

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 20 JUL 1936

Date of writing Report 19-6-1936 When handed in at Local Office 27-6-1936 Port of KOBE

No. in Survey held at TAMA Date, First Survey 23-3-36 Last Survey 30-5-1936
Reg. Book. (Number of Visits 8)

on the STEE SINGLE SCREW MOTORSHIP "CANBERRA MARU"

Tons { Gross 6477
Net 3858

Built at TAMA By whom built MITSUI BUSSAN KAISHA Yard No. 216 When built 1936

Owners OSAKA SHOSEN KABUSHIKI KAISHA Port belonging to OSAKA

Electric Light Installation fitted by MITSUI BUSSAN KAISHA Contract No. ✓ When fitted 1936

Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution DIRECT CURRENT TWO WIRES

Pressure of supply for Lighting 225 volts, **Heating** 225 volts, **Power** 225 volts.

Direct or Alternating Current, Lighting D.C. **Power** D.C.

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 rating 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 YES, is an adjustable regulating resistance fitted in series with each shunt field YES

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 STARBOARD IN ENG. ROOM. (NO.1 - FORWARD OUTBOARD, NO.2 - FORWARD INBOARD, NO.3 - AFT.)
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 of same horizontally from or vertically above the generators
NO WOODWORK OR OTHER COMBUSTIBLE MATERIAL 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 FORWARD END CENTER OF MACHINERY SPACE.
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 NONE and ✓
are they constructed wholly of durable, non-ignitable non-absorbent materials YES, is all insulation of high dielectric strength and permanently high insulation resistance YES, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework ✓
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, proportion of omnibus bars $2 \frac{1}{2} \times \frac{1}{16}$ " (1220 amp/□"), individual fuses to voltmeter, pilot or earth lamp YES, connections of switches 2 POLES ✓

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches TRIPLE POLE CIRCUIT BREAKER (CENTER POLE BEING FOR EQUALIZER CONTACT SWITCH) WITH OVERLOAD & REVERSE CURRENT TRIP AND D.P. LINKED SWITCH. ✓ LIGHTING & OUT GOING CIRCUITS:— D.P. LINKED SWITCH & D.P. FUSES. ✓

Instruments on main switchboard 7 ammeters 5 voltmeters ✓ synchronising device for paralleling purposes.

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system 2 VOLT METERS WITH ONE CHANGE SWITCH.

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules YES

Joint Boxes Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule YES



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Cables: Single, twin, concentric, or multicore TWINE are the cables insulated and protected as per Tables IV, V, XI or XIII of the Rules YES

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load ABOUT 5 VOLTS.

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

Paper Insulated Cables. If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound 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.

Support and Protection of Cables, state how the cables are supported and protected SECURED BY IRON + BRASS CLIPS.

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

Refrigerated Chambers, if lights are fitted, are the cables and fittings in accordance with the special requirements NOT FITTED

Joints in Cables, state if any, and how made, insulated, and protected

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 BOTH POLE INSULATED

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 NONE

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

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

where are the controlling switches situated

Searchlight Lamps, No. of 4, whether fixed or portable FIXED, are their fittings as per Rule YES

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

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 (EXCEPT 2 F.O. SHIFTING PUMP MOTORS), 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 , if not of this type, state distance of the combustible material horizontally or vertically above the motors and

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

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

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office

PARTICULARS OF GENERATING PLANT.

| DESCRIPTION OF GENERATOR. | No. of | RATED AT | | | | DRIVEN BY | WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE | |
|---------------------------|--------|------------|--------|-------|----------------|---------------|---|----------------------|
| | | Kilowatts. | Volts. | Amps. | Revs. per Min. | | Fuel Used. | Flash Point of Fuel. |
| MAIN | 3 | 240 | 225 | 1067 | 450 | DIESEL ENGINE | HEAVY OIL | ABOVE 150° F |
| AUXILIARY | | | | | | | | |
| EMERGENCY | | | | | | | | |
| ROTARY TRANSFORMER | | | | | | | | |

