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REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 2686

of KOBE, JAPAN Date of First Survey 14th Nov Date of Last Survey 16th Decr No. of Visits 8
 on the ~~Iron~~ Steel S/S. SPAIN MARU Port belonging to KOBE
 Built at KOBE By whom Kawasaki Dockyard Co Ltd When built 1919
Kawasaki Kisen Kaisha Ltd Owners' Address Kobe
 No. 470 Electric Light Installation fitted by Kawasaki Dockyard Co Ltd When fitted 1919

DESCRIPTION OF DYNAMO, ENGINE, ETC.

sets of Compound dynamo coupled directly to the single cylinder automatic vertical enclosed engine with forced lubrication. 8" dia., 6" stroke, 450 R.P.M.
 No. of Dynamo 170 Amperes at 100 Volts, whether continuous or alternating current Continuous
 Is Dynamo fixed In the engine room Whether single or double wire system is used double
 No. of Main Switch Board In the engine room having switches to groups A, B, C, D & E of lights, &c., as below
 Nos. of auxiliary switch boards and numbers of switches on each 2 in the engine room, 4 on the upper deck, 1 on the lower bridge and 1 on the aft main having main switch on each board
 Are fuses 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 a fuse fitted 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-oxidisable 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 porcelain & marble are used

number of lights provided for 160 arranged in the following groups:—

<u>114</u>	lights each of	<u>16</u>	candle power requiring a total current of	<u>52.00</u> Amperes
<u>13</u>	lights each of	<u>5</u>	candle power requiring a total current of	<u>2.50</u> Amperes
<u>31</u>	lights each of	<u>32</u>	candle power requiring a total current of	<u>35.00</u> Amperes
<u>2</u>	lights each of	<u>1500</u>	candle power requiring a total current of	<u>10.00</u> Amperes
	lights each of		candle power requiring a total current of	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>2.24</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>2.24</u> Amperes
<u>7</u>	Cargo lights of <u>128 & 1500</u>		candle power, whether incandescent or arc lights	<u>Incandescent</u>

Are the switches controlling the masthead and side lights placed In the chart room

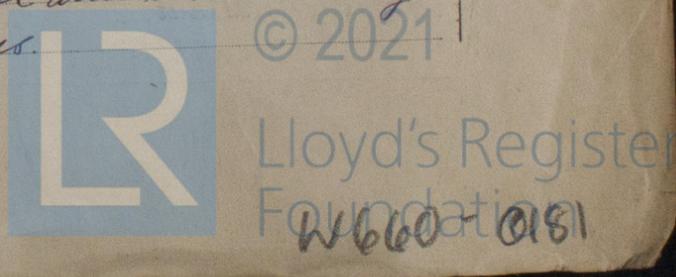
DESCRIPTION OF CABLES.

Each cable carrying	<u>170.0</u> Amperes, comprised of	<u>2500</u> wires, each <u>No. 30</u> S.W.G. diameter,	<u>0.3000</u> square inches total sectional area
Each cable carrying	<u>27.0</u> " " " " " "	<u>19</u> " " <u>No. 20</u> " " " " " "	<u>0.0190</u> " " " " " "
Each cable carrying	<u>19.0</u> Amperes, comprised of	<u>19</u> wires, each <u>No. 20</u> S.W.G. diameter,	<u>0.0190</u> square inches total sectional area
Each cable carrying	<u>14.5</u> " " " " " "	<u>19</u> " " <u>No. 20</u> " " " " " "	<u>0.0190</u> " " " " " "
Each cable carrying	<u>14.5</u> Amperes, comprised of	<u>7</u> wires, each <u>No. 20</u> S.W.G. diameter,	<u>0.0070</u> square inches total sectional area
Each cable carrying	<u>24.5</u> " " " " " "	<u>14</u> " " <u>No. 20</u> " " " " " "	<u>0.0140</u> " " " " " "
Each cable carrying	<u>0.5</u> Amperes, comprised of	<u>1</u> wires, each <u>No. 18</u> S.W.G. diameter,	<u>0.0018</u> square inches total sectional area
Each cable carrying	<u>5.0</u> Amperes, comprised of	<u>234</u> wires, each <u>No. 38</u> S.W.G. diameter,	<u>0.0066</u> square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Conductors are doubly insulated with india rubber and vulcanized paper and tape. Cables are protected against mechanical injury & chemical action by steel armoring or lead covering according to the requirements.
 Are the joints in cables, how made, insulated, and protected Mechanical joints are made throughout and protected with water tight 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 None
 How are the cables led through the ship, and how protected Cables are led unconcealed and without any additional protections beside those on the cables themselves.



DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *They are all in accessible places*

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *without any additional protections beside those on the cables themselves*

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

What special protection has been provided for the cables near boiler casings *as before*

What special protection has been provided for the cables in engine room *In some parts where necessary the cables are led through iron pipes*

How are cables carried through beams *Pierced through wood lining through bulkheads, &c. pierced through and provided with W.T. gland.*

How are cables carried through decks *Pierced and led through iron pipes.*

Are any cables run through coal bunkers *Y/N* or cargo spaces *Y/N* or spaces which may be used for carrying cargo, stores, or baggage *Y/N*

If so, how are they protected *With lead covering and steel armoring on the cables themselves*

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage *None*

If so, how are the lamp fittings and cable terminals specially protected

Where are the main switches and fuses for these lights fitted

If in the spaces, how are they specially protected

Are any switches or fuses fitted in bunkers *None*

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

Is the installation supplied with a voltmeter *Y/N* and with an amperemeter *Y/N*, 2 ammeters, fixed *on a marble 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

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

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 *17th 12, 19*

COMPASSES.

Distance between dynamo or electric motors and standard compass *Dynamo to standard compass 115 ft. Motor " " 110 ft.*

Distance between dynamo or electric motors and steering compass *Dynamo " steering " 105 ft. Motor " " 100 ft.*

The nearest cables to the compasses are as follows:—

A cable carrying	<i>5.6</i>	Amperes	<i>6</i>	feet from standard compass	<i>15</i>	feet from steering compass
A cable carrying	<i>13.5</i>	Amperes	<i>17</i>	feet from standard compass	<i>13</i>	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 *Kawasaki Dockyard Co., Ltd.* _____ degrees on _____ course in the case of the steering compass.

Per *J. Ota Kane* Secretary. Builder's Signature. Date *17th 12. 19.*

GENERAL REMARKS.

This Installation has been made and fitted in accordance with the Requirements of the Rules, and worked satisfactorily on trial.

It is submitted that this vessel is eligible for THE RECORD. ELEC: LIGHT. 24/2/20 *A Watt.* Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. 27 FEB. 1920*

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

Im 418—Transfer.



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