

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office)

Date of writing Report

19

When handed in at Local Office

29.7.44 Port of GLASGOW.

No. in

Reg. Book. Survey held at GLASGOW.

Date: First Survey 24-2-44

Last Survey 26-6-

1944

(No. of Visits 22.)

on the Refrigerating Machinery and Appliances of the ^{3/4}EMPIRE LADY.Tons { Gross
NetVessel built at NEWCASTLE-ON-TYNE By whom built Sir W.G. Armstrong
Whitworth & Co. Ltd., Yard No. 8 When built 1944

Owners Port belonging to

Voyage

Refrigerating Machinery made by L. STERNE & CO. LTD.,

Machine Nos. 2576
2577

When made 1944

Insulation fitted by

When fitted

System of Refrigeration N.H.3

Method of cooling Cargo Chambers

Insulating Material used

Number of Cargo Chambers insulated

Total refrigerated cargo capacity cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed

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 64 Are all the units connected to all the refrigerated chambers YES

Compressors, driven direct or through ^{single} ~~double~~ ^{Vee Belt} ~~reduction~~ ^{gearing} 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

(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

Length of stroke

Working pressure 180 lbs.

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

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 2

Cast iron or steel casings

LAP WELDED

Cylindrical or rectangular

CYLINDRICAL

Are safety valves fitted

to casings

NO

No. of tubes in each

80

Material of tubes

SOLID DRAWN/

Can each coil be readily shut off or disconnected

Water Circulating Pumps, No. and size of pumps available

how worked

Gas Separators, No. of 2 Delivery

1 Suction

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 or Brine Cooled Batteries, No. of 6

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

cleared of snow

YES

No. of coils in each battery

5

Material of coils

HOT ROLLED

Can each coil be readily shut off or

disconnected

YES

Total cooling surface of battery coils

12000 sq. Ft.

Is a watertight tray fitted under each battery

YES

Air Circulating Fans, Total No. of 6

each of

17,500

cubic feet capacity, at

revolutions per minute

Steam or electrically driven

Electrically

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

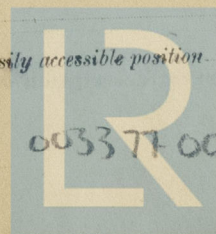
No. of brine sections in each chamber

Can each section be readily shut off or disconnected

Are the control valves situated in an easily accessible position

NOTE: THE WORDS WHICH DO NOT HAVE A SPACE BETWEEN THEM ARE PRINTED IN CAPITAL LETTERS.

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Are thermometers fitted to the outside 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
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)	6-4-44	200 lbs/	600 lbs/	300 lbs/		
	19-6-44	sq. in.	sq. in.	sq. in.	W.A.L.	
GAS COMPRESSORS	31-3-44	200 lbs/	600 lbs/	300 lbs/	W.A.L.	
	17-4-44	sq. in.	sq. in.	sq. in.	H.C.	
" SEPARATORS	30-3-44	200 lbs/	600 lbs/	300 lbs/	W.A.L.	
" MOTOR RECEPTORS	24-2-44	200 lbs/	600 lbs/	300 lbs/	W.A.L.	
" SHELL & TUBE	20-6-44	sq. in.	sq. in.	sq. in.	W.A.L.	
" CONDENSER COILS	18-5-44	200 lbs/	1500 lbs/	500 lbs/	W.A.L.	
" AIR COOLER	14-6-44	sq. in.	sq. in.	sq. in.	W.A.L.	
" EVAPORATOR COILS	25-4-44	200 lbs/	1000 lbs/	500 lbs/	W.A.L.	
" CONDENSER HEADERS AND CONNECTIONS	15-6-44	sq. in.	sq. in.	sq. in.	W.A.L.	
" CRANK CASES	23-5-44	40 lbs/	300 lbs/	150 lbs/	W.A.L.	
" CONDENSER COILS	25-5-44	sq. in.	sq. in.	sq. in.	F.D.	
" LIQUID TRAP COIL	29-3-44	200 lbs/	1500 lbs/	500 lbs/	W.A.L.	
" LIQUID TRAP		sq. in.	600 lbs/	300 lbs/	W.A.L.	
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE	22/8/44			200 lbs/		
BRINE PIPING AFTER ERECTION IN PLACE						

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.

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

atmosphere cooling water inlet and discharge & outflow and return brine &

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: SEE ATTACHED LIST.

The foregoing is a correct description of the Refrigerating Machinery.

For L. S. Smith & Co. Ltd.

P. B. A. Brown

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.	
BULKHEADS.	FRAME No. (Fore Peak)	A									
	FRAME No.	F									
		A									
	FRAME No.	F									
		A									
	FRAME No.	F									
		A									
	FRAME No. (Boiler Room)	F									
		A									
	FRAME No. (Engine Room)	A									
	FRAME No.	F									
		A									
	FRAME No.	F									
		A									
	FRAME No.	F									
		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

BOTTOM

AND FACE

BULKHEAD STIFFENERS, TOP

BOTTOM

AND FACE

RIBBAND ON TOP OF DECK

BOTTOM

AND FACE

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

BILGE

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

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

are they fitted in accordance with Section 3, Clause 8

diameter

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 5, 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 No 18-8-42 and Insulation

Is the Refrigerating Machinery and Appliances duplicate of a previous case YES If so, state name of vessel S.S. "EMPIRE GERANT"

Glasgow Report No. 66404.

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 built under special survey, in accordance with the rules and approved plans, and the material and workmanship are good.

The refrigerating machinery has been despatched to Messrs. Sir W. G. Armstrong Whitworth for installation in their Yard No. 8 and will be eligible, in our opinion, to have record I-LLOYDS R.M.C. with date on completion.

The Refrigerating machinery driven by two Steam Engines by Belliss & Morcom (No 10129 & 10130) as per Birmingham Cert/C. 3138 have been satisfactorily fitted on board the S.S. EMPIRE LADY. The machinery was run at full revs. for about 12 hours and found satisfactory.

Quatt
Newcastle on Tyne
Sept 1944.

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	Ice melting capacity per 24 hours.	Is Refrigerating Machinery Electrically Driven?	INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				No.	Capacity.
2	8	N.H.3	L. STERNE & CO. LTD.	1944	1) AIR	Tons. 64	No	-	Cubic ft. -

2/3 Fee GLASGOW £ 16 : 0 : 0 Fee applied for, 1 AUG 1944
Travelling Expenses £ : : Received by me, 19

Committee's Minute GLASGOW 1 AUG 1944

Assigned Supered for
Completion

W. A. Suggat

Surveyor to Lloyd's Register.

FRI, 9 FEB 1945

see minute
on J.E. RMC Rpt.

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