

# Report on Refrigerating Machinery and Appliances.

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Date of writing Report 21<sup>st</sup> Dec 1948 When handed in at Local Office 15 JAN 1949 Port of Glasgow  
 No. in Reg. Book. Survey held at Glasgow Date: First Survey 3RD JUNE 1948 Last Survey 22-12-1948  
 55294 (Number of Visits 54)  
 on the Refrigerating Machinery and Appliances of the T.S.S. "CITY OF EDINBURGH" Tons Gross 8238 Net 3965  
 Vessel built at Birkenhead By whom built Hammell Laird & Co. Yard No. When built 1938-8  
 Owners Ellerman Lines Ltd Port belonging to Glasgow Voyage  
 Refrigerating Machinery made by J. & B. Wall, Ltd Machine Nos. 13410 When made 1948  
 Insulation fitted by The Cork Insulation & Robertson Co. Ltd When fitted 12-48 System of Refrigeration CO<sub>2</sub> from Owners  
 Method of cooling Cargo Chambers Brine & Air Insulating Material used Slab & granulated cork Cap 7  
 Number of Cargo Chambers insulated 11 Total refrigerated cargo capacity 89,420 cubic feet 115560 ft<sup>3</sup>

## DESCRIPTION OF REFRIGERATING MACHINERY.

Where placed Upper tween deck, port side, abreast engine room.  
 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 115 Are all the units connected to all the refrigerated chambers.  
 Compressors, driven direct or through reduction gearing. Compressors, single or double acting Double If multiple effect compression No  
 Are relief valves or safety discs fitted YES No. of cylinders to each unit 2 Diameter of cylinders 6 1/8  
 Diameter of piston rod 2 3/4 Length of stroke 21 No. of revolutions per minute 85  
 Motive Power supplied from direct coupled steam engine  
 (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 2 Diameter 16" and 29"  
 Length of stroke 21 Working pressure 120 lb/sq. in. Diameter of crank shaft journals and pins 10" journals 9" pins  
 Breadth and thickness of crank webs 10 1/2 x 4 3/16 No. of sections in crank shaft 2 Revolutions of engines per minute 85  
 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  
 Gas Condensers, No. of 2 each 10 casings Cast iron or steel casings copper Cylindrical or rectangular cylindrical Are safety valves fitted  
 to casings YES No. of coils in each casing 1 Material of coils Alum brass Can each coil be readily shut off or disconnected YES  
 1-10 1/2 x 14 1/2 x 24  
 Water Circulating Pumps, No. and size of pumps available 1-12 1/2 x 14 1/2 x 24 how worked Steam Gas Separators, No. of 4  
 Gas Evaporators, No. of 2 cast iron or steel casings steel Pressure or gravity type pressure If pressure type, are safety  
 valves fitted No. of coils in each casing 13 Material of coils S.D. steel tube Can each coil be readily shut off or disconnected YES  
 Direct Expansion or Brine Cooled Batteries, No. of 11 Are there two separate systems, so that one may be in use while the other is being  
 cleared of snow No No. of coils in each battery See London RMC Report No 2214 Material of coils steel Can each coil be readily shut off or  
 disconnected YES Total cooling surface of battery coils 15660 Is a watertight tray fitted under each battery YES  
 Air Circulating Fans, Total No. of 11 each of See London RMC Report No 2214 cubic feet capacity, at See London RMC Report No 2214 revolutions per minute  
 Steam or electrically driven electrically Where spare fans are supplied are these fitted in position ready for coupling up No  
 Brine Circulating Pumps, No. and size of, including the additional pump 3 unit cent. + 1 unit free pump how worked electrically  
 Brine Cooling System, closed or open closed Are the pipes and tanks galvanised on the inside No  
 No. of brine sections in each chamber See London RMC Report No 2214  
 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

### HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
Engine Cylinders (if tested)	4P 13-8-48		350 lb/a		END	
STEAM CONDENSER	LP 7-7-48		250 lb/a		END	
Gas Compressors	9-7-48	1000 lb/a	3000 lb/a	1500 lb/a	END	
Separators	17-9-48	1000 lb/a	3000 lb/a	1500 lb/a	END	
Multiple Effect Receivers	5-11-48	1000 lb/a	3000 lb/a	1500 lb/a	END	
Condenser Coils	18-8-48	1000 lb/a	3000 lb/a	1500 lb/a	END	
Evaporator Coils	25-8-48	1000 lb/a	3000 lb/a	1500 lb/a	END	
Condenser Headers and Connections	20-8-48	1000 lb/a	3000 lb/a	1500 lb/a	END	
Condenser Casings	10-9-48	15/20 lb/a	30 lb/a		END	
Evaporator Casings	30-8-48	15/20 lb/a	40 lb/a		END	
NH <sub>3</sub> Condenser, Evaporator and Air Cooler Coils after erection in place	3-9-48					
Brine Piping after erection in place	4-12-48	25 lb/a	90 lb/a			

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... 14-12-48 Density of Brine... 1.47 by... Swadale 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... -2.3°F & 2°F, outflow and return brine... -10.5°F & -6°F

atmosphere... 43/56°F cooling water inlet and discharge... 44°F & 52/56°F gas in condensers... 44°F and evaporators... -16°F

the average temperature of the refrigerated chambers... 2.26°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... 9.45°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: As per London RMC Report No 2214 & attached list.

The foregoing is a correct description of the Refrigerating Machinery.

