

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 10931.

Port of *Middlesbrough* Date of First Survey *21st Sep. 1920* Date of Last Survey *18th Jan. 1921* No. of Visits *10*
 No. in *on the* ~~the~~ *Steel* *As "Hurunui"* Port belonging to *London*
 (Sup.) Reg. Book *49462* Built at *Middlesbrough* By whom *Sir Raylton Dixon & Co. Ltd.* When built *1921*
 Owners *Federal Steam Nav. Co. Ltd.* Owners' Address
 Yard No. *896 A.* Electric Light Installation fitted by *The Sunderland Forge & Engineering Co.* When fitted *1921*

DESCRIPTION OF DYNAMO, ENGINE, ETC.

One combined plant consisting of single cylinder vertical open type engine 9x7 300 H.P. 100 H.P. steam coupled to compound wound multipolar dynamo both by S.F. & Co.
 Capacity of Dynamo *200* Amperes at *100* Volts, whether continuous or alternating current *continuous*
 Where is Dynamo fixed *Platform Starboard Side* Whether single or double wire system is used *double*
 Position of Main Switch Board *close to dynamo* having switches to groups *Six* of lights, &c., as below
 Positions of auxiliary switch boards and numbers of switches on each *in Chart Room with switches controlling Foremast, Mainmast, Port, Starboard, compasses & Telegraphs & other Lamps.*

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 *no* 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 *173 at 169p* arranged in the following groups:—

A Navigation	20 lights each of	16	candle power requiring a total current of	11.2	Amperes
B Saloon & Fore	38 lights each of	"	candle power requiring a total current of	21.78	Amperes
C Engine & Aft	75 lights each of	"	candle power requiring a total current of	42.00	Amperes
D Engine & Rev. Room	40 lights each of	"	candle power requiring a total current of	22.40	Amperes
E Wireless	lights each of	—	candle power requiring a total current of	—	Amperes
F. Jannery Light House	2 Mast head light with 2 lamps each of	16	candle power requiring a total current of	2.24	Amperes
	2 Side light with 2 lamps each of	"	candle power requiring a total current of	2.24	Amperes
	5 Cargo lights of	6 - 16	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 *on Chart Room.*

DESCRIPTION OF CABLES.

Main cable carrying *200* Amperes, comprised of *37* wires, each *15* S.W.G. diameter, *.300* square inches total sectional area
 Branch cables carrying *42.00* Amperes, comprised of *19* wires, each *16* S.W.G. diameter, *.060* square inches total sectional area
 Branch cables carrying *22.4* Amperes, comprised of *7* wires, each *16* S.W.G. diameter, *.007* square inches total sectional area
 Leads to lamps carrying *.56* Amperes, comprised of *7* wires, each *28* S.W.G. diameter, *.0022* square inches total sectional area
 Cargo light cables carrying *3.0* Amperes, comprised of *72* wires, each *36* S.W.G. diameter, *—* square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Mains: P.E. run in Iron Pipe. Machinery Spaces: - Run & Pipe. IR. Tapes & Mils then lead down. Cabin & Accommodation Spaces: - Run & Pipe. IR. Tapes & Mils then lead down.

Joints in cables, how made, insulated, and protected *none 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 *no.*

How are the cables led through the ship, and how protected *Cables clipped to underside of Deck.*



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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 *W.P. in Iron Pipes*

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

What special protection has been provided for the cables near boiler casings *Armoured & Braided.*

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

How are cables carried through beams *Holes bushed with Fibre* through bulkheads, &c. *W.P. in Iron Pipes.*

How are cables carried through decks *W.P. in Black Iron.*

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

If so, how are they protected *—*

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coats, 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.

P. PRO THE SUNDERLAND TRADING ENGINEERING CO., LTD.

Electrical Engineers

Date *9th March 1921*

COMPASSES.

Distance between dynamo or electric motors and standard compass

78 feet

Distance between dynamo or electric motors and steering compass

75 feet

The nearest cables to the compasses are as follows:—

A cable carrying	<i>11.2</i>	Ampères	<i>8</i>	feet from standard compass	<i>6</i>	feet from steering compass
A cable carrying	<i>.56</i>	Ampères	<i>125 m/o</i>	feet from standard compass	<i>5</i>	feet from steering compass
A cable carrying	<i>.56</i>	Ampères	<i>5</i>	feet from standard compass	<i>125 m/o</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 *no* degrees on *All* course in the case of the standard compass and *no* degrees on *All* course in the case of the steering compass.

FOR SIR RAYLTON DIXON & COMPANY, LIMITED.

Builder's Signature.

Date

14. March 1921

GENERAL REMARKS.

This installation has been efficiently fitted on board and proved satisfactory under working conditions

It is submitted that this vessel is eligible for

THE RECORD. Elec Light

Wm. Chars
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.