

Rpt. 17.

No.

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office.)

Date of writing Report

27 AUG 1928

When handed in at Local Office

27 AUG 1928

Port of London.

No. in

Reg. Book. Survey held at

Date: First Survey

9th May 1928

Last Survey

22nd June 1928

(No. of Visits)

8

on the Refrigerating Machinery and Appliances of the S.S. "NIEUWKERK".

Tons

Gross

Net

Vessel built at

Rotterdam

By whom built

P. Smit junr

Yard No.

418

When built

Owners

Koninkl. Nederl. Stormv. Maats.

Voyage

Refrigerating Machinery made by

J. E. Hall Ltd.

Machine No.

4648

When made

1928.

Insulation fitted by

When fitted

System of Refrigeration CO₂ Brine

Method of cooling Cargo

Air Cooling

Insulating Material used

Number of Cargo Chambers insulated

2

Total refrigerated cargo capacity

41,000

cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY.

Where placed Tank top, aft eng. room.

Refrigerating Units, No. of

one

Single, double, or triple

double

Cubic feet of air delivered per hour

Total refrigeration or ice-melting capacity in tons per 24 hours

24

Are all the units connected to all the refrigerated chambers

yes

Compressors, driven direct

through

reduction gearing.

Compressors, single or double acting

double

No. of cylinders

2

Diameter of cylinders

3"

Diameter of piston rod

1 3/8"

Length of stroke

12"

No. of strokes per minute

200 each.

Motive Power supplied from

Direct acting cross compound steam engine

Steam Engines, high pressure, compound, or triple expansion, surface condensing.

No. of cylinders

2

Diameter H.P. 10", L.P. 20"

Length of stroke

12"

Working pressure

Diameter of crank shaft journals and pins

4 1/2"

Breadth and thickness of crank webs

6" x 3 1/8" in 3 1/8" out

No. of sections in crank shaft

two

Revolutions of engines per minute

100

Oil Engines, type

✓

2 or 4 stroke cycle

-

Single or double acting

-

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

-

Electric Motors, type

✓

No. of

-

Rated

-

Kilowatts

-

Volts at

✓

revolutions per minute

-

Diameter of motor shafts at bearings

-

Reduction Gearing, maximum shaft horse power at 1st pinion

✓

Revolutions per minute at full power at 1st pinion

-

2nd pinion

✓

1st reduction wheel

✓

main shaft

✓

Pitch circle diameter, 1st pinion

-

2nd pinion

-

1st reduction wheel

✓

Main wheel

✓

Width of face, 1st reduction wheel

-

Main wheel

✓

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, 1st pinion

✓

2nd pinion

✓

1st reduction wheel

✓

Main wheel

✓

Flexible pinion shafts, diameter 1st

✓

2nd

✓

Pinion shafts, diameter at bearings, External, 1st

✓

2nd

Internal, 1st

✓

2nd

✓

Diameter at bottom of teeth of pinion, 1st

✓

2nd

-

Wheel shafts, diameter at bearings, 1st

-

Main

✓

Diameter at wheel shroud, 1st

-

Main

✓

Gas Condensers, No. of

2

Cast iron or steel casings

Cast iron

Cylindrical or rectangular

rectangular

No. of coils in each

3

Material of coils

S.D. Copper 3/4" b. x 1" o.d.

Can each coil be readily shut off or disconnected

Water Circulating Pumps, No. and size of

1 - 4" x 4 1/2" D.A.

how worked

off crankshaft

Gas Separators, No. of

1 delivery each side.

Gas Evaporators, No. of

2

Cast iron or steel casings

Steel D. casings

Pressure or gravity type

gravity

No. of coils in each casing

3

Material of coils

S.D. Steel 1 1/2" b. x 1 5/8" o.d.

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

yes.

No. of coils in each battery

4 - for Tr. DK Cooler

Material of coils

1 1/2" bore W.I. Galv.

Can each coil be readily shut off or

disconnected

yes.

Total cooling surface of battery coils

T.D. = 1350 sq ft.

Is a watertight tray fitted under each battery

yes.

Air Circulating Fans, Total No. of

2 - 30"

each of

16,000

cubic feet capacity, at

520

revolutions per minute

maximum

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

2 - 6" x 6 1/2" x 6" V.D.

how worked

Steam - direct.

Brine Cooling System, closed or open

open

Are the pipes and tanks galvanised on the inside

No. of brine sections in each chamber

Air Cooler

4 - 1 1/2" bore deliveries to Tr. DK. Cooler

2 - 1 1/2" " " " Hold

Can each section be readily shut off or disconnected

yes.