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

| DESCRIPTION. | CONDUCTORS. | | COMPOSITION OF STRAND. | | TOTAL MAXIMUM CURRENT. | | Approximate Length (Lead and Return) Feet. | Insulated with | HOW PROTECTED. |
|------------------------|---------------|--|------------------------|-------------------|------------------------|-------|--|----------------|----------------|
| | No. per Pole. | Total Effective Area per Pole Sq. Ins. | No. | Diameter IN INCH. | In Circuit. | Rule. | | | |
| MAIN GENERATOR | 3 | 1.0026 | 140 | .0651 | 1067 | 1236 | 262 | PAPER | LEAD + ARMURED |
| EQUALISER CONNECTIONS | 2 | .406 | 85 | " | 533 | 600 | 131 | " | " " |
| AUXILIARY GENERATOR | | | | | | | | | |
| EMERGENCY GENERATOR | | | | | | | | | |
| ROTARY TRANSFORMER | | | | | | | | | |
| ENGINE ROOM LIGHT | 1 | .00935 | 12 | .0315 | 15 | 39 | 33 | PAPER | LEAD + ARMURED |
| BOILER ROOM | | | | | | | | | |
| AUXILIARY SWITCHBOARDS | | | | | | | | | |
| ACCOMMODATION LIGHT | 1 | .0234 | 30 | .0315 | 20 | 50 | 98 | RUBBER | LEAD + ARMURED |
| FAN | 1 | .00546 | 7 | " | 9.5 | 20 | 150 | " | " " |
| WIRELESS | 1 | .0234 | 30 | .0315 | 250 | 50 | 164 | RUBBER | LEAD + ARMURED |
| SEARCHLIGHT | 1 | .00546 | 7 | " | 2.3 | 20 | 60 | " | " " |
| MASTHEAD LIGHT | 1 | .00175 | 1 | .0473 | 0.2 | 7 | 150 | " | " " |
| SIDE LIGHTS | 1 | " | 1 | " | " | " | 49 | " | " " |
| COMPASS LIGHTS | 1 | " | 1 | " | 10 | " | 50 | " | LEAD COVERED |
| POOP LIGHTS | 1 | .00314 | 1 | .063 | 3.1 | 13 | 700 | " | LEAD + ARMURED |
| CARGO LIGHTS | 1 | .00935 | 12 | .0315 | 240 | 30 | 100 | " | " " |
| ARC LAMPS | | | | | | | | | |
| HEATERS | 1 | .0234 | 30 | .0315 | 546 | 50 | 98 | " | LEAD + ARMURED |

MOTOR CONDUCTORS.

