

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office

21 APR 1938

Date of writing Report 21 APR 1938

When handed in at Local Office 21 APR 1938

Port of London

No. in

Reg. Book.

Survey held at London

Date: First Survey 28th JanLast Survey 16th Mar 1938

(No. of Visits 21)

on the Refrigerating Machinery and Appliances of the

Amra

Tons { Gross 8314

Net 3993

Vessel built at Wallsend-on-Tyne

By whom built Swan Hunter & Wigham

Yard No. 1540

When built 1938

Owners British India Str. Nav. Co. Ltd.

Port belonging to

Voyage

Refrigerating Machinery made by

J. E. Hall Ltd.

Machine Nos.

9890

9891

When made 1938

Insulation fitted by

When fitted

System of Refrigeration CO₂ + Brine

Method of cooling Cargo Chambers

Brine Grids

Insulating Material used

Number of Cargo Chambers insulated

5

Total refrigerated cargo capacity

2000

cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY.

Where placed Queen deck aft main E.R.

Refrigerating Units, No. of

2

No. of machines

2

Is each machine independent

yes

Refrigeration or ice-melting capacity in tons per 24 hours

5½

Are all the units connected to all the refrigerated chambers

yes

Compressors, driven direct or through

single

reduction gearing

Compressors, single or double acting

single

If multiple effect compression

no

Safety valves or safety discs fitted

yes

No. of cylinders to each unit

one

Diameter of cylinders

1 1/16"

Diameter of piston rod

1/8"

Length of stroke

6"

No. of revolutions per minute

500

Power supplied from

(State number of boilers, oil engines or electric generators supplying the motive power.)

Main 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

3"

Thickness and thickness of crank webs

No. of sections in crank shaft

one

Revolutions of engines per minute

500

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

Thickness and thickness of crank webs

No. of sections in crank shaft

Revolutions of engine per minute

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

Are the internal surfaces of the receivers be examined

What means are provided for cleansing their inner surfaces

Is 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

Is lap welded or riveted longitudinal joint

Material

Range of tensile strength

Working pressure by Rules

Electric Motors, type

Enclosed ventilated

No. of

2

Rated

10 H.P.

Kilowatts

at 220 volts at 500

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

Shafts, diameter at bearings

Main wheel shaft, diameter at bearings

Condensers, No. of

2 in one casing

Cast iron or steel casings

Cylindrical or rectangular

cylindrical

Are safety valves fitted

Yes

No. of coils in each

2

Material of coils

S.D. Copper 3/4" x 1/2"

Can each coil be readily shut off or disconnected

yes

Refrigerating Pumps, No. and size of

1-1/2" horz centrifugal

how worked

electrically

Gas Separators, No. of

4

Evaporators, No. of

2

Cast iron or steel casings

steel

Pressure or gravity type

gravity

If pressure type, are safety

valves fitted

No. of coils in each

2

Material of coils

S.D. steel 1" x 1/2"

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

filled with 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

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

2-1/2" horizontal centri.

how worked

elec. direct

Brine Cooling System, closed or open

open

Are the pipes and tanks galvanised on the inside

no

No. of brine sections in each chamber

one to each

Can each section be readily shut off or disconnected

yes

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
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	11-3-38	1000 lbs. □	3000 lbs. □	1500 lbs. □	St.	
" SEPARATORS	11-3-38	do.	do.	do.	St.	
" MULTIPLE EFFECT RECEIVERS						
" CONDENSER COILS	28-1-38	do.	do.	do.	St.	
" EVAPORATOR COILS	15-2-38	do.	do.	do.	St.	
" CONDENSER HEADERS AND CONNECTIONS	16-3-38	do.	do.	do.	St.	
" CONDENSER CASINGS	11-3-38	5 to 10 lbs. □	20 lbs. □	-	St.	
" EVAPORATOR CASINGS		open top.				
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

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)

or, 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:-

6 lubricator piston leathers
6 do. gland do.
1 set of 2 leather moulds
1 pair main bearing brasses with bolts & nuts
1 do. crank pin do. do.
12 safety discs
12 additional valve springs for comp.
1 - 1/2" CO₂ valve + 3 spare pins
2 bolts & nuts for crosshead.
1 impeller, 1 spindle & 1 bearing assembly for Brine & Water Pumps.
2 springs for CO₂ safety valve
2 do. water relief valve
2 brass cased thermometers
1 hand pump for pressure lubricator
1 CO₂ gauge
1 hydrometer
1 fitted box for compressor parts

ELECTRICAL SPARES.

1 Armature
1 set of bearings
1 field coil
1 interpole coil
1 line of brush holder
1 set of brushes
1 set of controller spares
for machine motor
and
Pump motors (interchangeable)

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL
J. Wells
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.	A									
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

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

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

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 and it will be eligible for the notation + Lloyds R.M.C. (with date) when the installation and testing have been satisfactorily completed.

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.
2	2	Cash Duty	J.E. Hall Ltd	1938	(D. Brine Grids)	Tons. 5½		5	2000

Fee ... London. £ 2 : : : } Fee applied for, 19
Travelling Expenses £ : : : } Received by me, 19

Committee's Minute

FRI 18 NOV 1938

Assigned

La RMC 6852

D. Gemmell

Surveyor to Lloyd's Register.



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Foundation