

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 3699

Port of *Middlesbrough* Date of First Survey *Sept 1st* Date of Last Survey *Sept 29 1903* No. of Visits *ten*
 No. in *on the Iron or Steel* *S.S. Zambezia* Port belonging to *Lisbon*
 Reg. Book *100* Built at *Middlesbrough* By whom *Sir R. Dixon & Co. Ltd* When built *1903-9*
 Owners *Compania Nacional de Nav a Vapor* Owners' Address *Lisbon*
 Yard No. *501* Electric Light Installation fitted by *J. A. Holmes & Co* When fitted *1903*

DESCRIPTION OF DYNAMO, ENGINE, ETC.

One 5 1/2 "x 5" open type inverted vertical steam engine with auto separator for 80 lbs. coupled to a 1/2 dynamo gramme path comp. wound by J. A. H. C.

Capacity of Dynamo *80* Amperes at *65* Volts, whether continuous or alternating current *Continuous*

Where is Dynamo fixed *in engine room Port side*

Position of Main Switch Board *near dynamo* having switches to groups *A B C D* of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each *1-4 way D.P. fusebox aft feeding 2-6 way boxes one cargo & 3 hold lamps: 1-6 way switch in eng room feeding 6-4 way f boxes. 1-6 way board in Pantry to feed 5 boxes one cargo: 1-6 way fusebox forward.*

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 *no*

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 *50* 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

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

Total number of lights provided for *92* arranged in the following groups:—

A <i>Aft</i>	<i>20</i> lights each of	<i>16</i>	candle power requiring a total current of	<i>18</i>	Amperes
B <i>Engines</i>	<i>23</i> lights each of	<i>16</i>	candle power requiring a total current of	<i>22</i>	Amperes
C <i>Midships</i>	<i>33</i> lights each of	<i>16</i>	candle power requiring a total current of	<i>30</i>	Amperes
D <i>Forward</i>	<i>16</i> lights each of	<i>16</i>	candle power requiring a total current of	<i>16</i>	Amperes
E	lights each of		candle power requiring a total current of		Amperes
<i>2 Mast head lights</i>	<i>each</i> / lamps each of	<i>32</i>	candle power requiring a total current of	<i>4</i>	Amperes
<i>2 Side lights</i>	<i>each</i> / lamps each of	<i>32</i>	candle power requiring a total current of	<i>4</i>	Amperes
<i>2 Cargo lights</i>	of	<i>4 x 16</i>	candle power, whether incandescent or are lights	<i>incand</i>	

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

Where are the switches controlling the masthead and side lights placed *in Wheel House*

DESCRIPTION OF CABLES.

Main cable carrying *90* Amperes, comprised of *19* wires, each *14* L.S.G. diameter, *.945* square inches total sectional area
 Branch cables carrying *18* Amperes, comprised of *7* wires, each *17* L.S.G. diameter, *.017* square inches total sectional area
 Branch cables carrying *30* Amperes, comprised of *7* wires, each *15* L.S.G. diameter, *.0282* square inches total sectional area
 Leads to lamps carrying *9* Amperes, comprised of *1* wire, each *Nº 18* L.S.G. diameter, *.0018* square inches total sectional area
 Cargo light cables carrying *4* Amperes, comprised of *7* wires, each *5 1/2* L.S.G. diameter, *.005* square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Cables are insulated with fine rubber, taped & braided & further sheathed in iron wire & compounded where exposed to weather &c.

Joints in cables, how made, insulated, and protected

Spliced soldered and insulated with approved rubber tapes &c.

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 *yes, accessible & none in spaces*

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

(Iron sheathed) clipped up & wood casing Armoured with galvanized iron wire & braided over.

DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *yes when cargo is out.*

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *I sheathing*

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 *insulating bushes* through bulkheads, &c. *stuffing boxes*

How are cables carried through decks *in lead or iron flanges tubes made watertight*

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 *as above.*

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 *strong joints*

Where are the main switches and cut outs for these lights fitted *in ship's not in spaces.*

If in the spaces, how are they specially protected

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

The installation is supplied with a voltmeter and *not* an amperemeter, fixed *on main fd.*

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.

FOR J. H. HOLMES & CO

L. Sambidge

Electrical Engineers

Date *5-10-03*

COMPASSES.

Distance between dynamo or electric motors and standard compass *64 ft.*

Distance between dynamo or electric motors and steering compass *60 ft.*

The nearest cables to the compasses are as follows:—

Cable	Amperes	feet from standard compass	feet from steering compass
A cable carrying <i>16</i>	<i>16</i>	<i>12</i>	
A cable carrying <i>30</i>	<i>30</i>	<i>24</i>	
A cable carrying <i>5</i>	<i>16</i>	<i>10</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.

MR. SIR RAYLTON DIXON & COMPANY, LIMITED.

Builder's Signature.

Date

GENERAL REMARKS.

This installation has been fitted under special survey. The materials & workmanship are good. On completion the installation seems to work satisfactorily. See Secretary's Letter of 23rd Sept. regarding protection of cables in holds.

R.D. Shilston

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

Committee's Minute

It is submitted that installation appears to be satisfactory

Lloyd's Register Foundation

16.10.03

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.