

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office OCT 10 1938)

Date of writing Report 7/10 1938 When handed in at Local Office Port of Rotterdam
No. in Reg. Book. Survey held at Ridam 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 5259 Net 3102 10,704
Vessel built at Rotterdam By whom built M. P. Smit Jr. Yard No. 515 When built 1937/8
Owners, Ned. Amst. Hoorn. Mij. Port belonging to Rotterdam Voyage ✓
Refrigerating Machinery made by Rheinmetall Borsig Machine Nos. ✓ When made 1930
Insulation fitted by M. P. Smit Jr. When fitted 1930 System of Refrigeration CO₂
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 1/2 40000 kg each Are all the units connected to all the refrigerated chambers yes
Compressors, driven direct or through single 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 Electro 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 ✓ 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:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule ✓
Can the internal surfaces of the receivers be examined ✓ What means are provided for cleansing their inner surfaces ✓
Is there a drain arrangement fitted at the lowest part of each receiver ✓ If made under survey ✓
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 Deluge type compressors No. of 3 Rated full Kilowatts 16.2-22
Volts at 120 at 255/340 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 3 Cast iron or steel casings double pipe Cylindrical or rectangular ✓ Are safety valves fitted to casings ✓ No. of coils in each 2 Material of coils S.M. steel Can each coil be readily shut off or disconnected yes

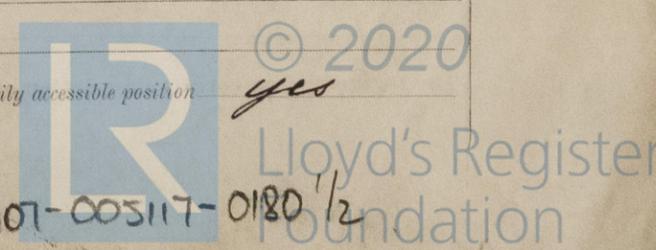
Water Circulating Pumps, No. and size of 1 rotary 36 t/h how worked elec. motor Gas Separators, No. of 3
Gas Evaporators, No. of 3 Cast iron or steel casings S.M. steel Pressure or gravity type open If pressure type, are safety valves fitted ✓ No. of coils in each casing 3 Material of coils S.M. steel Can each coil be readily shut off or disconnected yes

Direct Expansion or Brine Cooled Batteries, No. of ✓ 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 6 3 each of 6000 m³ 3600 m³ 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 ✓

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 ✓

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



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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						
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 *26-27/9 '30* Density of Brine *20°* 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 *10* 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.

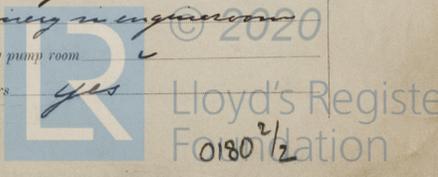
	IN LOWER HOLD CHAMBERS.					IN 'TWEEN DECK CHAMBERS.				
	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.
FRAME No. (Fore Peak) A										
FRAME No. F										
FRAME No. A										
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			steel	corbels	200 mm	1/2 cement finish
FRAME No. 104 A		steel	"	200 mm			steel	"	200 mm	1/2 cement finish
B Deck 113/115 F		steel	"	200 mm			steel	"	200 mm	1/2 cement finish
FRAME No. 104 A		steel	"	200 mm			steel	"	200 mm	1/2 cement finish
FRAME No. F										
FRAME No. A										
FRAME No. (After Peak) F										
SIDES						650 mm	steel plates	corbels	340 mm	1/2 cement finish
OVERHEADING							steel deck	"	365 mm	1/2 cement finish
FLOORS OF CHAMBERS							steel deck	"	365 mm	1/2 cement finish
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 cement finish* BOTTOM *ditto* AND FACE *50 mm corbels cement finish*
 RIBBAND ON TOP OF DECK *beams 11 x 3 1/2 x 50 A Deck 365 mm corbels cement finish B Deck 250 mm corbels cement finish*
 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 *scupper pipes*
 Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off *scupper 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

[Signature]

Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery by Hellin 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 satisfactorily cooling test has been held.

It is submitted that this vessel is eligible for THE RECORD, + Lloyds 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.
3	3	C.O.2	Rheinmetall Boring S.G.	1930	Mine & air cork slabs cement lined	12 Tons.	yes	6	16032 Cubic ft.

Fee £ 42. Fee applied for, 6. 10 1938.
Travelling Expenses Received by me, 18/10 1938.

[Signature]
Surveyor to Lloyd's Register.

Committee's Minute TUE 8 NOV 1938

Assigned + Lloyds R.M.C 9.38 for Temp 32° F.

CERTIFICATE WRITTEN.



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Certificate to be sent to