

Rpt. 13.

No. 2170

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

10 AUG 1954

Received at London Office

Date of writing Report 19 When handed in at Local Office JUL 26. 1954 19 Port of KOBE

No. in Survey held at Osaka Date, First Survey 12th January Last Survey 31th May 19 54
Reg. Book. (No. of Visits 7)366975 on the M. S. "INUISAN MARU" Tons { Gross 7,197.46
Net 4,118.24
Built at Osaka By whom built Fujinagata Shipbuilding Co., Ltd. Yard No. 31 When built 1954 6 mo.

Owners INUI KISEN K. K. Port belonging to Kobe

Installation fitted by Fujinagata Shipbuilding Co., Ltd. When fitted 1954 6 mo.

Is vessel equipped for carrying Petroleum in bulk No Is vessel equipped with D.F. Yes E.S.D. Yes Gy. C. Yes Sub. Sig. Yes Radar Yes

Plans, have they been submitted and approved Yes System of Distribution 3 phase, 3 wire Voltage of Lighting 110 V

Heating 110 V Power 440 V A.C. D.C. or A.C., Lighting A.C. Power A.C. If A.C. state frequency 60 cycle

Prime Movers, has the governing been found as per Rule when full load is thrown on and off Yes Are turbine emergency governors fitted with a trip switch --- Generators, are they compound wound ---, and level compounded under working conditions ---

if not compound wound state distance between generators --- and from switchboard --- Are the generators arranged to run in parallel Yes, are shunt field regulators provided --- Is the compound winding connected to the negative or positive pole ---

Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes Have certificates of test for machines under 100 kw. been supplied Yes and the results found as per Rule Yes

Position of Generators Engine Room Port

is the ventilation in way of generators satisfactory Yes are they clear of inflammable material and protected from mechanical injury and damage from water, steam and oil Yes Switchboards, where are main switchboards placed Forward center E.R.

are they in accessible positions, free from inflammable gases and acid fumes and protected from mechanical injury and damage from water, steam and oil Yes, what insulation is used for the panels Phenol resin, if of synthetic insulating material is it an Approved Type Yes, if of semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule Yes Is the construction as per Rule, including locking of screws and nuts Yes Description of Main Switchgear

for each generator and arrangement of equaliser switches A.C.B. 600 A x 2 & A.C.B. 400 A x 1 and disconnecting switch 400 A x 2 & disconnecting switch (C.O.S) 200 A x 1 and exciter switch 60 A x 3

and the switch and fuse gear (or circuit breakers) for each outgoing circuit No - fuse breaker 3 P 225 A Frame x 3, 3 P 100 A Frame x 5, 3 P 60 A Frame x 35 & 2 P 60 A Frame x 3

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard A.C. x 6 D.C. x 2
ammeters A.C. x 6 D.C. x 2 voltmeters 1 synchronising devices. For compound machines in parallel are the ammeters and reversed current protection devices connected on the pole opposite to the equaliser connection --- Earth Testing, state means provided two-lamp systemSwitches, Circuit Breakers and Fuses, are they as per Rule Yes, are the fuses an Approved Type Yes
make of fuses Mitsui "NOF" Category 2, are all fuses labelled Yes If circuit breakers are provided for the generators, at what overload do they operate 150 % and at what current do the reversed current protective devices operate 40.5 A

Joint Boxes, Section Boards and Distribution Boards, is the construction as per Rule Yes

Cables, are they insulated and protected as per Rule Yes, if otherwise than as per Rule are they of an Approved Type --- state maximum fall of pressure between bus bars and any point under maximum load 7 Volt, are the ends of all cables having a sectional area of 0.01 square inch and above provided with soldering sockets Yes Are all paper insulated and varnished cambric insulated cables sealed at the ends Yes Are all the cable runs in accessible positions, not exposed to drip or accumulation of water or oil, high temperatures or risk of mechanical damage No, are any cables laid under machines or floorplates No, if so, are they adequately protected --- Are cables in machinery spaces, galleys, laundries, etc., lead covered Yes or run in conduit ---

or of the "HR" type Yes State how the cables are supported or protected generally supported by iron hangers and fixed to them by metal clips having smooth edges.

