

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 3537

Port of *Middlesbrough* Date of First Survey *24th Nov. 1902* Date of Last Survey *7th Jan. 1903* No. of Visits *Seven*
 No. in Reg. Book *30344* on the Iron or Steel *of I. Heiktor* Port belonging to *Helsingfors*
 Built at *Middlesbrough* By whom *R. Craggs & Sons* When built *3-03*
 Owners *Atteub Finska Lloyd* Owners' Address *Helsingfors*
 Yard No. *180* Electric Light Installation fitted by *Finska Elektriska Aktiebolaget* When fitted *1903*

DESCRIPTION OF DYNAMO, ENGINE, ETC.

The dynamo is of covered type with ring lubricating bearings and coalbrushes and is directly coupled to a vertical high pressure engine, number of revolutions 670

Capacity of Dynamo *50* Amperes at *65* Volts, whether continuous or alternating current *continuous*

Where is Dynamo fixed *in the engine room*

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

Positions of auxiliary switch boards and numbers of switches on each *none*

If cut outs 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 cut outs fitted to both flow and return wires or cables of all circuits including lamp circuits *yes*

Are the cut outs of non-oxidizable metal *yes* and constructed to fuse at an excess of *100* per cent over the normal current

Are all cut outs 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 cut-outs constructed of incombustible materials and fitted on incombustible bases *yes*

Total number of lights provided for *14* arranged in the following groups:—

A	<i>4</i>	lights each of	<i>32</i>	candle power requiring a total current of	<i>5.3</i>	Amperes
B	<i>4</i>	lights each of	<i>32</i>	candle power requiring a total current of	<i>5.3</i>	Amperes
C	<i>4</i>	lights each of	<i>32</i>	candle power requiring a total current of	<i>5.3</i>	Amperes
D	<i>1 arc</i>	lights each of		candle power requiring a total current of	<i>15</i>	Amperes
E	<i>1 arc</i>	lights each of		candle power requiring a total current of	<i>15</i>	Amperes
—	Mast head light with	—	lamps each of	candle power requiring a total current of		Amperes
—	Side light with	—	lamps each of	candle power requiring a total current of		Amperes

14 Cargo lights of *as above* candle power, whether incandescent or arc lights *arc lights on deck & in hold*

If arc lights, what protection is provided against fire, sparks, &c. *metal and glass cased in holds*

Where are the switches controlling the masthead and side lights placed *yes*

DESCRIPTION OF CABLES.

Main cable carrying *50* Amperes, comprised of *7* wires, each *17/32* L.S.G. diameter, *1/40* square inches total sectional area
 Branch cables carrying *15* Amperes, comprised of *19* wires, each *0.53* L.S.G. diameter, *1/160* square inches total sectional area
 Branch cables carrying *53* Amperes, comprised of *7* wires, each *0.68* L.S.G. diameter, *1/258* square inches total sectional area
 Leads to lamps carrying *15* Amperes, comprised of *20* wires, each *0.24* L.S.G. diameter, *1/645* square inches total sectional area
 Cargo light cables carrying *15* Amperes, comprised of *407* wires, each *0.35* L.S.G. diameter, *1/40* square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

The insulation resistance of the wires is 500 megohms per kilometre. The wires are every where protected by brass covered water tight tubes of insulating material, which tubes are further laid in wood casings. Joints in cables, how made, insulated, and protected *All joints are thoroughly soldered and insulated with India rubber*

Are all the joints of cables thoroughly soldered, resin only having been used as a flux *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 *Some in holds*

Are there any joints in or branches from the cable leading from dynamo to main switch board *not* *(in brass junction boxes)*

How are the cables led through the ship, and how protected *the cables are led through the ship as already described in two or three tubes alongside the ship. In the case of junctions junction boxes are used.*

DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *in upper holds & upper bunkers*

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *In the holds the handlamps only are exposed to weather and moisture and the cable to these lamps are therefore protected with tubes of vulcanised india rubber. The cables to the arc lamps are protected by galvanised wire armour.*

What special protection has been provided for the cables near galley or oil lamps or other sources of heat *No cables near oil lamps or other sources of heat*

What special protection has been provided for the cables near boiler casings *No cables near boiler casings*

What special protection has been provided for the cables in engine room *No special protection Bergmann pipes*

How are cables carried through beams *Bergmann pipes* through bulkheads, &c. *Bergmann pipes*

How are cables carried through decks *No cables carried through decks*

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 *as described on the other side*

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage *yes, cargo holds only*

If so, how are the lamp fittings and cable terminals specially protected *The cables are carried through the tubes mentioned direct in the lamp fittings which are provided with strong covers of cast iron*

Where are the main switches and cut outs for these lights fitted *in the engine room*

If in the spaces, how are they specially protected *not in the spaces*

Are any switches or cut outs fitted in bunkers *not*

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 *—*

VESSELS BUILT FOR CARRYING PETROLEUM.

In vessels built for carrying petroleum, are all switches and cut-outs fitted in positions not liable to the accumulation of petroleum vapour or gas *✓*

Are any switches, cut outs, 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 installation is *—* supplied with a voltmeter and *—* an amperemeter, fixed *in engine room*

The copper used is guaranteed to have a conductivity of *99.5* per cent. that of pure copper.

Insulation of cables is guaranteed to have a resistance of not less than *300* megohms per statute mile after 24 hours' immersion in seawater.

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.

FINSKA ELEKTRISKA AKTIEBOLAGET

Gustaf Ritting
J. Ljunger

Electrical Engineers

Date *—*

COMPASSES.

Distance between dynamo or electric motors and standard compass *—*

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
A cable carrying	Amperes	feet from standard compass	feet from steering compass
A cable carrying	Amperes	feet from standard compass	feet from steering compass

Have the compasses been adjusted with and without the electric installation at work at full power *—*

The maximum deviation due to electric currents, etc., was found to be *—* degrees on *—* course in the case of the standard compass and *—* degrees on *—* course in the case of the steering compass.

Builder's Signature.

Date *—*

GENERAL REMARKS.

This installation is for Cargo purposes only. It has been fitted under survey. The workmanship is good. After completion it has been seen at work satisfactorily

R.D. Shilston.

Surveyor to Lloyd's Register of British and Foreign Shipping.

Committee's Minute *—*

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.