

## REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office)

Date of writing Report

23 JAN 1928

When handed in at Local Office

23 JAN 1928

No. in

Reg. Book.

Survey held at

Dartford

Date: First Survey

27<sup>th</sup> Oct. 1927

Last Survey

8 DEC.

1927

(No. of Visits)

4

on the Refrigerating Machinery and Appliances of the <sup>1</sup>/<sub>3</sub> "GRONINGEN."Tons <sup>Gross</sup> 1205  
<sup>Net</sup> 548

Vessel built at

Gron

By whom built

Ailsa S.B. Co.

Yard No.

403

When built

1928-3

Owners

General Str. Nav. Co. Ltd.

Port belonging to

LONDON

Voyage

LONDON.

Refrigerating Machinery made by

J. E. Hall &amp; Co.

Machine No.

4346

When made

1924

Insulation fitted by

J. LIVINGSTON.

WHITEINCH.

When fitted

1928-3.

System of Refrigeration

CO<sub>2</sub> + Brine

Method of cooling Cargo Chambers

Air cooled.

Insulating Material used

CORK

Number of Cargo Chambers insulated

2

Total refrigerated cargo capacity

16,000

cubic feet.

## DESCRIPTION OF REFRIGERATING MACHINERY.

Where placed Engine Room Platform Starboard side.

Refrigerating Units, No. of

one

Single, double, or triple

single

Cubic feet of air delivered per hour

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

15

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 acting

No. of cylinders

one

Diameter of cylinders

3½"

Diameter of piston rod

1½"

Length of stroke

9"

No. of strokes per minute

240

Motive Power supplied from

Steam engine thro' 2 throw crankshaft.

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

No. of cylinders

one

Diameter

12"

Length of stroke

9"

Working pressure

Diameter of crank shaft journals and pins

5"

Breadth and thickness of crank webs

4" x 3¼"

No. of sections in crank shaft

one

Revolutions of engines 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

✓

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

one

Cast iron or steel casings

cast iron

Cylindrical or rectangular

rectangular.

No. of coils in each

3

Material of coils S.D. Copper ¾" x 10" d.

Can each coil be readily shut off or disconnected

yes.

Water Circulating Pumps, No. and size of

1 - 4½" x 5" x 6" V.D. how worked

Steam direct

Gas Separators, No. of

1 suction

Gas Evaporators, No. of

one

Cast iron or steel casings

steel

Pressure or gravity type

gravity.

No. of coils in each casing

2

Material of coils S.D. steel 1" x 15" d.

Can each coil be readily shut off or disconnected

yes.

Direct Expansion or Brine Cooled Batteries, No. of

1 forward

Are there two separate systems, so that one may be in use while the other is being

cleared of snow

no

No. of coils in each battery

2

Material of coils H.I. 1½" bore.

Can each coil be readily shut off or

disconnected

yes

Total cooling surface of battery coils

460 sq. ft.

473 sq. ft.

Is a watertight tray fitted under each battery

yes.

Air Circulating Fans, Total No. of

1 forward

each of

6,000

cubic feet capacity, at

650

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

2 - 6" x 6½" 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 cooled (see above)

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.

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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

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)	8-11-24		350lb. 0"	-	84	
GAS COMPRESSORS	8-11-24	1000lb. 0"	3000lb. 0"	1500lb. 0"	84	
" SEPARATORS	8-11-24	do.	do.	do.	84	
" CONDENSER COILS	24-10-24	do.	do.	do.	84	
" EVAPORATOR COILS	5-12-24	do.	do.	do.	84	
" CONDENSER HEADERS AND CONNECTIONS	8-11-24	do.	do.	do.	84	
" CONDENSER CASINGS	8-11-24	5 to 10lb. 0"	20lb. 0"	-	84	
" EVAPORATOR CASINGS		open top.				
NH <sub>3</sub> 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 set of steam cylinder piston rings	8 addl. springs for comp. valves
1 set of 4 valves, seats + springs for compressor.	2 guides for grinding in comp. valves.
1 additional brine pump in engine room.	1 set valves + springs for water pump.
1 piston and rod for compressor with rings.	1 set valves + springs for brine pump.
2 lubricator piston leathers	1 set steam piston rings for water pump.
2 do gland do.	1 set steam piston rings for brine pump.
2 sets copper joint rings for compressor.	1 spring for water relief valve
1 do do do for other joints.	1 spring for brine relief valve
1 set special metal rings for compressor glands.	6 safety discs.
	1 hydrometer
	1 fitted box for comp. parts.

ELECTRICAL SPARES.

- 1 spare fan motor each size fitted.
- 1 set of carbon brushes for each size motor
- 1 set of controller spares for each size motor.

N.B. See Secretary's letter of 11<sup>th</sup> September 1925 with reference to S.S. Rock + S.S. Murel.

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

FOR J. & E. HALL, LTD  
Checholsa  
DIRECTOR  
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                     

                     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 gullerways of the respective chambers                     

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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.

See endorsement on Gls Rept-RMC 29882.

BM.

#### 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 Single	J. E. Hall Ltd.	1924	Carbonyl	Hall	(1) Air		15	2	14750

Fee £ 6 : 0 : 0

Fee applied for, 1573/1925

Travelling Expenses £ : 6 : 10

Received by me, Glasgow Report

D. Gemmell.  
Surveyor to Lloyd's Register.

Committee's Minute

Assigned



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