Where exposed to risk of mechanical damage protected by sheet iron plating.

Are all lead sheaths, armouring and conduits effectually bonded and earthed Yes Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands Yes where unarmoured cables pass through beams, etc., are the holes effectively bushed Yes (ship use) Refrigerated chambers, are the cables and fittings as per Rule Yes

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Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule Yes None fitted Emergency Supply, state position

Navigation Lamps, are they separately wired Yes controlled by separate double pole switches and fuses Yes Are the switches and fuses in a position accessible only to the officers on watch Yes, is an automatic indicator fitted Yes

Secondary Batteries, are they constructed and fitted as per Rule Yes, are they adequately ventilated Yes state battery capacity in ampere hours 24 V 200 AH x 1 24 V 120 AH x 2 8 V 80 AH x 2 150 V 2 AH x 2

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

Are any fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present No if so, how are they protected

and where are the controlling switches fitted Searchlight Lamps, No. of ---, whether fixed or portable ---, are they of the carbon arc or of the filament type ---

Heating and Cooking, is the general construction as per Rule Yes, are the frames effectually earthed Yes, are heaters in the accommodation of the convection type Yes

Motors, are all motors constructed and installed as per Rule and placed in well-ventilated compartments in which inflammable gases cannot accumulate and protected from damage from water, steam and oil Yes

Are motors coupled to oil fuel transfer and pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment Yes Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing

Have certificates of test for motors under 100 BHP intended for essential sea services been supplied and the results found as per Rule Yes

Control Gear and Resistances, and they constructed and fitted as per Rule Yes Lightning Conductors, where required are they fitted as per Rule ---

Ships carrying Oil having a Flash Point less than 150° F. Have all the special requirements of the Rules for such ships been complied with ---, are all fuses of an Approved Cartridge Type ---, make of fuse ---

Are the fittings for pump rooms, tween deck spaces, etc., in accordance with the special requirements for such ships --- Are the cables lead covered as per Rule ---

E. S. D., if fitted state maker Nihon Denki location of transmitter P. Fr 138-139 and receiver S. Fr 138-139

Spare Gear, if the vessel is for open sea service have spares been provided as per Rule and suitably stored in dry situations Yes

Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory Yes

PARTICULARS OF GENERATING PLANT.

| DESCRIPTION OF GENERATOR. | No. of | MAKER. | K.V.A. RATED AT | | | | PRIME MOVER. | |
|------------------------------|--------|---------------------------------|-----------------------|----------|----------|----------------|---------------|---|
| | | | K.V.A. per Generator. | Volts. | Amperes. | Revs. per Min. | TYPE. | MAKER. |
| MAIN | 2 | Meidensha Elect. MFG. CO., LTD. | 210 | A.C. 450 | 270 | 450 | Diesel engine | Mitsui Shipbuilding & Engineering Co. Ltd., Yamano Works. |
| AUX. | 1 | Meidensha Elect. MFG. CO., LTD. | 50 | A.C. 450 | 64.2 | 600 | Diesel engine | Daihatsu Kogyo K.K. Osaka |
| EMERGENCY ROTARY TRANSFORMER | | | | | | | | |

GENERATOR CABLES.

