

## REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 27964

Port of SUNDERLAND Date of First Survey 11 Oct. Date of Last Survey 18 Oct 1920 No. of Visits 3  
 No. in Reg. Book on the ~~Iron~~ or Steel "THODE FRAGLUND" Port belonging to Tønsberg  
 Built at SUNDERLAND By whom MESSRS SIR J. LAING & SONS LTD When built 1920  
 Owners Wilk. Wilhelmsen Owners' Address Tønsberg  
 Yard No. 678 Electric Light Installation fitted by Sunderland Forge & Coy. 624 6/12 When fitted 1920

## DESCRIPTION OF DYNAMO, ENGINE, ETC.

One combined plant consisting of single cylinder vertical, inverted steam type engine - 4x5 385 H.P. (100 lbs Steam), coupled to compound multipolar dynamo both by 5.346.624.

Capacity of Dynamo 100 Amperes at 110 Volts, whether continuous or alternating current continuous

Where is Dynamo fixed Engine Room Bottom Platform Starboard Side Whether single or double wire system is used double

Position of Main Switch Board Close to dynamo having switches to groups Two of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each in Chart Room with switches

controlling, Port, Starboard, Foremast, Mainmast, Stern & Morse.

In Engine Room with switches controlling compasses & telegraphs.

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 "Z" Fuses

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

Total number of lights provided for 202 at 16 1/2 arranged in the following groups :-

A Navigation	21 lights each of	16	candle power requiring a total current of	10.5	Amperes
B Saloon, Fore Cargo	65 lights each of	"	candle power requiring a total current of	32.5	Amperes
C Eng. Aft Cargo	82 lights each of	"	candle power requiring a total current of	41.0	Amperes
D Engine Room	34 lights each of	"	candle power requiring a total current of	17.0	Amperes
E Wireless	lights each of		candle power requiring a total current of		Amperes
2 Mast head light with 2 lamps each of	32		candle power requiring a total current of	2.24	Amperes
2 Side light with 2 lamps each of	32		candle power requiring a total current of	2.24	Amperes
10 Cargo lights of	6 - 16 1/2		candle power, whether incandescent or arc lights	Incandescent	

If arc lights, what protection is provided against fire, sparks, &c. none fitted

Where are the switches controlling the masthead and side lights placed In Chart Room

## DESCRIPTION OF CABLES.

Main cable carrying 100 Amperes, comprised of 19 wires, each .083 S.W.G. diameter, .100 square inches total sectional area

Branch cables carrying 10.5 Amperes, comprised of 7 wires, each .036 S.W.G. diameter, .007 square inches total sectional area

Branch cables carrying 41 Amperes, comprised of 7 wires, each .064 S.W.G. diameter, .0025 square inches total sectional area .022

Leads to lamps carrying 56 Amperes, comprised of 3 wires, each .029 S.W.G. diameter, .002 square inches total sectional area

Cargo light cables carrying 6 1/2 Amperes, comprised of 3 wires, each .029 S.W.G. diameter, .002 square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

Insulation - Pure & Vulc. IR. Tapes, Vulcanized then Lead covered & Armoured

Branching Spaces do then do

Accommodation Spaces do then do

Joints in cables, how made, insulated, and protected Iron made

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 Iron made

How are the cables led through the ship, and how protected Lead covered & Armoured cable clipped to underside of Deck

**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 covered & Armoured*

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

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 *Boxes bushed with Fibre* through bulkheads, &c. *Waterlight Bands*

How are cables carried through decks *Waterlight Deck Tubes.*

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 *Lead covered & Armoured*

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 *2500* 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.

**P. PRO THE SUNDERLAND FORGE ENGINEERING CO., LTD** Electrical Engineers Date *-*

**COMPASSES.**

Distance between dynamo or electric motor and standard compass *Directly*

Distance between dynamo or electric motors and steering compass *102 feet.*

The nearest cables to the compasses are as follows:

A cable carrying	<i>10.5</i>	Ampères	<i>6</i>	feet from standard compass	<i>10 feet</i>	feet from steering compass
A cable carrying	<i>.56</i>	Ampères	<i>7</i>	feet from standard compass	<i>led into</i>	feet from steering compass
A cable carrying	<i>.56</i>	Ampères	<i>led into</i>	feet from standard compass	<i>-</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 *nil* degrees on *any* course in the case of the standard compass and *nil* degrees on *any* course in the case of the steering compass.

**SIR JAMES KING & SONS, LIMITED.** *Hugh King* Builder's Signature. Date *11<sup>th</sup> December 1920*

**GENERAL REMARKS.**

*On completion this installation was tried under working conditions and found satisfactory, it appears to have been fitted in a satisfactory manner and in accordance with the rules.*

*It is submitted that this vessel is eligible for THE RECORD. Elec Light*

*W. Staki* 15 DEC 1920  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.



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