

Rpt. 17.

Report on Refrigerating Machinery and Appliances.

Received at London Office.

Date of writing Report **15th Aug. 19 44** When handed in at Local Office **15th Aug 44** Port of **New York**
 No. in Reg. Book. Survey held at **Syracuse, N.Y.** Date: First Survey **1st June** Last Survey **14th August 19 44**
 (Number of Visits **2**)

on the Refrigerating Machinery and Appliances of the **Victualling Ship** Tons (Gross - Net -)
 Vessel built at **Vancouver, B.C.** By whom built **Burrard Dry Dock Co** Yard No. **212** When built **1944**
 Owners **Wartime Merchant Shipping Ltd.** Port belonging to **-** Voyage **-**
 Refrigerating Machinery made by **Carrier Corporation** Machine Nos. **1234/5/6** When made **1944**
 Insulation fitted by **Burrard Dry Dock Co.** When fitted **1944** System of Refrigeration **Freon**
 Method of cooling Cargo Chambers **Direct Expansion Batteries** Insulating Material used **Palco Wool & Slab Cork**
 Number of Cargo Chambers insulated **25 & One Ice Making & One Ice Storage Chamber** Total refrigerated cargo capacity **111480** cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed **Refrigerating Engine Room Constructed in No. 3 Hold**

Refrigerating Units, No. of **Six (6)** No. of machines **Quadruple** Is each machine independent **Yes**
 Total refrigeration or ice-melting capacity in tons per 24 hours **45** Are all the units connected to all the refrigerated chambers **Yes**

Compressors, driven direct ~~XXXXXX~~ 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 **4** Diameter of cylinders **4 1/4"**

Diameter of piston rod **Trunk Piston** Length of stroke **3"** No. of revolutions per minute **600**

Motive Power supplied from **-** (State number of boilers, oil engines or electric generators supplying the motive power.)

Steam Engines, ~~XXXXXX~~ surface condensing. No. of cylinders **1** Diameter **8"**

Length of stroke **4"** Working pressure **100 lbs.** Diameter of crank shaft journals and pins **3-3/16"**

Breadth and thickness of crank webs **6 1/4" x 2-3/8"** No. of sections in crank shaft **One** Revolutions of engines per minute **600**

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 **6** Cast iron or steel casings **Steel** Cylindrical or rectangular **Cylindrical** Are safety valves fitted

to casings **Yes** No. of coils in each **Shell & Tube 48 tubes** Material of ~~xxxx~~ **Admiralty** Can each coil be readily shut off or disconnected **Yes**

Water Circulating Pumps, No. and size of pumps available **Fitted by Shipbuilder** how worked **-** **LIQUID RECEIVERS** No. of **6**

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 ~~XXXXXX~~ Batteries, No. of **25** 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 **One** Material of coils **Copper Finned** Can each ~~xxx~~ be readily shut off or

disconnected **Yes** Total cooling surface of battery coils **7080 sq.ft.finned** a watertight tray fitted under each battery **Yes**

Air Circulating Fans, Total No. of **16** each of **3340** cubic feet capacity, at **1510** revolutions per minute

Steam or electrically driven **Electrical** 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 **-** how worked **-**

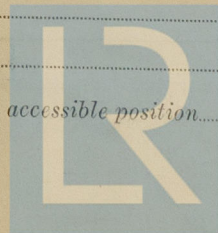
Brine Cooling System, closed or open **-** Are the pipes and tanks galvanised on the inside **-**

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 **-**



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

Im. 11.12. (MADE AND 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..... -

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure	Air Test Pressure.	Stamped.	REMARKS.
Engine Cylinders (if tested) ...						
Gas Compressors ...		93 lbs. at 86° F.		150 lbs.	Not stamped	
„ SCOPERS RECEIVERS.		“ “ “		400 lbs.	Lloyds Test 400 lbs. JSH 12-4-44	
„ Multiple Effect Receivers ...						
„ Condenser Coils ...				“ “		
„ Evaporator Coils ...						
„ Condenser Headers and Connections						
„ Condenser Casings ...				“ “	Lloyds Test 400 lbs JSH 14-8-44	
„ Evaporator Casings ...						
XXX Condenser, Evaporator and Air Cooler Coils after erection in place						
Brine Piping after erection in place...						

