

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office 129 NOV 1948)

27 NOV 1948

Date of writing Report 20th Nov. 1948 When handed in at Local Office

Port of NEWCASTLE-ON-TYNE

No. in Reg. Book. 75900

Survey held at *Hull* or *Tyne* Date: First Survey 9/3/48 Last Survey 15/11/1948 (No. of Visits 25)

on the Refrigerating Machinery and Appliances of the SS "STANROYAL" Tons { Gross 9136 Net 5598

Vessel built at *Hamburg* By whom built *Deutsche Schiff-u-Masch. A.G. Vulkan* Yard No. 213 When built 1929.

Owners *Starbuck Steamship Co. Ltd.* Port belonging to *London* Voyage

Refrigerating Machinery made by *Atlas Werke* Machine Nos. 23368 23369 When made 1929

Insulation fitted by *The Cork Insulation and Asbestos Co. Ltd.* When fitted 1948. System of Refrigeration *CO2*

Method of cooling Cargo Chambers *Brine & air.* Insulating Material used *Mineral wool & slab cork*

Number of Cargo Chambers insulated 5 Total refrigerated cargo capacity 45260 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed *Engine Room Starboard Side.*

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 *30 at 230 rpm* Are all the units connected to all the refrigerated chambers *Yes*

Compressors, driven direct or through *single* reduction gearing. Compressors, single or double acting *Double* If multiple effect compression *No*

Are relief valves or safety discs fitted *Safety discs* No. of cylinders to each unit *One* Diameter of cylinders *3 1/16"* *90 rpm*

Diameter of piston rod *1 23/32"* Length of stroke *9 1/16"* *230 rpm* No. of revolutions per minute *150* *230 rpm possible during c.o. test.*

Motive Power supplied from *5 Main Boilers* (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* Diameter *10 1/4"*

Length of stroke *12 1/2"* Working pressure Diameter of crank shaft journals and pins *4 1/16"*

Breadth and thickness of crank webs *6 5/16" x 2 5/16"* No. of sections in crank shaft *Soliva forged* Revolutions of engines per minute *150*

Oil Engines, type *2 or 4 stroke cycle* Single or double acting *Single* B.H.P. *150*

No. of cylinders *2* Diameter *10 1/4"* Length of stroke *12 1/2"* Span of bearings as per Rule *150*

Maximum pressure in cylinders *150* Diameter of crank shaft journals and pins *4 1/16"*

Breadth and thickness of crank webs *6 5/16" x 2 5/16"* No. of sections in crank shaft *2* Revolutions of engine per minute *150*

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 *Yes* What means are provided for cleansing their inner surfaces *None*

Is there a drain arrangement fitted at the lowest part of each receiver *Yes* If made under survey *Yes*

No. of Receivers *2* Cubic capacity of each *150* Internal diameter *10 1/4"* thickness *1/2"*

Seamless, lap welded or riveted longitudinal joint *Seamless* Material *Cast Iron* Range of tensile strength *150* Working pressure by Rules *150*

Electric Motors, type *None* No. of *None* Rated *None* Kilowatts *None*

Volts at *None* revolutions per minute *None* Diameter of motor shafts at bearings *None*

Reduction Gearing *None* Pitch circle diameter, pinion *None* Main wheel *None* Width of face *None*

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, pinion *None* Main wheel *None*

Pinion shafts, diameter at bearings *None* Main wheel shaft, diameter at bearings *None*

Gas Condensers, No. of *Two* Cast iron or steel casings *Cast Iron* Cylindrical or rectangular *Rectangular* Are safety valves fitted *Yes*

to casings *Yes* No. of coils in each *Two* Material of coils *Copper* Can each coil be readily shut off or disconnected *No*

Water Circulating Pumps, No. and size of pumps available *One 4 1/2" x 10" Duplex* how worked *Steam* Gas Separators, No. of *Two*

Gas Evaporators, No. of *Two* Cast iron or steel casings *Steel* Pressure or gravity type *Gravity* If pressure type, are safety valves fitted *Yes*

No. of coils in each casing *Two* Material of coils *Steel* Can each coil be readily shut off or disconnected *No*

Direct Expansion or Brine Cooled Batteries, No. of *Two* Are there two separate systems, so that one may be in use while the other is being cleared of snow *Yes*

No. of coils in each battery *Five* Material of coils *Steel* Can each coil be readily shut off or disconnected *Yes*

Total cooling surface of battery coils *3560 square feet* Is a watertight tray fitted under each battery *Yes*

Air Circulating Fans, Total No. of *Two* each of *Two* cubic feet capacity, at *Two* revolutions per minute *Two*

Steam or electrically driven *Electrically* Where spare fans are supplied are these fitted in position ready for coupling up *Yes*

Brine Circulating Pumps, No. and size of, including the additional pump *Two - 6 1/4" x 10 3/8" Duplex* how worked *Steam driven*

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

No. of brine sections in each chamber *Three sections in each chamber*

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.

