

Report on Refrigerating Machinery and Appliances.

Received at London Office

Date of writing Report 19... When handed in at Local Office 15 MAY 1952 Port of LIVERPOOL

No. in Reg. Book. Survey held at LIVERPOOL Date: First Survey 29/2/52 Last Survey 29-4-1952 (Number of Visits 14)

on the Refrigerating Machinery and Appliances of the SS PATRICIAN. Tons (Gross/Net)

Vessel built at SUNDERLAND By whom built J THOMPSON & SONS LTD Yard No. When built 1947-6

Owners ELLERMAN LINES LTD Port belonging to LIVERPOOL Voyage

Refrigerating Machinery made by J & E HALL LTD Machine Nos. 15080/1 When made 1952.

Insulation fitted by CORK INSULATION & ASB CO LTD Men fitted 1952. System of Refrigeration FREON

Method of cooling Cargo Chambers DIRECT EXPANSION AIR Insulating Material used FIGURE 9 SLUG CORK

Number of Cargo Chambers insulated 2. Total refrigerated cargo capacity 10,860. cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed ENGINE ROOM (AFT END - TWEEN DECK LEVEL)

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 23. Are all the units connected to all the refrigerated chambers. Yes

Compressors, driven direct or through VEE BELTS reduction gearing. 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 2 Diameter of cylinders 6 1/2"

Diameter of piston rod TRUNK TYPE Length of stroke 5" No. of revolutions per minute 500

Motive Power supplied from 3 RECIP. STEAM DRIVEN D.C. 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 PHOSPHORIC DRIP PROOF No. of 2 Rated 25 HP Kilowatts 110 Volts

at 1750 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 2 Cast iron or steel casings STEEL Cylindrical or rectangular CYLINDRICAL Are safety valves fitted

to casings No. of tubes in each 36 Material of coils YORK ALBRO HORIZONTAL CENTRIFUGAL Can each coil be readily shut off or disconnected No

Water Circulating Pumps, No. and size of pumps available 2-2700 G.P.M. how worked ELECTRICALLY Gas Separators, No. of 2

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 Brine Cooled Batteries, No. of 2 Are there two separate systems, so that one may be in use while the other is being

cleared of snow YES No. of coils in each battery 7 Material of coils Can each coil be readily shut off or

disconnected YES Total cooling surface of battery coils 1650 sq ft Is a watertight tray fitted under each battery Yes

Air Circulating Fans, Total No. of 2 each of 4,000 cubic feet capacity, at 1529/2280 revolutions per minute

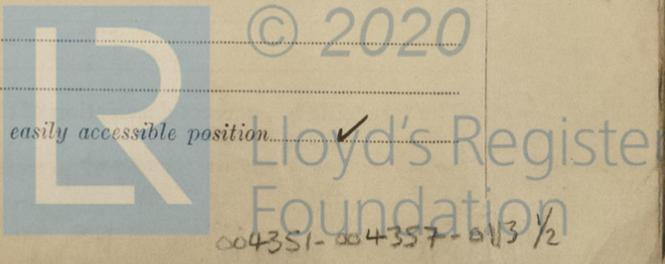
Steam or electrically driven ELECTRICALLY Where spare fans are supplied are these fitted in position ready for coupling up. STORED

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



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...
 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) ...						
Gas Compressors ...						
„ Separators ...						
„ Multiple Effect Receivers ...						
„ Condenser Coils ...						
„ Evaporator Coils ...						
„ Condenser Headers and Connections						
„ Condenser Casings ...						
„ Evaporator Casings ...						
„ Condenser, Evaporator and Air Cooler Coils after erection in place	24-4-52			290 lbs. □		
„ Brine Piping after erection in place	do.			290 lbs. □		

Have important steel castings and forgings been tested in accordance with the Rules...
 Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory...
 Dates of test... 27/29-4-52 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 ~~in~~ cooled batteries... -15°F & outflow and return brine... & atmosphere... 58° cooling water inlet and discharge... 52° & -10°F gas in condensers... -25°F and evaporators...
 the average temperature of the refrigerated chambers... -10°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... 9.5°F or 1.62°F RISE PER HR.

SPARE GEAR.

Are the working parts of the machines, pumps and motors respectively, interchangeable...
 Has the spare gear required by the Rules been supplied...
 Additional Spare Gear Supplied:—

The foregoing is a correct description of the Refrigerating Machinery.

DESCRIPTION OF INSULATION.

