

## REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

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Port of Rotterdam

No. in

Reg. Book. Survey held at Rotterdam Date: First Survey 2 1/2 '30 Last Survey 27/9 1938

80430

(No. of Visits 23)

on the Refrigerating Machinery and Appliances of the M.V. "NOORDAM"

Tons Gross 5559 Net 3102

10,704

Vessel built at Rotterdam By whom built N.V. P. Smit Jr. Yard No. 515 When built 1937/8

Owners, Ned. Amst. Stoom. Mij. Port belonging to Rotterdam Voyage

Refrigerating Machinery made by Rheinmetall-Borsig Machine Nos. When made 1930

Insulation fitted by N.V. P. Smit Jr. When fitted 1930 System of Refrigeration CO<sub>2</sub>

Method of cooling Cargo Chambers air Insulating Material used granulated cork

Number of Cargo Chambers insulated 6 Total refrigerated cargo capacity 16032 cubic feet.

## DESCRIPTION OF REFRIGERATING MACHINERY. Where placed in engine room

Refrigerating Units, No. of 3 No. of machines 3 Is each machine independent yes

Total refrigeration or ice-melting capacity in tons per 24 hours 12 40000 kg each Are all the units connected to all the refrigerated chambers yes

Compressors, driven direct or through <sup>single</sup> ~~double~~ reduction gearing. Compressors, single or double acting double If multiple effect compression are relief valves or safety discs fitted yes No. of cylinders to each unit 2 Diameter of cylinders 65 mm

Diameter of piston rod 35 mm Length of stroke 110 mm No. of revolutions per minute 340

Motive Power supplied from 3 Electric motors (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 2 Diameter 2

Length of stroke 2 Working pressure 2 Diameter of crank shaft journals and pins 2

Breadth and thickness of crank webs 2 No. of sections in crank shaft 2 Revolutions of engines per minute 2

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

No. of cylinders 2 Diameter 2 Length of stroke 2 Span of bearings as per Rule 2

Maximum pressure in cylinders 2 Diameter of crank shaft journals and pins 2

Breadth and thickness of crank webs 2 No. of sections in crank shaft 2 Revolutions of engine per minute 2

AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule 2

Can the internal surfaces of the receivers be examined 2 What means are provided for cleansing their inner surfaces 2

Is there a drain arrangement fitted at the lowest part of each receiver 2 If made under survey 2

No. of Receivers 2 Cubic capacity of each 2 Internal diameter 2 thickness 2

Seamless, lap welded or riveted longitudinal joint 2 Material 2 Range of tensile strength 2 Working pressure by Rules 2

Electric Motors, type Deluge type compressors No. of 3 Rated full Kilowatts 16.2-22

Volts at 220 at 25/340 revolutions per minute. Diameter of motor shafts at bearings 2

Reduction Gearing 2 Pitch circle diameter, pinion 2 Main wheel 2 Width of face 2

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, pinion 2 Main wheel 2

Pinion shafts, diameter at bearings 2 Main wheel shaft, diameter at bearings 2

Gas Condensers, No. of 3 Cast iron or steel casings double pipe Cylindrical or rectangular 2 Are safety valves fitted 2

to casings 2 No. of coils in each 2 Material of coils S.M. steel Can each coil be readily shut off or disconnected yes

Water Circulating Pumps, No. and size of 1 rotary 36 t/h how worked Elec. motor Gas Separators, No. of 3

Gas Evaporators, No. of 3 Cast iron or steel casings S.M. steel Pressure or gravity type open If pressure type, are safety

valves fitted 2 No. of coils in each casing 3 Material of coils S.M. steel Can each coil be readily shut off or disconnected yes

Direct Expansion or Brine Cooled Batteries, No. of 2 Are there two separate systems, so that one may be in use while the other is being

cleared of snow 2 No. of coils in each battery 2 Material of coils 2 Can each coil be readily shut off or

disconnected 2 Total cooling surface of battery coils 2 Is a watertight tray fitted under each battery 2

Air Circulating Fans, Total No. of 6 3 of 6000 m<sup>3</sup> cubic feet capacity, at 1400 revolutions per minute

Steam or electrically driven Electrically Where spare fans are supplied are these fitted in position ready for coupling up 2

Brine Circulating Pumps, No. and size of, including the additional pump 4 how worked electrically

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

No. of brine sections in each chamber 2

Can each section be readily shut off or disconnected 2 Are the control valves situated in an easily accessible position yes