J. J. Camis J. E. Haulk

### DESCRIPTION OF INSULATION.

#### TWEEN DECKS IN LOWER HOLD CHAMBERS.

#### UPPER 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. 169	F	-	3" AIR SPACE	1 1/2" WOOD	-	-	AIR SPACE 3	-	-	WOOD 1 1/2" T.G.
	A	✓	SLAB CORK	12"	1 1/2" CEMENT	✓	✓	SLAB CORK	12"	1 1/2" REINFORCED CEMENT
Frame No. 133	F	✓	"	12.55-6PS	"	✓	✓	SLAB CORK	6"	"
	A	✓	"	15.85-12PS	"	✓	✓	SLAB CORK	6"	"
Frame No. 116	F	✓	"	12"	"	-	-	-	-	-
PORT SIDE	A	✓	"	12"	"	-	-	-	-	-
Frame No. 106	F	✓	"	16"	"	-	-	-	-	-
(Boiler Room)	A	✓	ELDORITE SLABS	3"	SHEET IRON	-	-	SLAB CORK	12"	1 1/2" REINFORCED CEMENT
Frame No. (Engine Room)	A	-	-	-	-	-	-	-	-	-
Frame No.	F	-	-	-	-	-	-	-	-	-
	A	✓	✓	-	-	-	-	-	-	-
Frame No. 58	F	✓	✓	SLAB CORK	12"	✓	✓	REINFORCED 1/2" CEMENT	-	-
	A	✓	✓	SLAB CORK	12"	✓	✓	1 1/2" WOOD	-	-
Frame No. 33	F	✓	✓	SLAB CORK	12"	✓	✓	1 1/2" WOOD	-	-
	A	-	-	3" AIR SPACE	-	-	-	-	-	-
Frame No. (After Peak)	F	-	-	-	-	-	-	-	-	-
Sides	✓	✓	SLAB CORK	12"	✓	✓	✓	1 1/2" REINFORCED CEMENT	-	-
Overheading	✓	✓	GRAN CORK	11 1/2"	✓	✓	✓	1 1/2" WOOD	-	-
Floors of Chambers	✓	✓	GRAN CORK	12"	✓	✓	✓	1 1/2" WOOD	-	-
UNDERSIDE OF MAIN DECK	-	-	-	-	-	-	-	-	-	-
Trunk Hatchways	-	-	-	-	-	-	-	SLAB CORK	12"	1 1/2" REINFORCED CEMENT
Thrust Recess, Sides and Top	-	-	-	-	-	-	-	-	-	-
Tunnel Sides and Top	-	-	-	-	-	-	-	-	-	-
Tunnel Recess, Front and Top	-	-	-	-	-	-	-	-	-	-

Frames or Reverse Frames, Face... 3" IN LOWER TWEEN DECKS 6" IN UPPER TWEEN DECKS

Bulkhead Stiffeners, Top... 3" Bottom... 3" and Face... 3"

Ribband on Top of Decks... 2'-6"

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... ✓

SEN OK. Pillars... 6" to 9"

Ventilators... 6" to 9"

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

Are insulated plugs fitted to ventilators... YES cargo ports... - and side lights... -

the insulation of the lower hold floor and tunnel top in way of the hatchways protected... if so, how... -

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... -

for draining the tank top... 2 1/2" scupper led overboard with storm valve on ship's side

Fireproof Insulation. Is the insulation and woodwork fireproof in way of bunkers or any surfaces exposed to excessive heat... - Where

Pipes pass through watertight bulkheads or deck plating, are the fittings and packing of the stuffing boxes both watertight and fireproof... -

Battens, Dimensions and spacing, sides... 2"x2" at 9" centres floors... 2 1/2"x2 1/2" apart

Are screens fitted over the brine grids at chamber sides... 2 1/2"x2 1/2" apart

hinged or permanently fixed... -

Thermometer Tubes, No. and position in each chamber... 1 in centre of each chamber

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... 6"

Drainage Arrangements. What provision is made for draining the inside of the chambers... TRAP SCUPPERS

Are sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off... YES

provision is made for draining the refrigerating machinery room... 2 1/2" SCUPPER TO BILGES

return room... 2 1/2" SCUPPER TO BILGE

water circulating pump room... -

air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers... -

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Sounding Pipes, No. and position in each chamber situated below the load water line.....

Diameter 2 1/2 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 YES Are cement facings reinforced with expanded steel lattice YES

How is the expanded metal secured in place WIRE STAPLES TO CORK & 1 3/4 STAPLES TO WOOD

How are the cork slabs secured to the steel structure of the vessel BEDDED IN BITUMEN

Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the approved plans IN ACCORDANCE WITH APPROVED PLANS

Are they permanently fixed or collapsible, or portable PERMANENTLY

Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors NO Are the door frames efficiently insulated —

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

Cooling Pipes in Chambers, diameter 2 1/2 ID Minimum thickness 4 BSG Are they galvanised externally YES

How are they arranged in the chambers BATTERIES

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers Hot brine

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

W. McKenna He took insulation & asbestos to sea 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 Complete

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 & appliances have now been installed in this vessel, tested under survey & found to be satisfactory, the material & workmanship are good. In our opinion the vessel is eligible for all notation of LLOYD'S RMC 12, 48.

# 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 Cub. ft.
<u>2</u>	<u>2</u>	<u>carb</u> <u>anhyd.</u>	<u>J. &amp; G. Hall</u>	<u>12-48</u>	<u>Brine &amp; Air</u> <u>Slab &amp; Lysan block</u> <u>Cement faced</u>	<u>115</u>	<u>NO</u>	<u>11</u>	<u>894</u>

Fee R.M.C. £ 45 : 0 : 0 (Fee applied for, 25 JAN 1949)

Travelling Expenses £ 30 : 0 : 0 Received by me, 19

don. £ 15 : 0 : 0

Committee's Minute —

Assigned Lloyd's R.M.C 12.48

CERTIFICATE WRITTEN.  
(dated 2.3.49)



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