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

Where the tanks are not closed is the compartment in which they are situated efficiently ventilated

Steam Condensing Plant. State what provision is made for condensing steam, in terms of Section 4, Clauses 13 and 14

Machine exhausts to its own Surface Condenser

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)	H.P. 4-6-28 L.P. 6-6-28	-----	350 lb. sq. in. 250 lb. sq. in.			
GAS COMPRESSORS	22-6-28	1000 lb. sq. in.	3000 lb. sq. in.	1500 lb. sq. in.	C.N.H.	
" SEPARATORS	23-5-28	do.	do.	do.	DL	
" CONDENSER COILS	9-5-28	do.	do.	do.	DL	
" EVAPORATOR COILS	30-5-28	do.	do.	do.	DL	
" CONDENSER HEADERS AND CONNECTIONS	23-5-28	do.	do.	do.	DL	
" CONDENSER CASINGS	16-6-28	5 to 10 lb. sq. in.	20 lb. sq. in.		A.E.	
" EVAPORATOR CASINGS			open top.			
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
BRINE PIPING AFTER ERECTION IN PLACE						

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 air at the snow box and of the return air

or, delivery and return air at direct expansion or brine cooled batteries

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

time after the machinery and cooling appliances have been shut off

SPARE GEAR.

ARTICLES SUPPLIED AS PER RULE.

1 half crankshaft.
1 steam piston rod and nut.
1 piston for H.P. cylinder with rings.
1 set piston rings for H.P. cylinder.
1 set spring rings for each compressor piston.
2 compressor pistons + rods complete.
1 pump + rod for water pump.
1 H.P. slide valve piston + rods.
1 H.P. do. spindle + nuts.
1 eccentric sheave, strap rod + brasses each pattern.
1 additional brine pump in E.R.
2 bolts + nuts for main bearing.
2 do. do. for conn. rod big end.
2 do. do. for X-head.
1 set valves for air pump.
1 do. do. water pump.
1 do. do. brine pump.
1 do. do. feed pump.
1 set of 2 leather moulds.
6 tubes + 24 ferrules for steam condenser.
3 lengths each 1 1/4" + 1 1/2" W.L. piping.
3 W.L. bends do. do. 1 1/4" + 1 1/2"
12 W.L. sockets + backpicks each 1 1/4" + 1 1/2"
2 pairs of CO₂ pipe flanges.
1 set gasket screwing discs 1 1/4" + 1 1/2"
1 regulator valve spindle
1 set of 12 regulator piston leathers.
12 do. gland do.
2 sets of copper joint rings for comp. joints
do. do. for other joints.
2 sets of special metal packing rings for each comp. gland.

ADDITIONAL SPARE GEAR SUPPLIED.

2 sets of 4 valves + springs for comp. joints.
12 add. springs for comp. valves
1 guide for grinding in comp. valves
1 set valve springs for brine pump
1 set steam piston rings for do. do.
2 springs for water relief valve
2 do. do. brine do.
2 do. CO₂ safety valve
2 bolts + nuts for comp. rod coupl.
1 pump for pressure lubricator
1 CO₂ gauge.
1 hydrometer.
2 brass cased thermometers
12 copper safety discs
1 - 3/8" CO₂ gauge valve + 3 spare pipes.
1 fitted box for comp. parts
fan motor spares.
1 armature packed for storage
1 set field coils
2 sets of carbon brushes.
1 line of brush holders
1 set starter spares
1 set bearings

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

FOR J. & E. HALL, LTD. Manufacturer.

Chichester

DISCOUNT

DESCRIPTION OF INSULATION.

IN LOWER HOLD CHAMBERS.						IN 'TWEEN DECK CHAMBERS.						
BULKHEADS.		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										
		A										
	FRAME No.	F										
		A										
	FRAME No.	F										
		A										
	FRAME No. (Boiler Room)	F										
		A										
	FRAME No. (Engine Room)	A										
	FRAME No.	F										
		A										
	FRAME No.	F										
		A										
	FRAME No.	F										
		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 BOTTOM AND FACE

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 VENTILATORS

MASTS

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

Coal Bunker Bulkheads, and Brine Outflow and Return Pipes passing through coal bunkers. Is the insulation, so far as practicable, fireproof

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. Where the chambers are situated below the load water line, what provision is made for draining the inside of the chambers

Where 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

Are the
When
Steam

Engi
Gas
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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, inside dimensions, main _____ and branch _____
Are they permanently fixed or collapsible, or portable _____ State position in chambers _____

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 _____ 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 _____

General Remarks (State quality of workmanship, opinions as to class, &c.) *The refrigerating machinery has been constructed under special survey and the materials and workmanship are good.*

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	POWER.		INSULATED CARGO CHAMBERS.	
No. and whether Single or Duplex.	Makers.	Date of Construction.	System.	Type.		Cubic feet of air delivered per hour.	Ice melting capacity per 24 hours. Tons.	No.	Capacity.
1 Double	J. E. Hall Ltd.	1928	Carb. Amby	Hall.	(1) Air		24	2	41,000

Fee £ 3 : 0 : 0 } Fee applied for, 19
Travelling Expenses £ : 18 : 5 } Received by me, 19
Incl. in Rotterdam fees.

Committee's Minute **FRI. 12 OCT 1928**

D. Gemmell
Surveyor to Lloyd's Register.

Assigned *See Amb 31537*
(Ref. 1785P)