

Report on Refrigerating Machinery and Appliances.

Date of writing Report 23-5-51 When handed in at Local Office 6-6-51 Port of GENOA 12 JUL 1951
 No. in Reg. Book. 53776 Survey held at GENOA Date: First Survey 19-4-51 Last Survey 17-5-51
 (Number of Visits 11) HOMELAND 10.043
 on the Refrigerating Machinery and Appliances of the TRIPLE SCREW STEAMER BRASIL Now Tons Gross 10.043 Net 5789
 Vessel built at GLASGOW By whom built A. STEPHEN & SONS Yard No. ✓ When built 1905-4
 Owners MEDITERRANEAN LINES INC. Port belonging to PANAMA Voyage NEW YORK - BREMEN - HAMBURG.
 Refrigerating Machinery made by HASLAM FNDRY & ENG CO Ld DERRY Machine Nos. 828 When made 1904
 Insulation fitted by UNKNOWN When fitted UNKNOWN System of Refrigeration BRINE
 Method of cooling Cargo Chambers BRINE GRIDS Insulating Material used CHARCOAL
 Number of Cargo Chambers insulated 4 IN TWEEN DECK Total refrigerated cargo capacity 10,290 cubic feet

CARB. ANHY
 DESCRIPTION OF REFRIGERATING MACHINERY. Where placed ENG RM FLAT OFF ENG. CASING PORT SIDE
 Refrigerating Units, No. of ① 2 No. of machines 1 Is each machine independent YES
 Total refrigeration or ice-melting capacity in tons per 24 hours UNKNOWN Are all the units connected to all the refrigerated chambers YES
 Compressors, driven direct or through simple double reduction gearing. Compressors, single or double acting D.A. If multiple effect compression NO
 Are relief valves or safety discs fitted SAFETY DISCS No. of cylinders to each unit TWO Diameter of cylinders 2 7/16"
 Diameter of piston rod 1" Length of stroke 9" No. of revolutions per minute 100
 Motive Power supplied from 3 SINGLE ENDED SCOTCH BOILERS FOR AUX. PURPOSES W.P 180 lb/sq. in.
 (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 TWO Diameter H.P. 8 1/2", L.P. 13"
 Length of stroke 8 3/4" Working pressure 180 lb/sq. in. Diameter of crank shaft journals and pins 8 1/2" x 11 5/8" L
 Breadth and thickness of crank webs 110 1/2" x 5 7/8" No. of sections in crank shaft 1-SOLID Revolutions of engines per minute 100
 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 receiver 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 ✓ No. of ✓ Rated ✓ Kilowatts ✓ Volts ✓
 at ✓ revolutions per minute. Diameter of motor shafts at bearings ✓
 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 TWO Cast iron or steel casings CAST IRON Cylindrical or rectangular RECTANGULAR Are safety valves fitted to casings YES No. of coils in each THREE Material of coils COPPER Can each coil be readily shut off or disconnected YES
 Water Circulating Pumps, No. and size of pumps available 3 5 IN = 100 Tons/hr 3 IN = 35 "how worked" STEAM Gas Separators, No. of 2
 Gas Evaporators, No. of TWO Cast iron or steel casings STEEL Pressure or gravity type GRAVITY If pressure type, are safety valves fitted ✓ No. of coils in each casing TWO Material of coils STEEL 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 STEAM 4" x 5" x 5" 12 Tons/hr MOTOR 300 litres/MIN. how worked 1-STEAM & 1 MOTOR
 Brine Cooling System, closed or open OPEN Are the pipes and tanks galvanised on the inside NO
 No. of brine sections in each chamber TWO SECTIONS 1-ROOF GRIDS & OTHER WALL GRIDS

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

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. **YES BOTH.**

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure	Air Test Pressure.	Stamped.	REMARKS.
Engine Cylinders (if tested) ...						
Gas Compressors ...						
„ Separators ...						
„ Multiple Effect Receivers ...						
„ Condenser Coils ...						
„ Evaporator Coils ...						
„ Condenser Headers and Connections						
„ Condenser Casings ...						
„ Evaporator Casings ...						
NH ₃ Condenser, Evaporator and Air Cooler Coils after erection in place						
Brine Piping after erection in place...						

EXISTING PLANT.

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 **17/18-5-51** Density of Brine **30°** by **BAUMÉ** 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 **77°F** ✓ outflow and return brine **-14°C** & **-12°C**
 atmosphere **25°C** cooling water inlet and discharge **16°C** & **18°C** gas in condensers **31°C** and evaporators **-15°C**
 the average temperature of the refrigerated chambers **-6°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 **5½°C** (10°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 CO² MACHINE.**

H.P. Piston - 1
 L.P. " - 1
 Crosshead Bearing - 1
 " " Compressor - 1
 Piston - Rod " - 3
 Valves for " - 6
 Springs for above - 4
 Glands " - 4
 Piston Rods Steam ing - 2
 Regulator Valve Lids - 4
 Oil Pump Valves - 2
 " " Piston - 2
 Delivery Valves - 6
 Suction " - 6
 Compressor g.l. Lids - 2
 White metal packing rings - 24
 Oil pump piston rod - 2
 Regulator and Comp Valve Spindles - 41.

The foregoing is a correct description of the Refrigerating Machinery.

EXISTING PLANT.

