

Report on Refrigerating Machinery and Appliances.

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(Number of Visits 9)

on the Refrigerating Machinery and Appliances of the _____ Tons ^{Gross} 5030 _{Net} 2716

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

Owners British India Steam Nav Co Ltd Port belonging to _____ Voyage _____

Refrigerating Machinery made by J. C. Hall, Ltd. Dartford 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 gears 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.)
NO 8 S.F. Read 240H/2

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 lbs/sq in Diameter of crank shaft journals and pins CO₂ mach 3 3/8 diam 3 1/2 diam
Steam engine 2 1/8 do 3 1/2 do

Breadth and thickness of crank webs CO₂ 2 3/4 x 1 3/4 No. of sections in crank shaft CO₂ 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 Jorcalbro Can each coil be readily shut off disconnected Yes

Water Circulating Pumps, No. and size of pumps available 2-1/2 centif. 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 5 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 5 coils grid 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 3-1/2 Centrifugal how worked electrically

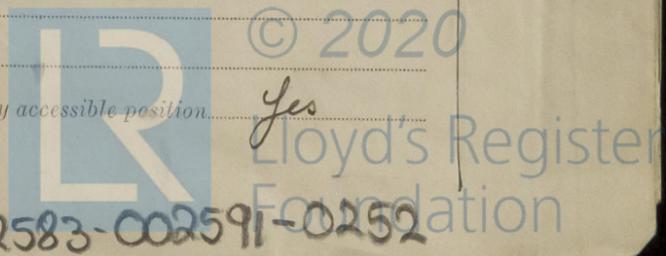
Brine Cooling System, closed or open closed Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber one, with cut-out curbs 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.

100,11,42. (MADE AND PRINTED IN ENGLAND.)



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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. l/sq in	Hydraulic Test Pressure l/sq in	Air Test Pressure. l/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	<i>stock listed</i> 27-10-47	1000	3000	1500	R.J.D.	
„ Evaporator Coils	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 & spindle for water pumps
 1 do do brine do
 1 set tools
 16 compressor piston rings
 1 hydrometer
 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 casual 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}
J. 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) A										
Frame No. (F) A										
Frame No. (F) A										
Frame No. (F) A										
Frame No. (Boiler Room) A										
Frame No. (Engine Room) A										
Frame No. (F) 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
 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 *Dumna*
 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.				Tons.	No.
2	4	Amby Carb	J & E Hall Ltd	1948	Bone & Air	9	NO	5	7000

Low fee £8.0.0 }
 Fee £15.0.0 } 24 : 0 : 0 } Fee applied for, 19
 Travelling Expenses £ : : } Received by me, 19
Pro Seiler for self & R. J. Benn,
 Surveyor to Lloyd's Register.

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

Assigned **SEE ACCOMPANYING MACHINERY REPORT**



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