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Are thermometers fitted to the outlet 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 *Yes*
 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	26.5.48	1,200 lbs/sq in	3,000 lbs/sq in			
EVAPORATOR COILS	9.6.48	200/600 lbs/sq in	2,500 lbs/sq in			
CONDENSER HEADERS AND CONNECTIONS						
CONDENSER CASINGS		Gravity				
EVAPORATOR CASINGS	16.9.48	25 lbs	50 lbs/sq in			
NH, CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE	28.10.48					
BRINE PIPING AFTER ERECTION IN PLACE	3.11.48	25 lbs	50 lbs/sq in			

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 16th-14th November 1948 Density of Brine 1.8 by Swadlow 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
 atmosphere 30°F cooling water inlet and discharge 51°F & 58°F gas in condensers 65°F and evaporators -20°F
 the average temperature of the refrigerated chambers 10°F and the rise of temperature in these chambers upon the expiration of 13 hours
 time after the machinery and cooling appliances have been shut off 12.5°F & 96° per hr.

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:

The foregoing is a correct description of the Refrigerating Machinery.

Manufacturer.

DESCRIPTION OF INSULATION.

	IN LOWER HOLD CHAMBERS.					IN 'TWEEN DECK CHAMBERS.				
	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of diego.	Inner Lining.	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of diego.	Inner Lining.
FRAME No. (Fore Peak)	A									
FRAME No. 56	F	Cofferdam				Cofferdam				
	A	none	Mineral wool	9"	7/8" TrG pine boards	none	none	Mineral wool	9"	7/8" TrG pine boards
FRAME No. 43	F	none	Mineral wool	9"	7/8" TrG pine boards	none	none	Mineral wool	9"	7/8" TrG pine boards
	A	Hold				Cargo	Tween decks			
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.	F									
	A									
FRAME No. (After Peak)	F									
SIDES		none	Mineral wool	14"	7/8" TrG pine boards	none	none	Mineral wool	11"	7/8" TrG pine boards
OVERHEADING		none	Mineral wool	12"	7/8" TrG pine boards	none	none	Mineral wool	12"	7/8" TrG pine boards
FLOORS OF CHAMBERS		none	1/2" bitumen 7" beam density slab-cork	7"	1 1/2" asphalt resurfaced with heavy expanded metal	open gratings (wood)	none	none		3" pine ribbands at sides & ends
TRUNK HATCHWAYS					and 2" hardwood sheathed below hatch.	2" wood TrG bulkhead	7/8" TrG pine boards	Mineral wool	4" either side of 2" wood bulkhead	7/8" TrG pine boards
CENTRE LINE STEEL BULKHEAD, LOWER HOLD.										
THRUST RECESS, SIDES AND TOP						none	none	Mineral wool	8" slat 2" post	7/8" TrG pine boards pps.
TUNNEL SIDES AND TOP						none	none	Mineral wool	10"	7/8" TrG hardwood boards
ESCAPE TRUNK										
TUNNEL RECESS, FRONT AND TOP						none	none	Mineral wool slab cork	9" aft 18" post 10" slat 13" apart 6" aft 10" in	7/8" TrG pine boards
FRAMES OR REVERSE FRAMES, FACE										9" pps (wood) Hold
BULKHEAD STIFFENERS, TOP			Mineral wool							
BOTTOM			Mineral wool							
AND FACE			Mineral wool							
RIBBAND ON TOP OF DECKS			3" pine at 2nd Deck							
SIDE STRINGERS, TOP			none							
BOTTOM			none							
AND FACE			none							
WEB FRAMES, SIDES			none							
BRACKETS, TOP			none							
BOTTOM			none							
AND FACE			none							
INSULATED HATCHES, MAIN			6" slab cork in pine frames.							
BILGE			5" slab cork in pine frames							
MANHOLE			4" slab cork in pine frames.							
HATCHWAY COAMINGS, MAIN			Pine sheathed with 1/2" galv steel							
BILGE			Pine, unsheathed.							
HOLD PILLARS			3" slab cork & 1/2" reinforced cement, with 3/16" galvanized protection plates.							
MASTS			slab at upper deck.							
VENTILATORS			2 @ 19" dia/ to Tween deck & lower hold - 3" slab cork in 7/8" TrG pine trunked							
Are insulated plugs fitted to provide easy access to bilge suction roses			yes			yes				heels of pillars no.
and manhole doors of tanks			yes			yes				and side lights none
Are insulated plugs fitted to ventilators			yes			yes				
Are screens fitted over the brine grids at chamber sides			yes			yes				hinged or permanently fixed permanently fixed.
Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected			yes			if so, how 2" hardwood sheathing on hold floor 1/2" hardwood lining on tunnel with 3 1/2" hardwood slatting spaced 12" apart				
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.			steel cofferdam between oil tanks and insulated chambers							
and for draining the tank top			drains into cofferdam							
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										yes
Cargo Battens, Dimensions and spacing, sides			2" x 2" spaced 12"							
floors			2" x 2" spaced as required							tunnel top 3" x 3" sp. 18"
fixed or portable portable on deck only			Are screens fitted over the brine grids at chamber sides			yes				hinged or permanently fixed permanently fixed.
Thermometer Tubes, No. and position in each chamber			2. At aft cut'd corners & hold pillars in side chambers & fore'd corners in centre chamber.							
diameter			3/4"							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			Suppers to bilges							
Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off										no
What provision is made for draining the refrigerating machinery room			in Engine Room							
brine return room			none							fan room drains to Engine room bilge water circulating pump room in Engine Room.
Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers										no air spaces.

