cable carrying <i>✓</i>	Amperes <i>✓</i>	feet from standard compass <i>✓</i>	feet from steering compass <i>✓</i>
A cable carrying <i>✓</i>	Amperes <i>✓</i>	feet from standard compass <i>✓</i>	feet from steering compass <i>✓</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 *✓* course in the case of the standard compass and *✓* degrees on *✓* course in the case of the steering compass.

Nils Andersen
Linnhans Skeppsvärv, Aktieföretag

Builder's Signature.

Date *15 Oct. 1921.*

GENERAL REMARKS. *This electric lighting installation is in my opinion in accordance with the requirements of the Rules, workmanship and material being good, and it is recommended that the record of "Electric light" be made in the Register Book in the case of this vessel.*

It is submitted that this vessel is eligible for THE RECORD.

Fees Rr. 100:—

Elec. Light. 26/10/21

Surveyor to Lloyd's Register of Shipping.

Quirjens

Committee's Minute

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.



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