| DESCRIPTION. | K.V.A. | CONDUCTORS. | | MAXIMUM CURRENT IN AMPERES. | | APPROX. LENGTH (lead plus return feet). | INSULATION. | PROTECTIVE COVERING. |
|-----------------------|--------------|---------------------------|--|-----------------------------|-------|---|-------------|----------------------|
| | | No. in Parallel per Pole. | Sectional Area or No. and Dia. of Strands. Sq. ins. or mm. sq. | In the Circuit. | Rule. | | | |
| MAIN GENERATOR | A.C. 210 | 1 | 0.4 | 270 | 349 | 52 | V.C. | H.R. |
| Exciter | D.C. 5 KW | 1 | 0.0225 | 45.5 | 53 | 100 | " | L.A.S. |
| EQUALISER | D.C. 0.55 KW | 1 | 0.003 | 5.5 | 7 | 50 | V.R. | H.R. |
| Exciter field circuit | | | | | | | | |
| Auxiliary GENERATOR | A.C. 50 KVA | 1 | 0.06 | 64.2 | 91 | 69 | V.C. | L.A.S. |
| Exciter | D.C. 2 KW | 1 | 0.007 | 18.2 | 27 | 125 | " | " |
| Exciter field circuit | 0.15 KW | 1 | 0.003 | 1.5 | 7 | 66 | V.R. | H.R.S. |

MAIN DISTRIBUTION CABLES (to Section Boards, Distribution Fuse Boards, etc.).

| DESCRIPTION. | | | | | | | | |
|---|---|--------|------|-----|----|------|--------|--|
| Power distribution Box P-A | 1 | 0.1 | 89.8 | 128 | 85 | V.C. | L.A.S. | |
| " P-B | 1 | 0.01 | 25.8 | 29 | 43 | " | " | |
| " P-C | 1 | " | 25.2 | 29 | 85 | " | " | |
| " P-D | 1 | 0.0145 | 27.5 | 38 | 75 | " | " | |
| " P-E | 1 | 0.007 | 12.6 | 19 | 49 | " | " | |
| " P-F | 1 | 0.0145 | 29.6 | 38 | 33 | " | " | |
| " P-G | 1 | 0.003 | 8.4 | 11 | 82 | V.R. | H.R.S. | |
| Shore connection Box (Transformer 1 Ry) | 1 | 0.0225 | 39.4 | 51 | 88 | V.C. | L.A.S. | |
| " (" 2 Ry) | 1 | 0.06 | 79 | 91 | 23 | " | " | |
| Lifting Crane | 1 | 0.007 | 14 | 19 | 85 | " | " | |

Remarks 1 - V.C.: Varnished Cambric 2 - V.R.: Vulcanized Rubber sheathed 3 - H.R.: Polychloroprene sheathed 4 - S: Steel wire braided 5 - L: Lead 6 - A: Alloy

LIGHTING, HEATING, WIRELESS, NAVIGATION LIGHTS, ETC., CABLES.