	IN LOWER HOLD CHAMBERS.					IN 'TWEEN DECK CHAMBERS. NO. 4 PORT & STARBOARD.				
	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. F										
Frame No. A										
Frame No. F										
Frame No. A										
Frame No. F										
Frame No. A										
Frame No. 59 (Cabin Room) F								FIBREROC	6" ✓	3/4" PLYWOOD
Frame No. A (Engine Room)								FIBREROC	6" ✓	3/4" PLYWOOD
Frame No. 30 F										
Frame No. A										
Frame No. F										
Frame No. A										
Frame No. F										
Frame No. A										
Frame No. F										
Frame No. A										
Frame No. F										
Frame No. A										
Sides ...								FIBREROC	11" ✓	3/4" PLYWOOD
Overheading ...								FIBREROC	13" ✓	3/4" PLYWOOD
Floors of Chambers ...								INWAY OF E.R. — SLAG CORK	6" ✓	1/2" ROPE ASPHALT WITH "SURFASTAL"
Trunk Hatchways ...								FIBREROC	8" ✓	3/4" PLYWOOD
Thrust Recess, Sides and Top ...										
Tunnel Sides and Top ...										
Tunnel Recess, Front and Top ...										
Frames or Reverse Frames, Face										2 1/2 x 4" WOOD GRAINDS ✓
Bulkhead Stiffeners, Top										Bottom and Face ✓
Ribband on Top of Decks										Bottom and Face ✓
Side Stringers, Top										Bottom and Face ✓
Web Frames, Sides										Bottom and Face ✓
Brackets, Top										Bottom and Face ✓
Insulated Hatches, Main										Bilge Manhole ✓
Hatchway Coamings, Main										Bilge ✓
Hold Pillars										Bottom and Face ✓
Masts										Ventilators 6" FIBREROC ✓
Are insulated plugs fitted to provide easy access to bilge suction roses										lank, 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										✓
Cargo Battens, Dimensions and spacing, sides										2 x 2 x 12" ✓ floors 18 PORTABLE ✓ tunnel top ✓
fixed or portable										Are screens fitted over the brine grids at chamber sides ✓ hinged or permanently fixed ✓
Thermometer Tubes, No. and position in each chamber										APPROVED TYPE OF ELECT RECORDING THERMOMETERS IN SPACES & AIR DUCTS (AS ATTACHED LIST.) ✓
diameter										are they fitted in accordance with Section 3, Clause 8. ✓
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										TRAPPED SCUPPERS TO BILGES PARTISIAN-FWOMAT. ✓
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										DIRECT TO ER BILGE ✓
brine return room										fan room DIRECT TO BILGE ✓ water circulating pump room ER BILGE ✓
Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers										✓



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..... YES ✓
 Are all wood linings tongued and grooved..... BONDED PLYWOOD 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..... HOT BITUMEN. ✓
 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..... Are the door frames efficiently insulated.....
 Are insulated ^{DOORS} ~~PIPS~~ supplied for the doorways..... YES Where are the doors worked from..... HATCH TRUNK ✓
 Cooling Pipes in ^{BATTERIES} Chambers, diameter..... 1/8" 00. Minimum thickness..... ✓ Are they galvanised externally..... YES ✓
 How are they arranged in the chambers..... FOUR IN EACH CHAMBER (DIRECT EXPANSION BATTERIES)
 Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers..... WATER SPRAY PIPES
 (SEA WATER AT SEA — FRESH WATER IN CONTAMINATED WATERS.)
 The foregoing is a correct description of the Insulation and Appliances.

Builder.....

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery..... 11-9-51 and Insulation..... 7-3-52.
 (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.)
 Vessel has been converted to carry refrigerated produce in
 No 4 tween deck port & starboard chambers.
 Insulation and Appliances installed under special survey in
 accordance with approved plans, Specifications & Secretary's letters
 Refrigerating Machinery installed under special survey
 at Messrs J. & C. Hall Ltd Cardiff has now been installed
 on board, cooling down tests carried out and found
 satisfactory, Electrical maker test certificates & London report No 5460
 herewith attached.
 The refrigerating Machinery and Appliances of this vessel
 are eligible in all opinions to be classed, in the Register
 Book with notation of Lloyd's RMC 4-52. " to maintain
 temp minus 5°F with sea temp ± 75°F maximum.

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.
2	4	Direct expansion FACON (10)	J. & C. HALL LTD	1952	DIRECT EXPANSION AIR SEPARATOR & SHAB CORK	Tons. 23	yes	2	10,86

Fee Paid... £24-5-0. (Fee applied for, 15 MAY 1952)
 Travelling Expenses £ : : (Received by me, 19.....)

Inspector.....
 Surveyor to Lloyd's Register.

Committee's Minute..... TUES. 22 JUL 1952

Assigned..... + Lloyd's RMC 4-52
 Note to maintain temp minus 5°F
 with sea temp 75°F max

17.8.54

Certificate to be sent to

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