

Report on Refrigerating Machinery and Appliances.

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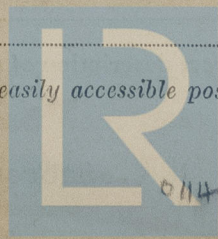
Date of writing Report 19 When handed in at Local Office OCT. 27, 1955 19 Port of KobeNo. in Reg. Book. Survey held at Tamano, Japan Date: First Survey 21-1-1955 Last Survey 23-7- 19 55.3267(Number of Visits 21)on the Refrigerating Machinery and Appliances of the M.V. "HODAKASAN MARU" Tons Gross 7218.16 Net 4028.36Vessel built at Tamano, Japan By whom built Mitsui S.B. & Eng., Co., Ltd. Yard No. 593 When built July, 1955.Owners Mitsui Sempaku K.K. Port belonging to Tokyo Voyage Ocean going.Refrigerating Machinery made by RL20-Mitui S.B. & E.Co.Ld. Machine No. (RL20) 6, 7 When made July, 1955.Insulation fitted by Mitsui S.B. & E.Co.Ltd. When fitted July, 1955 System of Refrigeration Freon 12 direct expansion.Method of cooling Cargo Chambers forced air circulation pass through plain pipe air cooler Insulating Material used Slab CorkNumber of Cargo Chambers insulated 5 Total refrigerated cargo capacity 14800 (net) cubic feet

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

Refrigerating Units, No. of 5 No. of machines 6 (4 x F-200) (2 x RL-20) Is each machine independent YesTotal refrigeration or ice-melting capacity in tons per 24 hours 4 x 5.23 2 x 2.8 Are all the units connected to all the refrigerated chambers YesCompressors RL20 compressor & F200 compressor driven direct through xxx rotary compressing. Compressors, single or double acting F-200 single If multiple effect compression NoAre relief valves or safety discs fitted Yes No. of cylinders to each unit RL20=1 Diameter of cylinders RL20=100mmDiameter of connecting rod F200=32mm Length of stroke RL20=Rotary type No. of revolutions per minute RL20=1210-840Motive 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 Rate 11-7.65 5.88-4.05 Kilowatts 220 Volts 60.50mmat 1800-1200, 1210-840 revolutions per minute. Diameter of motor shafts at bearings 60.50mmReduction 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 -to casings Yes No. of xxx in each 96, 66 Material of coils Copper Can each xxx be readily shut off or disconnected NoWater Circulating Pumps, No. and size of pumps available 2x26M3/hx 16m how worked with 4HP motor Gas Separators, No. of 6Gas 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 xxx Batteries, No. of 5 Are there two separate systems, so that one may be in use while the other is being cleared of snow NoNo. of coils in each battery 4, 3, 2 Material of coils Steel Can each coil be readily shut off or disconnected YesTotal cooling surface of battery coils 810,609,444 sq.ft. Is a watertight tray fitted under each battery YesAir Circulating Fans, Total No. of 5 each of 6000, 2470, 3530 cubic feet capacity, at 1800, 2500, 2000 revolutions per minuteSteam or electrically driven Electrically Where spare fans are supplied are these fitted in position ready for coupling up YesBrine 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)	30-4-55	9 kg/cm ²	350 & 200 lbs.	200 & 150 lbs.	HI LR	
Gas Compressors	21-5-55	"	24.5 & 14 kg/cm ²	14 kg/cm ²	JN, DC LR	
Separators	12, 25, 28-3-55	"	24.5 kg/cm ²	14 kg/cm ²	SM, JN, DC LR	
Multiple Effect Receivers	13-5-55	"	"	"	"	
Condenser Coils	12-3-55	"	"	"	"	
Cooling batteries	29-3-55	9 kg/cm ²	350 lbs.	200 lbs.	SM LR	
Evaporator Coils	16-5-55	"	"	"	YK LR	
Condenser Headers and Connections	12-3-55	"	"	"	"	
Condenser Casings	29-3-55	9 kg/cm ²	350 lbs.	200 lbs.	SM LR	
Evaporator Casings	12-3-55	1.5 kg/cm ²	4 kg/cm ²	"	SM LR	
NH ₃ Condenser, Evaporator and Air Cooler Coils after erection in place	29-3-55	"	"	"	"	
Brine Piping after erection in place	"	"	"	"	"	

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 July 22, 23 & 24 July, 1955 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 of the cargo chambers...
 batteries No. 1-18.5°C No. 2-18.0 No. 3-20.0 No. 4-18.0 No. 5-21.0
 atmosphere 28°C cooling water inlet and discharge 24.3°C, 26°C gas in condensers 130°C and evaporators -30°C
 the average temperature of the refrigerated chambers -18°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 Average 12°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
 F 200 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 regulator valve
 1 set - driving belt

The foregoing is a correct description of the Refrigerating Machinery.

