

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office)

Date of writing Report

19

When handed in at Local Office

No. in

Reg. Book.

Survey held at

Date: First Survey

Port of London.

18th July 1928 Last Survey 28 SEPT. 1928

(No. of Visits)

10

on the Refrigerating Machinery and Appliances of the S. S. N. Y. "Port-alema."

Tons

Gross

Net

Vessel built at

Kallend

By whom built

Swan Hunter & Wigham

Yard No. 1341

When built 1928.

Owners

Commonwealth & Dominion

Port belonging to

Richardson Ltd.

Voyage

Refrigerating Machinery made by

J. & E. Hall Ltd.

Machine No. 4349

When made 1928.

Insulation fitted by

J. & E. Hall, Ltd.

When fitted

1928

System of Refrigeration CO₂ + Brine

Method of cooling Cargo Chambers

Brine grids

Insulating Material used See attached report.

Number of Cargo Chambers insulated

8

Total refrigerated cargo capacity 338,000 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY.

Where placed on 2nd deck aft Eng. Room.

Refrigerating Units, No. of

two

Single, double, or triple

double

Cubic feet of air delivered per hour

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

144

Are all the units connected to all the refrigerated chambers yes.

Compressors, driven direct

through

reduction gearing

Compressors, single or double acting

Double acting

No. of cylinders 2 per mach.

Diameter of cylinders

4 1/8"

Diameter of piston rod

3"

Length of stroke

15"

No. of strokes per minute 240 each

Motive Power supplied from

Direct Coupled - electric motors.

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

5 1/2"

Breadth and thickness of crank webs

8" x 3 1/2"

No. of sections in crank shaft

one

Revolutions of engine per minute

135

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

open

No. of one per mach.

Rated 130 H.P.

Kilowatts

Volts 220 at 135

revolutions per minute.

Diameter of motor shafts at bearings

5 1/2"

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 per mach.

Cast iron or steel casings

Cylindrical or rectangular

cylindrical.

No. of coils in each

8

Material of coils S.D. Copper 3/4" x 10" d.

Can each coil be readily shut off or disconnected

yes

Water Circulating Pumps, No. and size of

Supplied by ship's engine

how worked

Gas Separators, No. of

1 delivery

Gas Evaporators, No. of 2 per mach.

Cast iron or steel casings

Steel

Pressure or gravity type

pressure.

No. of coils in each casing

6

Material of coils S.D. Steel 1" x 1 1/2" d.

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

3

each

20" Sirocco for blowing air over side grids

cubic feet capacity, at

Steam or electrically driven

electrically

Where spare fans are supplied are these fitted in position ready for coupling up

no.

Brine Circulating Pumps, No. and size of, including the additional pump

3-5" vertical centrifugal

elec. motor direct coupled

Brine Cooling System, closed or open

open

Are the pipes and tanks galvanised on the inside

no.

No. of brine sections in each chamber

N°1 hold = 10, N°2 hold = 12, N°4 hold = 12.

N°1 tw. dk. = 9,

N°2 tw. dk. = 12,

N°4 tw. dk. = 10,

Port chill = 3,

Star. cheese = 2

Can each section be readily shut off or disconnected

yes

Are the control valves situated in an easily accessible position

yes.

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

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

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)	4-9-28					
GAS COMPRESSORS	13-9-28	1000 lb. sq. in.	3000 lb. sq. in.	1500 lb. sq. in.	Sh	
" SEPARATORS	5-9-28	do.	do.	do.	Sh	
" CONDENSER COILS	31-8-28	do.	do.	do.	Sh	
" EVAPORATOR COILS	25-9-28	do.	do.	do.	Sh	
" CONDENSER HEADERS AND CONNECTIONS	18-4-28	do.	do.	do.	C.N.H.	
" CONDENSER CASINGS	5-9-28	do.	do.	do.	Sh	
" EVAPORATOR CASINGS	28-9-28	do.	do.	do.	C.N.H.	
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 & 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.

ARTICLES SUPPLIED AS PER RULE.	ADDITIONAL SPARE GEAR SUPPLIED.
1 crankshaft 2 sets of rings for compressor pistons 4 pistons + rods for compressor 1 additional brine pump for engine room. 1 pair main bearings, bolts and nuts 1 pair crank pin bolts and nuts 1 pair flyls and nuts for crosshead bearing 1 spindle and impeller for centrifugal brine pump 1 set valves for vertical duplex brine pump. 1 set of 2 leather moulds. 3 lengths each 1 1/2" + 1 1/4" W.I. piping 3 W.I. bends 1 1/2" + 1 1/4" 2 pair CO ₂ pipe flanges. 1 set ratchet screwing dies to screw 1 1/2" + 1 1/4". 2 regulator valve spindles Subdry brine cocks + valves. Assorted bolt, studs and nuts. 24 lubricator piston leather. 24 lubricator gland leather. 2 sets of copper joint rings for compressor. 1 set do. do. for other joints. 8 sets of special metal packing rings for comp. gland.	4 sets of 4 valves, seats + springs 24 addl. valve springs. 1 guide for grinding the valves 1 set springs for V.D. brine pump valves. 1 plunger sleeve ring for V.D. brine pump 2 springs for water relief valve 2 do CO ₂ safety valve 1 pump for pressure lubricator 2 CO ₂ gauges. 1 hydrometer. 8 chambers thermometer 24 copper safety discs 1 separator drain plug + pip. 2-1/2 CO ₂ gauge valve with 6 span pip. 1 fitted box for comp. part. 1 pair main bearing shells lined W.M. 1 do crank pin shells lined W.M. 1 do X head bearings with cap.

ELECTRICAL SPARES.

Armature in Zinc lined case	1 of each for
Set of field coils	Machine motors
Brush holder	Centri. Brine Pump motors.
Set of brushes	V.D. Brine Pump motor
Set of bushes	Fan Motors.
Set of starter spares.	

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

FOR J. & E. HALL, LTD
C. Nicholson
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

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

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. The Machinery has now been securely fixed on board the vessel, tried under full working conditions + found satisfactory.

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.
2 Single	J. & E. Hall Ltd.	1928	Cottrell-Hughes	Hall	(1) Porine. (2) Gran Cork (3) Slat Cork.	144	8	335000	

Lon 1/2 tip
Rmc 1/2 20 }
Fee £30:0:0
Travelling Expenses £19:6
Fee applied for, 19
Received by me, 6.12.1928

Committee's Minute TUE. 4 DEC 1928

Assigned See Minute on
Jwc. Rmc Rpt 3554.

D. Gemmell.
Surveyor to Lloyd's Register.

Fred. A. Ferguson
Newcastle-on-Tyne.



Lloyd's Register
Foundation