| DESCRIPTION. | CONDUCTORS. | | MAXIMUM CURRENT IN AMPERES. | | APPROX. LENGTH (lead plus return feet). | INSULATION. | PROTECTIVE COVERING. |
|------------------------------------|---------------------------|--|-----------------------------|-------|---|-------------|----------------------|
| | No. in Parallel per Pole. | Sectional Area or No. and Dia. of Strands. Sq. ins. or mm. sq. | In the Circuit. | Rule. | | | |
| Lighting Distribution Box L-A | 1 | 0.0045 | 5.44 | 15 | 131 | V.R. | H.R.S. |
| " L-B | 1 | 0.007 | 14.65 | 21 | 112 | V.C. | L.A.S. |
| " L-C | 1 | 0.01 | 25.3 | 32 | 98 | " | " |
| " L-D | 1 | 0.01 | 24.7 | 32 | 85 | " | " |
| " L-E | 1 | 0.0045 | 3.76 | 15 | 280 | V.R. | H.R.S. |
| " L-F | 1 | 0.0045 | 3.77 | 15 | 230 | " | " |
| " L-G | 1 | 0.04 | 52.2 | 70 | 39.5 | V.C. | L.A.S. |
| " L-H | 1 | 0.0145 | 17.3 | 42 | 204 | " | " |
| " L-I | 1 | 0.0145 | 17.3 | 42 | 161 | " | " |
| " L-J | 1 | 0.01 | 23.7 | 32 | 102 | " | " |
| Projector for Suez Canal | 1 | 0.0145 | 18.2 | 37 | 230 | V.R. | H.R.S. |
| Lighting Section Box S-A | 1 | 0.007 | 15.3 | 21 | 79 | V.C. | L.A.S. |
| " S-B | 1 | 0.04 | 69.7 | 77 | 77 | " | " |
| Power Distribution Box P-H | 1 | 0.007 | 12 | 19 | 40 | " | " |
| " P-I | 1 | 0.007 | 13.2 | 19 | 115 | " | " |
| " P-J | 1 | 0.0045 | 4 | 15 | 79 | V.R. | H.R.S. |
| " P-K | 1 | 0.0225 | 42.9 | 51 | 108 | V.C. | L.A.S. |
| " P-L | 1 | 0.0045 | 7 | 15 | 82 | V.R. | H.R.S. |
| Switch Board for Radio Apparatus | 1 | 0.007 | 13 | 19 | 92 | V.C. | L.A.S. |
| Communication Distribution Box C-A | 1 | 0.01 | 24.3 | 32 | 92 | " | " |
| " C-C | 1 | 0.0045 | 6 | 15 | 88 | V.R. | H.R.S. |
| " Fuse Box C-D | 1 | 0.0045 | 6.2 | 11 | 45 | " | " |
| Navigation Light Indicator | 1 | 0.0045 | 1.82 | 15 | 122 | " | " |

MOTOR CABLES.

