

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

NOV 19 1937

Received at London Office

Date of writing Report 19th Oct 1937 When handed in at Local Office 19/10/ 1937 Port of YOKOHAMA
 No. in Survey held at YOKOHAMA Date, First Survey 10th Sept Last Survey 12th Oct 1937
 Reg. Book. YOKOHAMA (Number of Visits 9)
 on the Steel Screw M.V. "KAIYO MARU" Tons { Gross 8637
 Net 6368
 Built at Yokohama By whom built Mitsubishi Jukogyo K.K. Yard No. 279 When built 1937
 Owners Nippon Tanker K.K. Port belonging to Tokio
 Electric Light Installation fitted by Mitsubishi Jukogyo K.K. Yokohama Ok Contract No. 279 When fitted 1937
 Is the Vessel fitted for carrying Petroleum in bulk yes

System of Distribution Two wire insulated system
 Pressure of supply for Lighting 110 volts, Heating 110 volts, Power 110 volts.
 Direct or Alternating Current, Lighting Direct Power Direct
 If alternating current system, state frequency of periods per second ✓
 Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off yes
 Generators, do they comply with the requirements regarding temperature rise yes, are they compound wound yes
 are they over compounded 5 per cent. yes, if not compound wound state distance between each generator ✓
 Where more than one generator is fitted are they arranged to run in parallel no, is an adjustable regulating resistance fitted in series with each shunt field yes Have certificates of test results for machines under 100 kw. been submitted and approved yes Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing ✓
 Are all terminals accessible, clearly marked, and furnished with sockets yes, are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched yes Are the lubricating arrangements of the generators as per Rule yes
 Position of Generators Bottom platform, forward starboard side of Engine room, is the ventilation in way of the generators satisfactory yes are they clear of all inflammable material yes if situated near unprotected woodwork or other combustible material, state distance or same horizontally from or vertically above the generators ✓ and ✓
 are the generators protected from mechanical injury and damage from water, steam or oil yes, are their axes of rotation fore and aft yes
 Earthing, are the bedplates and frames of the generating plant efficiently earthed yes are the prime movers and their respective generators in metallic contact yes Main Switch Boards, where placed Bottom platform, forward starboard side of Engine room If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard ✓
 Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes yes, are they protected from mechanical injury and damage from water, steam or oil yes, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards ✓ and ✓, are they constructed wholly of durable, non-ignitable non-absorbent materials yes, is all insulation of high dielectric strength and of permanently high insulation resistance yes, is it of an approved type yes, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework ✓, is the non-hygroscopic insulating material of an approved type ✓, and is the frame effectively earthed yes Are the fittings as per Rule regarding:— spacing or shielding of live parts yes, accessibility of all parts yes, absence of fuses on back of board yes, temperature rise of omnibus bars yes, individual fuses to voltmeter, pilot or earth lamp yes, are moving parts of switches alive in the "off" position no are all screws and nuts securing connections effectively locked yes are any fuses fitted on the live side of switches no
 Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches For each generator:— One air circuit breaker & D.P. switch with fuses. For outgoing circuits, seventeen D.P. D.T. knife switches with fuses.
 Are turbine driven generators fitted with emergency trip switch as per rule ✓ Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material yes Instruments on main switchboard Two ammeters Two voltmeters ✓ synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection ✓
 Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system Earth lamps Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules yes are the fusible cutouts of an approved type yes have the reversed

current protection devices been tested under working conditions yes. **Joint Boxes, Section and Distribution Boards**, is the construction, protection, insulation, material, and position of these as per rule yes.

Cables: Single, twin, concentric, or multicore Single are the cables insulated and protected as per Tables IV, V, X or XI of the Rules yes.

If the cables are insulated otherwise than as per Rule, are they of an approved type yes. **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load 4.5 Volts.

Cable Sockets, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets yes.

Paper Insulated and Varnished Cambric Insulated Cables. If conductors are paper or varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound yes, or waterproof insulating tape yes.

Cable Runs, are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage yes. Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered yes armoured.

Support and Protection of Cables, state how the cables are supported and protected Perforated metal grids and clips or in steel conduits.

