

Report on Refrigerating Machinery and Appliances.

9 DEC 1953

Received at London Office 18 DEC 1953

Date of writing Report 19 When handed in at Local Office 19 Port of Kobe
 No. in Reg. Book. Survey held at Kobe Date: First Survey 20th June Last Survey 21st October 1953.
 (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, Strab 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 ~~XXXXXX~~ through ~~single~~ belt reduction ~~XXXXXX~~ Compressors, single or double acting Single ~~XXXXXX~~ If multiple effect compression -
 Are relief valves ~~XXXXXX~~ fitted Yes No. of cylinders to each unit 3 ✓ 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 2x24 M³/H how worked 4 HP Motor Gas Separators, No. of 2
 Gas Evaporators, No. of 2 ✓ Cast iron or steel casings Steel shell Pressure or gravity type 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

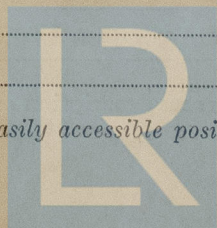
Direct Expansion or Brine Cooled Batteries, No. of Are there two separate systems, so that one may be in use while the other is being
 cleared of snow No. of coils in each battery Material of coils Can each coil be readily shut off or
 disconnected Total cooling surface of battery coils Is a watertight 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...
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	13-7-53	200	500 ✓	250	JN	
No. BAT3606						
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 T & G
Frame No. 104	F						20 ✓	Glass wool	✓ 100	do
	A						20 ✓	Glass wool	✓ 75	do
Frame No. 94	F					30	20 ✓	Glass wool	225	do
	A									
Frame No. (Boiler Room)	F									
	A									
Frame No. (Engine Room)	F									
	A									
Frame No.	F									
	A									
Frame No.	F									
	A									
Frame No. (After Peak)	F					30 ✓	20 ✓	Glass wool	✓ 250	13 rabbet 20 T & G
Sides						30 ✓	20 ✓	Glass wool	✓ 275	do
Overheading						30 ✓	20 ✓	Strab Cork	✓ 225	20 T & G
Floors of Chambers						30 ✓	20 ✓	Glass wool	✓ 225	13 Rabbet 20 T & 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 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 Are screens fitted over the brine grids at chamber sides No hinged or permanently fixed... Yes

Thermometer Tubes, No. and position in each chamber... 8, 1 forward and 1 aftward in each chamber

diameter 52.9 m/m 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

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.....
Are all wood linings tongued and grooved..... Yes..... Are ~~cement~~ 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. Ashura

for S. Murakami
Director & General Manager

Builders.

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. Tons.	Is Refrigerating Machinery Electrically Driven?	INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				No.	Capacity. Cubic ft.
2	6	Three cyl. Single acting compound (NH ₃ Brine)	Nippon Sabroe Co., Ltd.	1953 10 mo.	1) NH ₃ brine cooling 2) Glass wool and stab cork	33.5	Yes	4	7048.106

Fee Sabroe Co. £4,232
Cable S.Y. 46.837
Travelling Expenses £1,800
Sakura

Fee applied for, DEC 10, 1953
Received by me, 19

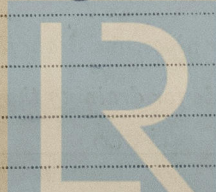
FRIDAY 19 FEB 1954

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



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CERTIFICATE WRITTEN