

Report on Refrigerating Machinery and Appliances.

Received at London Office

Date of writing Report 28 Oct 1947 When handed in at Local Office 28 Oct 1947 Port of NEW YORKNo. in 36717 Reg. Book. Survey held at Brooklyn Date: First Survey 8 Sept 47 Last Survey Sept 28 1947(Number of Visits 5)on the Refrigerating Machinery and Appliances of the S/S BEATRICE Ex WHEATLAND Tons {Gross 81.89
Net 48.4Vessel built at Wilmington NC By whom built North Carolina S/S Co Yard No. 172 When built 1944Owners Bell Insular Line Inc Port belonging to New York Voyage Porto RicoRefrigerating Machinery made by Carrier Corp Machine Nos. slc When made 1940Insulation fitted by Eastern Cold Storage Inc When fitted Sept 1947 System of Refrigeration Freon 12Method of cooling Cargo Chambers Air and Direct Exp Insulating Material used both RockwoolNumber of Cargo Chambers insulated slc Total refrigerated cargo capacity 23000 cubic feetDESCRIPTION OF REFRIGERATING MACHINERY. Where placed Steel Deck House (fore of No 1 Hatch)Refrigerating Units, No. of 6 No. of machines 6 Is each machine independent yesTotal refrigeration or ice melting capacity in tons per 24 hours 28 Are all the units connected to all the refrigerated chambers yesCompressors, driven direct or through multiple belt drive reduction gearing. Compressors, single or double acting single If multiple effect compression noAre relief valves or safety discs fitted yes No. of cylinders to each unit 4 Diameter of cylinders 4 1/2"Diameter of piston rod - Length of stroke 3 1/4" No. of revolutions per minute 410Motive Power supplied from 2-300 KW General Electric Turbo Generators 240V
(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 6 Cubic capacity of each 5 @ 3.03 Internal diameter 12" + 16" thickness 3/8"Seamless, lap welded or riveted longitudinal joint weld Material slc Range of tensile strength - Working pressure by Rules -Electric Motors, type Westinghouse marine No. of slc Rated 10 HP Kilowatts 240 Voltsat 1220 revolutions per minute. Diameter of motor shafts at bearings 1 5/8"Reduction Gearing none 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 slc Cast iron or steel casings slc Cylindrical or rectangular cylindrical Are safety valves fittedto casings yes No. of coils in each 44 Material of coils suber Can each coil be readily shut off or disconnected -Water Circulating Pumps, No. and size of pumps available 4 how worked 1- electric Gas Separators, No. of slcGas Evaporators, No. of - Cast iron or steel casings - Pressure or gravity type - If pressure type, are safetyvalves 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 4 Are there two separate systems, so that one may be in use while the other isbeing cleared of snow no No. of coils in each battery one Material of coils brass Can each coil be readily shut off ordisconnected yes Total cooling surface of battery coils 1130 ft Is a watertight tray fitted under each battery yesAir Circulating Fans, Total No. of 4 each of 2 @ 4800 cubic feet capacity, at 2 @ 593 revolutions per minuteSteam or electrically driven electric Where spare fans are supplied are these fitted in position ready for coupling up yesBrine 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.

Are thermometers fitted to the outflow and to each return brine pipe.....Where the tanks are closed are they ventilated as per Rule.....
 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.....
 Is the exhaust steam led to the main and auxiliary condensers.....

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
Engine Cylinders (if tested) ...	none					
Gas Compressors ...	Ex army stock, overhauled, accepted by US American Bureau of Shipping, and examined under full working condition					
" Separators ...	+ tested as below when erected.					
" Multiple Effect Receivers ...	none					
" Condenser Coils ...			" "	" "	" "	
" Evaporator Coils ...	none					
" Condenser Headers & Connections	Sept 27	200 lb/sq	400 lb/sq	200 lb/sq		Vacuum Test
" Condenser Casings ...	"	"	"	"		(Wet Bulb.)
" Evaporator Casings ...						
NH ₃ Condenser, Evaporator and Air Cooler Coils after erection in place	"	"	"	"		"
Brine Piping after erection in place..	none.					

Have important steel castings and forgings been tested in accordance with the Rules.....
Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory.....
 Dates of test...Sept. 2+3rd 1947...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-10°F.....& -4°F.....outflow and return brine.....&
 atmosphere...84°.....cooling water inlet and discharge...45°F & 80°F...gas in condensers 92°F, -6°F and evaporators.....
 the average temperature of the refrigerated chamber...-7°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...Frozen Chambers 10°F rise, Chilled 7°F rise.

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:—

Compressors:-

- 1- Complete compressor motor at New York + at Porto Rico.
- 1- Valve flat assembly w/ check valves
- 2- sets of Compressor piston rings.
- 1- connecting rod complete.
- 1- shaft seal oil gland.
- 3- sets of multiple Belts (for drive)

- 1 - High + low Freon pressure gauge
- 1 - Complete dual thermometer
- 2 - Automatic expansion valves.
- 6 - Solenoid valve electric coils.
- 1 - Complete fan assembly - at New York
- 1 - Complete dual pressure stat.
- 6 - Dryer cartridges for liquid line dryers

The foregoing is a correct description of the Refrigerating Machinery.



