

Rpt. 17.

No. 55340<sup>A</sup>

# REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office)

30 JAN 1935

Date of writing Report 26-1-35 When handed in at Local Office 26-1-35 Port of Glasgow  
 No. in Reg. Book. 90765 Survey held at Glasgow Date: First Survey 25th Sept '34 Last Survey 18-1-1935  
 (No. of Visits 46)

on the Refrigerating Machinery and Appliances of the T.S.M.V. "PORT WYNDHAM" Tons { Gross 8580  
 Net 5233

Vessel built at Glydebank By whom built J. Brown & Co. Ltd. Yard No. 541 When built 1935

Owners Commonwealth & Dominion Line Ltd. Port belonging to London Voyage

Refrigerating Machinery made by J. E. Hall Ltd. Machine No. When made 1934

Insulation fitted by Mercer Insulation Co. When fitted 1935 System of Refrigeration CO<sub>2</sub> brine

Method of cooling Cargo Chambers Brine & air Insulating Material used Cork

Number of Cargo Chambers insulated 5 holds, 6 turn decks Total refrigerated cargo capacity 431288 cubic feet.

## DESCRIPTION OF REFRIGERATING MACHINERY. Where placed

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

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

Compressors, driven direct or through <sup>single</sup><sub>double</sub> } reduction gearing. Compressors, single or double acting \_\_\_\_\_ No. of cylinders \_\_\_\_\_

Diameter of cylinders \_\_\_\_\_ Diameter of piston rod \_\_\_\_\_ Length of stroke \_\_\_\_\_ No. of strokes per minute \_\_\_\_\_

### Motive Power supplied from

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 \_\_\_\_\_

Electric Motors, type \_\_\_\_\_ No. of \_\_\_\_\_ Rated \_\_\_\_\_ Kilowatts \_\_\_\_\_

Volts at \_\_\_\_\_ 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 \_\_\_\_\_ Cast iron or steel casings \_\_\_\_\_ Cylindrical or rectangular \_\_\_\_\_

No. of coils in each \_\_\_\_\_ Material of coils \_\_\_\_\_ Can each coil be readily shut off or disconnected \_\_\_\_\_

Water Circulating Pumps, No. and size of \_\_\_\_\_ how worked \_\_\_\_\_ Gas Separators, No. of \_\_\_\_\_

Gas Evaporators, No. of \_\_\_\_\_ Cast iron or steel casings \_\_\_\_\_ Pressure or gravity type \_\_\_\_\_

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 \_\_\_\_\_ Are there two separate systems, so that one may be in use while the other is being

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

disconnected \_\_\_\_\_ Total cooling surface of battery coils \_\_\_\_\_ Is a watertight tray fitted under each battery \_\_\_\_\_

Air Circulating Fans, Total No. of \_\_\_\_\_ each of \_\_\_\_\_ cubic feet capacity, at \_\_\_\_\_ revolutions per minute \_\_\_\_\_

Steam or electrically driven \_\_\_\_\_ Where spare fans are supplied are these fitted in position ready for coupling up \_\_\_\_\_

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 \_\_\_\_\_





Common  
Are thermometers fitted to the outflow and to each return brine pipe Yes Where the tanks are closed are they ventilated as per Rule None  
Where the tanks are not closed is the compartment in which they are situated efficiently ventilated Yes  
Steam Condensing Plant. State what provision is made for condensing steam, in terms of Section 4, Clauses 13 and 14 None

#### 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						
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						
BRINE PIPING AFTER ERECTION IN PLACE						

Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory Yes  
Date of test 17-1-25 Density of Brine 50 by T. Waddell hydrometer  
Temperatures (When the cargo chambers are cooled down to the required test temperatures) of air at the snow box and of the return air Yes & Yes  
or, delivery and return air at direct expansion or brine cooled batteries Yes & Yes, outflow and return brine -10° & -6°  
atmosphere 40 cooling water inlet and discharge 43 & 47 gas in condensers 68 and evaporators -12  
the average temperature of the refrigerated chambers 5° 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 8°

