

# REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 12581.

Port of *Leith* Date of First Survey *25th Feb* Date of Last Survey *9th Mar 1909* No. of Visits *4*  
 No. in *1* on the Iron or Steel "*Netravati*" Port belonging to *Bombay*  
 Reg. Book *26* Built at *Grangemouth* By whom *Messrs. The Grangemouth Dockyard Co. Ltd.* When built *1909*  
 Owners *Bombay Steam Navigation Co.* Owners' Address *Bombay*  
 Yard No. *310* Electric Light Installation fitted by *H. J. Robertson & Co.* When fitted *1909*

## DESCRIPTION OF DYNAMO, ENGINE, ETC.

Dynamo Compound wound of Multipolar {4 pole} type Coupled direct to a Vertical Engine with cylinder 8" dia. by 6" stroke  
 Capacity of Dynamo *140* Amperes at *100* Volts, whether continuous or alternating current *continuous*  
 Where is Dynamo fixed *Engine Room Starting platform*  
 Position of Main Switch Board *Engine Room near Dynamo* having switches to groups *A, A', B, C, D, E & F* of lights, &c., as below  
 Positions of auxiliary switch boards and numbers of switches on each

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 *wire* 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 *159* arranged in the following groups:—

A Cargo	18	lights each of	16	candle power requiring a total current of	10.8	Amperes
A' "	18	"	"	"	10.8	"
B Forecastle	23	lights each of	32	candle power requiring a total current of	17.4	Amperes
C Officers	20	lights each of	16	"	15.6	Amperes
C' Bridge	3	"	32	"	15.6	"
D Engine Room	21	lights each of	16	candle power requiring a total current of	15.0	Amperes
D' Roof	2	"	32	"	15.0	"
E Saloon Etc.	29	lights each of	16	candle power requiring a total current of	14.4	Amperes
F Engine Room	23	"	16	"	13.2	"
2 Mast head light with	1	lamps each of	32	candle power requiring a total current of	included in C & D	Amperes
4 Side lights with	1	lamps each of	32	candle power requiring a total current of	" " C & B	Amperes
6 Cargo lights of			96	candle power, whether incandescent or arc lights	Incandescent	

If arc lights, what protection is provided against fire, sparks, &c. *No Arcs*

Where are the switches controlling the masthead and side lights placed *Forward Side Lts, Lamp Room and Bridge Side Lts. & Masthead Lt, Bridge Wheel House*

## DESCRIPTION OF CABLES.

Main cable carrying	100	Amperes, comprised of	19	wires, each	14	L.S.G. diameter, .0956 square inches total sectional area
Branch cables carrying	15.6	Amperes, comprised of	4	wires, each	14	L.S.G. diameter, .0142 square inches total sectional area
Branch cables carrying	10.8	Amperes, comprised of	4	wires, each	18	L.S.G. diameter, .0124 square inches total sectional area
Leads to lamps carrying	.6	Amperes, comprised of	1	wires, each	16	L.S.G. diameter, .00322 square inches total sectional area
Cargo light cables carrying	3.6	Amperes, comprised of	114	wires, each	38	L.S.G. diameter, .00322 square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

Pure india rubber then vulcanizing india rubber, india rubber coated tape; the whole vulcanized together, Braided tarred jute coated with preservative compound, in Strong Wood Casing, other portions Armoured & Lead & Armoured  
 Joints in cables, how made, insulated, and protected *Spliced joints, soldered & re-insulated with a layer of felt strip, built up with several layers of pure india rubber strip finished with proof tape and varnished*

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 *no joints Bunkers or 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 *Armoured Cables along Spar Deck in 2" Galv'd. iron pipe & through tween decks Armoured Cables Clipped to under side of deck*



H. Y. Robertson & Co.

DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *Yes except Cargo Spaces*  
What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *Armoured in Galv'd iron pipe and Lead Covered & Armoured*  
What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *Lead Covered & Armoured*  
What special protection has been provided for the cables near boiler casings *Lead Covered & Armoured*  
What special protection has been provided for the cables in engine room *Armoured & Lead Covered & Armoured*  
How are cables carried through beams *thro" fibre ferrules* through bulkheads, &c. *thro" fibre bushes*  
How are cables carried through decks *in Galv'd iron pipes bushed with fibre*  
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 with Galv'd iron wire*  
Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage *Cargo Spaces only*  
If so, how are the lamp fittings and cable terminals specially protected *Strong Cast iron Shutters*  
Where are the main switches and cut outs for these lights fitted *In Lamp Room & Engine Room*  
If in the spaces, how are they specially protected *none in spaces*  
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 *also* supplied with a voltmeter and *with* an amperemeter, fixed *on 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.

H. Y. Robertson & Co.

Electrical Engineers

Date *16<sup>th</sup> March 1909.*

COMPASSES.

Distance between dynamo or electric motors and standard compass *46 Feet*  
Distance between dynamo or electric motors and steering compass *42 Feet*  
The nearest cables to the compasses are as follows:—  
A cable carrying *15.6* Amperes *6* feet from standard compass *5* feet from steering compass  
A cable carrying *1* Amperes *4* feet from standard compass *4* feet from steering compass  
A cable carrying *.6* 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.

FOR THE GREENOCK AND GRANGEMOUTH DOCKYARD CO., LD.

J. Hawley

Builder's Signature.

Date *20<sup>th</sup> March 1909*

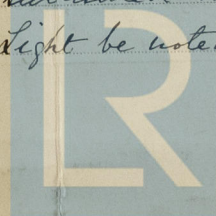
GENERAL REMARKS.

*The foregoing appears to be a correct description of this installation which has been fitted in a satisfactory manner*  
*A. J. Graham*

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. Book.*



Lloyd's Register Foundation

23.3.09

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.