

No. 2632.

|                     |                              |                                       |                                   |              |                         |
|---------------------|------------------------------|---------------------------------------|-----------------------------------|--------------|-------------------------|
| No. in<br>Reg. Book | on the Iron or Steel         | <b>S.S. SCOTLAND MARU</b>             | Port belonging to                 | <b>Kobe.</b> |                         |
|                     | Built at                     | <b>Kawasaki Dockyard Co. Ltd.</b>     | By whom                           | <b>Kobe.</b> | When built <b>1919</b>  |
| Owners              | <b>Kawasaki Kisen Kaisha</b> |                                       | Owners' Address                   | <b>Kobe</b>  |                         |
| Yard No.            | <b>464</b>                   | Electric Light Installation fitted by | <b>Kawasaki Dockyard Co. Ltd.</b> |              | When fitted <b>1919</b> |

Two sets of compound dynamo Coupled directly to the single cylinder automatic cut-off vertical enclosed engine with forced lubrication.  
8" dia. 6" stroke. 450 R.P.M.

Where is Dynamo fixed *In the engine room* Whether single or double wire system is used *double*

Position of Main Switch Board *In the engine room* having switches to groups *A, B, C, D & E* of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each *2 in the engine room, 4 on the shelter deck, 1 on the lower bridge and 1 on the after main* having one main switch on each board.

If 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*

If vessel is 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-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 *Yes, porcelain & marble used*

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

|          |                      |                        |              |  |                      |         |
|----------|----------------------|------------------------|--------------|--|----------------------|---------|
| A        | <i>114</i>           | lights each of         | <i>16</i>    | candle power requiring a total current of        | <i>52.0</i>          | Amperes |
| B        | <i>13</i>            | lights each of         | <i>5</i>     | candle power requiring a total current of        | <i>2.5</i>           | Amperes |
| C        | <i>31</i>            | lights each of         | <i>32</i>    | candle power requiring a total current of        | <i>35.0</i>          | Amperes |
| D        | <i>2</i>             | lights each of         | <i>1,500</i> | candle power requiring a total current of        | <i>10.0</i>          | Amperes |
| E        |                      | lights each of         |              | candle power requiring a total current of        |                      | Amperes |
| <i>2</i> | Must head light with | <i>2</i> lamps each of | <i>32</i>    | candle power requiring a total current of        | <i>2.24</i>          | Amperes |
| <i>2</i> | Side light with      | <i>2</i> lamps each of | <i>32</i>    | candle power requiring a total current of        | <i>2.24</i>          | Amperes |
| <i>7</i> | Cargo lights of      | <i>128 &amp; 1500</i>  |              | candle power, whether incandescent or arc lights | <i>incandescant.</i> |         |

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

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

### DESCRIPTION OF CABLES.

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|-----------------------------|-----------------------------|------------------|-------------------------|---|--|
| Main cable carrying         | 170.0 Amperes, comprised of | 2500 wires, each | No. 30 S.W.G. diameter, | 0.3000 square inches total sectional area |  |
| Branch "                    | 27.0 "                      | 20 "             | No. 20 "                | 0.0200 "                                  |  |
| Branch cables carrying      | 19.0 Amperes, comprised of  | 15 wires, each   | No. 20 S.W.G. diameter, | 0.0150 square inches total sectional area |  |
| " "                         | 14.5 "                      | 7 "              | No. 20 "                | 0.0070 "                                  |  |
| Branch cables carrying      | 14.5 Amperes, comprised of  | 7 wires, each    | No. 20 S.W.G. diameter, | 0.0070 square inches total sectional area |  |
| " "                         | 24.5 "                      | 14 "             | No. 20 "                | 0.0140 "                                  |  |
| Leads to lamps carrying     | 0.5 Amperes, comprised of   | 1 wires, each    | No. 18 S.W.G. diameter, | 0.0018 square inches total sectional area |  |
| Cargo light cables carrying | 5.0 Amperes, comprised of   | 234 wires, each  | No. 38 S.W.G. diameter, | 0.0066 square inches total sectional area |  |

### DESCRIPTION OF INSULATION, PROTECTION, ETC.

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Conductors are doubly insulated with india rubber and vulcanized rubber and tape. Cables are protected against mechanical injury and chemical action by steel armoring or lead covering according to the requirements. 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 a wood lined through bulkheads, &c. Pierced through & provided with water tight glands.*  
 How are cables carried through decks *Pierced and led through 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 *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 *Yes*, and with an amperometer *Yes, 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 *25<sup>th</sup> 10.19*

COMPASSES.

Distance between dynamo or electric motors and standard compass *Dynamo to standard compass 115 feet*  
 Distance between dynamo or electric motors and steering compass *Motor " steering " 110 feet*  
*Dynamo " steering " 105 feet*  
*Motor " steering " 100 feet*

The nearest cables to the compasses are as follows:—

| A cable carrying | Amperes   | feet from standard compass | feet from steering compass |
|------------------|-----------|----------------------------|----------------------------|
| <i>5.6</i>       | <i>6</i>  | <i>15</i>                  | <i>15</i>                  |
| <i>13.5</i>      | <i>17</i> | <i>13</i>                  | <i>13</i>                  |
|                  |           |                            |                            |

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 Dockyard Co., Ltd.*

Per \_\_\_\_\_

Secretary.

Builder's Signature.

Date *Oct 26<sup>th</sup> 1919.*

GENERAL REMARKS.

*This Installation has been 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 7/12/19.*

*Alexander Watt*

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE 23 DEC. 1919

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.