

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 21690

Port of *Glasgow* Date of First Survey *4th Feb* Date of Last Survey *7th April* No. of Visits *11*
 No. in Reg. Book *on the Iron or Steel* *S. S. "CAIRNGORM"* Port belonging to *Glasgow*
 Built at *Glasgow* By whom *J. Shearer & Sons* When built *1904*
 Owners *W. Robertson* Owners' Address *Glasgow*
 Yard No. *36* Electric Light Installation fitted by *James Espe* When fitted *1904*

DESCRIPTION OF DYNAMO, ENGINE, ETC.

One 5½" x 5" Vertical Engine, coupled direct to Compound wound, multipolar Continuous Current dynamo, running at 400 revs. per min.

Capacity of Dynamo *40* Amperes at *80* Volts, whether continuous or alternating current *Continuous*

Where is Dynamo fixed *Engine Room*

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

Positions of auxiliary ~~switch~~ boards and ~~numbers of switches on each~~ *Forecastle, Chart Room, Captain's Room, Aft Cabin.*

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 *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 *yes*

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

Total number of lights provided for *47* arranged in the following groups:—

A Forward	13	lights each of	16	candle power requiring a total current of	10.4	Amperes
B Cargo Afters	16	lights each of	16	candle power requiring a total current of	12.8	Amperes
C Engine Room	8	lights each of	16	candle power requiring a total current of	6.4	Amperes
D Aft.	7	lights each of	16	candle power requiring a total current of	5.6	Amperes
E		lights each of		candle power requiring a total current of		Amperes

One Mast head light with *one* lamps each of *32* candle power requiring a total current of *1.6* Amperes

Two Side light with *one* lamps each of *32* candle power requiring a total current of *3.2* Amperes

Cargo lights *as shown above* 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 *Chart Room*

DESCRIPTION OF CABLES.

Main cable carrying	40	Amperes, comprised of	19	wires, each	18	L.S.G. diameter, .0351 square inches total sectional area
Branch cables carrying	15	Amperes, comprised of	7	wires, each	16	L.S.G. diameter, .0225 square inches total sectional area
Branch cables carrying	12.8	Amperes, comprised of	7	wires, each	18	L.S.G. diameter, .0129 square inches total sectional area
Leads to lamps carrying	.8	Amperes, comprised of	3	wires, each	20	L.S.G. diameter, .0030 square inches total sectional area
Cargo light cables carrying	6.4	Amperes, comprised of	30	wires, each	26	L.S.G. diameter, .0762 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

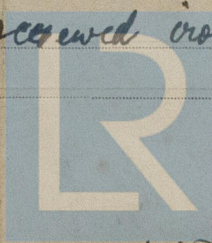
Pure and Vulcanized rubber, taped & braided, 600 megohms—

Joints in cables, how made, insulated, and protected *thoroughly cleaned, twisted, soldered, and insulated with pure rubber strip and adhesive tape—*

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 *none in such places—*

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 *along ship side, in screwed iron tubing—*



DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *yes, except in Hold or Coal Bunkers —*

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *screwed iron tubing*

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

What special protection has been provided for the cables near boiler casings *armoured cable —*

What special protection has been provided for the cables in engine room *armoured cable —*

How are cables carried through beams *screwed iron tubing* through bulkheads, &c. *screwed tubing (water-tight)*

How are cables carried through decks *screwed tubing flanged to deck, standing about 12" above same —*

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 *screwed iron tubing*

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 *none*

Where are the main switches and cut outs for these lights fitted *none*

If in the spaces, how are they specially protected *none*

Are any switches or cut outs fitted in bunkers *none*

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 *also* supplied with a voltmeter and *an ammeter, fixed* *Main Switch Board*

The copper used is guaranteed to have a conductivity of *100* 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.

James Espie

Electrical Engineers

Date *12th April 1904*

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 <i>15</i> Amperes	<i>20</i> feet from standard compass	<i>20</i> feet from steering compass
A cable carrying <i>1-6</i> Amperes	<i>5</i> feet from standard compass	<i>5</i> feet from steering compass
A cable carrying <i>_____</i> Amperes	<i>_____</i> feet from standard compass	<i>_____</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 *0* degrees on *each* course in the case of the standard compass and *each* degrees on *each* course in the case of the steering compass.

JOHN SHEARER & SONS, LIMITED.

John Shearer Director.

Builder's Signature.

Date *13th April 1904*

GENERAL REMARKS.

This installation has been examined during the time it was being fitted on board, tried with all lights on & found to be satisfactory

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

Committee's Minute

Glasgow 18 APR 1904

Recevd Electric Light.

It is submitted that this installation appears to be satisfactory.

19.4.04

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.