Manufacture

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. (Fore Peak)	A									
Frame No. 190	F					✓	✓	CHARCOAL	7"	2 x 7/8" T.G.
	A					✓	✓	"	7"	"
Frame No. 183	F					✓	✓	"	7"	"
	A					✓	✓	"	7"	"
Frame No. 181	F					✓	✓	"	7"	"
	A					✓	✓	"	7"	"
Frame No. 175	F					✓	✓	"	7"	"
	A					✓	✓	"	7"	"
Frame No. 173	F					✓	✓	"	7"	"
	A					✓	✓	"	7"	"
Frame No. 168	F					✓	✓	"	7"	"
	A					✓	✓	"	7"	"
Frame No.	F									
	A									
Frame No.	F									
	A									
Frame No. (After Peak)	F					9 3/4"	1 x 7/8" T.G.	CHARCOAL	7"	2 x 7/8" T.G.
Sides ...						✓	✓	"	7"	2 x 7/8" T.G.
Overheading ...						✓	2 x 7/8" T.G.	"	11"	3" WOOD DECK
Floors of Chambers ...										
Trunk Hatchways ...										
Thrust Recess, Sides and Top										
Tunnel Sides and Top										
Tunnel Recess, Front and Top										

Frames or Reverse Frames, Face **2" of Charcoal with 2 x 7/8" T.G.**
 Bulkhead Stiffeners, Top **✓** Bottom **✓** and Face **2" of Charcoal, 2 x 7/8" T.G.**
 Ribband on Top of Decks **✓**
 Side Stringers, Top **✓** Bottom **✓** and Face **✓**
 Web Frames, Sides **✓** and Face **✓**
 Brackets, Top **✓** Bottom **✓** and Face **✓**
 Insulated Hatches, Main **✓** Bilge **✓** Manhole **✓**
 Hatchway Coamings, Main **✓** Bilge **✓**
 Hold Pillars **✓**
 Masts **✓** Ventilators **✓**
 Are insulated plugs fitted to provide easy access to bilge suction roses. **✓** 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 **YES**
 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 **1 1/4" thick x 1" deep 2" apart** floors **DITTO** tunnel top **✓**
 fixed or portable **BOTH** Are screens fitted over the brine grids at chamber sides **YES** hinged or permanently fixed **HINGED**
 Thermometer Tubes, No. and position in each chamber. **AFT CHAMBERS 1 IN EACH CENTRAL; 2 FWD CHAMBERS 2 IN EACH CENTRAL 1; BY DOOR.**
 diameter **AFT - 3" FWD - 2 1/4"** 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. **✓**
 Draining Arrangements. What provision is made for draining the inside of the chambers **DRAIN PIPES WITH U BENDS TO LOWER HOLD BILGES.**
 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 **DRAINS TO ENGINE ROOM BILGES**
 brine return room **DITTO** fan room **✓** water circulating pump room **IN ENG. ROOM**
 Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers. **YES**

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. ✓
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. 1 3/4" Minimum thickness. 1/4" Are they galvanised externally. No
How are they arranged in the chambers. IN TWO SECTIONS, 1 - ROOF GRIDS & 1 SIDE GRIDS, BOTH SECTIONS COVERING SIDES & ROOF OF CHAMBERS, ALL GRIDS SECURELY CLIPPED TO ANGLE IRON SUPPORTS.
Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers. NONE
The foregoing is a correct description of the Insulation and Appliances.

EXISTING PLANT. Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery. ✓ and Insulation. ✓
(If not, state date of approval)
Is the Refrigerating Machinery and Appliances duplicate of a previous case. ✓ 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 Machinery and Appliances of the Vessel have not been constructed under Special Survey, the CO₂ Plant was originally installed when the Vessel was built in 1905, the Freon plant was fitted on board at Gottenburg in 1947 and utilises the original brine system of the CO₂ Plant. The whole of the Refrigerating Machinery and Appliances have been surveyed for classification in accordance with Sect. 5 of the Rules and the Condensers and Evaporators have been tested in accordance with Sect. 6, clauses 8(b) & (c). The insulation in the four tween deck chambers has been opened up and the scantlings of the grounds, battens, linings and the thickness of insulating material has been checked and found as stated. On completion of the Survey the machinery was tried under working conditions and a cooling down test was carried out with satisfactory results; also please see Rpt 18 attached herewith. The Refrigerating Machinery and Appliances of this Vessel are, in my opinion worthy to be classed in the Register Book with the notation LLOYDS REFRIGERATING MACHINERY CERTIFICATION R.M.C. 5-51.

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. Cubic ft.
32	CO ₂ - 2	CARB. ANHYD.	HASLAM FNDRY ENG CO LD DENDY	1905	✓ BRINE	✓ 6.5	No		
2	FREON - 2	DICHLORO- DIFLUORO- METHANE	FRICK CO. WAYNESBORO PA. USA.	1947	✓ CHARCOAL	FREON 15.	No	4	10,290

Fee R.M.C. CLASS. £ 43 : 0 : 0
CAR FUND - - - 2 : 11 : 0
Travelling Expenses £ 2 : 3 : 0
(Fee applied for, 7.7.1951)
(PAYABLE IN LONDON).
Received by me, 19.

H. F. Mansfield.
Surveyor to Lloyd's Register.

Committee's Minute. AUG. 14 AUG 1951
Assigned. See Rpt 18.