

Rpt. 17.

No. FE-3856

Report on Refrigerating Machinery and Appliances.

Date of writing Report 19 When handed in at Local Office AUG 29, 1956 19 Port of KOBE

Received at London Office 10 SEP 1956

No. in Beg. Book. Survey held at Tamano, Japan Date: First Survey 21st Oct., 1955 Last Survey 7th June, 1956

(Number of Visits 12)

on the Refrigerating Machinery and Appliances of the M.V. "MIKAGESAN MARU" Tons Gross 7200.05
Net 4019.43
 Vessel built at Tamano, Japan By whom built Mitsui S.B. & Eng. Co., Ltd. Yard No. 609 When built 1956-6
 Owners Mitsui Steamship Co., Ltd. Port belonging to Tokyo Voyage Ocean going
 Refrigerating Machinery made by The Sabroe Co., of Japan Ltd. & Mitsui S.B. & Eng. Co. Ltd. Machine Nos. 20034-20037 When made 1956-6
 Insulation fitted by Mitsui S.B. & E. Co. Ltd. When fitted June, 1956 System of Refrigeration Freon 12 direct expansion
 Method of cooling Cargo Chambers Forced air circulating pass through plain pipe air cooler Insulating Material used Slab cork
 Number of Cargo Chambers insulated 5 Total refrigerated cargo capacity 14,349 (Net) cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Flat on Port side 2nd deck of engine room.

Refrigerating Units, No. of 5 No. of machines 6 { 4 x F200 } { 2 x RL20 } Is each machine independent Yes

Total refrigeration or ice-melting capacity in tons per 24 hours 4x5.23 Are all the units connected to all the refrigerated chambers Yes
 Compressors RL20 driven direct or through single V-belt Compressors, single or double acting single If multiple effect compression No

Are relief valves or safety discs fitted Yes No. of cylinders to each unit RL 20-1 Diameter of cylinder RL20-100mm
 connecting F200-32mm Length of stroke F200-100mm No. of revolutions per minute RL20-1210-840

Motive Power supplied from 3 Electric generators (State number of boilers, oil engines or electric generators supplying the motive power.)

Steam Engines, high pressure, compound, or triple expansion, surface condensing. No. of cylinders - Diameter -
 Length of stroke - Working pressure - Diameter of crank shaft journals and pins -
 Breadth and thickness of crank webs - No. of sections in crank shaft - Revolutions of engines per minute -

Oil Engines, type - 2 or 4 stroke cycle - Single or double acting - B.H.P. -
 No. of cylinders - Diameter - Length of stroke - Span of bearings as per Rule -
 Maximum pressure in cylinders - Diameter of crank shaft journals and pins -
 Breadth and thickness of crank webs - No. of sections in crank shaft - Revolutions of engine per minute -

Air Receivers: Have they been made under survey - State No. of Report or Certificate -
 Is each receiver, which can be isolated, fitted with a safety valve as per Rule -
 Can the internal surfaces of the receivers be examined and cleaned - Is a drain fitted at the lowest part of each receiver -

No. of Receivers - Cubic capacity of each - Internal diameter - thickness -
 Seamless, lap welded or riveted longitudinal joint - Material - Range of tensile strength - Working pressure by Rules -

Electric Motors, type Drip proof self ventilation No. of 6 Rated 11-7.65 Kilowatts 220 Volts
1800-1250, 1210-840 revolutions per minute. Diameter of motor shafts at bearings 60, 50mm

Reduction Gearing - Pitch circle diameter, pinion - Main wheel - Width of face -
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, pinion - Main wheel -
 Pinion shafts, diameter at bearings - Main wheel shaft, diameter at bearings -

Gas Condensers, No. of 6 Cast iron or steel casings Steel Cylindrical or rectangular Cylindrical Are safety valves fitted No
 to casings Yes No. of coils in each 96.66 Material of coils copper Can each coil be readily shut off or disconnected No

Water Circulating Pumps, No. and size of pumps available 2x26M3/hx16M how worked Direct coupled with 4HP motor Gas Separators, No. of 6

Gas Evaporators, No. of - Cast iron or steel casings - Pressure or gravity type - If pressure type, are safety valves fitted -
 No. of coils in each casing - Material of coils - Can each coil be readily shut off or disconnected -

Direct Expansion or Direct Expansion Batteries, No. of 5 Are there two separate systems, so that one may be in use while the other is being cleared of snow No
 No. of coils in each battery 4, 3, 2 Material of coils Steel Can each coil be readily shut off or disconnected Yes
 Total cooling surface of battery coils 810, 609, 444 sq. ft. Is a watertight tray fitted under each battery Yes

Air Circulating Fans, Total No. of 5 each of 5300, 3530, 2475 cubic feet capacity, at 1800, 2000, 2500 revolutions per minute
 Steam or electrically driven Electrically Where spare fans are supplied are these fitted in position ready for coupling up Yes

Brine Circulating Pumps, No. and size of, including the additional pump - how worked -
 Brine Cooling System, closed or open - Are the pipes and tanks galvanised on the inside -
 No. of brine sections in each chamber -

Can each section be readily shut off or disconnected - Are the control valves situated in an easily accessible position -

NOTE.—THE WORDS WHICH DO NOT APPLY SHOULD BE DELETED.



