

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 5011

Port of *Middlesbrough* Date of First Survey *11th April* Date of Last Survey *24th April* No. of Visits *5*
 No. in on the Iron or Steel *"I. I. Period"* Port belonging to *Melbourne*
 Reg. Book *71 S.M.* Built at *Middlesbrough* By whom *Derbyshire Dixon & Co* When built *1904*
 Owners *Howard Smith & Co Ltd* Owners' Address *Melbourne*
 Yard No. *427* Electric Light Installation fitted by *Dundonald Forge & Eng. Co Ltd* When fitted *1904*

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Single cylinder open type engine direct coupled to Multipolar compound wound dynamo

Capacity of Dynamo *90* Amperes at *100* Volts, whether continuous or alternating current *Continuous*

Where is Dynamo fixed *At bottom of Engine room*

Position of Main Switch Board *Near dynamo* having switches to groups *three* of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each *One at top of engine room controlling all hold lights and one in wheelhouse controlling all navigation lights.*

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* exception - *If wire fuses are used Main switchboard -* 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 *159* arranged in the following groups:—

| | | | | | | |
|---|-----------|----------------|-----------|---|-------------|---------|
| A | <i>30</i> | lights each of | <i>16</i> | candle power requiring a total current of | <i>18</i> | Amperes |
| B | <i>40</i> | lights each of | <i>16</i> | candle power requiring a total current of | <i>24</i> | Amperes |
| C | <i>24</i> | lights each of | <i>16</i> | candle power requiring a total current of | <i>14.4</i> | Amperes |
| D | <i>65</i> | lights each of | <i>16</i> | candle power requiring a total current of | <i>39</i> | Amperes |
| E | | lights each of | | candle power requiring a total current of | | Amperes |

Two Mast head light with *1* lamp each of *32 C.P. A.F.* candle power requiring a total current of *2.4* Amperes

Two Side light with *1* lamp each of *32 C.P. A.F.* candle power requiring a total current of *2.4* Amperes

Four Cargo lights of *6-16* candle power, whether incandescent or arc lights *Incandescent*

If arc lights, what protection is provided against fire, sparks, &c.

Where are the switches controlling the masthead and side lights placed *In wheelhouse.*

DESCRIPTION OF CABLES.

Main cable carrying *96* Amperes, comprised of *34* wires, each *16* L.S.G. diameter, *119* square inches total sectional area

Branch cables carrying *18* Amperes, comprised of *4* wires, each *16* L.S.G. diameter, *0.225* square inches total sectional area

Branch cables carrying *24* Amperes, comprised of *4* wires, each *15* L.S.G. diameter, *0.285* square inches total sectional area

Leads to lamps carrying *1.2* Amperes, comprised of *1* wires, each *18* L.S.G. diameter, *0.0181* square inches total sectional area

Cargo light cables carrying *2.4* Amperes, comprised of *1* wires, each *16* L.S.G. diameter, *0.0327* square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

In Berths Saloon &c, pure rubber, vulcanized rubber, taped and lead covered. In holds engine room and Stokelole, as above but armoured over lead covering.

Joints in cables, how made, insulated, and protected *There are none.*

Are all the joints of cables thoroughly soldered, resin only having been used as a flux *—* Are all joints in accessible positions, none being made in bunks, cargo spaces, or spaces which may at any time be used for carrying cargo, stores, or baggage *No*

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 *Lead covered and armoured wires led through holds*

DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *No. except when cargo is out.*

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *lead covered and armoured.*

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

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

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

How are cables carried through beams *Holes bushed with fibre. through bulkheads, &c. Harkright glands used.*

How are cables carried through decks *Harkright deck tubes used.*

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 and armoured.*

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

If so, how are the lamp fittings and cable terminals specially protected *By special heavy fittings*

Where are the main switches and cut outs for these lights fitted *for bunker fittings in Engine Room, for Hold fittings top of Engine Room.*

If in the spaces, how are they specially protected *No.*

Are any switches or cut outs 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 *_____*

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 *Yes*

The installation is *Yes* supplied with a voltmeter and *no* an amperemeter, fixed *on switch board.*

The copper used is guaranteed to have a conductivity of *98* per cent. that of pure copper.

Insulation of cables is guaranteed to have a resistance of not less than *600* 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.

THE SUNDERLAND FORGE & ENGINEERING CO., LTD.

Electrical Engineers

Date *30 April 1904*

COMPASSES.

Distance between dynamo or electric motors and standard compass *Twigs. about 200 feet*

Distance between dynamo or electric motors and steering compass *198 feet*

The nearest cables to the compasses are as follows:—

| Cable | Amperes | Feet from standard compass | Feet from steering compass |
|------------------------------|------------------|----------------------------|-----------------------------------|
| A cable carrying <i>14.4</i> | <i>12.</i> | <i>24</i> | <i>6</i> |
| A cable carrying <i>1.2</i> | <i>6</i> | <i>6</i> | <i>6</i> |
| A cable carrying <i>.6</i> | <i>runs into</i> | <i>and into</i> | <i>feet from steering compass</i> |

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 has been fitted under survey. The materials and workmanship are good. On completion it has been seen at work and found satisfactory*

R. D. Shilston

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

Committee's Minute *_____*

It is submitted that the Record Elec. Light be noted in the Reg. Books.



Lloyd's Register Foundation

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.