

Rpt. 17.

No. 148160

# Report on Refrigerating Machinery and Appliances.

Received at London Office

Date of writing Report 19... When handed in at Local Office 28 NOV 1957 19... Port of LIVERPOOL  
 No. in Reg. Book. Survey held at LIVERPOOL Date: First Survey 15 10 57 Last Survey 7 11 1957  
 (Number of Visits 9...)  
 on the Refrigerating Machinery and Appliances of the S.S. "HILARY" Tons Gross 7415 Net 4206  
 Vessel built at Birkenhead By whom built Cammell Laird & Co. Ltd. Yard No. When built 1931  
 Owners Booth Steamship Co. Ltd. Port belonging to Voyage  
 Refrigerating Machinery made by J. & E. Hall Ltd. Machine Nos. 17521 & 17551 When made 1957  
 Insulation fitted by Cork Insulation & Asbestos Co. Ltd. When fitted 1957 System of Refrigeration Dichloro-difluoro-methane  
 Method of cooling Cargo Chambers Direct expansion coolers Insulating Material used Slab cork and Eldorite  
 Number of Cargo Chambers insulated 1 Total refrigerated cargo capacity 31,250 cubic feet

## DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Engine room flat Port side forward

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 ~~single~~ Steam engine ~~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 ins.  
 Diameter of piston rod Trunk-pistons Length of stroke 5 ins. No. of revolutions per minute 350  
 Motive Power supplied from 4 Main boilers (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 1 Diameter 8 ins.  
 Length of stroke 4 1/2 Working pressure 120 Diameter of crank shaft journals and pins  
 Breadth and thickness of crank webs No. of sections in crank shaft Revolutions of engines per minute 350

~~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 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 discs~~

Gas Condensers, No. of 2 Cast iron or steel casings Steel Cylindrical or rectangular Cylindrical Are safety valves fitted  
 to casings Yes No. of tubes 84 Material of coils Torcalbro Can each coil be readily shut off or disconnected No

Water Circulating Pumps, No. and size of pumps available how worked steam Gas Separators, No. of 2  
 Ballast pump 200 tons per hour.

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 No No. of circuits As approved Material of coils Steel Can each coil be readily shut off or  
 disconnected Yes Total cooling surface of battery coils 5100 sq. ft. Is a watertight tray fitted under each battery Yes

Air Circulating Fans, Total No. of 2 each of 19,000 cubic feet capacity, at 920/1320 revolutions per minute  
 Steam or electrically driven Electrically Where spare fans are supplied are these fitted in position ready for coupling up Yes

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

NOTE.—THE WORDS WHICH DO NOT APPLY SHOULD BE DELETED.

PRINTED IN ENGLAND.



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. Main

### 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 <sub>3</sub> Condenser, Evaporator and Air Cooler Coils after erection in place	3.11.57.	120	-	200	-	
Direct expansion						
Brine Piping after erection in place	3.11.57.	120	-	200	-	

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. 7.11.57. 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 on brine cooled batteries 21.5°F and 23°F & 24°F & 24°F, outflow and return brine - & -

atmosphere 40°F cooling water inlet and discharge 51°F & 55°F gas in condensers 56°F and evaporators 0°F

the average temperature of the refrigerated chambers 22.5 and the rise of temperature in these chambers upon the expiration of - hours  
time after the machinery and cooling appliances have been shut off. See London letter 2nd October, 1957.

### 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: See London Report No. R8930

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL, Ltd.  
51, EGERTON STREET  
BIRKENHEAD

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. (Fore Peak)	A									
Frame No.	F									
Frame No.	A									
Frame No. 57	F									
	A	-	- Eldorite	6 ins.	3/4 Plywood					
Frame No. 54	F									
	A	-	- Eldorite	6 ins.	3/4 Plywood					
Frame No. 35	F									
	A	-	- Eldorite	6 ins.	3/4 Plywood					
Frame No. 37 (Boiler Room)	F									
	A									
Frame No. (Engine Room)	F									
	A									
Frame No.	F									
	A									
Frame No.	F									
	A									
Frame No.	F									
	A									
Frame No. (After Peak)	F									
	A	-	- Eldorite	12 ins.	3/4 Plywood					
Sides		-	- Eldorite	11 ins.	3/4 Plywood					
Overheading										
Floors of Chambers	1 ins.	2 1/2" T & G	Slab Cork	6 ins.	2" T & G					
Trunk Hatchways										
Thrust Recess, Sides and Top										
Tunnel Sides and Top								Eldorite	6 ins.	2 ins T & G
Tunnel Recess, Front and Top										

Frames or Reverse Frames, Face 2 ins. over face

Bulkhead Stiffeners, Top Bottom and Face 2 ins. over.

