

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office. JUL 1936)

Date of writing Report 6 JUL 1936 When handed in at Local Office 6 JUL 1936 Port of London

No. in Reg. Book. Survey held at Darford Date: First Survey 12th May Last Survey 11th June 1936
29677
79883 (No. of Visits SEVEN)

on the Refrigerating Machinery and Appliances of the S.S. "MASULA" Tons { Gross 7326 Net 4566

Vessel built at Glasgow By whom built Barclay Currier & Co. Ltd. Yard No. _____ When built 1919-6

Owners British India Steam Nav. Co. Ltd. Port belonging to Glasgow Voyage _____

Refrigerating Machinery made by J. E. Hall Ltd. Machine No. 9507 When made 1936

Insulation fitted by _____ When fitted _____ System of Refrigeration CO₂ + Brine

Method of cooling Cargo Chambers Brine Grids and Air Circles Insulating Material used _____

Number of Cargo Chambers insulated 5 Total refrigerated cargo capacity 19,170 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Main Deck - P+S of Eng Casings

Refrigerating Units, No. of 2 Single, double, or triple - Cubic feet of air delivered per hour _____

Total refrigeration or ice-melting capacity in tons per 24 hours 21 1/2 Are all the units connected to all the refrigerated chambers yes

Compressors, driven direct or through double reduction gearing. Compressors, single or double acting double No. of cylinders 2

Diameter of cylinders 3 1/2" Diameter of piston rod 1 5/8" Length of stroke 9" No. of strokes per minute 240

Motive Power supplied from Steam engine thro' two throw crankshaft.

Steam Engines, high pressure, compound, or triple expansion, surface condensing. No. of cylinders 2 Diameter 12"

Length of stroke 9" Working pressure _____ Diameter of crank shaft journals and pins 5"

Breadth and thickness of crank webs 7" x 3 1/4" 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 _____ 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 _____

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" x 1" o.d. Can each coil be readily shut off or disconnected yes

Water Circulating Pumps, No. and size of one 6" x 4" x 8" V.D. how worked steam direct Gas Separators, No. of 4

Gas Evaporators, No. of 2 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" h. x 1 1/8" o.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 1750 Is a watertight tray fitted under each battery yes

Air Circulating Fans, Total No. of 4 - 14" each of 1000 cubic feet capacity, at 2000 revolutions per minute _____

Steam or electrically driven electrically Where spare fans are supplied are these fitted in position ready for coupling up no

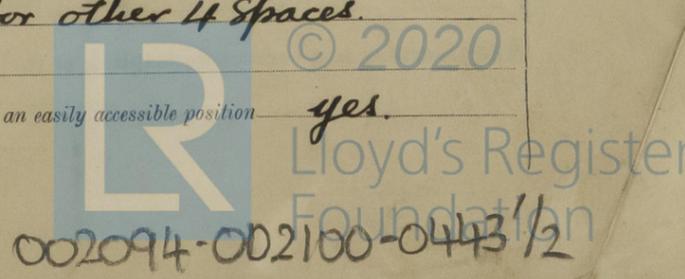
Brine Circulating Pumps, No. and size of, including the additional pump 2 - 5" x 6" x 6" V.D. how worked steam direct

Brine Cooling System, closed or open open Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber 2 for centre spaces + 1 each for other 4 spaces.

Can each section be readily shut off or disconnected yes Are the control valves situated in an easily accessible position yes

Im. 631.-T.



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Common
 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)	21-5-36		350 lbs		SH	
GAS COMPRESSORS	11-6-36	1000 lbs	3000 lbs	1500 lbs	SH	
SEPARATORS	9-6-36	do.	do.	do.	SH	
CONDENSER COILS	15-5-36	do.	do.	do.	SH	
EVAPORATOR COILS	12-5-36	do.	do.	do.	SH	
CONDENSER HEADERS AND CONNECTIONS	8-6-36	do.	do.	do.	SH	
CONDENSER CASINGS	4-6-36	5 to 10 lbs	20 lbs		SH	
EVAPORATOR CASINGS	11-6-36	20-25 lbs	50 lbs		SH	
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.

Are the machines in accordance with Section 4, Clause 2 of the Rules

Are the working parts of the machines, pumps and motors respectively, interchangeable

ARTICLES SUPPLIED AS PER RULE.

ADDITIONAL SPARE GEAR SUPPLIED.

1 piston & rod for each compressor with rings
 1 bracket & rod for C.W. pump
 1 set valves & springs for same
 1 set steam piston rings for same
 1 add. brine pump fitted in engine room
 1 set valves and springs & steam piston rings for brine pump
 2 bolts & nuts for comp. rod big end.
 2 do. do. engine crosshead.
 2 do. do. comp. do.
 2 do. do. main bearings
 12 lubricator piston leather
 12 do. gland do.
 1 set of 2 leather moulds
 3 lengths W.I. piping 1 1/4" & 1 1/2" bore
 3 W.I. bends do.
 6 sockets & 2 back nuts do. do.
 1 set ratchet screwing dies for 1 1/4" & 1 1/2" pipe
 sundry brine cocks
 1 regulator valve spindle
 Assorted bolts & nuts
 2 pair CO₂ pipe flanges
 2 sets copper joint rings for comp. joints
 1 do. do. for other joints
 2 sets special metal rings for each comp. gland.

2 sets each of 4 valves & springs
 8 add. springs for compressor
 2 springs for hydr. relief valve
 2 do. for brine do. do.
 2 springs for CO₂ safety valve
 1 pump for pressure lubricator
 1 CO₂ gauge
 1 hydrometer
 2 brass cased thermometers
 6 safety discs
 1-1/2" CO₂ valve
 3 - spare pipe for same.
 1 fitted box for comp. parts.

ELECTRICAL SPARES.

1 Motor complete
 1 Set of brushes
 1 Set brush holders
 1 Set starter spares
 } For each size Fan motor.

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL, LTD.
 Chichester
 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. F										
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 COASINGS, MAIN _____ BILGE _____
 HOLD PILLARS _____
 MASTS _____ VENTILATORS _____
 Are insulated plugs fitted to provide easy access to bilge suction roses _____ tank, air, and sounding pipes _____ heads 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 and it will be eligible for the notation + Lloyd's R.M.C (with date) when the installation and testing have been satisfactorily completed.*

The machinery has been despatched to Calcutta for installation, where the chambers will be insulated and equipped.

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	POWER.		INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.		Cubic feet of air delivered per hour.	Ice melting capacity per 24 hours. Tons.	No.	Capacity. Cubic ft.
2	2	Carl Guly J+E. Hall Ltd		1936.	Brine Fries		2 1/2	5	10,170

Fee (1/3rd) £ 2:0:0 { Fee applied for, 17 JUL 1936
Travelling Expenses £ : : { Received by me, 20 8 1936

D. Gemmell.
Surveyor to Lloyd's Register.

Committee's Minute Fri. 6 NOV 1936

Assigned See RmC 59710



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Foundation