#### 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.

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

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. 178 A (Fore Peak)			Cork	1 1/2"	1 1/4"			Cork	1 1/2"	1 1/4"	
FRAME No. 147 F			"	4"	1 1/4"			"	6"	1 1/4"	
FRAME No. 122 A			"	10 3/4"	1 1/4"			"	7"	1 1/4"	
FRAME No. 97 F (Bottom Room) ENGINE			"	9 3/4"	1 1/4"			"	6 1/2"	1 1/4"	
FRAME No. 74 A (Engine Room)			"	5"	1 1/4"			"	6 1/2"	1 1/4"	
FRAME No. 47 F	1 1/2" in way of oil tanks.	Corrugated iron	"	11 1/2"	1 1/4"			"	11 1/2"	1 1/4"	
FRAME No. 23 A			"	11 1/2"	1 1/4"			"	11 1/2"	1 1/4"	
FRAME No. F											
FRAME No. A											
FRAME No. F (After Peak)			Cork	11 1/2" to 14" in No 11 elsewhere	1 1/4" x			Cork	10"-11"	1 1/4" x	
SIDES			"	11 1/2"	3/4" x 1"			"	10 1/2"	3/4" x 1"	
OVERHEADING			"	7"	1" x 1 1/2"			"	3; 1 1/2" in No 3 L. & Q. Tim. 2 1/4"	1 1/4"	
FLOORS OF CHAMBERS	No 1 ELSEWHERE	1 1/2"	1 1/2"	6"	1" x 1 1/2"			"	Nothing in No 5		
TRUNK HATCHWAYS			No 2 & 4 'TWEEN DECKS					1 1/4"	4" x 6"	1 1/4"	
THRUST RECESS, SIDES AND TOP								"	9 1/2"	2 1/2" P.P. on top. 1" x 1 1/2" on sides	
TUNNEL SIDES AND TOP								1 1/2" over oil tanks	1 1/2"	6 1/2"	2 1/2" P.P.
TUNNEL RECESS, FRONT AND TOP								1 1/2" over oil tanks	1 1/2"	6 1/2"	2 1/2" P.P.
FRAMES OR REVERSE FRAMES, FACE											
BULKHEAD STIFFENERS, TOP											
RIBBAND ON TOP OF DECKS											
SIDE STRINGERS, TOP											
WEB FRAMES, SIDES											
BRACKETS, TOP BEAM											
INSULATED HATCHES, MAIN											
HATCHWAY COAMINGS, MAIN											
HOLD PILLARS											
MASTS											
Are insulated plugs fitted to provide easy access to bilge suction roses											
Are insulated plugs fitted to ventilators											
Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected											
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 bulkheads or deck plating, are the fittings and packing of the stuffing boxes both watertight and fireproof											
Cargo Battens, Dimensions and spacing, sides											
fixed or portable											
Thermometer Tubes, No. and position in each chamber											
diameter											
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											
Trap scuppers led to bilges											
What provision is made for draining the refrigerating machinery room											
brine return 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 *one to each bilge & by thermometer tubes*

Diameter *2 1/2"* Are all sounding pipes in way of insulated chambers fitted in accordance with Section 3, Clause 11. ☒

Are all wood linings tongued and grooved *Yes* Are cement facings reinforced with expanded steel lattice *none*

How is the expanded metal secured in place *none*

How are the cork slabs secured to the steel structure of the vessel *cork slabs only in ships provision chambers*

**Air Trunkways in Chambers,** inside dimensions, main *varying dimensions* and branch ☒

Are they permanently fixed or collapsible, or portable *Screwed* State position in chambers *sides & overhead & ends*

*different in the various compartments*

Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors *no trunks thro' W.T. Bulkheads* 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 1/2"* Are they galvanised externally *Yes*

How are they arranged in the chambers *sides, ends & overhead - different in the various compartments*

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

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

*James L. Brown*  
FOR THE MERSEY INSULATION CO.

B1 175

**Plans.** Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery ☒ and Insulation *Spec*

Is the Refrigerating Machinery and Appliances duplicate of a previous case *No* 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 machinery has been built under survey. The materials & workmanship are good. It has been fitted aboard in a satisfactory manner and found satisfactory under test.*

*In our opinion the vessel is eligible for record + R.M.C. 1.35.*

*26/1/35*

**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 feet.
								21	437288

Fee *£42-0-0* Fee applied for, 19 *See London Report*  
Travelling Expenses £ : : Received by me, 19 *See London Report*

Committee's Minute

Assigned *+ Lloyd's R.M.C. 1.35*

CERTIFICATE WRITTEN  
31.1.35

*James L. Brown* *Geo. Webster*  
Surveyor to Lloyd's Register



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Foundation