

# REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

No. 48784

- 1 DEC 1933

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No. in Reg. Book. Survey held at Dartford Date: First Survey 22<sup>nd</sup> June Last Survey 13<sup>th</sup> October 1933  
Port of London  
(No. of Visits 14)

on the Refrigerating Machinery and Appliances of the S.S. PORT CHALMERS. Tons { Gross..... Net.....

Vessel built at \_\_\_\_\_ By whom built Swan Hunter & Wigan Yard No. 1483 When built 1933

Owners Commonwealth & Dominion Line Port belonging to Richardson Voyage \_\_\_\_\_

Refrigerating Machinery made by J. & E. Hall Ltd. Machine No. 8841 When made 1933  
8842  
8843

Insulation fitted by \_\_\_\_\_ When fitted \_\_\_\_\_ System of Refrigeration CO<sub>2</sub> + Brine

Method of cooling Cargo Chambers Brine grids + air Insulating Material used \_\_\_\_\_

Number of Cargo Chambers insulated 19 Total refrigerated cargo capacity 495,000 cubic feet.

## DESCRIPTION OF REFRIGERATING MACHINERY. Where placed 2<sup>nd</sup> Deck aft E.R. casing

Refrigerating Units, No. of 3 Single, double, or triple \_\_\_\_\_ Cubic feet of air delivered per hour \_\_\_\_\_

Total refrigeration or ice-melting capacity in tons per 24 hours 168 Are all the units connected to all the refrigerated chambers yes.

Compressors, driven direct or through single reduction gearing. Compressors, single or double acting single No. of cylinders 2 per mach

Diameter of cylinders 5" Diameter of piston rod 2 1/4" Length of stroke 10" No. of strokes per minute 300 each

Motive Power supplied from Direct coupled electric motor.

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 CO<sub>2</sub> machine 6 1/2 ins - 4" pins

Breadth and thickness of crank webs 9" x 4 1/2" No. of sections in crank shaft one normal \_\_\_\_\_ Revolutions of engines per minute 300

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 \_\_\_\_\_

Electric Motors, type open - pedestal bearings No. of 3 Rated 160 H.P. Kilowatts \_\_\_\_\_

Volts at 220 at 300/200 revolutions per minute. Diameter of motor shafts at bearings \_\_\_\_\_

Reduction Gearing, maximum shaft horse power at 1st pinion \_\_\_\_\_ Revolutions per minute at full power at 1st pinion \_\_\_\_\_

2nd pinion \_\_\_\_\_ 1st reduction wheel \_\_\_\_\_ main shaft \_\_\_\_\_ Pitch circle diameter, 1st pinion \_\_\_\_\_ 2nd pinion \_\_\_\_\_

1st reduction wheel \_\_\_\_\_ Main wheel \_\_\_\_\_ Width of face, 1st reduction wheel \_\_\_\_\_ Main wheel \_\_\_\_\_

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, 1st pinion \_\_\_\_\_ 2nd pinion \_\_\_\_\_

1st reduction wheel \_\_\_\_\_ Main wheel \_\_\_\_\_ Flexible pinion shafts, diameter 1st \_\_\_\_\_ 2nd \_\_\_\_\_

Pinion shafts, diameter at bearings, External, 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Internal, 1st \_\_\_\_\_ 2nd \_\_\_\_\_

Diameter at bottom of teeth of pinion, 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Wheel shafts, diameter at bearings, 1st \_\_\_\_\_

Main \_\_\_\_\_ Diameter at wheel shroud, 1st \_\_\_\_\_ Main \_\_\_\_\_

Gas Condensers, No. of 3 Cast iron or steel casings cast iron Cylindrical or rectangular cylindrical

No. of coils in each 14 Material of coils S.D. Copper 3/4" b. x 1 1/8" o.d. Can each coil be readily shut off or disconnected yes.