If cables are run in wood casings, are the casings and caps secured by screws yes, are the cap screws of brass yes, are the cables run in separate grooves yes. If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII yes.

Refrigerated Chambers, are the cables and fittings in accordance with the special requirements yes.

Joints in Cables, state if any, and how made, insulated, and protected Cables jointed with insulated terminals in metal boxes.

Watertight Glands and Deck Tubes, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands yes.

Bushes in Beams and Non-watertight Partitions, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed yes state the material of which the bushes are made Lead.

Earthing Connections, state what earthing connections are fitted and their respective sectional areas none.

are their connections made as per Rule yes.

Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule yes. **Emergency Supply**, state position and method of control of the emergency supply and how the generator is driven yes.

Navigation Lamps, are these separately wired yes, controlled by separate switch and separate fuses yes, are the fuses double pole yes, are the switches and fuses grouped in a position accessible only to the officers on watch yes.

has each navigation lamp an automatic indicator as per Rule yes. **Secondary Batteries**, are they constructed and fitted as per Rule yes.

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight yes.

are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected guards.

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected gas tight fittings, how are the cables led yes.

where are the controlling switches situated outside the spaces.

are all fittings suitably ventilated yes, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials yes.

Heating and Cooking Appliances, are they constructed and fitted as per Rule yes, are air heaters constructed and fitted as per Rule yes.

Searchlight Lamps, No. of Two, whether fixed or portable Fixed, are their fittings as per Rule yes.

Arc Lamps, other than searchlight lamps, No. of yes, are their live parts insulated from the frame or case yes, are their fittings as per Rule yes.

Motors, are their working parts readily accessible yes, are the coils self-contained and readily removable for replacement yes, are the brushes, brush holders, terminals and lubricating arrangements as per Rule yes, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material yes, are they protected from mechanical injury and damage from water, steam or oil yes, are their axes of rotation fore and aft yes, if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type yes, if not of this type, state distance of the combustible material horizontally or vertically above the motors yes and yes.

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing none. **Control Gear and Resistances**, are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule yes.

Lightning Conductors, where lightning conductors are required, are these fitted as per Rule yes.

Ships carrying Oil having a Flash Point less than 150° F. Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings yes are all fuses of the filled cartridge type yes are they of an approved type yes.

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office yes.

Spare Gear, if the vessel is for open sea service have spares been supplied as per Rule yes.

PARTICULARS OF GENERATING PLANT.										
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.			
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.		
MAIN ...	<u>Two</u>	<u>30 each</u>	<u>110 each</u>	<u>273</u>	<u>600</u>	<u>Steam engine</u>	<u>✓</u>	<u>✓</u>		
AUXILIARY ...										
EMERGENCY ...										
ROTARY TRANSFORMER										

