

Report on Refrigerating Machinery and Appliances.

9 DEC 1953

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 (Number of Visits 20)

on the Refrigerating Machinery and Appliances of the "HIYEHARU MARU" Tons { Gross 7846.32 Net 4435.94
 Mitsubishi Heavy Ind., Reorganized, Ltd., Kobe
 Vessel built at Kobe, Japan By whom built Shipyard & Engine Yard No. 855 When built 10, 1953.
 Owners Shin Nihon Kisen K.K. Port belonging to Nishinomiya, Japan Voyage
 Refrigerating Machinery made by The Sabroe Co., of Japan Machine Nos. When made 10, 1953.
 Insulation fitted by Mitsubishi, Kobe When fitted 10, 53 System of Refrigeration NH₃, Brine
 Method of cooling Cargo Chambers Brine Circulation Insulating Material used Glass wool, Stab Cork
 Number of Cargo Chambers insulated 4 Total refrigerated cargo capacity 7048.106 cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed 2nd deck, port side Fr. No. 94 to 114

Refrigerating Units, No. of 2 ✓ No. of machines 2 ✓ Is each machine independent Yes ✓
 Total refrigeration or ice-melting capacity in tons per 24 hours 33.5 Are all the units connected to all the refrigerated chambers ✓ Yes
 Compressors, driven ~~through~~ ^{single} belt ~~reduction gear~~ Compressors, single or double acting Single ~~If multiple effect compression~~
 Are relief valves ~~fitted~~ Yes No. of cylinders to each unit 3 ~~2LP 1HP~~ Diameter of cylinders 150 m/m
 Diameter of piston rod 45 m/m Length of stroke 125 m/m No. of revolutions per minute 500
 Motive Power supplied from 2 sets of enclosed self ventilated drip proof type ✓
 (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 semi enclosed self ventilation No. of 2 ✓ Rated Continuous Kilowatts 40 HP Volts
 at 220, 1,200 revolutions per minute. Diameter of motor shafts at bearings 65 mm.
 Motor pulley dia. Comp. pulley dia.

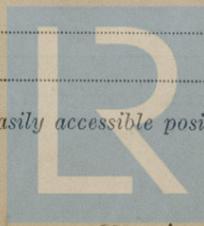
Reduction Gearing by V-belt Pitch circle diameter, pinion 340mm. Main wheel 784mm. Width of face 195 mm.
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, pinion... Main wheel...
 Pinion shafts, diameter at bearings... Main wheel shaft, diameter at bearings...

Gas Condensers, No. of 2 ✓ Cast iron or steel casings Steel Shell Cylindrical or rectangular Cylindrical Are safety valves fitted
 to casings Yes No. of tubes in each 68 Material of casings Steel tube Can each coil be readily shut off or disconnected Yes
 Water Circulating Pumps, No. and size of pumps available 2x24M³/H how worked 4 HP Motor Gas Separators, No. of 2
 Gas Evaporators, No. of 2 ✓ Cast iron or steel casings Steel shell Pressure driven pressure If pressure type, are safety
 valves fitted Yes No. of tubes in each casing 64 Material of casings Steel tube Can each coil be readily shut off or disconnected Yes

Direct Expansion or Brine Cooled Batteries, No. of... Are there two separate systems, so that one may be in use while the other is being
 cleared of snow... No. of coils in each battery... Material of coils... Can each coil be readily shut off or
 disconnected... Total cooling surface of battery coils... Is a watertight tray fitted under each battery...

Air Circulating Fans, Total No. of... each of... cubic feet capacity, at... revolutions per minute
 Steam or electrically driven... Where spare fans are supplied are these fitted in position ready for coupling up...
 Brine Circulating Pumps, No. and size of, including the additional pump 3 x 20 M³/H how worked 5 HP motor driven
 Brine Cooling System, closed or open Open Are the pipes and tanks galvanised on the inside No
 No. of brine sections in each chamber each chamber has 2 sections which are placed on side wall and
 under the ceiling.