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Are thermometers fitted to the outflow and to each return brine pipe - Where the tanks are closed are they ventilated as per Rule. -
Where the tanks are not closed is the compartment in which they are situated efficiently ventilated. -
Are the number and capacity of the machines and the number of pumps and sea connections in accordance with Section 2, Clause 1 of the Rules.
Yes
Is the exhaust steam led to the main and auxiliary condensers. -

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
Engine Cylinders (if tested)	26-28-1-56	-	-	-	-	-
Gas Compressors	16-4-56	10kg/cm ²	350 lbs.	200 lbs.	RS LR	MS LR
Separators	6-3-56	"	"	"	MS LR	RS LR
Multiple Effect Receivers	13-2-56	"	"	"	RS LR	-
Condenser Coils	6-3-56	10 kg/cm ²	350 lbs.	200 lbs.	MS LR	-
Cooling batters	26-3-56	"	"	"	MH LR	-
Evaporator Coils	26-3-56	"	"	"	MS LR	-
Condenser Headers and Connections	6-3-56	"	"	"	MS LR	-
Condenser Casings	-	-	-	-	-	-
Evaporator Casings	-	-	-	-	-	-
NH ₃ Condenser, Evaporator and Air Cooler Coils after erection in place	-	-	-	-	-	-
Brine Piping after erection in place	28-5-56	10 kg/cm ²	-	10 kg/cm ²	RS LR	Gas test

Have important steel castings and forgings been tested in accordance with the Rules. Yes

Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory. Yes

Dates of test. 2, 3 June, 1956 Density of Brine. - by - hydrometer

Temperatures (when the cargo chambers are cooled down to the required test temperatures) of delivery and return air at direct expansion or brine cooled batteries S(1) - 24°C S(2) - 19.5°C P(1) - 21.8°C P(2) - 22.8°C P(3) - 22.6°C
S(1) - 23°C S(2) - 18.0°C P(1) - 20.5°C P(2) - 22.0°C P(3) - 22.0°C outflow and return brine. - &
atmosphere. 23°C cooling water inlet and discharge. 17°C & 18°C gas in condensers. 22°C and evaporators. -30°C
the average temperature of the refrigerated chambers. -20.5°C and the rise of temperature in these chambers upon the expiration of 12 hours
time after the machinery and cooling appliances have been shut off. S(1) 11°C S(2) 10.2°C, P(1) 12.6°C P(2) 11°C, P(3) 10.6°C

SPARE GEAR.

Are the working parts of the machines, pumps and motors respectively, interchangeable. Yes

Has the spare gear required by the Rules been supplied. Yes

Additional Spare Gear Supplied:-

Compressor

F200 type

1 set - piston

1 set - piston rod

2 sets - suction & delivery valve

1 set - shaft seal

RL-20 type

1 set - piston sleeve

3 sets - Delivery valves

1 set - shaft seal

1 set - gas regulating valve

1 set - driving belt.

THE MITSUBISHI SHIPBUILDING & ENGINEERING CO., LTD., YAMATO WORKS.

The foregoing is a correct description of the Refrigerating Machinery.

Senior Managing Director

THE SHIPBUILDING COMPANY OF JAPAN, LTD.

MANAGING DIRECTOR

Manufacturer.

DESCRIPTION OF INSULATION.

IN LOWER HOLD CHAMBERS.						IN 'TWEEN DECK CHAMBERS.				
	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.
Frame No. 130 (A)						35mm	1-16mm Softwood	Cork Board	175mm	16+25mm Glass Wool
Frame No. 122 (P. side only)						-	25+16mm Softwood	Cork Board	150mm	25+16mm Softwood
Frame No. 120 (P. side only)						35mm	1-16mm Softwood	Cork Board	150mm	"
Frame No. 111						-	25+16mm Softwood	Cork Board	150mm	"
Frame No. 109						35mm	1-16mm Softwood	Cork Board	150mm	"
Between Frame No. 97 & 96						-	25+16mm Softwood	Cork Board	150mm	"
Frame No. 94						35mm	1-16mm Softwood	Cork Board	100mm	"
Frame No. (Side (Shell side only))						35mm	"	Cork Board	100mm	
Frame No. (Cooler Room (Overhead))						85mm	"	"	100mm	
Frame No. (Floor (Shell side only))						30mm	"	"	150mm	
Frame No.										
Frame No. (After Peak)						35mm	"	Glass Wool	50mm	
Sides						35mm	"	Cork Board	175mm	
Overheading						35mm	"	Cork Board	225mm	
Floors of Chambers						30mm	"	"	225mm	
Trunk Hatchways										
Thrust Recess, Sides and Top										
Tunnel Sides and Top										
Tunnel Recess, Front and Top										

Frames or Reverse Frames, Face. 180 x 9.5 B.P.