Sabroe & Co., of Japan Ltd.,
OSAKA.

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

S. Tanaka
Senior 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 Soft wood	225mm cork board	16+25mm	Soft wood
P. side only							2-layer paper			2 layer paper
Frame No. 122 (M)							25+16mm Soft wood	150mm cork board	25+16mm	Soft wood
							2-layer paper			2 layer papers
Frame No. 130 (F)						35mm	1-16mm Soft wood	150mm cork board	150mm	"
P. side only (A)							2-layer papers			"
Frame No. 111 (F)							25+16mm Soft wood	150mm cork board	150mm	"
(A)							2-layer papers			"
Frame No. 109 (Boiler Room) (A)						35mm	1-16mm Soft wood	"	"	"
Frame No. (Engine Room) (A)							2-layer papers			"
Frame No. (F)							25+16mm Soft wood	"	"	"
Between cooler RM (A)						35mm	1-16mm Soft wood	100mm	"	"
Frame No. 94 (F)							2-layer papers			"
(A)										"
Frame No. (F)						35mm	(Side (Shell side only) (glass wool & cork)	glass wool & cork	100mm	"
(A) Cooler RM (Overhead (Floor						85mm	"	cork board	"	"
Frame No. (After Peak) (F)						30mm	"	"	"	"
(A)						35mm	"	glass wool & cork 16+25mm	225mm Soft wood	2-layer papers
Sides						35mm	"	cork board	"	"
Overheading						30mm	"	"	"	"
Floors of Chambers										"
Trunk Hatchways							* (1-16mm Soft wood			
Thrust Recess, Sides and Top							(10mm Asphalt pitch			
Tunnel Sides and Top							(50mm Deck composition			
Tunnel Recess, Front and Top										

Frames or Reverse Frames, Face. 180 x 9.5 Bulb Plate
 Bulkhead Stiffeners, Top 100 x 9 Flat bar 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 700φ 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 No
 and for draining the tank top No
 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 75x50 space 300 floors 75x25 space 100 tunnel top -
 fixed or portable Side fixed Are screens fitted over the brine grids at chamber sides No hinged or permanently fixed -
 Thermometer Tubes, No. and position in each chamber One, at the centre of each ceiling
 diameter 50φ 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 50mmφ Scupper pipe with water sealed trap fixed
 Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off No
 What provision is made for draining the refrigerating machinery room 2-50φ Scupper provided cooler
 brine return room - fan room - Same as refig. chamber
 Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers to the 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.....
Are insulated plugs supplied for the doorways..... Where are the doors worked from.....

Cooling Pipes in cooler room diameter..... 3.4..... Minimum thickness..... 3.2..... 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 where 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..... The provision for defrosting by use of both F-12 hot gas and hot sea water are provided.

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

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

Sabroe & Co., of Japan Ltd., OSAKA.

Senior Managing Director.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery..... 3-5-55 and Insulation..... 3-5-55
(If not, state date of approval)

Is the Refrigerating Machinery and Appliances duplicate of a previous case..... Yes..... If so, state name of vessel..... "Hagurosan Maru"

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

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

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

Materials and the workmanship are sound and good.

The Refrigerating Installation has been examined under full working condition and found satisfactory.

In our opinion, the Refrigerating installation of this vessel is worthy to have a record of LLOYD'S RMC 7.55.

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	Ice melting capacity per 24 hours.	Is Refrigerating Machinery Electrically Driven?	INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				No.	Capacity.
56	6	F-12	The Sabroe Co. of Japan. Mitsui S.B. & E. Co.	July, 1955	(1) F-12 direct expansion. (2) Slab Cork 2 x 2.8	4 x 5.23	Yes	5	14,800

Fee..... \$130.913 Fee applied for, SEP. 12 1955

Travelling Expenses \$ See Rpt. Received by me, 19

FRIDAY 11 NOV 1955

Committee's Minute.....

Assigned.....

to maintain temp. 0°F with sea temp. 88°F maximum.