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 <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 *yes*

Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory *yes*

Dates of test *26-27/4 '30* Density of Brine *28°* by *Baumé* hydrometer

Temperatures (when the cargo chambers are cooled down to the required test temperatures)

or, delivery and return air at direct expansion or brine cooled batteries *✓* & *✓* outflow and return brine *-24 1/2 °C* & *-23 °C*

atmosphere *16 °C* cooling water inlet and discharge *19 °C* & *21 °C* gas in condensers *21 °C* and evaporators *-31 °*

the average temperature of the refrigerated chambers *-17 °C* and the rise of temperature in these chambers upon the expiration of *18* hours

time after the machinery and cooling appliances have been shut off *10 °C*

#### 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 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										
C deck 113/115 F						✓	steel	corbels	200 mm	1/2 cement
FRAME No. 104 A						✓	steel	"	200 mm	1/2 cement
B deck 113/115 F						✓	steel	"	200 mm	1/2 cement
FRAME No. 104 A						✓	steel	"	200 mm	1/2 cement
FRAME No. F										
FRAME No. A										
FRAME No. (After Peak) F										
SIDES ...						650 mm	steel	corbels	340 mm	1/2 cement
OVERHEADING ...						✓	steel	deck	365 mm	1/2 cement
FLOORS OF CHAMBERS ...						✓	steel	deck	365 mm	1/2 cement
TRUNK HATCHWAYS ...										
THRUST RECESS, SIDES AND TOP ...										
TUNNEL SIDES AND TOP ...										
TUNNEL RECESS, FRONT AND TOP ...										

FRAMES OR REVERSE FRAMES, FACE *in air space 650 mm*

BULKHEAD STIFFENERS, TOP *5 x 5" 125 mm* corbels *bottom ditto* AND FACE *50 mm* corbels cement

RIBBAND ON TOP OF DECK *beams 11 x 3 1/2 x 50" A deck 365 mm* corbels *B deck 250 mm* corbels cement

SIDE STRINGERS, TOP *✓* BOTTOM *✓* AND FACE *✓*

WEB FRAMES, SIDES *✓* AND FACE *✓*

BRACKETS, TOP *no brackets* 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 *yes*

Cargo Battens, Dimensions and spacing, sides *2 x 2" x 12"* floors *wooden gratings* tunnel top *✓*

fixed or portable *fixed* Are screens fitted over the brine grids at chamber sides *in grids* hinged or permanently fixed *✓*

Thermometer Tubes, No. and position in each chamber *2 in each chamber 1 aft on forward*

diameter *2 1/2"* 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 *no pipes*

Draining Arrangements. What provision is made for draining the inside of the chambers *suction pipes*

Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off *screw plugs*

What provision is made for draining the refrigerating machinery room *Refrigerating machinery in engine 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 *yes*



Sounding Pipes, No. and position in each chamber situated below the load water 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 *by hooks*

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

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.

MACHINEFABRIEK & SCHEEPSWERF VAN

*A. J. B. van der*

Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery by *H. J. B. van der* and Insulation *13/1 '38*  
(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 ☒

General Remarks (State quality of workmanship, opinions as to class, &c.)

The machinery and insulation has been made and fitted in accordance with the specification, approved plans, Secretary's letters and Society's Rules and was found in a good working condition, but the ventilator dampers were found leaking, so that the temperature in the chambers could not be brought down sufficiently for frozen cargo, I am of opinion that the vessel is eligible for the record of + LLOYDS R.M.C. for 32°F 9-30 for the present, and + LLOYDS R.M.C. with date for -10°C when a satisfactory cooling test has been held.

It is submitted that  
this vessel is eligible for  
THE RECORD.

+ Lloyd's R.M.C. 9.38  
for Temp 32°F

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.
3	3	C.O.2	Rheinmetall Borsig & Co.	1930	Mine & air catalytic cement lined	12 Tons.	yes	6	16,032

Fee ..... £ 42. - Fee applied for, 6. 10 1938

Travelling Expenses £ - Received by me, 18/10 1938.

*F. Willems*  
Surveyor to Lloyd's Register.

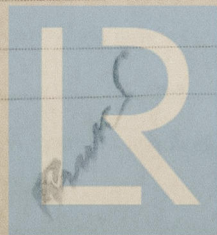
Committee's Minute

TUE 8 NOV 1938

Assigned

+ Lloyd's R.M.C. 9.38  
for Temp 32°F

CERTIFICATE WRITTEN.



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Foundation