| DESCRIPTION. | No. of Motors. | CONDUCTORS. | | COMPOSITION OF STRAND. | | TOTAL MAXIMUM CURRENT. | | Approximate Length (Lead and Return) Feet. | Insulated with | HOW PROTECTED. |
|-----------------------------|----------------|---------------|--|------------------------|-----------|------------------------|-------|--|----------------|----------------|
| | | No. per Pole. | Total Effective Area per Pole Sq. Ins. | No. | Diameter. | In Circuit. | Rule. | | | |
| BILGE BALLAST PUMP | 1 | 1 | .1337 | 56 | .0557 | 102 | 228 | 33 | PAPER | LEAD + ARMURED |
| SANITARY PUMPS | 1 | 1 | .0234 | 30 | .0315 | 31 | 98 | " | RUBBER | " " |
| MAIN BILGE PUMP | 1 | 1 | .1337 | 56 | .0557 | 102 | 228 | " | PAPER | " " |
| FIRE & GENERAL SERVICE PUMP | 1 | 1 | .00314 | 1 | .0630 | 9 | 12 | " | RUBBER | " " |
| L.O. SHIFTING PUMP | 1 | 1 | .00314 | 1 | .0630 | 9 | 12 | " | RUBBER | " " |
| EMERGENCY BILGE PUMP | 2 | 1 | .00935 | 12 | .0315 | 13 | 29 | " | " | " " |
| L.O. PURIFIERS | 2 | 4 | .3342 | 140 | .0551 | 1540 | 1648 | 200 | PAPER | " " |
| SCAVANGE BLOWERS | 2 | 1 | .00314 | 1 | .063 | 9 | 12 | 33 | RUBBER | " " |
| GEN. SERVICE WATER PUMPS | 2 | 1 | .00935 | 12 | .0315 | 9.1 | 29 | " | " | " " |
| F.O. PURIFIERS | 1 | 1 | " | " | " | 13 | 39 | " | " | " " |
| FRESH WATER PUMP | 1 | 1 | .0365 | 37 | .0354 | 50 | 60 | 50 | " | " " |
| ENGINE TURNING GEAR | 2 | 1 | .1337 | 56 | .0557 | 192 | 228 | 164 | PAPER | " " |
| COOLING WATER PUMPS | 2 | 1 | .203 | 85 | " | 238 | 300 | 200 | " | " " |
| EXHAUST PUMP | 2 | 1 | .0789 | 80 | .0354 | 81 | 100 | 50 | RUBBER | " " |
| LUBRICATING OIL PUMPS | 1 | 1 | .203 | 85 | .0557 | 245 | 375 | 525 | PAPER | " " |
| OIL FUEL TRANSFER PUMP | 4 | 1 | .3342 | 140 | " | 464 | 575 | 400 | " | " " |
| WINCHES, FORWARD | 4 | 2 | .203 | 85 | " | 556 | 750 | 260 | " | " " |
| " " " " | 4 | 2 | " | " | " | " | " | 328 | " | " " |
| WINCHES, AFT | 4 | 2 | " | " | " | " | " | 460 | " | " " |
| " " " " | 4 | 2 | " | " | " | " | " | " | " | " " |
| STEERING GEAR | | | | | | | | | | |
| (a) MOTOR GENERATOR | 1 | 1 | .203 | 85 | .0557 | 195 | 375 | 600 | PAPER | LEAD + ARMURED |
| (b) MAIN MOTOR | 1 | 1 | " | " | " | 153 | " | 60 | " | " " |
| WORKSHOP MOTOR | 1 | 1 | .00314 | 1 | .063 | 9 | 13 | 65 | RUBBER | " " |
| VENTILATING FANS | 2 | 1 | .0234 | 30 | .0315 | 24 | 98 | 164 | " | " " |
| CRANE MOTOR | 2 | 1 | .0365 | 37 | .0354 | 49 | 60 | 80 | " | " " |
| R.M.C. COOLING PUMPS | 2 | 1 | .00546 | 7 | .0315 | 10.4 | 21 | 33 | " | " " |
| " BRINE PUMPS | 2 | 1 | .00935 | 12 | " | 14.2 | 29 | " | " | " " |
| " COMPRESSORS | 2 | 1 | .1337 | 56 | .0557 | 120 | 228 | " | PAPER | " " |
| GALLEY COOKING FAN | 2 | 1 | .00314 | 1 | .063 | 9.2 | 12 | 100 | RUBBER | " " |

All Conductors are of annealed copper conforming to British Standard Specification No. 7.
 The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.
 The foregoing is a correct description.

E. Maeda. Electrical Engineers. Date *24th Jun, '36.*

COMPASSES.

Distance between electric generators or motors and standard compass *65 FT. FROM ENGINE ROOM VENTILATING FAN MOTOR.*

Distance between electric generators or motors and steering compass *59 FT. " " " " " "*

The nearest cables to the compasses are as follows:—

A cable carrying *2.2* Ampères *14* feet from standard compass *4* feet from steering compass.

A cable carrying *1.6* Ampères *14* feet from standard compass *4* feet from steering compass.

A cable carrying *1.4* Ampères *14* feet from standard compass *4* 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, NOT INTERFERED.*

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.

PER PRO MITSUI BUSSAN KAISHA, LTD.,

N. Saito

SUB-MANAGER SHIPBUILDING DEPT.

Builder's Signature.

Date *24th Jun, '36.*

Is this installation a duplicate of a previous case *NO* If so, state name of vessel *✓*

General Remarks (State quality of workmanship, opinions as to class, &c.)

The Electrical Installation of this vessel has been fitted under Special Survey in accordance with the Rules + approved plans.

The materials and workmanship are good.

On completion the installation was tested under full working conditions and found to be efficient and is eligible, in my opinion, to be accepted for classification.

NOTE: - The spare gear placed on board is in excess of that required by the Rules.

Noted

Shun

24.7.36

Total Capacity of Generators *720* Kilowatts.

The amount of Fee ... £ *78-15-0* When applied for, *29/5/1936*

Travelling Expenses (if any) £ : : *25-8-34* When received, *25/8*

M. Kamakura.

Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. 24 JUL 1936*

Assigned *See Sheer No. 2E 9607*

The Surveyors are requested not to write on or below the space for Committee's Minute.



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