

Report on Refrigerating Machinery and Appliances.

Received at London Office 14 JUN 1947

Date of writing Report 19... When handed in at Local Office 19... Port of Hamburg

No. in Reg. Book. Survey held at Hamburg Date: First Survey 11.3.46. Last Survey 5.3. 1947
86505 (Number of Visits 15)

on the Refrigerating Machinery and Appliances of the motor vessel "Empire Alde" (ex Pelikan) Tons (Gross - Net -)

Vessel built at Bremen-Vegesack By whom built Bremer Vulkan Yard No. 712 When built 1935

Owners Elders and Fyffes, Ltd. Port belonging to London Voyage -

Refrigerating Machinery made by Atlas-Werke Machine Nos. 27291 & 27292 When made 1935

Insulation fitted by Messrs. Loehr, Hamburg When fitted 1946-47 System of Refrigeration Brine & Air.

Method of cooling Cargo Chambers Cold Air Insulating Material used tops where "Torfoleum" is used

Number of Cargo Chambers insulated Three (3) Total refrigerated cargo capacity 157,025 cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Main motor-room-starboard side-bottom platform

Refrigerating Units, No. of Two (2) No. of machines Two (2) Is each machine independent Yes

Total refrigeration or ice-melting capacity in tons per 24 hours 32.88 each Are all the units connected to all the refrigerated chambers Yes

Compressors, driven direct or through ^{single} ~~double~~ reduction gearing. Compressors, single or double acting double If multiple effect compression -

Are relief valves or safety discs fitted safety discs No. of cylinders to each unit two (2) Diameter of cylinders 3 5/32" (80m/m)

Diameter of piston rod 1 37/64" (40m/m) Length of stroke 6 11/16" (170m/m) No. of revolutions per minute 300/385

Motive Power supplied from Four (4) diesel driven electric generators (3 of 6 cylinders, 1 of 3 cylinders.)

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 3 at 192

Oil Engines, type Diesel 2 or 4 stroke cycle 4 Single or double acting single B.H.P. 1 at 96

No. of cylinders 3 of 6 cylrs 1 of 3 cylrs Diameter 8 21/32" Length of stroke 13 inches Span of bearings as per Rule -

Maximum pressure in cylinders 45 atmos. Diameter of crank shaft journals and pins 135 mm (journals), 125 mm (pins)

Breadth and thickness of crank webs - No. of sections in crank shaft Solid Revolutions of engine per minute 475/min.

Air Receivers: Have they been made under survey Yes State No. of Report or Certificate Germanischer Lloyd

Is each receiver, which can be isolated, fitted with a safety valve as per Rule Yes

Can the internal surfaces of the receivers be examined and cleaned Yes Is a drain fitted at the lowest part of each receiver Yes

No. of Receivers 2 Cubic capacity of each 222.48 cu ft Internal diameter - thickness - 426

Seamless, lap welded or riveted longitudinal joint riveted Material Steel Range of tensile strength - Working pressure by Rules lbs/sq in

Electric Motors, type A.E.G. A.116 No. of 2 Rated 54/74 Kilowatts 220 Volts

at 300/385 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 Cast iron or steel casings Cast iron Cylindrical or rectangular rectangular Are safety valves fitted

to casings Yes No. of coils in each 12 Material of coils copper Can each coil be readily shut off or disconnected Yes

Water Circulating Pumps, No. and size of pumps available 1 at 3800 gals/hr. how worked electrically (centrifugal) Gas Separators, No. of -

Gas Evaporators, No. of 2 Cast iron or steel casings steel Pressure or gravity type pressure If pressure type, are safety

valves fitted Yes No. of coils in each casing - Material of coils Iron Can each coil be readily shut off or disconnected Yes

Direct Expansion or Brine Cooled Batteries, No. of 4 -Brine 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 7 Material of coils steel Can each coil be readily shut off or

disconnected Yes Total cooling surface of battery coils 3550 Is a watertight tray fitted under each battery Yes

Air Circulating Fans, Total No. of 4 each of 2 of 36.000 2 of 50.000 cubic feet capacity, at - revolutions per minute

Steam or electrically driven electrically 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 3=17.200 galls/hr. how worked electrically (centrifugal)

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

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.

5c.2.46. (MADE AND PRINTED IN ENGLAND.)

Quair Tada report 14/7/47



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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) ...						
Gas Compressors ...						
„ Separators ...						
„ Multiple Effect Receivers ...						
„ Condenser Coils ...						
„ Evaporator Coils ...						
„ Condenser Headers and Connections						
„ Condenser Casings ...						
„ Evaporator Casings ...						
NH, 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

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: -

The foregoing is a correct description of the Refrigerating Machinery.

R. B. ... 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. 142 (Fore Peak)	A 50 m/m	22 m/m	Alfol	Sheets. 20	15 m/m	50 m/m	22 m/m	Alfol	Sheets. 20	(lower tween 15 m/m deck)
Frame No. 147	F								10	
Frame No. 113	F	22 m/m	Alfol	5		22 m/m	Alfol	5	10	
Frame No. 107	A	22 m/m	"	17		"	"	10	25	
Frame No. 67 (Boiler Room)	F					22 m/m	Alfol	25		(lower tween deck)
Frame No. 47 (Engine Room)	A					35 m/m	Alfol	25		
Frame No. 46	F	22 m/m	Alfol	25						
Frame No. 42	A					22 m/m	Alfol	25		
Frame No. 13	F					35 m/m	"	20		
Frame No. 5 (After Peak)	A					50 m/m	22 m/m	Alfol	20	22 m/m
Sides ...		32 m/m	Alfol	22/27		22 m/m	Alfol	20		
Overheading ...						32 m/m	"	22/28		
Floors of Chambers ...		50 m/m Oregon Pine	Torfo-leum	150 m/m		50 m/m Oregon	Torfo-leum	150 m/m		

Trunk Hatchways ...
 Thrust Recess, Sides and Top Original granulated cork
 Tunnel Sides and Top ...
 Tunnel Recess, Front and Top ...

Frames or Reverse Frames, Face 5 1/2" x 2" wood grounds fastened by 5/8" screw bolts. (Alfol)
 Bulkhead Stiffeners, Top 5 1/2" x 2" wood grounds Bottom 5 1/2" x 2" wood grounds and Face 5 1/2" x 2" wood grounds
 Ribband on Top of Decks -
 Side Stringers, Top 20 sheets Alfol 7/8" timber Bottom 2 1/2" Oregon pine and Face timber 7/8"
 Web Frames, Sides " " " " and Face 7/8" timber
 Brackets, Top Alfol filled 7/8" timber Bottom - and Face -
 Insulated Hatches, Main insulated with Torfoleum Bilge 4 7/8" x 1 1/4" x 4 3/4" Manhole 3 1/4" x 3 1/2" x 3"
 Hatchway Coamings, Main - Bilge -
 Hold Pillars Boxed in 6 1/2" square, timber 5 7/8" x 3/4"
 Masts in cooler room only - timber faced Ventilators not in insulated spaces
 Are insulated plugs fitted to provide easy access to bilge suction roses Yes tank, air, and sounding pipes boxed in wheels of pillars boxed in and manhole doors of tanks plugs Are insulated plugs fitted to ventilators. no cargo ports. yes and side lights. -
 Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected. yes if so, how. 32 m/m fir
 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. Oil Fuel in D.B. tanks only
 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. Yes.
 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 in the insulation (Alfol).
 Draining Arrangements. What provision is made for draining the inside of the chambers. scupper pipes
 Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off. yes, screw caps.
 What provision is made for draining the refrigerating machinery room. drain to E.R. bilges
 brine return room. - fan room. to bilges water circulating pump room. -
 Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers. yes

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..... **Yes**
 Are all wood linings tongued and grooved..... **Yes** 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..... **yes**
 Are they permanently fixed or collapsible, or portable..... **Fixed. (Galvanised metal sheeting).**

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..... **48 m/m** Minimum thickness..... **5 m/m** Are they galvanised externally..... **yes**
 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.

[Signature]
 Builders

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery..... **Specification and Insulation as approved**
 (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.....
 All insulation has been completed, but a section of the insulation in the starboard forward end of No 3 lower 'tween deck and the insulation of the refrigerator evaporators in the main propelling machinery space will require to be part renewed on account of access to fire damaged parts.
 The Refrigerating Machinery has been completely opened up and reconditioned.
 To complete the survey of Refrigerating Machinery and appliances the brine batteries and cooler fans require to be installed and the whole of the Refrigerating Machinery and appliances require to be tested under working conditions.

General Remarks (State quality of workmanship, opinions as to class, &c.).....
 The machinery of this installation is the original, fitted in the vessel in 1935 but it has not been in use throughout the period 1939/46. All parts have now been completely opened up, including brine and cooling water pump, and reconditioned. The evaporators and condensers have been tested in accordance with the Society's Rules, as have the brine and gas pipe lines, with satisfactory results.
 The Machinery has not been tested under working conditions.
 The insulation of the cargo spaces has been refitted at this time.
 As approved, "Alfol" sheets have been used for sides and overhead and "Torfoleum" for double bottom tank top insulation. The insulation has been fitted under survey and the workmanship has been maintained at a high standard. The timber used for all purposes, due to difficulty in obtaining this material, is not of consistent high quality. A coding test on the installation has not been carried out.
 The installation, when completed and tested in accordance with the Rule Requirements, so far as the above reported survey is concerned, is considered eligible to be assigned a record in the Register Book, of RMC with date when the survey has been completed.
 The following plans are being forwarded under separate cover: -
 1. Forward and aft cross sections.
 2. Cargo cooling rooms.
 3. Cross section thro' hold.

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.
2	4	Carb. Anhy.	"Atlas-Werke" Bremen	1935	Brine & Air "Alfol" and "Torfoleum".	Tons. 65 ³ / ₄	Yes	3	157.025

Fee £ 46 : 0 : 0 Fee applied for, 19
 Travelling Expenses £ : : Received by me, 19 47
[Signature]
 Surveyor to Lloyd's Register.

Committee's Minute..... **FRI. 25 JUL 1947**
 Assigned..... *See how RMC 1794*

Certificate to be sent to

