

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 2161

Port of Kobe Date of First Survey 18 Oct Date of Last Survey 26 Nov. 1917 No. of Visits 9
 on the Iron or Steel S. S. "Borneo Maru" Port belonging to Osaka
 Book Built at Kobe By whom The Kawasaki Dryd. Co. Ltd When built 1917
 Owners The Osaka Shosen Kaisha Ltd. Owners' Address Osaka
 No. 402 Electric Light Installation fitted by The Kawasaki Dryd. Co. Ltd When fitted 1917

DESCRIPTION OF DYNAMO, ENGINE, ETC.

The generating sets consist of two 17 K.W. open multipolar compound wound D.C. dynamos, directly coupled with two automatic cut off vertical single cylinder enclosed engines, with forced lubrication.
 Capacity of Dynamo 17 K.W. 170 Amperes at 100 Volts, whether continuous or alternating current

Where is Dynamo fixed In engine room. Whether single or double wire system is used ✓
 Position of Main Switch Board In engine room. having switches to groups 5 switches of lights, &c., as below
 Positions of auxiliary switch boards and numbers of switches on each Distribution boxes, a switch on each
on lower bridge, 4 on shelter deck, 2 on upper deck, 2 in engine & boiler room.

fuses 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.
 Is the vessel wired on the double wire system are fuses fitted to both flow and return wires or cables of all circuits including lamp circuits Yes.
 Are the fuses of non-oxidizable metal Yes. and constructed to fuse at an excess of 100 per cent over the normal current
 Are all fuses 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 fuses constructed of incombustible materials and fitted on incombustible bases Yes.

Total number of lights provided for 187 arranged in the following groups:—

<u>76</u>	lights each of <u>5, 16, 4 32</u>	candle power requiring a total current of <u>28</u>	Amperes
<u>1 arc 4 24</u>	lights each of <u>500 & 32</u>	candle power requiring a total current of <u>31.5</u>	Amperes
<u>1 arc 4 16</u>	lights each of <u>500 & 32</u>	candle power requiring a total current of <u>22.5</u>	Amperes
<u>27</u>	lights each of <u>16 & 32</u>	candle power requiring a total current of <u>15.5</u>	Amperes
<u>42</u>	lights each of <u>16</u>	candle power requiring a total current of <u>22.5</u>	Amperes
<u>2</u>	Mast head light with <u>2</u> lamps each of <u>32</u>	candle power requiring a total current of <u>2.2</u>	Amperes
<u>2</u>	Side light with <u>2</u> lamps each of <u>32</u>	candle power requiring a total current of <u>2.2</u>	Amperes
<u>2 arc 10 incandescent</u>	Cargo lights of <u>500 & 128</u>	candle power, whether incandescent or arc lights <u>incandescent & arc light.</u>	
Are lights, what protection is provided against fire, sparks, &c. <u>Water proof enclosed type.</u>			

Where are the switches controlling the masthead and side lights placed In chart room.

DESCRIPTION OF CABLES.

Main cable carrying 170 Amperes, comprised of 37 wires, each # 14 S.W.G. diameter, 0.1857 square inches total sectional area
 Branch cables carrying 31.5 Amperes, comprised of 7 wires, each # 16 S.W.G. diameter, 0.0224 square inches total sectional area
 Branch cables carrying 7 Amperes, comprised of 1 wires, each # 16 S.W.G. diameter, 0.0032 square inches total sectional area
 Leads to lamps carrying 0.55 Amperes, comprised of 1 wires, each # 18 S.W.G. diameter, 0.0018 square inches total sectional area
 Cargo light cables carrying 5 Amperes, comprised of 283 wires, each # 38 S.W.G. diameter, 0.0080 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

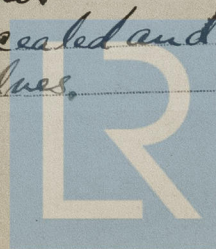
Armoured rubber insulated lead covered wire, lead covered rubber insulated wire, and cotton braided rubber insulated wire are used.

How are the joints in cables, how made, insulated, and protected Joints in cables are made on small marble plates in water proof junction boxes.

Are all the joints of cables thoroughly soldered, and the flux used not containing acids or other corrosive substances 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 Yes.

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 Cables are led unconcealed and without any additional protection those on cables themselves.



DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *Yes.*

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *Galvanized steel armoured lead covered wires are used.*

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

What special protection has been provided for the cables near boiler casings *Ditto.*

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

How are cables carried through beams *Through lead tubes.* through bulkheads, &c. *Through lead glands.*

How are cables carried through decks *Through water tight iron pipes.*

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 *Galvanized steel armoured lead covered wires are used, if necessary through iron tubes more often.*

Are any lamps fitted in ~~coal bunkers~~ or spaces which may at times be used for cargo, coals, or baggage *Yes.*

If so, how are the lamp fittings and cable terminals specially protected *With iron covers or brass guards.*

Where are the main switches and fuses for these lights fitted *In distribution boxes outside of these spaces.*

If in the spaces, how are they specially protected *None.*

Are any switches or fuses fitted in bunkers *None.*

Cargo light cables, ~~whether~~ portable or permanently fixed *How fixed By sockets in cargo light boxes.*

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel *None*

How are the returns from the lamps connected to the hull *None*

Are all the joints with the hull in accessible positions *None*

Is the installation supplied with a voltmeter *Yes.* and with *2* amperemeters *Yes.* fixed *On main switch board.*

VESSELS BUILT FOR CARRYING PETROLEUM.

~~In vessels built for carrying petroleum, are all switches and fuses fitted in positions not liable to the accumulation of petroleum vapour or gas~~

Are any switches, fuses, or joints of cables fitted in the pump room or companion *None*

How are the lamps specially protected in places liable to the accumulation of vapour or gas *None*

The copper used is guaranteed to have a conductivity of not less than that of the Engineering Standards Committee's standard, and the wires are protected by tinning from the sulphur compounds present in the insulating material.

Insulation of cables is guaranteed to have a resistance of not less than *600* megohms per statute mile at 60° Fahrenheit after 24 hours' immersion in water, the test being made after one minute's electrification at not less than 500 volts and while the cable is still immersed.

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.

S. Tada,

Electrical Engineers

Date *16th 1. 18.*

COMPASSES.

Distance between dynamo or electric motors and standard compass *115 ft from dynamos & 4 ft from motor generator.*

Distance between dynamo or electric motors and steering compass *105 ft from dynamos & 20.5 ft from motor generator.*

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.

Kawasaki

Shunajima

Builder's Signature.

Date

GENERAL REMARKS.

The installation has been fitted in accordance with the requirements of the Rules & worked satisfactorily on trial.

Arthur L. Jones

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 22. MAR. 1918



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