GENERATOR, LIGHTING AND HEATING CONDUCTORS.										
DESCRIPTION.	No. of	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet. <u>M</u>	Insulated with	HOW PROTECTED.
		No. per Pole.	Total Nominal Area per Pole Sq. ins. <u>inches</u>	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR ...	<u>1</u>	<u>321</u>	<u>61</u>	<u>2.60</u>	<u>273</u>	<u>332</u>	<u>17</u>	<u>Rubber</u>	<u>H.C. & Armoured.</u>	
EQUALISER CONNECTIONS ...										
AUXILIARY GENERATOR ...										
EMERGENCY GENERATOR ...										
ROTARY TRANSFORMER MOTOR GENERATOR ...										
ENGINE ROOM ...	<u>1</u>	<u>14.5</u>	<u>7</u>	<u>1.63</u>	<u>21.5</u>	<u>46</u>	<u>9</u>	<u>"</u>	<u>"</u>	<u>"</u>
BOILER ROOM ...	<u>1</u>	<u>14.5</u>	<u>7</u>	<u>1.63</u>	<u>21.7</u>	<u>46</u>	<u>20</u>	<u>"</u>	<u>"</u>	<u>"</u>
AUXILIARY SWITCHBOARDS ...										
NO. 1 FUSE BOX	<u>1</u>	<u>14.5</u>	<u>7</u>	<u>1.63</u>	<u>44</u>	<u>46</u>	<u>60</u>	<u>"</u>	<u>"</u>	<u>"</u>
NO. 2 " "	<u>1</u>	<u>14.5</u>	<u>7</u>	<u>1.63</u>	<u>7</u>	<u>12.9</u>	<u>110</u>	<u>"</u>	<u>"</u>	<u>"</u>
H. DIST. BOARD	<u>1</u>	<u>4.50</u>	<u>7</u>	<u>1.63</u>	<u>12.3</u>	<u>24</u>	<u>18</u>	<u>"</u>	<u>"</u>	<u>"</u>
D " "	<u>1</u>	<u>14.5</u>	<u>7</u>	<u>1.63</u>	<u>21.5</u>	<u>46</u>	<u>2</u>	<u>"</u>	<u>"</u>	<u>"</u>
F " "	<u>1</u>	<u>14.5</u>	<u>7</u>	<u>1.63</u>	<u>17</u>	<u>46</u>	<u>34</u>	<u>"</u>	<u>"</u>	<u>"</u>
ACCOMMODATION										
First Amidships	<u>1</u>	<u>77.5</u>	<u>37</u>	<u>1.63</u>	<u>68.3</u>	<u>130</u>	<u>280</u>	<u>"</u>	<u>"</u>	<u>"</u>
Aft	<u>1</u>	<u>25.8</u>	<u>19</u>	<u>1.30</u>	<u>47.3</u>	<u>64</u>	<u>65</u>	<u>"</u>	<u>"</u>	<u>"</u>
WIRELESS ...	<u>1</u>	<u>25.8</u>	<u>19</u>	<u>1.30</u>	<u>39</u>	<u>64</u>	<u>200</u>	<u>"</u>	<u>"</u>	<u>"</u>
SEARCHLIGHT ...	<u>Two</u>	<u>12</u>	<u>1.95</u>	<u>1</u>	<u>1.63</u>	<u>9</u>	<u>12.9</u>	<u>24</u>	<u>"</u>	<u>Lead Covered.</u>
MASTHEAD LIGHT ...	<u>Two</u>	<u>1</u>	<u>1.95</u>	<u>1</u>	<u>1.63</u>	<u>36</u>	<u>12.9</u>	<u>80</u>	<u>"</u>	<u>H.C. & Armoured</u>
SIDE LIGHTS ...	<u>1</u>	<u>1.95</u>	<u>1</u>	<u>1.63</u>	<u>36</u>	<u>12.9</u>	<u>13</u>	<u>"</u>	<u>"</u>	<u>Lead Covered</u>
COMPASS LIGHTS ...	<u>1</u>	<u>1.95</u>	<u>1</u>	<u>1.63</u>	<u>09</u>	<u>12.9</u>	<u>10</u>	<u>"</u>	<u>"</u>	<u>"</u>
POOP LIGHTS ...	<u>1</u>	<u>1.95</u>	<u>1</u>	<u>1.63</u>	<u>18</u>	<u>12.9</u>	<u>240</u>	<u>"</u>	<u>"</u>	<u>H.C. & Armoured.</u>
CARGO LIGHTS ...										
AEC LAMPS ...										
HEATERS ...										

MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet. <u>M</u>	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Nominal Area per Pole Sq. ins. <u>inches</u>	No.	Diameter.	In Circuit.	Rule.			
REFRIGERATING PUMP	<u>1</u>	<u>1</u>	<u>25.6</u>	<u>19</u>	<u>1.30</u>	<u>41</u>	<u>64</u>	<u>75</u>	<u>Rubber</u>	<u>Lead Covered & Armoured.</u>
MAIN BILGE LINE PUMPS										
Galley Fans	<u>2</u>	<u>1</u>	<u>1.95</u>	<u>1</u>	<u>1.63</u>	<u>7</u>	<u>12.9</u>	<u>70</u>	<u>"</u>	<u>"</u>
EMERGENCY BILGE PUMP										
SANITARY PUMP										
CIRC. SEA WATER PUMPS										
CIRC. FRESH WATER PUMPS										
AIR COMPRESSOR										
FRESH WATER PUMP										
ENGINE TURNING GEAR	<u>1</u>	<u>1</u>	<u>65</u>	<u>19</u>	<u>2.10</u>	<u>115</u>	<u>142 (1/2 in)</u>	<u>80</u>	<u>"</u>	<u>"</u>
ENGINE HOISTING GEAR	<u>1</u>	<u>1</u>	<u>25.6</u>	<u>19</u>	<u>1.30</u>	<u>38</u>	<u>64 (1/2 in)</u>	<u>45</u>	<u>"</u>	<u>"</u>
LUBRICATING OIL PUMPS										
OIL FUEL TRANSFER PUMP										
WINDLASS										
WINCHES, FORWARD										
WINCHES, AFT										
STEERING GEAR—										
(a) MOTOR GENERATOR ...										
(b) MAIN MOTOR ...										
WORKSHOP MOTOR	<u>1</u>	<u>1</u>	<u>14.5</u>	<u>7</u>	<u>1.63</u>	<u>21</u>	<u>46</u>	<u>75</u>	<u>"</u>	<u>"</u>
VENTILATING FANS	<u>2 each</u>	<u>1</u>	<u>14.5</u>	<u>7</u>	<u>1.63</u>	<u>28</u>	<u>46</u>	<u>90</u>	<u>"</u>	<u>"</u>
H.O. PUMPER	<u>1</u>	<u>1</u>	<u>4.50</u>	<u>7</u>	<u>90</u>	<u>28</u>	<u>24</u>	<u>15</u>	<u>"</u>	<u>"</u>
NO. 10 " "	<u>1</u>	<u>1</u>	<u>4.50</u>	<u>7</u>	<u>90</u>	<u>28</u>	<u>24</u>	<u>20</u>	<u>"</u>	<u>"</u>
NO. 2 " "	<u>1</u>	<u>1</u>	<u>4.50</u>	<u>7</u>	<u>90</u>	<u>28</u>	<u>24</u>	<u>20</u>	<u>"</u>	<u>"</u>
NO. 3 " "	<u>1</u>	<u>1</u>	<u>4.50</u>	<u>7</u>	<u>90</u>	<u>28</u>	<u>24</u>	<u>20</u>	<u>"</u>	<u>"</u>

All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical Commission Publication No. 28).

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

K. Sati

Electrical Engineers.

Date *Oct. 18, 1937*

COMPASSES.

Distance between electric generators or motors and standard compass *10 M*

Distance between electric generators or motors and steering compass *9 M.*

The nearest cables to the compasses are as follows:—

A cable carrying	<i>.09</i>	Ampères	<i>.6</i>	<i>M</i> feet from standard compass	<i>.4</i>	<i>M</i> feet from steering compass.
A cable carrying	<i>.09</i>	Ampères	<i>.8</i>	<i>M</i> feet from standard compass	<i>.6</i>	<i>M</i> feet from steering compass.
A cable carrying	<i>.36</i>	Ampères	<i>2.2</i>	<i>M</i> feet from standard compass	<i>1.8</i>	<i>M</i> feet from steering compass.

Have the compasses been adjusted with and without the electric installation at work at full power *Yes*

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted *Yes*

The maximum deviation due to electric currents 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.

E. Adachi

Builder's Signature.

Date *Oct. 18, 1937*

Is this installation a duplicate of a previous case *✓* If so, state name of vessel *✓*

General Remarks (State quality of workmanship, opinions as to class, etc. *The Electric Installation of*)

this vessel has been installed onboard under Special Survey, in accordance with the Rules & approved plans. Materials & workmanship good.

On completion of installing, the complete installation tried under full working conditions and megger tested with satisfactory results.

*The Electric Installation of this vessel is eligible in my opinion to be classed with the machinery and have the record of *ELRIC 10-34**

Noted

J. J.

22/11/37

Total Capacity of Generators *Sixty* Kilowatts.

The amount of Fee ... £ *28 : 10* : *19-10-37*

Travelling Expenses (if any) £ *✓* :

When received.

14/2-1938

MR 15/2

J. Nicholas

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE 23 NOV 1937

Assigned

See JMa J.E 6235-



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Foundation