Water Circulating Pumps, No. and size of Supplied by Owner how worked \_\_\_\_\_ Gas Separators, No. of 6

Gas Evaporators, No. of 3 Cast iron or steel casings steel Pressure or gravity type pressure

No. of coils in each casing 14 Material of coils S.D. Steel 1" b. x 1 5/16" o.d. 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

No. of coils in each battery \_\_\_\_\_ Material of coils S.D. Steel 1" bore Can each coil be readily shut off or disconnected yes. Total cooling surface of battery coils 160 sq. feet Is a watertight tray fitted under each battery \_\_\_\_\_

Air Circulating Fans, Total No. of 5 - 12 1/2" each of 18000 C.F./min - 1800 R.M.P. cubic feet capacity, at 1900 " revolutions per minute

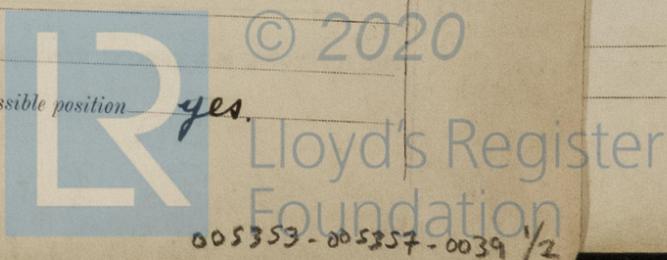
Steam or electrically driven Electrically Where spare fans are supplied are these fitted in position ready for coupling up no

Brine Circulating Pumps, No. and size of, including the additional pump 4 - 5" vert. centri how worked electrically

Brine Cooling System, closed or open closed 1 - 4" x 4 1/2" V.D. ram pump, worm driven. Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber see separate sheet attached.

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

Where the tanks are not closed is the compartment in which they are situated efficiently ventilated

Steam Condensing Plant. State what provision is made for condensing steam, in terms of Section 4, Clauses 13 and 14

HYDRAULIC AND OTHER TESTS.

Table with columns: DESCRIPTION, Date of Test, Working Pressure, Hydraulic Test Pressure, Air Test Pressure, Stamped, REMARKS. Includes entries for Engine Cylinders, Gas Compressors, Separators, Condenser Coils, Evaporator Coils, Condenser Headers and Connections, Condenser Casings, and Evaporator Casings.

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 air at the snout box and of the return air

or, 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

time after the machinery and cooling appliances have been shut off

SPARE GEAR.

Are the machines in accordance with Section 4, Clause 2 of the Rules

Are the working parts of the machines, pumps and motors respectively, interchangeable

ARTICLES SUPPLIED AS PER RULE.

ADDITIONAL SPARE GEAR SUPPLIED.

Handwritten list of spare gear items including crankshaft, pistons, rods, valves, gauges, and various tools and fittings.

Handwritten list of additional spare gear items including sets of valves, guides, springs, pumps, and various tools.

ELECTRICAL SPARES.

Handwritten list of electrical spares including armature-packed motor, field coils, brushes, and fans.

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL, Manufacturer.

Handwritten signature: C. Nichols, DIRECTOR.

DESCRIPTION OF INSULATION.

Table with columns: IN LOWER HOLD CHAMBERS, IN 'TWEEN DECK CHAMBERS. Includes rows for Bulkheads, 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 AND FACE. RIBBAND ON TOP OF DECKS. SIDE STRINGERS, TOP AND FACE. WEB FRAMES, SIDES AND FACE. BRACKETS, TOP AND FACE. INSULATED HATCHES, MAIN AND MANHOLE. HATCHWAY COAMINGS, MAIN AND MANHOLE. 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. Coal Bunker Bulkheads, and Brine Outflow and Return Pipes passing through coal bunkers. Is the insulation, so far as practicable, fireproof. 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. Where the chambers are situated below the load water line, 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, inside dimensions, main \_\_\_\_\_ and branch \_\_\_\_\_**

Are they permanently fixed or collapsible, or portable \_\_\_\_\_ State position in chambers \_\_\_\_\_

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 \_\_\_\_\_ 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.) The refrigerating machinery has been constructed under special survey and the materials and workmanship are good.*

*This machinery has been installed in the vessel, Examined under working conditions, and found satisfactory. Please see New Report for Insulation, particulars of Cooling down tests etc.*

*H. B. Forster  
Newcastle-on-Tyne  
21<sup>st</sup> Decr. 1933.*

**PARTICULARS TO BE ENTERED IN REGISTER BOOK.**

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	POWER.		INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.		Cubic feet of air delivered per hour.	Ice melting capacity per 24 hours. Tons.	No.	Capacity. Cubic ft.
3	6	Cash. Aubrey	J. E. Hall Ltd	1933	Brine + Air		168	19	

*Fee £ 12 0 0 for Nov 1/2/33  
36 0 0  
Travelling Expenses £ : :  
See Newcastle Report  
Received by me, 19*

*D. Gemmell  
Surveyor to Lloyd's Register.*

Committee's Minute **FRI. 29 DEC 1933**  
Assigned *See Amble 48784*



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