

Report on Refrigerating Machinery and Appliances.

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No. in Reg. Book. Survey held at DARTFORD Date: First Survey 2-4-46 Last Survey 27-11-46

(Number of Visits 16)

on the Refrigerating Machinery and Appliances of the Sangola Tons Gross 86.2 Net 50.5

Vessel built at By whom built BARCLAY, CURLE & CO Yard No. 707 When built 1946

Owners BRITISH INDIA STEAM NAVY CO LTD Port belonging to Voyage

Refrigerating Machinery made by J.E. HALL LTD, DARTFORD Machine Nos. 12756, 12757 When made 1946

Insulation fitted by When fitted System of Refrigeration CARB. ANHY.

Method of cooling Cargo Chambers Brine and Air Insulating Material used

Number of Cargo Chambers insulated 2 Total refrigerated cargo capacity 6,700 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 9 Are all the units connected to all the refrigerated chambers Yes

Compressors, driven direct or through 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 2 Diameter of cylinders 1 13/16"

Diameter of piston rod 1 1/8" Length of stroke 6" No. of revolutions per minute 500

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 One / engine diameter 7 1/2"

Length of stroke 4 1/2" Working pressure 120 lbs / sq" Diameter of crank shaft journals and pins CO2 M/S 3" JOURNALS 3 1/2" PINS

Breadth and thickness of crank webs, No. of sections in crank shaft CO2 MACHINERY 1 REVOLUTIONS OF ENGINES PER MINUTE 500

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: Have they been made under survey State No. of Report or Certificate

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

Can the internal surfaces of the receivers be examined and cleaned Is a drain fitted at the lowest part of each receiver

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 each Cast iron or steel casings Copper Cylindrical or rectangular cylindrical Are safety valves fitted

to casings Yes No. of coils in each 1 - per casing Material of coils U.P. or cast iron Can each coil be readily shut off or disconnected Yes

Water Circulating Pumps, No. and size of pumps available 2 - 1 1/2" centrifugal how worked Electrically Gas Separators, No. of 4

Gas Evaporators, No. of 1 of coils Cast iron or steel casings Steel Pressure or gravity type pressure If pressure type, are safety

valves fitted fitted No. of coils in each casing 7 Material of coils S.D. Steel Can each coil be readily shut off or disconnected Yes

Direct Expansion or Brine Cooled Batteries, No. of Brine 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 One Material of coils Steel Can each coil be readily shut off or

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

Air Circulating Fans, Total No. of 2 each of 1 - 1,800 cubic feet capacity, at 2,500 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 3 - 1 1/2" centrifugal how worked Electrically

Brine Cooling System, closed or open closed Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber two

Can each section be readily shut off or disconnected Yes Are the control valves situated in an easily accessible position Yes

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



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.
 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.

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure. lbs/sq. in.	Hydraulic Test Pressure. lbs/sq. in.	Air Test Pressure. lbs/sq. in.	Stamped.	REMARKS.
Engine Cylinders (if tested) ...	18.7.46 5.10.46		240	-	W.T.	ENG Nos 23427-23428 TESTED NOTTINGHAM
Gas Compressors ...	29.5.46	1000	3000	1500	RM	
„ Separators ...	13.9.46	1000	3000	1500	RM	
„ Multiple Effect Receivers ...		NOT FITTED				
„ Condenser Coils ...	STOCK TESTED	1000	3000	1500		
„ Evaporator Coils ...	18.8.46 25.9.46	1000	3000	1500	RM	
„ Condenser Headers and Connections	28.10.46 9.11.46	1000	3000	1500	RD	
„ Condenser Casings ...	8.11.46	10-15	30	-	RD	
„ Evaporator Casings ...	4.10.46	20-25	50	-	RM.	
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 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... 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... 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: One Impeller and spindles each for Brine and Water Pumps: One set of tools: 16 compressor piston rings: One hydrometer: 48 additional compressor valve springs: 2 leather mauls: 2 springs for water relief valve: 2 springs for CO₂ relief valve: 2 studs and nuts for main bearings: 2 bolts and nuts for connecting rod big end: 2 studs and nuts for crosshead: 2 brass cased thermometers: 1 CO₂ gauge: One fitted box for compressor parts
 For Steam Engine: One set of steam piston rings
 One set of steam governor springs
 One set of packing.

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL, LTD.
J. Wells
 Manufacturers

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				3						
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. (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... 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. 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. 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.....
(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. In our opinion the refrigerating machinery and appliances of this vessel will be eligible for the notation + Lloyd's RMC (with date) when the installation and testing has been satisfactorily completed.*

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.				Tons.	No.
2	4	Carb. Acety.	J. & C. Hall Ltd	1946	W. Bruce & Co	9	No	2	6,700

Fee Paid..... £18 : : : Fee applied for,..... 19.....

Travelling Expenses £ : : : Received by me,..... 19.....

R. Muntton, R.J. Dunn
Surveyor to Lloyd's Register.

Committee's Minute..... **FRI. 23 MAY 1947**

Assigned..... *See gls. 71755*

Certificate to be sent to
MLW

