

# REPORT ON ELECTRIC LIGHTING INSTALLATION.

Port of *Belfast.*

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No. *4076* \*

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Name of Ship

*Manitoba*

Built at

*Harland & Wolff*

When built

Electric Light Installation fitted by

*J. R. Holmes & Co.*

when fitted

*March 1892.*

## DESCRIPTION OF DYNAMO AND ENGINE.—

*2 Candles Silent Engines Coupled direct to 2 Castles dynamos.*

Capacity of Dynamo *5*

*270*

Amperes at

*60*

Volts, ~~whether~~ continuous or alternating current

Where is Dynamo fixed

*Bottom platform in Engine room on special seating.*

## LAMPS.—

Is vessel wired on single or double wire system

*Single*

Total number of lights

*286*

arranged in the following groups:—

A	<i>32</i>	lights each of	<i>16</i>	candle power requiring a total current of	<i>32</i>	Amperes
B	<i>30</i>	lights each of	<i>16</i>	candle power requiring a total current of	<i>30</i>	Amperes
B <sub>r</sub>	<i>30</i>				<i>30</i>	
C	<i>51</i>	lights each of	<i>16</i>	candle power requiring a total current of	<i>51</i>	Amperes
C <sub>r</sub>	<i>32</i>				<i>32</i>	
D	<i>40</i>	lights each of	<i>16</i>	candle power requiring a total current of	<i>40</i>	Amperes
D <sub>r</sub>	<i>31</i>				<i>31</i>	
E	<i>40</i>	lights each of	<i>16</i>	candle power requiring a total current of	<i>40</i>	Amperes

*1* Mast head light with *4* lamps each of *32* candle power requiring a total current of *2* Amperes

*2* Side lights with *12* lamps each of *32* candle power requiring a total current of *2* Amperes

*6* Cargo lights of *8 x 16* candle power, ~~whether~~ incandescent or arc lights

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

*None.*

## SWITCHES AND CUT-OUTS.—

Position of Main Switch Board

*near dynamo*

having switches to groups

*enumerated above*

of lights as above

Positions of other switch boards and numbers of switches on each

*One port & one starboard side of Engine room with 4 switches each for Engine room lights. One wheelhouse for Mast & side light & wheelhouse lights - 4.*

If cut outs are fitted to main circuit

*Yes*

and to each auxiliary circuit

*Yes.*

and at each position where cable is branched or reduced in size

*Yes.*

If vessel is wired on the double wire system are cut outs fitted on each wire

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.*

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

How are the lamps specially protected in places liable to the accumulation of vapour or gas

*Lead covered & in strong wood casing*

Are all switches and cut-outs constructed of unflammable materials and fitted on unflammable bases

*Yes.*

*Porcelain & Slate.*

## DESCRIPTION OF CABLES.—

*1000 amperes to the square inch in all cases.*

Main cable carrying	Amperes, comprised of	wires, each	legal standard wire gauge diameter
Branch cables carrying	Amperes, comprised of	wires, each	legal standard wire gauge diameter
Branch cables carrying	Amperes, comprised of	wires, each	legal standard wire gauge diameter
Leads to lamps	<i>1</i> Amperes, comprised of	<i>3</i> wires, each	<i>22</i> legal standard wire gauge diameter
Cargo light cables carrying	<i>6</i> Amperes, comprised of	<i>19</i> wires, each	<i>18</i> legal standard wire gauge diameter

The copper used has a conductivity of *98* per cent. that of pure copper.

Insulation of cables is guaranteed to have a resistance of not less than

*2000*

megohms per statute mile after 24 hours' immersion in seawater



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DESCRIPTION OF INSULATION, PROTECTION, &c.—

① Pure india rubber, ② Separator. ③ Vulcanised rubber specially hard pressed.  
④ Taped (5) Braided & ⑥ Compounded with waterproof Compound.

Joints in cables, how made, insulated, and protected *Spliced or twisted & soldered, resin or flux insulated with india rubber in a specially watertight manner.*

Are all the joints of cables thoroughly soldered, resin only having been used as a flux *Yes.*

How are cables led throughout the ship *in wood casing generally*

What special protection has been provided for the cables in open alleyways *iron sheathed*

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

What special protection has been provided for the cables near boiler casings *iron sheathed*

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

How are cables carried through decks *through iron tubes* and through bulkheads *wood ferrules or watertight glands.*

Are any cables run through coal bunkers *None* or cargo spaces *Yes* If so, how are they protected *Lead Covered in heavy wood casing - protected in main tween decks by channel iron.*

Are any lamps fitted in coal bunkers or spaces which may be used for cargo *In Cargo spaces.*

If so, how are they specially protected *with cast iron covers.*

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 *with Brass bolt screwed into beam.*

How are the returns from the lamps connected to the hull *Brass 3/8" bolts & washers.*

Are all the joints with the hull in accessible positions *Yes.*

TESTING, &c.—

Has the installation been thoroughly tested to its full capacity during a trial of *12 hours* hours' duration *machine afternoon running*

The insulation resistance of the whole installation was not less than *40,000* ohms *reception for 3 days.*

The installation is *not* supplied with a voltmeter and *not* an amperemeter, fixed *on Main Switchboard*

General Remarks.

*The Engine Room Space are specially wired so as to entirely dispense with soldered joints thus avoiding any corrosion which might otherwise take place & all lights are controlled from starting platform.*

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.

*J. H. Holmes & Co*

Electrical Engineers

Date

COMPASSES.—

Distance between dynamo and standard compass

Distance between dynamo and steering compass

The nearest cables to the compasses are as follows:—

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

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

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

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.

*Harland & Wolff Ltd* The Builder's Signature

Date

*30th April*

*A. L. Jones*

Surveyor's Signature

Date

*2nd May 1892*



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