

REPORT ON ELECTRIC LIGHTING INSTALLATION.

31628

Port of *London*

Feb. 27 FEB 1891

No. ***
 No. in Reg. Book. *596* Name of Ship *Minnesota* Built at *Wm. Harland & Wolff Belfast* When built *1887*
 Electric Light Installation fitted by *India Rubber Co., Silvertown* when fitted *1887*

DESCRIPTION OF DYNAMO AND ENGINE.—

Single cylinder vertical engine and grooved fly wheel driving by endless rope a Silvertown double horse shoe ring armature dynamo machine

Capacity of Dynamo *125* Amperes at *50* Volts, whether continuous or alternating current *Continuous*

Where is Dynamo fixed *in After Starboard Side of Engine room*

LAMPS.—

Is vessel wired on single or double wire system *Double Wire* Total number of lights *81* arranged in the following groups:—

A *After circuit* *18* lights each of *16* candle power requiring a total current of *22.5* Amperes

B *Engine* *21* lights each of *16* candle power requiring a total current of *26.25* Amperes

C *Midship* *22* lights each of *16* candle power requiring a total current of *27.5* Amperes

D *Forward* *20* lights each of *16* candle power requiring a total current of *25.0* Amperes

E *lights each of* candle power requiring a total current of *Amperes*

One Mast head light with *2* lamps each of *16* candle power requiring a total current of *2.5* Amperes

Two Side lights with *2* lamps each of *16* candle power requiring a total current of *5.0* Amperes

Four Cargo lights of *6* lamps each of *16* candle power, whether incandescent or arc lights *Incandescent*

If arc lights, what protection is provided against fire, sparks, &c. A.B. Masthead, Side lights and two cargo lamps are included in the 20 lamps on group D, and two cargo lights are included in the 18 lamps of group A

SWITCHES AND CUT-OUTS—

Position of Main Switch Board *on bulkhead by dynamo* having switches to groups *A, B, C and D* of lights as above

Positions of other switch boards and numbers of switches on each *In main switchboard are also placed all the sectional switches for lamps in group B which are divided into lots of about 3 lamps each. Each cargo lantern has a separate switch, also each signal light, and except as specified above each individual lamp has a separate switch.*

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 *wherever a switch is placed*

If vessel is wired on the double wire system are cut outs fitted on each wire *no*

Are the cut outs of non-oxidizable metal *In alloy* and constructed to fuse at an excess of *40 to 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

Are all switches and cut-outs constructed of unflammable materials and fitted on unflammable bases *not in all cases*

DESCRIPTION OF CABLES.—

Main cable carrying *101.25* Amperes, comprised of *37* wires, each *No 15* legal standard wire gauge diameter

Branch cables carrying *25* Amperes, comprised of *19* wires, each *" 19* legal standard wire gauge diameter

Branch cables carrying *22.5* Amperes, comprised of *17* wires, each *" 16* legal standard wire gauge diameter

Branch cables carrying *14* Amperes, comprised of *7* wires, each *" 18* legal standard wire gauge diameter

Leads to lamps *1 1/4* Amperes, comprised of *one* wires, each *" 16* legal standard wire gauge diameter

Cargo light cables carrying *7.5* Amperes, comprised of *19* wires, each *" 23* 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 *300* megohms per statute mile after 24 hours' immersion in seawater

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DESCRIPTION OF INSULATION, PROTECTION, &c.—

The conductors which are of twisted copper wire are insulated with pure rubber then vulcanizing india rubber and rubber coated tape, the whole vulcanized together, braided flax and coated with preservative compound

Joints in cables, how made, insulated, and protected jointed with pure rubber and protected by prepared tapes

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

How are cables led throughout the ship Generally in double grooved wood casings, but in engine and boiler spaces funnel, holds, and other places where more liable to mechanical injury the cables are laid in iron pipes

What special protection has been provided for the cables in open alleyways see above

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

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

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

How are cables carried through decks Airtight deck tubes and through bulkheads head are wood bushes

Are any cables run through coal bunkers Yes or cargo spaces Yes If so, how are they protected Iron pipe

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 6 hours' duration Yes

The insulation resistance of the whole installation was not less than 100,000 ohms

The installation is not supplied with a voltmeter nor an amperemeter, fixed

General Remarks.—

Circuit B does not require a large branch cable, as a number of small circuits each of No 14 wire are run from the main switch, and Circuit C has two cables leaving the main switch each carrying half the current

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.

for Stuart Russell
TELEGRAPH WORKS CO., LIMITED.

Electrical Engineers

Date Feb 24th 1891

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.

This information was furnished by the owners for the Committee's information
Edward J. Turner Surveyor's Signature Date 26th Feb 1891



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