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DESCRIPTION OF INSULATION.

IN LOWER HOLD CHAMBERS.

IN TWEEN DECK CHAMBERS.

CHAMBER	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								
Frame No. 1	F	12								
	A	22 1/2								
Frame No.	F									
	A									
Frame No.	F									
	A									
Frame No. (Boiler Room)	F									
	A									
Frame No. (Engine Room)	A									
Frame No. 2+3	F	25								
	A	41								
Frame No.	F									
	A									
Frame No. 4	F	14								
5+6	A	41								
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 2x4" WOOD FURRING BOLTED

Bulkhead Stiffeners, Top WOOD SHEATHED Bottom WOOD SHEATHED and Face 2x4" WOOD SHEATHING

Ribband on Top of Decks 2x6" WOOD FURRING BOLTED

Side Stringers, Top - Bottom - and Face -

Web Frames, Sides - and Face -

Brackets, Top - Bottom - and Face -

Insulated Hatches, Main INSULATED DOORS Bilge - Manhole -

Hatchway Coamings, Main - Bilge -

Hold Pillars -

Masts - Ventilators 6" ROCKWOOL & 1" T+G SHEATHING

Are insulated plugs fitted to provide easy access to bilge suction roses none tank, air, and sounding pipes none heels of pillars none and manhole doors of tanks none Are insulated plugs fitted to ventilators yes cargo ports none and side lights none

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 2x3" 15" SPACING floors 2x3" 1" SPACING tunnel top -

fixed or portable PORTABLE Are screens fitted over the brine grids at chamber sides - hinged or permanently fixed -

Thermometer Tubes, No. and position in each chamber none (Dial Thermometers fitted) 2- each chamber diameter 1/2" at Bulkhead 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 2. Drains P+S in each chamber

Where drains, scupper pipes, and drain pipes are fitted are means provided for blanking them off Water seal trap

What provision is made for draining the refrigerating machinery room Plug drain to deck

brine return room - fan room as in chambers water circulating pump room Engine room

Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers none

Sounding Pipes, No. and position in each chamber situated below the loadwater line. *None.*

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. *yes* Are cement facings reinforced with expanded steel lattice. *yes*

How is the expanded metal secured in place. *"Z" clips*

How are the cork slabs secured to the steel structure of the vessel. *Hard finished master mix cement.*

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

Are they permanently fixed or collapsible, or portable. *Permanent.*

Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors. *✓* Are the door frames efficiently insulated. *yes*

Are insulated plugs supplied for the doorways. *yes* Where are the doors worked from. *Refuser fan room.*

Cooling Pipes in Chambers, diameter. *1.66"* Minimum thickness. *.191* Are they galvanised externally. *yes*

How are they arranged in the chambers. *Across.*

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers. *None*

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

Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery. *yes* and Insulation. *Specification*

(If not, state date of approval)

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. *Complete.*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The refrigerating machinery & appliances and insulation have recently been newly fitted into this vessel under the American Bureau Survey. The upper & lower tween decks in No. 1 hold have been suitably fitted for carrying refrigerated cargoes, with three separate chambers in each deck, No. 1 chamber forward, & Nos 2+3 chambers P+S of cargo hatchway on upper tween deck, and No. 4 chamber forward & Nos 5+6 chambers P+S of hatchway on lower tween deck. Chambers No. 1+2+3 are air cooled for carrying chilled cargoes, chambers No. 5+6 are cooled by direct expansion for the carrying of frozen cargoes. Chamber No. 4 is air and direct expansion cooled for the carrying of chilled and frozen cargoes.*

The refrigerating machinery and appliances have been statically tested as reported and have been examined under full load conditions with satisfactory results. The insulation air trunks etc. have been examined and found to comply with requirements, a satisfactory cooling & temperature rise test effected. The workmanship & material on goods throughout.

It is recommended this vessel be granted the notation of LLOYD'S RMC 9-47 with temperatures 0°F in chambers 5+6 & 34°F in chambers 1+2+3.

(Electrical installation examined & megger tests satisfactory.)

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.
6	24	Union	Carnier Cork Appliances	March 1940 1947	Direct Exp. & Air Rockwood Cork	28	yes	6	23000

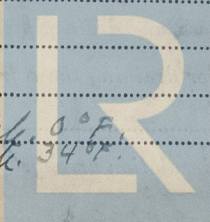
Fee RMC. \$300.00 : Fee applied for, Nov 13 1947

Travelling Expenses \$ 10.00 : Received by me, 19

M. J. Lindler
Surveyor to Lloyd's Register.

Committee's Minute. **NEW YORK NOV 5 - 1947** *none*

Assigned. LLOYD'S RMC-9-47
Nos. 4, 5, 6 Upper Tween Deck chambers for temp. 0°F
Nos. 1, 2, 3 Upper Tween Deck chambers for temp. 34°F



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