| ALL IMPORTANT MOTORS TO BE ENUMERATED. | | No. | B.H.P. | CONDUCTORS. | | MAXIMUM CURRENT IN AMPERES. | | APPROX. LENGTH (lead plus return feet). | INSULATION. | PROTECTIVE COVERING. |
|--|---|------|--------|---------------------------|--|-----------------------------|-------|---|-------------|----------------------|
| | | | | No. in Parallel per Pole. | Sectional Area or No. and Dia. of Strands. Sq. ins. or mm. sq. | In the Circuit. | Rule. | | | |
| Steering Engine Gear | 2 | 17 | 1 | 0.01 | 26 | 32 | 350 | V.C. | L.A.S. | |
| Piston Cooling & L.O. Pump | 2 | 75 | 1 | 0.1 | 97.5 | 120 | 118 | " | " | |
| Main Cooling Pump | 3 | 30 | 1 | 0.0225 | 36.5 | 51 | 95 | " | " | |
| Ballast Pump | 1 | 40 | 1 | 0.04 | 47 | 70 | 36 | " | " | |
| G. S. Pump | 1 | 35 | 1 | 0.03 | 42.8 | 58 | 56 | " | " | |
| Machine Tool | 1 | 5 | 1 | 0.0045 | 6.5 | 11 | 66 | V.R. | H.R.S. | |
| F.O. Shift Pump | 1 | 5 | 1 | 0.0045 | 6.9 | 11 | 7 | " | " | |
| F.O. Colloidal Filter | 1 | 1 | 1 | 0.003 | 1.5 | 7 | 36 | " | " | |
| F.O. Service Pump | 1 | 3 | 1 | " | 4.2 | 7 | 26 | " | " | |
| L.O. Service Pump | 1 | 2 | 1 | " | 3.1 | 7 | 59 | " | " | |
| L.O. Transfer Pump | 1 | 2.5 | 1 | " | 3.6 | 7 | 56 | " | " | |
| Aux. Cooling Pump | 2 | 5 | 1 | 0.0045 | 6.5 | 11 | 28 | " | " | |
| Fuel Valve Cooling Pump | 1 | 1.5 | 1 | 0.003 | 2.3 | 7 | 56 | " | " | |
| Eng. Room Vent. Fan | 1 | 5 | 1 | 0.0045 | 6.5 | 11 | 139 | " | " | |
| F. W. Pump | 1 | 4 | 1 | " | 5.2 | 7 | 110 | " | " | |
| Sanitary Pump | 1 | 2.5 | 1 | 0.003 | 3.4 | 7 | 77 | " | " | |
| F.O. Transfer Pump | 1 | 15 | 1 | 0.01 | 21 | 29 | 26 | V.C. | L.A.S. | |
| Boil. W. Circu. Pump | 1 | 3 | 1 | 0.003 | 4.2 | 7 | 35 | V.R. | H.R.S. | |
| Forced Draft Fan | 1 | 15 | 1 | 0.01 | 14.5 | 29 | 43 | V.C. | L.A.S. | |
| Lifting Crane (Hoisting) | 1 | 7.5 | 1 | 0.0145 | 10.8 | 27 | 20 | V.R. | " | |
| " (Travelling) | 1 | 2 | 1 | 0.003 | 3.2 | 7 | 20 | " | " | |
| Engine Turning | 1 | 10.5 | 1 | 0.01 | 16.3 | 29 | 79 | V.C. | " | |
| Eme. Blower (for main engine) | 1 | 70 | 1 | 0.1 | 90 | 128 | 75 | " | " | |
| Ref. Compressor | 1 | 7.5 | 1 | 0.007 | 9.8 | 19 | 23 | " | " | |
| Ref. Cooling Pump | 1 | 1.5 | 1 | 0.003 | 2.15 | 7 | 118 | V.R. | H.R.S. | |
| Thermo Tank Vent. Fan | 1 | 5 | 1 | 0.0045 | 6.6 | 11 | 59 | " | " | |
| Cooking Fan | 1 | 1 | 1 | 0.003 | 1.5 | 10 | 66 | " | " | |
| Bean-Curd Machine | 1 | 0.5 | 1 | " | 0.83 | 7 | 75 | " | " | |
| Store Vent. Fan | 2 | 0.5 | 1 | " | 2.15 | 7 | 115 | " | " | |
| Cargo Vent. Fan | 1 | 1.5 | 1 | " | 4 | 7 | 130 | " | " | |
| " | 1 | 3 | 1 | " | 4 | 7 | 130 | " | " | |
| Aux. Air Compressor | 1 | 5 | 1 | 0.0045 | 7.6 | 11 | 21 | " | " | |
| F.O. Burning Pump | 1 | 3 | 1 | 0.003 | 4.2 | 7 | 35 | " | " | |

The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.

All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.

The foregoing is a correct description.

Id. Mizokami Electrical Contractors. Date

COMPASSES.

Have the compasses been adjusted under working conditions Yes

M. M. G. Raja Builder's Signature. Date

Have the foregoing descriptions and schedules been verified and found correct Yes

Is this installation a duplicate of a previous case No If so, state name of vessel

Plans. Are approved plans forwarded herewith No If not, state date of approval 20th October 1953

Certificates. Are certificates of test for motors engaged on essential sea services and generators forwarded herewith Yes

General Remarks. (State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.)

The Electrical Installation of this vessel has been constructed under Special Survey in accordance with the Rules, Approved plans and Secretary's letters.

The materials and workmanship were found sound and good.

The Generators and Motors etc., have been examined under full load working condition to Rule's requirement and found satisfactory.

MADE AND PRINTED AT KOBÉ.
(The Surveyors are requested not to write on or below the space for Committee's Minute.)

Total Capacity of Generators 470 K.V.A. ✓ Kilowatts.

The amount of Fee ... £ 225,000 When applied for, JUL. 26. 1954 19

Travelling Expenses (if any) See Rpt. 1: When received, 19

Committee's Minute TUESDAY 14 SEP 1954

Assigned See Rpt. 4b.

S. B. Johnson K. Kajima
Surveyor to Lloyd's Register of Shipping.



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