

Rpt. 17.

No.

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

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 21202. (No. of Visits 8)

on the Refrigerating Machinery and Appliances of the M. S. Gripsholm Tons { Gross
 Vessel built at Walker on Tyne By whom built Armstrong Whitworth & Co. No. 999 When built 1924
 Owners Svenska Amerika Lingen Port belonging to Voyage
 Refrigerating Machinery made by J. G. Ball & Co. Dartford Machine No. 5963 When made 1924
 Insulation fitted by When fitted 1924 System of Refrigeration C.O.₂ Brine
 Method of cooling Cargo Chambers Brine Grids Insulating Material used Cellulose Cork
 Number of Cargo Chambers insulated 3 Total refrigerated cargo capacity 11,630 cubic feet.
 See Shipbuilders figures 12000

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed On Deck Starboard side ship
 Refrigerating Units, No. of 2 Single, double, or triple Single Cubic feet of air delivered per hour
 Total refrigeration or ice-melting capacity in tons per 24 hours 24 tons Are all the units connected to all the refrigerated chambers Yes

Compressors, driven ~~direct~~ through single } reduction gearing. Compressors, ~~single~~ double acting C.O.₂ No. of cylinders 2 per machine
 Diameter of cylinders 2 1/16" Diameter of piston rod 1 1/4" Length of stroke 7' No. of strokes per minute 252 each

Motive Power supplied from Electric motor, thro single reduction gearing

Steam Engines, high pressure, compound, or triple expansion, surface condensing. No. of cylinders Diameter
 Length of stroke C.O.₂ machine Working pressure Diameter of crank shaft journals and pins = 3 3/4" pins 7 journals
 Breadth and thickness of crank webs 5' x 2 1/8" No. of sections in crank shaft 1 Revolutions of ~~engine~~ C.O.₂ machine per minute 126

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 Totally enclosed, drip proof, No. of 1 per machine Rated 29 B.H.P. Kilowatts
 Volts at 220 625 revolutions per minute. Diameter of motor shafts at bearings 70 mm (2 3/4")

Reduction Gearing, maximum shaft horse power at 1st pinion 29 Revolutions per minute at full power at 1st pinion 625

2nd pinion 1st reduction wheel main shaft 126 Pitch circle diameter, 1st pinion 10' 2nd pinion
 1st reduction wheel Main wheel 49.6" Width of face, 1st reduction wheel 6 1/4" Main wheel 6'

Distance between centres of pinion (and wheel faces) and the centre of the adjacent bearings, 1st pinion 8 1/16" 2nd pinion

1st reduction wheel Main wheel 6 7/8" Flexible pinion shafts, diameter 1st 2nd

Pinion shafts, diameter at bearings, External, 1st 70 3/4" (2 3/4") 2nd Internal, 1st 2nd

Diameter at bottom of teeth of pinion, 1st 9.07 2nd Wheel shafts, diameter at bearings, 1st

Main 3 3/4" Diameter at wheel shroud, 1st 10.8" Main

Gas Condensers, No. of 2 Cast iron or steel casings Cast Iron Cylindrical or rectangular Circular

No. of coils in each 3 Material of coils 3/4" x 1" S.D. copper Can each coil be readily shut off or disconnected Yes

Water Circulating Pumps, No. and size of 1 2" centrifugal how worked D.C. to motor Gas Separators, No. of 1 - delivery

Gas Evaporators, No. of 2 Cast iron or steel casings Steel Circular Pressure or gravity type Pressure

No. of coils in each casing 2 Material of coils 1 1/8" x 1 1/2" S.D. 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 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 1 - H.P. - 1" how worked D.C. to motor

Brine Cooling System, closed or open Open Are the pipes and tanks galvanised on the inside

No. of brine sections in each chamber 3 in each cargo chamber

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.

Motor driven plant

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)						
GAS COMPRESSORS	10-11-24	1000 $\frac{1}{2}$ "	3000 $\frac{1}{2}$ "	1500 $\frac{1}{2}$ "	SSS	
" SEPARATORS	10-11-24	"	"	"	SSS	
" CONDENSER COILS	15-10-24	"	"	"	SSS	
" EVAPORATOR COILS	9-10-24	"	"	"	SSS	
" CONDENSER HEADERS AND CONNECTIONS	10-11-24	"	"	"	SSS	
" CONDENSER CASINGS	17-11-24	5 to 10 $\frac{1}{2}$ "	30 $\frac{1}{2}$ "		SSS	
" EVAPORATOR CASINGS	30-10-24	20 to 25 $\frac{1}{2}$ "	50 $\frac{1}{2}$ "		SSS	
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
BRINE PIPING AFTER ERECTION IN PLACE...				90 $\frac{1}{2}$ "		

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- Spare crank shaft	12- Additional springs for compressor valves
1- Set of spring rings for each compressor piston	1- Guide for grinding in compressor valves
1- Piston & rod for each compressor	1- Spindle & impeller for H.P. brine pump
1- Spindle & impeller for centrifugal water pump	1- Pump for pressure lubricator
1- Brine pump fitted in engine room	1- C.O. ₂ pressure gauge
2- Bolts & nuts for main bearings	1- Hydrometer
2- " " " " connecting rod big end	2- Brass coated thermometers
2- " " " " & head bearing	12- Copper safety discs
1- Spindle and impeller for brine pump	1- 18" C.O. ₂ gauge valve & 3 spare nuts
3- Lengths of 1 $\frac{1}{2}$ " & 1 $\frac{1}{2}$ " W.I. piping	1- Flatted box
3- W.I. bends each 1 $\frac{1}{2}$ " & 1 $\frac{1}{2}$ " hole	1- Raw hide pinion for machine motor in tin case
12- W.I. sockets do do do	1- Pair main bearing brasses
2- Pairs of C.O. ₂ pipe flanges 1 $\frac{1}{2}$ " & 1 $\frac{1}{2}$ " gas thread	1- " crank pin
1- Set of ratchet screwing dies 1 $\frac{1}{2}$ " & 1 $\frac{1}{2}$ " gas thread	1- " iron head
1- Regulator valve spindle	
Sundry brass cocks	
12- Orville both studs & nuts	
12- Lubricator piston leathers	
12- " gland leathers	
2- Sets of copper joint rings for compressor joints	
1- " " " " other joints	
2- Sets of special metal packing rings for each compressor gland	
1- Set of 2 leather moulds	
2- Sets each of 4 valves, seats & springs for compressor	

Electrical Spares

	For machine motor	For C.W. pump and main brine pumps	C.H.P. Brine pump motor
Armature packed for shipment	1	1	1
Set of field coils	1	1	1
Line of brush holders	1	1	1
Set of brushes	1	1	1
Set of spanners	1	1	1
Set of spanners spars	1	1	1

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

FOR J. & E. HALL, LTD

Chickolson
for DIRECTOR

Manufactured
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LR-FAP-TB10-38 1/2

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DESCRIPTION OF INSULATION.

X 17. 23553.

IN LOWER HOLD CHAMBERS.

IN 'TWEEN DECK CHAMBERS.

		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.
BULKHEADS.	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)	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		
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.



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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 Is 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.) These Refrigerating Machines have been built under special survey, the material 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.

Fee ... £ 6 : : Fee applied for, 13 Nov 1925 at NWC.

Travelling Expenses £ : 12 : 7 Received by me, 1925

Surveyor to Lloyd's Register.

Committee's Minute FR. 20 NOV 1925

Assigned + Lloyd's RMB 11.25