Bulkhead Stiffeners, Top. 100 x 9 F.B. Bottom. - and Face. -

Ribband on Top of Decks. -

Side Stringers, Top. - Bottom. - and Face. -

Web Frames, Sides. 400 x 10 and Face. 150 x 12

Brackets, Top. 415 x 345 Bottom. - and Face. -

Insulated Hatches, Main. - Bilge. - Manhole. -

Hatchway Coamings, Main. - Bilge. -

Hold Pillars. -

Masts. - Ventilators. 700 ϕ Derrick post ventilator

Are insulated plugs fitted to provide easy access to bilge suction roses. No tank, air, and sounding pipes. No heels of pillars. No

and manhole doors of tanks. No Are insulated plugs fitted to ventilators. Yes cargo ports. No and side lights. No

Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected. No if so, how. -

Oil Storage Tanks, where adjacent to the insulated chambers, state what provision has been made for ventilating the air space between the insulation and the bulkhead plating. -

and for draining the tank top. -

Fireproof Insulation. Is the insulation and woodwork fireproof in way of bunkers or any surfaces exposed to excessive heat. No Where

Cooling Pipes pass through watertight bulkheads or deck plating, are the fittings and packing of the stuffing boxes both watertight and fireproof. -

Cargo Battens, Dimensions and spacing, sides 75x25 150 floors 75x25 100 tunnel top. -

Side - Fixed Are screens fitted over the brine grids at chamber sides. - hinged or permanently fixed. -

Thermometer Tubes, No. and position in each chamber. One at centre of chamber

diameter. 50mm are they fitted in accordance with Section 3, Clause 8. Yes

Protection of Pipes. Are all pipes, including air and sounding pipes, which pass through or into insulated chambers, well insulated. Yes

Draining Arrangements. What provision is made for draining the inside of the chambers. 50mm scupper pipe with water sealed trap fitted.

Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off. -

What provision is made for draining the refrigerating machinery room. 2-50mm scuppers

brine return room. fan room. water circulating pump room.

Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers. Yes, to bilge.

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Sounding Pipes, No. and position in each chamber situated below the load water line

Diameter - Are all sounding pipes in way of insulated chambers fitted in accordance with Section 3, Clause 11

Are all wood linings tongued and grooved Yes Are cement facings reinforced with expanded steel lattice

How is the expanded metal secured in place

How are the cork slabs secured to the steel structure of the vessel Nailed to wood linings which are secured to Steel Structure

Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the approved plans Yes

Are they permanently fixed or collapsible, or portable Permanently fixed

Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors No Are the door frames efficiently insulated Yes

Are insulated plugs supplied for the doorways No Where are the doors worked from Outside

Cooling Pipes in Chambers, diameter 34mm Minimum thickness 3.2mm Are they galvanised externally Yes

How are they arranged in the chambers F-12 direct expansion plain pipe air coolers are installed inside the insulated envelope in each cooler room which is divided by insulated wall from its chamber

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers F-12 hot gas and hot sea water

The foregoing is a correct description of the Insulation and Appliances.

MITSUBI SHIPBUILDING & ENGINEERING CO., LTD., TAMANO WORKS.

T. Watanabe for S. Tanaka
Senior Managing Director, Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery 6-1-56 and Insulation 4-20-1956
(If not, state date of approval)

Is the Refrigerating Machinery and Appliances duplicate of a previous case Yes If so, state name of vessel M.V. "MOGAMISAN MARU"

If the survey is not complete, state what arrangements have been made for its completion and what remains to be done Complete.

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

The Refrigerated Cargo Installations of this vessel have been constructed under Special Survey in accordance with the Rules approved plans and Secretary's letters.

The Materials and workmanship are sound and good.

The Refrigerated Cargo Installations have been examined under full working condition and found satisfactory.

In our opinion, the Refrigerated Cargo Installations of this vessel are worthy to have a record of +LLOYD'S RMC 6,56.

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	Ice melting capacity per 24 hours. Tons.	Is Refrigerating Machinery Electrically Driven?	INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				No.	Capacity. Cubic ft.
5	6	F-12	The Sabroe Co., of Japan. Mitsui S.B. & E. Co., Ltd.		(1) F-12 direct expansion (2) Slab cork	4x5.23 2x2.8	Yes	5	14,949

Fee £126.688 (Fee applied for, AUG. 21, 1956)

Travelling Expenses £5000 (Received by me, 19)

R.D. Sutherland J. Honokura
Surveyor to Lloyd's Register.

Committee's Minute

Assigned

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