Ribband on Top of Decks.

Side Stringers, Top 2 ins. over Bottom 2 ins. over and Face 2 ins. over.

Web Frames, Sides - and Face 2 ins. over

Brackets, Top Bottom and Face -

Insulated Hatches, Main As original Bilge Manhole

Hatchway Coamings, Main Bilge

Hold Pillars.

Masts Ventilators

Are insulated plugs fitted to provide easy access to bilge suction roses. Yes tank, air, and sounding pipes. Yes heels of pillars.

and manhole doors of tanks. Yes Are insulated plugs fitted to ventilators. Yes cargo ports - and side lights.

Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected. Yes if so, how 2 ins. T & G

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. Yes 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 2" x 2" x 12" floors 3 1/2" x 3" tunnel top 3 1/2" x 3" Grating.

Sides fixed Are screens fitted over the brine grids at chamber sides - hinged or permanently fixed

Floors portable Thermometer Tubes, No. and position in each chamber 4 - Port forward Port after, Starboard forward Starboard after

diameter 1 Air Suction P & S, 1 Air Delivery P & S 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. Trapped scupper to hold bilge Port & Starboard aft.

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. To engine room bilge

brine return room - fan room - water circulating pump room To boiler room bilge

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.  $\frac{3}{4}$  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 bitumin  
Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the approved plans..... Yes  
Are they permanently fixed or collapsible, or portable..... Fixed

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.....  $1\frac{5}{8}$  OD..... Minimum thickness..... 16 W.G..... Are they galvanised externally..... Yes  
How are they arranged in the chambers..... Port and Starboard sides of tunnel, forward

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers..... Hot gas  
The foregoing is a correct description of the Insulation and Appliances.

CORK INSULATION & ASBESTOS Co. Ltd.  
136, COMMERCIAL ROAD,  
LIVERPOOL 5

Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery..... Yes..... and Insulation..... Yes  
(If not, state date of approval)..... No..... If so, state name of vessel.....  
Is the Refrigerating Machinery and Appliances duplicate of a previous case.....  
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 New Refrigerated Cargo Installation of this vessel has been built under Special Survey in accordance with the Approved Plans and the Secretary's letter. Cooling down tests were carried out in accordance with London Letter dated the 2nd October, 1957 and found satisfactory. The materials and workmanship are good.  
The Refrigerated Cargo Installation is eligible in my opinion to be classed with the notation  
\* LLOYD'S R.M.C.11,57 to maintain temp. 53°F with sea temp. 85°F. Max."

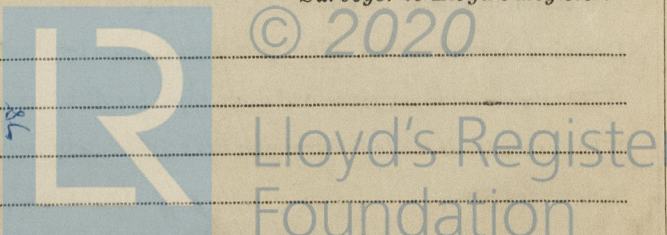
PARTICULARS TO BE ENTERED IN REGISTER BOOK. No.4, Hold Plant

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.
						Tons.	Steam		Cubic ft.
2	4	Dichloro- difluoro- methane.	J.&E.Hall Ltd.	1957	Air slab Cork & Eldorite	23	driven	1	31,250

Di pool Ap & 83:3:0  
Fee ... London ... £ 28: 2: 0 (Fee applied for, 5 DEC 1957)  
Travelling Expenses £ : : (Received by me, 19.....)  
Special Attendance £ 9: 9: 0

W. A. Lygget.  
Surveyor to Lloyd's Register.

Committee's Minute  
Assigned.....  
+ Lloyd's Reg 11.57  
to maintain temp. 53°F  
with sea temp. 85°F. Max.



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