

REPORT ON ELECTRIC LIGHTING INSTALLATION.

No. 31657

Port of Elasgow Date of First Survey 10.6.12 Date of Last Survey 10.7.12 No. of Visits 10
 No. in on the Iron or Steel INDRAKUALA Port belonging to Liverpool
 Reg. Book Built at Elasgow By whom B. Boumell & Co. When built 1912
 Owners Indra Linc & Co. Owners' Address Liverpool
 Yard No. Electric Light Installation fitted by Wm. Barrie & Co. Ltd. When fitted 1912

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Single cylinder, vertical, double acting, open type Engine, direct coupled to compound wound multipolar Dynamo

Capacity of Dynamo 150 Amperes at 100 Volts, whether continuous or alternating current Continuous

Where is Dynamo fixed In Valve Recess, Port side Whether single or double wire system is used Double

Position of Main Switch Board In Valve Recess having switches to groups 6 groups of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each Forecastle, 3 way Fuse Board; Upper St. Ford, 3 way; Saloon, 9 way; Chart Rm., 6 way; Upper St. aft Midships, 9 way; aft, 9 way; Engines 9 way; Engineers Workshop, D.P. Switch and Fuse for Motor.

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 cessel 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-oxidisable metal yes, pure tin and constructed to fuse at an excess of 50 to 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 metal parts on porcelain.

Total number of lights provided for 194 arranged in the following groups:—

A	<u>28</u>	lights each of	<u>16 & 32</u>	candle power requiring a total current of	<u>30.2</u>	Amperes
B	<u>51</u>	lights each of	<u>8, 16, & 32</u>	candle power requiring a total current of	<u>30.2</u>	Amperes
C	<u>47</u>	lights each of	<u>16 & 32</u>	candle power requiring a total current of	<u>39.8</u>	Amperes
D	<u>32</u>	lights each of	<u>8, 16, & 32</u>	candle power requiring a total current of	<u>26.1</u>	Amperes
E	<u>36</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>20.3</u>	Amperes
F	<u>2</u>	motor of <u>7 B.H.P.</u>				
	<u>2</u>	Mast head light with <u>2</u> lamps each of	<u>32</u>	candle power requiring a total current of	<u>2.2</u>	Amperes
	<u>2</u>	Side light with <u>2</u> lamps each of	<u>32</u>	candle power requiring a total current of	<u>2.2</u>	Amperes
	<u>10</u>	Cargo lights each of <u>6 - 32</u>		candle power, whether incandescent or arc lights	<u>Incandescent</u>	

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

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

DESCRIPTION OF CABLES.

Main cable carrying 150 Amperes, comprised of 37 wires, each 14 L.S.G. diameter, .1824 square inches total sectional area
 Branch cables carrying 39.8 Amperes, comprised of 19 wires, each 17 L.S.G. diameter, .0459 square inches total sectional area
 Branch cables carrying 30.2 Amperes, comprised of 7 wires, each 14 L.S.G. diameter, .0346 square inches total sectional area
 Leads to lamps carrying 2.8 Amperes, comprised of 1 wire, each 16 L.S.G. diameter, .0032 square inches total sectional area
 Cargo light cables carrying 6.7 Amperes, comprised of 67 wires, each 31 L.S.G. diameter, .0066 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Tinned copper conductors, insulated with pure and vulcanised rubber and taped. In Accommodation, Cables Lead Covered; Tween Decks, Engine and Boiler Rooms, twin, padded circular taped, lead covered, braided, armoured with galv. iron wires, joints in cables, how made, insulated, and protected braided and compounded overall.

Joints in cables entirely dispensed with: porcelain junction boxes used throughout

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 bunkers, cargo spaces, or spaces which may at any time be used for carrying cargo, stores, or baggage None

Are there any joints in or branches from the cable leading from dynamo to main switch board None

How are the cables led through the ship, and how protected In Tween Decks and Eng. Rms. cables lead covered, armoured and braided, clipped up to decks and bulkheads with G.I. clips. In Accommodation, L.C. Cables fastened with brass saddles.

DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *All cables accessible.*

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *cables L.C. arm. and braided. Up masts, cables run in gal. iron tubing.*

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *L.C. arm. & braided.*

What special protection has been provided for the cables near boiler casings *L.C. arm. and braided*

What special protection has been provided for the cables in engine room *L.C. arm. and braided.*

How are cables carried through beams *holes lead bushed* through bulkheads, &c. *brass W. J. glands*

How are cables carried through decks *Gal. iron or brass deck tubes, 12" high flanged to deck.*

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 *Lead covered, armoured and braided, carried through beams*

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage *none in bunkers*

If so, how are the lamp fittings and cable terminals specially protected *In Cargo Holds, portable lamp fittings.*

Where are the main switches and cut outs for these lights fitted *Switch & Plug in Cast Iron W. J. Box.*

If in the spaces, how are they specially protected *In Cast Iron Box. — Fuses in Fuse Boxes, placed*

Are any switches or cut outs fitted in bunkers *None* in Accommodation.

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

The installation is supplied with a voltmeter and an amperemeter, fixed *on Switchboard.*

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 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 WILLIAM HABVIE & CO., LIMITED.

W. H. Habvie
SECRETARY.

Electrical Engineers

Date *22nd July 1912.*

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 *.28* Amperes *led into* feet from standard compass *also into* feet from steering compass

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

Both Compasses on Bridge fitted with Electric Light.

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 *Yes*

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

For CHARLES CONNELL & CO., Limited.

William H. Connell
Director

Builder's Signature. Date

GENERAL REMARKS.

This installation has been fitted on board under special survey & tested under full working conditions & found satisfactory.

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

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

Committee's Minute

GLASGOW 30 JUL 1912

Elec. Light.

