

Report on Refrigerating Machinery and Appliances.

Received at London Office 22 MAY 1947

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 No. in Reg. Book. Surveys held at GLASGOW Date: First Survey 14-1-47 Last Survey 2 5. 1947
 (Number of Visits 8)
 on the Refrigerating Machinery and Appliances of the M/V "SANGOLA" Tons {Gross 8646
 Net 5053
 Vessel built at GLASGOW By whom built BARCLAY CURLE & CO L^D Yard No. 707 When built 1947
 Owners BRITISH INDIA STEAM NAVIGATION CO L^D Port belonging to LONDON Voyage -
 Refrigerating Machinery made by J & E HALL L^D Machine Nos. _____ When made _____
 Insulation fitted by J. D. INSULATING CO L^D When fitted 1947 System of Refrigeration _____
 Method of cooling Cargo Chambers BRINE & AIR Insulating Material used SLAB CORK
 Number of Cargo Chambers insulated 2 Total refrigerated cargo capacity 5730 cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed _____

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 _____
_{double}

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 _____ (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:—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 _____ 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 pumps available _____ 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 _____

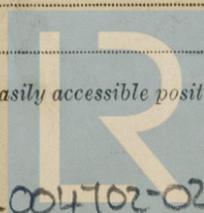
Brine Cooling System, closed or open _____ Are the pipes and tanks galvanised on the inside _____

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 _____

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

101.11.42. (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... Yes.

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.	<u>24.4.47</u>	<u>20 lbs.</u>	<u>90 lbs.</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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... Yes.
 Dates of test 1-2.5.47. Density of Brine 48° by Twaddell 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... -12° & -10°F
 atmosphere 45°F cooling water inlet and discharge 46° & 51°F gas in condensers 58°F and evaporators -22°F
 the average temperature of the refrigerated chambers 6°F and the rise of temperature in these chambers upon the expiration of 12 hours
 time after the machinery and cooling appliances have been shut off 12°F.

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 London R.M.C. Report 17.1671.

The foregoing is a correct description of the Refrigerating Machinery.



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 Manufacturer.

DESCRIPTION OF INSULATION.

IN LOWER HOLD CHAMBERS.						REFRIGERATED CARGOES IN 'TWEEN DECK CHAMBERS. MAIN TO UPPER DECK FRAMES 54 TO 63 ST ^o SIDE.				
	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					BULKHEAD	N ^o 54	SLAB GRK	10"	FACED WITH
	F	UPPER DE				"	N ^o 63	" "	10"	1/2" CEMENT
Frame No.	A		REFRIGERATED			F & A BHD ^s	A & B	" "	10"	REINFORCED
	F		CARGO			SHIP'S SIDE		" "	11"	WITH GALV ^d .
Frame No.	A	MAIN DE				OVERHEADING		" "	12"	EXPANDED METAL.
	F	54FR	ELEVATION.		63FR	FLOOR OF CHAMBERS		" "	8"	FACED WITH 1/2" ASPHALTE.
Frame No. (Boiler Room)	F									
	A		SHIP'S STORES							
Frame No. (Engine Room)	A		INSULATED							
	F									
Frame No.	A									
	F		REFRIGERATED CARGO							
Frame No. (After Peak)	A									
	F		REFRIGERATED CARGO							
Sides										
Overheading										
Floors of Chambers		FR 54	SHIP'S SIDE		FR 63					
Trunk Hatchways										
Thrust Recess, Sides and Top										
Tunnel Sides and Top										
Tunnel Recess, Front and Top										

Frames or Reverse Frames, Face 2 1/2"

Bulkhead Stiffeners, Top Bottom and Face

Riband 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

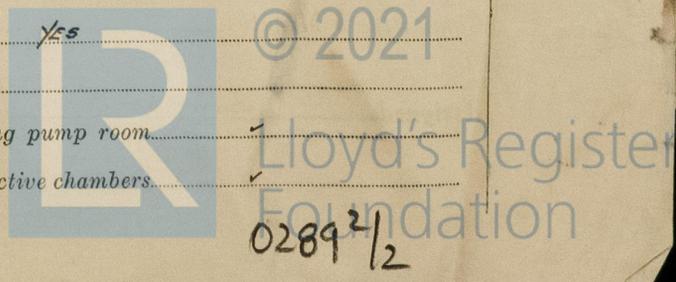
Cargo Battens, Dimensions and spacing, sides 2" x 2" SPACED 12" floors (PORTABLE) SPARRED WOOD GRATINGS tunnel top fixed or portable FIXED Are screens fitted over the brine grids at chamber sides hinged or permanently fixed

Thermometer Tubes, No. and position in each chamber 2 IN EACH CHAMBER diameter 2 1/2" 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 BY SCUPPERS Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off YES What provision is made for draining the refrigerating machinery room BY SCUPPER 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



SURE 65

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. BEDED IN BITUMINOUS SOLUTION

Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the approved plans. ✓
 Are they permanently fixed or collapsible, or portable. FIXED

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. 1 7/8" Minimum thickness. 7/16" Are they galvanised externally. Yes
 How are they arranged in the chambers. Side & Roof girders

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers. BY HOT BRINE

The foregoing is a correct description of the Insulation and Appliances. For BARCLAY, CURLE & CO. LTD.
J. Wilson Builders.
 Technical Manager.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery and Insulation. APPROVED PLAN
 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. Complete

General Remarks (State quality of workmanship, opinions as to class, &c.)
The Refrigerating Machinery and Appliances have been fitted under Special Survey.
The materials & workmanship are good.
The Machinery has been tested under working conditions and cooling tests have been satisfactorily carried out.
The installation is eligible in our opinion for classification with Record of LLOYDS R.M.C. 5.47.

It is submitted that this vessel is eligible for THE RECORD. + Lloyd's R.M.C. 5.47.

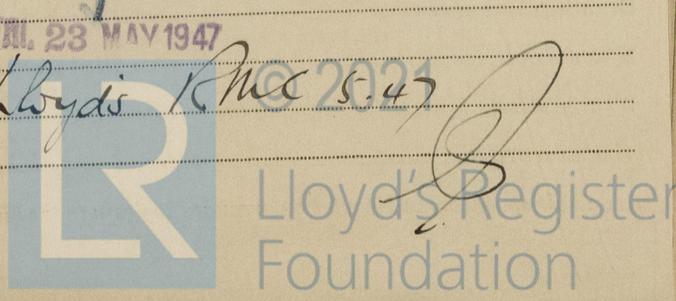
CERTIFICATE WRITTEN. L.Y.
22/5/47.

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.
<u>2</u>	<u>H</u>	<u>CORR</u>	<u>T.O.E. HALL LTD.</u>	<u>1947</u>	<u>(1) BRINE & AIR (2) SLAB CORR.</u>	<u>9</u>	<u>NO.</u>	<u>2</u>	<u>5730</u>

Fee £ : : (Fee applied for, 19
 Travelling Expenses £ : : (Received by me, 19
Robert Humphreys Surveyor to Lloyd's Register.

Committee's Minute
 Assigned. Transmit to London + Lloyd's R.M.C. 5.47



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

M.L.D.

Certificate to be sent to