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..... 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 brine cooled batteries..... &....., outflow and return brine..... &.....
atmosphere..... cooling water inlet and discharge..... &..... gas in condensers..... and evaporators.....
the average temperature of the refrigerated chambers..... and the rise of temperature in these chambers upon the expiration of..... hours
time after the machinery and cooling appliances have been shut off.....

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:—
1 machine (that is, one steam engine with quadruple compressors) is spare.
2 Strainer baskets of each size used.
2 solenoid coils for Automatic Valves.
1 Thermometer of each size.
1 Thermostat of each size.

The foregoing is a correct description of the Refrigerating Machinery.

CARRIER CORPORATION *Herman Greenwood* Vice President
International Division 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. F										
Frame No. A										
Frame No. F										
Frame No. A										
Frame No. (Boiler Room) F										
Frame No. (Boiler Room) A										
Frame No. (Engine Room) A										
Frame No. F										
Frame No. A										
Frame No. F										
Frame No. A										
Frame No. F										
Frame No. A										
Frame No. (After Peak) F										
Sides ...										
Overheading ...										
Floors of Chambers ...										
Trunk Hatchways ...										
Thrust Recess, Sides and Top ...										
Tunnel Sides and Top ...										
Tunnel Recess, Front and Top ...										

Frames or Reverse Frames, Face.....
Bulkhead Stiffeners, Top..... Bottom..... and Face.....
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.....
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..... floors..... 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.....
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.....
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.....
brine return room..... fan room..... water circulating pump room.....
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
Are all wood linings tongued and grooved..... 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..... Minimum thickness..... Are they galvanised externally.....
How are they arranged in the chambers.....

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

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

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.....

General Remarks (State quality of workmanship, opinions as to class, &c.)

PLEASE SEE FOLLOWER SHEET

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.

Fee £ \$100⁰⁰ (Fee applied for, ^{TO BE} CHARGED 19.....
Travelling Expenses £ : 35⁰⁰ (Received by me, ^{AT VANCOUVER} ^{Dec. 25 1944})

John S. Heck
Surveyor to Lloyd's Register.

Committee's Minute..... NEW YORK AUG 23 1944

Assigned. Transmitted to London.

FRI. 29 DEC 1944
See Per 6331

Rpt. 9a.

Port of NEW YORK

Continuation of Report No. 45366

dated 15th August, 1944

11 SEP 1944
on the

Victualling Ship - Burrard D.D.Co. Hull No.212

GENERAL REMARKS:

These Freon compressors have been built under a mass production system, where a large number of parts are made to the Makers' gauges, and are afterwards rapidly assembled into complete machines. These ships were urgently required, and it was therefore decided to fall in with the makers' system, but this involved that each compressor finally assigned to these Victualling Ships could not be individually examined.

A large number of parts were examined by the Undersigned and found satisfactory. The complete machines are tested to 150-180 lbs. by Air Pressure under Water. Several compressors were actually witnessed under this test and found satisfactory. The Makers make a sample test every 3 months, testing one or more sample compressors to 375 lbs. per sq.in., and reporting the same to Underwriters Organizations and other bodies. Several of the compressors were also witnessed during "running in", when they are belt driven without load, and were found satisfactory.

The Liquid Receivers and Condenser Shells have been tested in the presence of the Undersigned to 400 lbs.per sq.in. by Air Pressure under water and they were found sound and tight in every respect, and showing no sign of weakness at that pressure.

The Direct Expansion batteries have been tested by Air Pressure under Water to 400 lbs. per sq.in.

General Opinion

These Compressors have been built under Special Survey in accordance with the Rules and Approved Plans, and the workmanship and material are good.

They have been forwarded to Vancouver to be fitted on board, and when this has been done in accordance with the Rules, and the Installation has been thoroughly tried and submitted to Temperature and Maintenance Tests to the satisfaction of the Surveyor, it will be eligible, in my opinion, to receive the notation LLOYDS R.M.C. with date as recommended by Vancouver Surveyor.

Copy of this Report has been forwarded to Vancouver Surveyor for information and guidance.

John S. Heck

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John S. Heck



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*Noted.
Await- Dr. report.
R.H.
12/19/44.*