Sounding Pipes, No. and position in each chamber situated below the load water line *1 to tank top pos from tunnel fitted with weighted cork 1 to helges pos from shelter deck*

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 *asphalt & cement facings reinforced with expanded steel lattice* yes

How is the expanded metal secured in place embedded in facings

How are the cork slabs secured to the steel structure of the vessel embedded in bitumastic solution

Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the approved plans yes

Are they permanently fixed or collapsible, or portable permanently fixed

Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors none *Natural vent air trunks led through bulkhead 43 from after side.* Are the door frames efficiently insulated yes

Are insulated plugs supplied for the doorways yes Where are the doors worked from insulated compartments

Cooling Pipes in Chambers, diameter 1 1/2" Minimum thickness 7 W.G. Are they galvanised externally New piping - yes *original retained piping - paint coated.*

How are they arranged in the chambers at sides and overhead, piping fore and aft: on bulkheads horizontally thwartships

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers. hot brine circulation

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

Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery Noted - 26 July 1948. and Insulation yes.

Is the Refrigerating Machinery and Appliances duplicate of a previous case no 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, etc.)

The Refrigerating machinery and appliances were originally fitted in Germany and have now been examined for special survey, reconditioned & part renewed by Messrs J. & E. Hall Ltd. & The Cork Insulation & Asbestos Co Ltd., in accordance with the approved plans and Secretary's letters and are in our opinion eligible for the notation Lloyds R.M.C. 11.48

It is submitted that
this vessel is eligible for
THIS RECORD. - Lloyds R.M.C. 11.48
S.R.M.C.
Mar 13.12.48

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. Cubic ft.	
<u>Two</u>	<u>Two</u>	<u>C.O.₂</u>	<u>Atlas Werke</u>	<u>1929</u>	<u>Bure & Air.</u> <u>Muesel Wool</u> <u>Slab. Cork.</u>	<u>30</u>	<u>No.</u>	<u>5</u>	<u>45,260</u>	

Fee £ 32 : 0 : 0 { Fee applied for, not yet 19
Travelling Expenses £ : : { Received by me, 19

Wesley *W. Sneddon*
Surveyors to Lloyd's Register.

Committee's Minute ✓ **FRI. 17 DEC 1946**

Assigned Lloyds R.M.C. 11.48
S.R.M.C.

CERTIFICATES WRITTEN
(R.M.C. & S.R.M.C.)
dated 31.12.48



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