

Rpt. 17.

M. C. No.

67711

No. 60177

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office)

Date of writing Report 5th Sept. 1938When handed in at Local Office 5th Sept 38.

Port of Glasgow.

No. in

Reg. Book. Survey held at Glasgow.

Date: First Survey 1st Dec 1937Last Survey 7th Sept. 1938.

1938.

71676

(No. of Visits)

9

on the Refrigerating Machinery and Appliances of the T.W. S.C. T. S. "CANTON".

Tons

Gross 15784

Net 9255

Vessel built at LINTHOUSE, GLASGOW. By whom built ALEX. STEPHEN & SONS LTD. Yard No. 557 When built 1938

Owners PENINSULAR & ORIENTAL STEAM NAVY CO Port belonging to LONDON

Voyage

Refrigerating Machinery made by J. & E. HALL LTD.

Machine Nos.

9811

9812

When made

1937.

Insulation fitted by ALEX. STEPHEN & SONS LTD When fitted 1938

System of Refrigeration CO₂

Method of cooling Cargo Chambers BRINE GRIDS. & Air.

Insulating Material used GRANULATED & SLAB CORK.

Number of Cargo Chambers insulated 5

Total refrigerated cargo capacity 33.845 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Tank-top - Ford of E & B. space.

Refrigerating Units, No. of No. of machines Is each machine independent

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 single } reduction gearing. Compressors, single or double acting If multiple effect compression

are relief valves or safety discs fitted No. of cylinders to each unit Diameter of cylinders

Diameter of piston rod Length of stroke No. of revolutions per minute

Motive Power supplied from 30 H.P. (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 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

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 15' Centrifugal + 4 alternative how worked Gas Separators, No. of

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 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



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

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Are thermometers fitted to the ^{COMMON} 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 ✓
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 Electric Drive

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 ₃ 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 yes.
Dates of test 1 AND 2 - 9 - 38 Density of Brine 50 by Twaddell hydrometer
Temperatures (when the cargo chambers are cooled down to the required test temperatures) - 4° F
or, delivery and return air at direct expansion or brine cooled batteries & , outflow and return brine - 13° F & - 11° F
atmosphere 56° F cooling water inlet and discharge 60° F & 65° F gas in condensers 73° F and evaporators - 16° F
the average temperature of the refrigerated chambers - 4° F and the rise of temperature in these chambers upon the expiration of twelve hours
time after the machinery and cooling appliances have been shut off 10° F

SPARE GEAR.

Are the working parts of the machines, pumps and motors respectively, interchangeable ✓
Has the spare gear required by the Rules been supplied yes.
Additional Spare Gear Supplied:-
As per London report dated 3rd Dec. 1937

The foregoing is a correct description of the Refrigerating Machinery.

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. 126	F					-	1 1/4" W.P.	GR. CORK	9"	-
		A									
	FRAME No. 145	F									
		A					-	1 1/4" W.P.	GR. CORK	9"	
	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. (After Peak)	F									
SIDES	...						-	1 1/4" W.P.	GR. CORK	11"	
OVERHEADING	...						-	1 1/4" W.P.	GR. CORK	10"	
FLOORS OF CHAMBERS	...						-	1 1/4" SURF. ASTAL	SLAB CORK	8"	
TRUNK HATCHWAYS	...						-	1 1/4" W.P.	GR. CORK	9"	
THRUST RECESS, SIDES AND TOP	...										
TUNNEL SIDES AND TOP	...										
TUNNEL RECESS, FRONT AND TOP	...										

FRAMES OR REVERSE FRAMES, FACE 2" inside frames.

BULKHEAD STIFFENERS, TOP 2" to 4 1/2" BOTTOM Do AND FACE Do.

RIBBAND ON TOP OF DECKS 2 1/2" white pine ribband on G. OR only.

SIDE STRINGERS, TOP - BOTTOM - AND FACE -

WEB FRAMES, SIDES - AND FACE -

BRACKETS, TOP - BOTTOM - AND FACE -

INSULATED HATCHES, MAIN - BILGE 5 1/2" Cork 1" & 3/4" P.P. T & B. MANHOLE -

HATCHWAY COAMINGS, MAIN - BILGE 9" P.P.

HOLD PILLARS 1" felt and 2 1/2" P.P. protection also metal protection for 4'0" above deck.

MASTS - VENTILATORS -

Are insulated plugs fitted to provide easy access to bilge suction roses Yes tank, air, and sounding pipes Yes heels of pillars Yes

and manhole doors of tanks Nil Are insulated plugs fitted to ventilators Yes cargo ports Nil and side lights Nil

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 3" x 2" P.P. about 18" apart floors Nil tunnel top -

fixed or portable fixed to scum Are screens fitted over the brine grids at chamber sides Yes hinged or permanently fixed portable panels

Thermometer Tubes, No. and position in each chamber 2 to large spaces 1. to small spaces.

diameter 2 1/2" bore 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 Yes

Draining Arrangements. What provision is made for draining the inside of the chambers Trapped scuppers led to drain tank from P. Side led to bilge S. side.

Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off Scum down caps.

What provision is made for draining the refrigerating machinery room Drain into cofferdam lat below (IP & S.)

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 Nil.

Sounding Pipes, No. and position in each chamber situated below the load water line *1 P. 21.5 into "H" deck compartment.*

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

Are all wood linings tongued and grooved *yes* Are cement facings reinforced with expanded steel lattice *no*

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 *yes*

Are they permanently fixed or collapsible, or portable *portable panels at ship's sides & holds. main supply on*

roof fixed Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors *NIL* 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" bore* Minimum thickness *1/4"* Are they galvanised externally *yes*

How are they arranged in the chambers *overhead and side walls.*

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

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

FOR ALEXANDER STEPHEN & SONS, LIMITED,

Am Quarrie 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 *-* 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 and appliances have been built under special survey and in accordance with the Rules. The materials & workmanship are good. They have been efficiently fitted in position on board and afterwards tested under full working conditions and found in order.*

The refrigerating machinery & appliances of this vessel are eligible in my opinion, to be classed in the Register Book with notation of + 110005 R.M.C. 9.38.

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.
2	4	Carl Anky	J. & E. Hall Ltd	1937	(1) Brine - Air (2) Gas - Sub Cool	54	yes	5	33845

Land 76 £2.0.0
Fees 10 £1.0.0
Travelling Expenses £ 1 : 1 : -
Fee applied for, 8/9/1938
Received by me, 19/11/1938

Committee's Minute

Assigned

Route Ets.

CERTIFICATE WRITTEN



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