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



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Are thermometers fitted to the outflow and to each return brine pipe Yes Where the tanks are closed are they ventilated as per Rule Yes
 Where the tanks are not closed is the compartment in which they are situated efficiently ventilated Yes
 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 No

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure. Lbs/sq.in.	Hydraulic Test Pressure. Lbs/sq.in.	Air Test Pressure. Lbs/sq.in.	Stamped.	REMARKS.
Engine Cylinders (if tested) No. 36006						
Gas Compressors 36007	20-6-53	200	600 ✓	✓300	SM	
1st St. No. OAT3610 & No. OAT3612						
2nd St. No. OAT3611 & No. OAT3612	13-7-53	200	500 ✓	250 ✓	JN	
Separators						
Multiple Effect Receivers						
Condenser Coils						
Evaporator Coils						
Condenser Headers and Connections No. CAT3610						
Condenser Casings 3611 No. BAT3606	13-7-53	200	500 ✓	250 ✓	JN	
Evaporator Casings 3607	11-7-53	10	500 ✓	250 ✓	MS	
NH ₃ Condenser, Evaporator and Air Cooler Coils after erection in place	17-10-53	200	-	200	YK	
Brine Piping after erection in place	12-10-53	25	50	-	YK	

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 20-10-53 to 21-10-53 Density of Brine 32.2 by Baume 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 - & -, outflow and return brine -21.1°F & -13°F, atmosphere 70.7°F, cooling water inlet and discharge 69.8°F & 70.5°F, gas in condensers 81°F, and evaporators -23°F, the average temperature of the refrigerated chambers -1.6°F 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 4.6°F 15.7°F

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:-
 For Compressor:-
 1 Crank shaft with 2 sets of main bearings, 3 sets of piston with suc. valves,
 3 sets of Connecting Rods, 3 sets of delivery valves, each 1 set of del. valve and suc. valve seats and spindles, 2 sets of shaft seal packings, 1 set of L.O. pump gear, 1 set of oil strainer, each 1 set of 1st and 2nd stage gas strainer, 1 complete set of safety valves, 1st of high pressure cut out switch, NH₃ pressure gauge and 2 sets of NH₃ expansion valves.
 For Sea Water Circulating Pump:-
 1 set of impeller with shaft, 2 sets of ball bearings, each 1 set of pressure and compound gauge.
 For Brine Pump:-
 1 set of impeller with shaft, 2 sets of ball bearings, each 1 set of pressure and compound gauge.

The foregoing is a correct description of the Refrigerating Machinery.

