

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office 19 SEP 1944)

Date of writing Report 16th Sept 1944. When handed in at Local Office 18 SEP 1944. Port of NEWCASTLE-ON-TYNE
No. in Reg. Book. Survey held at Newcastle Date: First Survey Last Survey 19
(No. of Visits)

on the Refrigerating Machinery and Appliances of the "EMPIRE LADY" Tons { Gross 704.04
Net 476.64
Vessel built at Newcastle By whom built Shipbuilding Co. Ltd (Ship Branch) Yard No. 8 When built 8.44.
Owners Ministry of War Transport Port belonging to Newcastle Voyage Canada.
Refrigerating Machinery made by L. Stearn & Co. Ltd. Machine Nos. 2546 When made 1944.
Insulation fitted by Not yet fitted. When fitted System of Refrigeration N.H.3 vapor
Method of cooling Cargo Chambers Air cooled. Insulating Material used ✓
Number of Cargo Chambers insulated 3 Total refrigerated cargo capacity 284000. cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Tween deck space abaft main Eng. 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 By VEE BELTS BY STEAM ENGS. Are all the units connected to all the refrigerated chambers

Compressors, driven By VEE BELTS BY STEAM ENGS. 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 7 1/4"

Diameter of piston rod Trunk pistons Length of stroke 6 No. of revolutions per minute 410

Motive Power supplied from 3 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 Two Diameter 7" & 11"

Length of stroke 5" Working pressure 180 lb Diameter of crank shaft journals and pins Belliss & Morcom Imp. no. 10129 & 10130.

Breadth and thickness of crank webs No. of sections in crank shaft See Birmingham City C 3138 of 7th Mar 44 Revolutions of engine 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

AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule

Can the internal surfaces of the receivers be examined What means are provided for cleansing their inner surfaces

Is there a drain arrangement fitted at the lowest part of each receiver If made under survey

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 Cast iron or steel casings Cylindrical or rectangular Are safety valves fitted

to casings No. of coils in each Material of coils Can each coil be readily shut off or disconnected

Water Circulating Pumps, No. and size of pumps available 1 Centrif. 100 Tons/hr. 1 Ballcock 200 Tons/hr. worked 1 B.S. Pump 60 T/hr. Gas Separators, No. of

Gas Evaporators, No. of Cast iron or steel casings Pressure or gravity type If pressure type, are safety valves fitted

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

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

Air Circulating Fans, Total No. of 6 each of 14500 cubic feet capacity, at — revolutions per minute

Steam or electrically driven Electric. 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

Vertical text on the left margin: "THE LLOYD'S REGISTER FOUNDATION"

Diagonal handwritten text: "See Surveying Report No 684/11"



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)						
GAS COMPRESSORS						
SEPARATORS						
MULTIPLE EFFECT RECEIVERS						
CONDENSER COILS						
EVAPORATOR COILS						
CONDENSER HEADERS AND CONNECTIONS						
CONDENSER CASINGS						
EVAPORATOR CASINGS						
NH, CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
BRINE PIPING AFTER ERECTION IN PLACE						

See Glasgow Report No. 68411

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 *24th August 1914* 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
 atmosphere cooling water inlet and discharge & outflow and return brine & 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: *In accordance with Glasgow Report 68411.*

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. (Fore Peak) A										
FRAME NO. F										
FRAME NO. A										
FRAME NO. F										
FRAME NO. A										
FRAME NO. 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

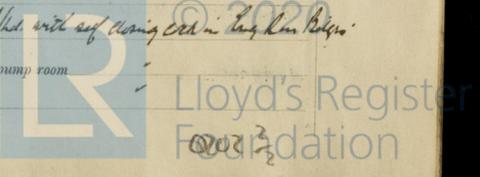
Cargo Battens, Dimensions and spacing, sides floors tunnel top
 fixed or portable Are screens fitted over the brine grids at chamber sides hinged or permanently fixed

Thermometer Tubes, No. and position in each chamber *6 in No. 3 P, 35.*
 diameter *2 1/2" internal* 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
 Draining Arrangements. What provision is made for draining the inside of the chambers *4" Brass Lapped Pipes (provided but not fitted).*

Where ~~scupper~~ scupper pipes, and drain pipes are fitted are means provided for blanking them off *Yes*
 What provision is made for draining the refrigerating machinery room *4" Scupper (1/2") through by the side with a stopcock in the line below.*

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 *1 each to bilges & double bottoms (P.S.).*

Diameter *2 1/2 inches* 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 *Added in Return*

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 *Yes.*

Is the Refrigerating Machinery and Appliances duplicate of a previous case *Yes.* If so, state name of vessel *Empire Abbey*

If the survey is not complete, state what arrangements have been made for its completion and what remains to be done

Insulation in holds & tween decks to be fitted on the arrival of the vessel in Canada. Cork, supplied by Cork Insulation & Rubbers Co., also air trunk for completion of installation now stored in tween deck, on board vessel. On completion of installation cooling tests to be carried out.

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

None done. Refrigerating Machinery pans, ammonia leads to coils fitted. Cooler spaces & piping. Machinery room insulated, deck insulation in way of insulated compartments fitted and vessel prepared ready to receive hold & tween deck insulation, in accordance with the attached specification.

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.								INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.	System of (1) Refrigerating (2) Insulating the Chambers.	Ice melting capacity per 24 hours.	Is Refrigerating Machinery Electrically Driven?	No.	Capacity.
2	4	Ammonia	L. Horn & Co	1944	(1) Air	Tons. 64	No. ho.	3	Cubic ft. 284,000

Fee *See letter E 21-8/44.* To be charged in Canada. Fee applied for, 19

Travelling Expenses £ : : (Received by me, 19

A. Alton, a watt
Surveyor to Lloyd's Register.

Committee's Minute **FRI. 9 FEB 1945**

assigned
see minute on Int'l Ice Rule Rpt.