

# REPORT ON ELECTRIC LIGHTING INSTALLATION.

No. *13434\** Port of *Glasgow*  
 No. in Reg. Book. Name of Ship *Barcelona* Built at *Glasgow* When built *May 95*  
 Electric Light Installation fitted by *Wm Harrow & Co Ltd* when fitted *May 95*

MON 17 JUN 1895  
 Received at London Office

## DESCRIPTION OF DYNAMO AND ENGINE.—

*Two-poled dynamo compound wound with ring armature coupled direct to a vertical high speed engine*

Capacity of Dynamo *150* Amperes at *60* Volts, whether continuous or alternating current *continuous*

Where is Dynamo fixed *on upper part of engine room port side.*

## LAMPS.—

Is vessel wired on single or double wire system *double* Total number of lights *99* arranged in the following groups:—

| Group | No. of lights | Each of                                       | Candle power       | Requiring a total current of | Amperes        |
|-------|---------------|---|--------------------|------------------------------|----------------|
| A     | <i>30</i>     | <i>lights each of 16 &amp; 32</i>             | <i>16 &amp; 32</i> | <i>34</i>                    | <i>Amperes</i> |
| B     | <i>31</i>     | <i>lights each of 16</i>                      | <i>16</i>          | <i>31</i>                    | <i>Amperes</i> |
| C     | <i>26</i>     | <i>lights each of 16 &amp; 32</i>             | <i>16 &amp; 32</i> | <i>28</i>                    | <i>Amperes</i> |
| D     | <i>10</i>     | <i>lights each of 16 search lamp</i>          | <i>16</i>          | <i>50</i>                    | <i>Amperes</i> |
| E     | <i>1</i>      |   |                    |                              |                |
| 1     | <i>1</i>      | <i>Mast head light with 1 lamp each of 32</i> | <i>32</i>          | <i>2</i>                     | <i>Amperes</i> |
| 2     | <i>1</i>      | <i>Side light with 1 lamp each of 32</i>      | <i>32</i>          | <i>2</i>                     | <i>Amperes</i> |

*Four* Cargo lights of *5 x 16* candle power, whether incandescent or arc lights *incandescent*

If arc lights, what protection is provided against fire, sparks, &c. *enclosed globe completely wired*

## SWITCHES AND CUT-OUTS—

Position of Main Switch Board *near dynamo* having switches to groups *A B C D* of lights as above

Positions of other switch boards and numbers of switches on each *no other switchboard except one two way board in lamp room for search light & arc lamp.*

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 *Yes*

Are the cut outs of non-oxidizable metal *Yes tin wire* 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 *Yes*

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

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

## DESCRIPTION OF CABLES.—

| Group                         | Amperes    | Comprised of | Wires, each | Legal standard wire gauge diameter |
|-------------------------------|------------|--------------|-------------|------------------------------------|
| Main cable carrying           | <i>150</i> | <i>37</i>    | <i>15</i>   | <i>15</i>                          |
| A Branch cables carrying      | <i>30</i>  | <i>17</i>    | <i>14</i>   | <i>14</i>                          |
| B Branch cables carrying      | <i>31</i>  | <i>7</i>     | <i>14</i>   | <i>14</i>                          |
| C Leads to lamps              | <i>26</i>  | <i>7</i>     | <i>14</i>   | <i>14</i>                          |
| D Cargo light cables carrying | <i>50</i>  | <i>165</i>   | <i>16</i>   | <i>38</i>                          |

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 *600* megohms per statute mile after 24 hours' immersion in seawater

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DESCRIPTION OF INSULATION, PROTECTION, &c.—

All wire & cable of best Silvanow manufacture insulated (I) pure rubber tape, (II) vulcanising rubber tape vulcanised (III) braided hemp or jute covered.

Joints in cables, how made, insulated, and protected very few joints used. insulated with pure rubber tape & solution, vulcanised tape & solution cemented with solution.

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

How are cables led throughout the ship from the engine room along the alleyway clear of bunkers & fore & aft through the seven decks mast head wires run in 1/2 inch galvanized pipe.

What special protection has been provided for the cables in open alleyways run in lead casing & white lead

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat none so placed

What special protection has been provided for the cables near boiler casings stout lead casing

What special protection has been provided for the cables in engine room lead casing & iron pipes

How are cables carried through decks through galvanized plates and through bulkheads through lead plates

Are any cables run through coal bunkers no or cargo spaces Yes If so, how are they protected in stout casing running between the sparrows on sides of ship.

Are any lamps fitted in coal bunkers or spaces which may be used for cargo no

If so, how are they specially protected

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

TESTING, &c.—

Has the installation been thoroughly tested to its full capacity during a trial of 24 hours' duration

The insulation resistance of the whole installation was not less than 200,000 ohms

The installation is supplied with a voltmeter and an amperemeter, fixed

General Remarks.—

All wire & cable used of best vulcanised rubber & work done on the distributing box system with as few joints as possible.

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.

Wm. Harvie & Co. Electrical Engineers

Date June 11th 95.

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 Yes

The maximum deviation due to electric currents, etc., was found to be nothing degrees on any course in the case of the standard compass and nothing degrees on any course in the case of the steering compass.

Charles Connell Builder's Signature

Date 14 June 1895

Thomas Warren Surveyor's Signature

Date 14 June 1895

