

Report on Refrigerating Machinery and Appliances.

Received at London Office 22 MAR 1950

Date of writing Report March 1950 When handed in at Local Office March 1950 Port of Belfast

No. in Reg. Book. Survey held at Belfast Date: First Survey 14th Aug. 1949 Last Survey 15th March 1950
40528 (Number of Visits 60)

on the Refrigerating Machinery and Appliances of the "RUNIC" Tons Gross 13589 Net 7788

Vessel built at Belfast By whom built Harland & Wolff's Yard No. 1414 When built 1950

Owners Shaw Saville & Albion Ltd Port belonging to Southampton Voyage

Refrigerating Machinery made by J. & G. Hall Ltd Machine Nos. 13940/1/2 When made

Insulation fitted by Mersey Insulation Co When fitted 1949-50 System of Refrigeration Carl Anby

Method of cooling Cargo Chambers Brine & Air Insulating Material used Fibre glass & gran cork

Number of Cargo Chambers insulated 21 Total refrigerated cargo capacity 508090 cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Port Upper Deck

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

Are relief valves or safety discs fitted ^{double} 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 2 Turbo Steam Generators 2 Diesel Engine Generators
(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 See list Range of tensile strength Working pressure by Rules

Electric Motors, type No. of 445 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 2 c. 66,000 G/Hr. how worked Elect. Motor 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 See list 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 See list Material of coils Steel Can each coil be readily shut off or

disconnected Yes Total cooling surface of battery coils 75,850 Is a watertight tray fitted under each battery Yes

Air Circulating Fans, Total No. of 30 each of See list cubic feet capacity, at See list revolutions per minute

Steam or electrically driven Elect. Where spare fans are supplied are these fitted in position ready for coupling up See list of spares

Brine Circulating Pumps, No. and size of, including the additional pump 1 c. 30,000, 2 c. 3,000 G/Hr. how worked Elect. Motor

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

No. of brine sections in each chamber See list attached

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.

20.1.41. (MADE AND PRINTED IN ENGLAND.)

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.	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	DEC. '49 MARCH '50	25 lb	-	90 lb	-	
Brine Piping after erection in place...						

SEE CONDENSER R.M.C. RPT. N° 2620

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... *15th March 1950.* Density of Brine... *47* by... *Waddell.* 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...
50° F cooling water inlet and discharge. *45° F & 49° F* gas in condensers... *60° F* and evaporators... *-6° F*
 the average temperature of the refrigerated chambers... *6.6° 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... *8.1° F.*

SPARE GEAR.

Are the working parts of the machines, pumps and motors respectively, interchangeable...
 Has the spare gear required by the Rules been supplied... *Yes.*
 Additional Spare Gear Supplied:— *See Landon Report R.M.C. N° 2620*

The foregoing is a correct description of the Refrigerating Machinery.



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 Manufacturer.
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"RUNIC"

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. 105 (Fore Peak)	A	None	None	Fibre glass	12" / 1" T.G.	None	None	Fibre glass	12" / 1" T.G.	
Frame No. 151	F	do	do	do	9 1/2" / 1" T.G.	do	do	do	8" MAIN T.D.KS / 7" UPPER "	do
	A	do	do	do	3 1/2" / 1" T.G.	do	do	do	4" /	do
Frame No. 123	F	do	do	do	9 1/2" / 1" T.G.	do	do	do	8" L+MAIN T.D. / 7" UPPER "	do
	A	do	do	do	3 1/2" / 1" T.G.	do	do	do	4" /	do
Frame No. 100	F	do	do	do	12" / 1" T.G.	do	do	do	12" /	do
	A	Cofferdam for 99 & 100				Cofferdam 100-99 on LRTD + MAIN T.D.				
Frame No. (Boiler Room)	F		✓					✓		
	A		✓					✓		
Frame No. 65 (Engine Room)	A	None	None	Fibre glass	12" / 1" T.G.	None	None	Fibre glass	12" / 1" T.G.	
Frame No. 44	F	do	do	Fibre glass	3 1/2" / 1" T.G.	do	do	do	4" /	do
	A	do	do	do	9" / 1" T.G.	do	do	do	8" /	do
Frame No. 23	F	do	do	do	10" / 1" T.G.	do	do	do	8" /	do
	A	do	do	do	3 1/2" / 1" T.G.	do	do	do	4" /	do
Frame No.	F	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A	✓	✓	✓	✓	✓	✓	✓	✓	✓
Frame No. (After Peak)	F	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sides Nos 2, 3, 4, 5 Holds		None	None	Fibre glass	11" / 1" T.G.	None	None	Fibre glass	11" / 1" T.G.	
Overheading Nos 1, 2, 3 Holds		do	do	do	11" / 1" T.G.	do	do	do	11" / 1" T.G.	
Floors of Chambers Nos 2, 3, 4, 5		do	do	Gran Cork	8" / 1" T.G.	do	do	SLAB CORK	2" / 1" T.G.	
Trunk Hatchways		✓								
COFFERDAM (for 99-10) TOP				Slab cork 9" x 6"	1" Asphalt reinforced					
Tunnel Sides and Top				Gran Cork 10"	1 1/2" T.G.					
Tunnel Recess, Front and Top				General cargo in No. 6 Hold						

Frames or Reverse Frames, Face 3" x 2" wood grounds on channels + rev frames 1/2" hair felt on BA's + reverse frames

Bulkhead Stiffeners, Top Felt, wood grounds, fibre glass Bottom Felt, wood grounds, fibre glass and Face 1/2" hair felt + wood grounds.

Ribband on Top of Decks 3-9" wide + (clear of chilled meat comp.) fitted along ship side + across bulkheads in all insulated twin decks across fwd lkd of No. 6 main tank + after lkd of No. 4 upper twin deck where insulated 2" slab cork + 1" asphalt reinforced with surfastal and Face 3/4" Solid hair felt

Side Stringers, Top Solid wood mousing Bottom and Face 3/4" Solid hair felt

Web Frames, Sides ✓ and Face ✓

Brackets, Top ✓ Bottom ✓ and Face ✓

Insulated Hatches, Main 1 1/4" x 3/4" T.G., 6" fibre glass, 1" x 3/4" T.G. Bilge 1 1/4" x 3/4" T.G., 5" fibre glass, 1" x 3/4" T.G. Manhole 1 1/4" x 3/4" T.G., 5" fibre glass, 3/4" x 1" T.G.

Hatchway Coamings, Main 1 1/2" x 6 1/2" oregon pine Bilge 1 1/2" x 2 1/2" oregon pine

Hold Pillars 2" slab cork bedded in bitumen + 1/2" T.G. boards bound by 1/2" gal hoop iron

DRY MAST 8" fibre glass + 1/4" lining Ventilators ✓

Are insulated plugs fitted to provide easy access to bilge suction roses Yes tank, air, and sounding pipes No heels of pillars No and manhole doors of tanks Yes Are insulated plugs fitted to ventilators ✓ cargo ports None and side lights ✓

Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected Yes if so, how 2" Elm sheathing

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 No air spaces Cofferdam between insulated bulkhead + midship or bunkers 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 None exposed 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, size 2" x 2" 18" apart fitted on bulkheads + tunnel top no coolers are fitted 3" x 3" OVER BILGES spaced 12" 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 Electrical distance thermometers as approved ✓

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 Scuppers to bilges with No. 2 flaps Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off liquid seal + trapped

What provision is made for draining the refrigerating machinery room scuppers

brine return room scuppers 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 No air spaces

10" in No. 1 T.D.
10" in No. 4 T.D.

Sounding Pipes, No. and position in each chamber situated below the load water line *led to bilges + to top of insulation*
 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 except overheading lotts have metal joints* Are cement facings reinforced with expanded steel lattice *Yes*
 How is the expanded metal secured in place *Bedded in asphalt*
 How are the cork slabs secured to the steel structure of the vessel *Bedded in asphalt (rubbands + fillers)*
 Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the approved plans *Yes*
 Are they permanently fixed or collapsible, or portable *Fixed except in way of doors to chilled spaces where they are portable*
 Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors *None* 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 1/2" bore* Minimum thickness *7 w/6* Are they galvanised externally *Yes*
 How are they arranged in the chambers *In grids in sections as air coolers. Roof grids fitted in*
Nº 1 2 3 4 Upper Tur Dks, 2, 3 5 Main Tur Dks + Nº 2, 3 lower tur decks
 Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers *Brine heating*

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

Wm James Shields

THE MERSEY INSULATION CO. LTD.
 HARLAND & WOLFF LTD.
 BELFAST.

Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery *No* and Insulation *No*
 (If not, state date of approval) MACH 23-7-48 INSULATION 17-3-49
 Is the Refrigerating Machinery and Appliances duplicate of a previous case *Yes* If so, state name of vessel *PERSIC (Blair Cairn Law)*
 If the survey is not complete, state what arrangements have been made for its completion and what remains to be done *Complete*

The Specifications + approved plans are being retained in the Belfast Office for reference in dealing with the sister vessel fitting out at this port.

General Remarks (State quality of workmanship, opinions as to class, &c.) *The insulation has been fitted under Special Survey + the materials + workmanship are good. The machinery has been efficiently installed + tested under full working conditions with satisfactory results.*

The installation is eligible, in our opinion to have the Notation: -
+ HORDS RMC 3-50

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.	
3	6	Carb Amby	J. & Hall Dartford	1950	① Brine + Air ② Fibreglass + Gran cork	186	Yes	21	508090	

Fee *Lon No 58-6-8 BEL No 116-13-4* £175: - - - (Fee applied for, *2/3/1950*)
 Travelling Expenses £ : : Received by me, *19*

Ch Howard, N. Russell
 Surveyor to Lloyd's Register.

Committee's Minute *31/3/50*

Assigned *+ Lloyd's Amc*
Wm Bel 3.50



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Certificate to be sent to