Rpt. 13.

RETAIN

Received at London Office 19

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 39089

Port of Glasgow Date of First Survey 26/6/19 Date of Last Survey 26/8/19 No. of Visits 3

No. in Reg. Book ____ on the ~~Iron or~~ Steel S.S. Benvorlich Port belonging to Leith

Built at Scotstoun By whom Messrs. J. Connell & Co Ltd. When built 1919

Owners Messrs W. Thomson & Co Ltd Owners' Address

Yard No. 390 Electric Light Installation fitted by Messrs H. J. Robertson & Co When fitted 1919

DESCRIPTION OF DYNAMO, ENGINE, ETC.

One compound Dynamo, Multipolar type, coupled direct to an enclosed forced lubrication engine 6"x4½" Stroke @ 520 revs per minute

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

Where is Dynamo fixed Engine Room Starling Platform Whether single or double wire system is used double

Position of Main Switch Board " " " " having switches to groups A, B, C, D, E, & F of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each No auxiliary Switchboards fitted

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 80 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 Yes

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

Total number of lights provided for 156 arranged in the following groups :—

A	Navigation 4	lights each of	32	candle power requiring a total current of	6	Amperes
B	Wireless 4	" " "	8	candle power requiring a total current of	2.5	Amperes
C	Cargo 30	lights each of	16	candle power requiring a total current of	18	Amperes
D	Amidships 16/32	lights each of	16/30 watt	candle power requiring a total current of	19.2	Amperes
E	Crews Quarters 31	lights each of	16	candle power requiring a total current of	18.6	Amperes
F	Engine Room 39	" " "	16	candle power requiring a total current of	23.4 included in 7	Amperes
Two	Mast head light with	1 lamp each of	32	candle power requiring a total current of	" " "	Amperes
Two	Side light with	1 lamp each of	32	candle power requiring a total current of	" " "	Amperes
~~Five~~	Cargo lights of	6 of 16 cp in each		candle power, whether incandescent or arc lights	No arcs.	

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

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Where are the switches controlling the masthead and side lights placed In Bridge Wheel House

DESCRIPTION OF CABLES.

Main cable carrying 100 Amperes, comprised of 19 wires, each 13 S.W.G. diameter, ·126 square inches total sectional area

Branch cables carrying 25 Amperes, comprised of 4 wires, each 16 S.W.G. diameter, ·0225 square inches total sectional area

Branch cables carrying 18 Amperes, comprised of 4 wires, each 18 S.W.G. diameter, ·0124 square inches total sectional area

Leads to lamps carrying ·6 Amperes, comprised of 1 wires, each 14 S.W.G. diameter, ·00246 square inches total sectional area

Cargo light cables carrying 3·6 Amperes, comprised of 119 wires, each 38 S.W.G. diameter, ·00322 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Pure Rubber, Vulcanised Rubber, Tape & Lead covered in accommodation; elsewhere Armoured & externally braided

Joints in cables, how made, insulated, and protected No Joints

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 Forward through beams under Bridge Deck & Aft through tween decks. Armoured & externally braided

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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 Galv^d iron pipes

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Armoured & Braided

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

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

How are cables carried through beams Fibre or Wood Bushes *through bulkheads, &c.* W.T. Glands

How are cables carried through decks In galv^d iron pipes

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 Armoured & Braided

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* 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° Farhenheit 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.

H. J. Robertson & Co. *Electrical Engineers* *Date* 3/12/19

COMPASSES.

Distance between dynamo or electric motors and standard compass 104 Ft

Distance between dynamo or electric motors and steering compass 100 "

The nearest cables to the compasses are as follows:—

A cable carrying 4·5 *Amperes* 4 *feet from standard compass* *feet from steering compass*

A cable carrying ·6 *Amperes* 4 *feet from standard compass* *feet from steering compass*

A cable carrying ·3 *Amperes* into *~~feet from~~ standard compass* & into *~~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* every *course in the case of the standard compass and* Nil *degrees on* every *course in the case of the steering compass.*

CHARLES CONNELL & CO. LD. D McCallum Secy. *Builder's Signature.* *Date* 12 Dec 1919

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. HG 7/1/20

J. Stanley Rankin

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

Committee's Minute GLASGOW 30 DEC 1919 Elec. Light.

H.C. 23.12.19

Im,9,14.—Transfer.

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN