

# Report on Refrigerating Machinery and Appliances.

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P3296 (Number of Visits 3)

on the Refrigerating Machinery and Appliances of the M/V "NICOYA" (EX EMPIRE MOWDDACH) Tons (Gross 3410 Net 2032)

Vessel built at BREMEN-VEGESACK By whom built BREMER VULKAN Yard No. 716 When built 1935

Owners ELDERS & FYFFES LTD. Port belonging to Voyage

Refrigerating Machinery made by ATLAS-WERKE Machine Nos. 28172 & 28173 When made 1935

Insulation fitted by MESSRS LOHR, HAMBURG When fitted 1946-1947 System of Refrigeration BRINE & AIR

Method of cooling Cargo Chambers COLD AIR Insulating Material used ALFOI SHEETS EXCEPT TANK TORS WHERE "TARFOLEUM" IS USED

Number of Cargo Chambers insulated 3 Total refrigerated cargo capacity 167344 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

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PP

hubs

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

MADE AND PRINTED IN ENGLAND.

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 <sub>3</sub> 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. *Yes.*  
 Dates of test *13-9-47* Density of Brine *46* by *TWADDLE* 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 *16°F* & *20°F*, outflow and return brine *7°F* & *16°F* atmosphere *68°F* cooling water inlet and discharge *71°* & *75°* gas in condensers *82°* and evaporators *18°*  
 the average temperature of the refrigerated chambers *19°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 *average 31.3°F (Average rise per hour 1.044°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 .....

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 ditto. | Inner Lining. | Air Space.               | Outer Lining. | Non-conducting Material. | Thickness of ditto. | Inner Lining. |
| Frame No. (Fore Peak) A             |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. F                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. A                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. F                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. A                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. F                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. (Boiler Room) A           |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. (Engine Room) A           |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. F                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. A                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. F                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. A                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. F                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| Frame No. A                         |                         |               |                          |                     |               |                          |               |                          |                     |               |
| 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 .....  
 Bulkhead Stiffeners, Top Bottom and Face  
 Ribband 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 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  
**Draining Arrangements.** What provision is made for draining the inside of the chambers  
 When sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off  
 What provision is made for draining the refrigerating machinery room  
 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

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**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.....  
**Air Trunkways in Chambers.** Are the arrangements satisfactory and in accordance with the approved plans.....  
 Are they permanently fixed or collapsible, or portable.....  
 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..... Minimum thickness..... Are they galvanised externally.....**  
 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.

Builders.

**Plans.** Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery..... and Insulation.....  
(If not, state date of approval)  
 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.*  
*Now done:- Examined completion of insulation in way of engine room pipes, No. 1 Hold tank top No. 2 Hold and in way of cooler fans. Cooler fans installed and examined under working conditions and found satisfactory. Evaporator coils cleaned out examined and found in good condition. Packing fitted to compressor rods and refrigerating machinery and appliances examined under working conditions and found in good order.*

**General Remarks** (State quality of workmanship, opinions as to class, &c.) *The refrigerating machinery and appliances of this vessel as now examined is in good order and eligible in my opinion to have notation of LLOYDS RMC 9,47 for temperature 32° F.*

**PARTICULARS TO BE ENTERED IN REGISTER BOOK.**

| REFRIGERATING MACHINES. |                        |         |         |                          | System of<br>(1) Refrigerating<br>(2) Insulating<br>the Chambers. | Ice melting<br>capacity per<br>24 hours.<br>Tons. | Is Refrigerating<br>Machinery<br>Electrically<br>Driven? | INSULATED CARGO<br>CHAMBERS. |                        |
|-------------------------|------------------------|---------|---------|--------------------------|---|---|--|------------------------------|------------------------|
| No. of Units.           | No. of<br>Compressors. | System. | Makers. | Date of<br>Construction. |   |   |  | No.                          | Capacity.<br>Cubic ft. |
|                         |                        |         |         |                          |   |   |  |                              |                        |

Certificate to be sent to

Fee (Completion) £ 10: 0: 0 Fee applied for, 23 SEP 1947  
 Travelling Expenses £ 3: 0: 0 Received by me, \_\_\_\_\_ 19\_\_\_\_  
 Wm Robinson  
 Surveyor to Lloyd's Register.

Committee's Minute \_\_\_\_\_  
 Assigned Lloyd's R.M.C. 9,47  
for Temp 32° F



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 Foundation