THE SABROE 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.
	mm	mm		mm		mm	mm		mm	mm
Frame No. (Fore Peak) A										
Frame No. 114 F						30	20 ✓	Glass wool	225 ✓	13 rabbet 20 ✓ & G
Frame No. 104 F							20 ✓	Glass wool	100 ✓	do
Frame No. 104 A							20 ✓	Glass wool	75 ✓	do
Frame No. 94 F						30	20 ✓	Glass wool	225 ✓	do
Frame No. (Boiler Room) F										
Frame No. (Engine Room) A										
Frame No. F										
Frame No. A										
Frame No. F										
Frame No. A										
Frame No. F										
Frame No. (After Peak) F						30 ✓	20 ✓	Glass wool	250 ✓	13 rabbet 20 ✓ & G
Sides ...						30 ✓	20 ✓	Glass wool	275 ✓	do
Overheading ...						30 ✓	20 ✓	Strab Cork	225 ✓	20 ✓ & G
Floors of Chambers ...						30 ✓	20 ✓	Glass wool	225 ✓	13 Rabbet 20 ✓ & G
Trunk Hatchways ...										
Thrust Recess, Sides and Top ...										
Tunnel Sides and Top ...										
Tunnel Recess, Front and Top ...										
Frames or Reverse Frames, Face						126.5(200x8 bulb plate with 90x90x10 L rev.), 36.5(200x8 bulb plate)				
Bulkhead Stiffeners, Top		10 mm.		Bottom	50				and Face	50
Ribband on Top of Decks										
Side Stringers, Top		200		Bottom					and Face	
Web Frames, Sides		200							and Face	126.5(200x8 bulb plate with 90x90x10 L.rev.)
Brackets, Top				Bottom					and Face	
Insulated Hatches, Main				Bilge						Manhole
Hatchway Coamings, Main				Bilge						
Hold Pillars										
Masts to be at side in No. 3 & No. 4 cargo chambers										
Are insulated plugs fitted to provide easy access to bilge suction roses						Yes				Yes tank, air, and sounding pipes. - heels of pillars. -
and manhole doors of tanks										- Are insulated plugs fitted to ventilators. - cargo ports. - and side lights. -
Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected										- 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										- Where
Cooling Pipes pass through watertight bulkheads or deck plating, are the fittings and packing of the stuffing boxes both watertight and fireproof										Yes
Cargo Battens, Dimensions and spacing, sides		50 x 75 x 125		floors	30 x 75 x 100					tunnel top
fixed or portable		Both								Yes
Are screens fitted over the brine grids at chamber sides						No				Yes
hinged or permanently fixed										
Thermometer Tubes, No. and position in each chamber						8, 1 forward and 1 aftward				in each chamber
diameter		52.9 mm								Yes
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						2" Syphon Type scupper to E.R.				
Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off										Yes
What provision is made for draining the refrigerating machinery room						2" Syphon type scupper to E.R.				
brine return room		ditto		fan room						water circulating pump room
Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutters of the respective chambers										Yes

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Sounding Pipes, No. and position in each chamber situated below the load water line..... Nothing

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

Are all wood linings tongued and grooved..... Yes..... Are ~~wood~~ facings reinforced with expanded steel lattice..... Yes, at floor

How is the expanded metal secured in place..... Nailed to T & G

How are the cork slabs secured to the steel structure of the vessel..... with asphalt and pressed with wood planking

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

Are they permanently fixed or collapsible, or portable..... -

Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors..... - Are the door frames efficiently insulated..... -

Are insulated plugs supplied for the doorways..... - Where are the doors worked from..... -

Cooling Pipes in Chambers, diameter..... 48.6 mm..... Minimum thickness..... 3.5 mm..... Are they galvanised externally..... Yes

How are they arranged in the chambers..... Arranged at ceiling and wall side in two sections and each section is arranged to be able to shut off at cooling room when necessary..... by steam.

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers..... Brine heated by steam.

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

H. Ashima
for S. Murakami

Builders.

Director & General Manager

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery..... Yes..... and Insulation..... Yes

Is the Refrigerating Machinery and Appliances duplicate of a previous case..... No..... If so, state name of vessel..... -

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 Refrigerating installation of this vessel has been constructed under Special Survey in accordance with the Rules, Approved Plans and Society's letters.

The materials and workmanship are sound and good.
The Refrigerating Installation has been examined under working condition and found satisfactory.

In our opinion, the Refrigerating Installation of this vessel is worthy to have a record of + RMC 10,53.

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.				Tons.	No.
2	6	Three cyl. NH3	Nippon Sabroe Co., Ltd.	1953 10 mo.	1) NH3 brine cooling 2) Glass wool and stab cork	33.5	Yes	4	7048.106

Fee Sabroe Co. £ 4,232 (Fee applied for, DEC 10, 1953)
Kobe S.Y. 46,837
Travelling Expenses £ 1,800
Sabroe
FRIDAY 19 FEB 1954

Russell G. Sajima
Surveyor to Lloyd's Register.

Committee's Minute.....

Assigned.....

+ Lloyd's RMC 10.53
To maintain with sea temp
Temp of 10°F
90°F max.

Certificate to be sent to

24-2.54

