

Report on Refrigerating Machinery and Appliances.

Received at London Office

Date of writing Report 28 JUN 1948

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No. in

Reg. Book. Survey held at London

Date: First Survey 29-10-47

Last Survey 16 DECEMBER 1947

(Number of Visits 9)

on the Refrigerating Machinery and Appliances of the

Tons Gross 5030

Net 2716

Vessel built at By whom built Barclay Curle & Co. Ltd Yard No. 711 When built 1948

Owners British India Steam Navigation Co. Ltd Port belonging to Voyage

Refrigerating Machinery made by J. C. Hall, Ltd. Salford Machine No. 13064/13065 When made 1948

Insulation fitted by When fitted System of Refrigeration CO₂ & Brine

Method of cooling Cargo Chambers Air over screened grids Insulating Material used

Number of Cargo Chambers insulated 5 Total refrigerated cargo capacity 7040 cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed

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

Total refrigeration or ice-melting capacity in tons per 24 hours 9 tons Are all the units connected to all the refrigerated chambers Yes

Compressors, driven direct ~~through~~ ^{by} ~~electric~~ ^{mechanical} gear. Compressors, single or double acting Single, multiple effect compression No

Are relief valves or safety discs fitted Yes No. of cylinders to each unit Two 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 Steam engines, direct coupled

(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 per engine Diameter 7 1/2"

Length of stroke 4 1/2" Working pressure 120 lb/sq. in. Diameter of crank shaft journals and pins CO₂ mach 3 1/2" diam 3 1/2" pinsBreadth and thickness of crank webs 3 1/2" x 1 1/4" No. of sections in crank shaft CO₂ one steam one 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 of 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 Forcalbro Can each coil be readily 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 set 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 2 Material of coils S.D. steel Can each coil be readily shut off or disconnected Yes

Direct Expansion or Brine Cooled Batteries, No. of 3 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 coils Is a watertight tray fitted under each battery No

Air Circulating Fans, Total No. of 5 each of 1200 cubic feet capacity, at 2120 revolutions per minute

Steam or electrically driven electrically Where spare fans are supplied are these fitted in position ready for coupling up No

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 one, with cut-out cocks on roof grids

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)						
Gas Compressors	10-12-47	1000	3000	1500	R.J.D.	
„ Separators	17-11-47	1000	3000	1500	R.J.D.	
„ Multiple Effect Receivers		not fitted				
„ Condenser Coils	27-10-47 17-11-47	1000	3000	1500	R.J.D.	
„ Evaporator Coils	27-10-47 17-11-47	1000	3000	1500	R.J.D.	
„ Condenser Headers and Connections	28-11-47	1000	3000	1500	R.J.D.	
„ Condenser Casings	28-11-47	20	50	1500	R.J.D.	
„ Evaporator Casings	19-11-47	20	50	—	R.J.D.	
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: 1 Impeller & spindles for water pumps
1 do do brine do
1 set tools
16 compressor piston rings
1 hydromeli
48 additional comp valve springs
2 leather moulds
2 springs for water relief valve
2 do Co₂ do do
2 studs & nuts for main bearings
2 bolts do conn rod big end
2 studs do X heads
2 brass case thermos
1 Co₂ gauge
1 fitted box for comp rods & parts
For steam engine 1 set piston rings
1 do governor springs
1 do packing

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL, L^{td}

2 wells

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
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 *yes* If so, state name of vessel *Dumka*

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 of this vessel have been constructed under Special Survey in conformity with the Society's Rules, Regulations and the Secretary's letters. The scantlings and arrangements are in accordance with, or equivalent to, those shown on the approved plans. The materials and workmanship are good.

In my opinion the refrigerating machinery and appliances of this vessel will be eligible for the notation + LLOYDS RMC (with date) when the installation and testing have 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.				No.	Capacity.
2	4	Amherst Carb	J & E Hall Ltd	1948	Bureau Veritas	Tons. 9	NO	5	Cubic ft. 7060

Low fee £8.0.0 } Fee applied for, 19 *for self R.I. Dunn*
 Fee £15.0.0 } Received by me, 19
 Travelling Expenses £ : : Surveyor to Lloyd's Register.

Committee's Minute **GLASGOW** -6 JUL 1948

Assigned **SEE ACCOMPANYING MACHINERY REPORT**



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