

Report on Refrigerating Machinery and Appliances.

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on the Refrigerating Machinery and Appliances of the _____ Tons (Gross _____ Net _____)
Vessel built at Greenock By whom built Greenock Shipyard Yard No. 488 When built 1956
Owners _____ Port belonging to _____ Voyage _____
Refrigerating Machinery made by J. E. Hall Ltd Machine Nos. 16893/4/5 When made 1956
Insulation fitted by _____ When fitted _____ System of Refrigeration F12
Method of cooling Cargo Chambers _____ Insulating Material used _____
Number of Cargo Chambers insulated _____ Total refrigerated cargo capacity _____ cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed _____

Refrigerating Units, No. of 3 No. of machines 3 Is each machine independent Yes
Total refrigeration or ice-melting capacity in tons per 24 hours 129 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
Are relief valves or safety discs fitted Yes No. of cylinders to each unit 8 Diameter of cylinders 5"
Diameter of piston rod trunk pistons Length of stroke 4" No. of revolutions per minute 1000
Motive Power supplied from _____
(State number of boilers, oil engines or electric generators supplying the motive power.)

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 Comp 4 1/4", 3 7/8"
Breadth and thickness of crank webs 2 3/8" x 7 1/8" oval No. of sections in crank shaft one Revolutions of engines per minute 1000

~~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 _____~~

~~Air Receivers:—Have they been made under survey _____ State No. of Report or Certificate _____
Is each receiver, which can be isolated, fitted with a safety valve as per Rule _____
Can the internal surfaces of the receivers be examined and cleaned _____ Is a drain fitted at the lowest part of each receiver _____~~

~~No. of Receivers _____ Cubic capacity of each _____ Internal diameter _____ thickness _____
Seamless, lap welded or riveted longitudinal joint _____ Material _____ Range of tensile strength _____ Working pressure by Rules _____~~

~~Electric Motors, type _____ No. of _____ Rated _____ Kilowatts _____ Volts _____
at _____ 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 _____
Pinion shafts, diameter at bearings _____ Main wheel shaft, diameter at bearings _____~~

~~Gas Condensers, No. of 3 Cast iron or steel casings Steel Cylindrical or rectangular Cylindrical Are safety discs fitted
to casings Yes No. of coils in each 154 Material of coils Cupronickel Can each coil be readily shut off or disconnected no~~

~~Water Circulating Pumps, No. and size of pumps available _____ how worked _____ Gas Separators, No. of ✓~~

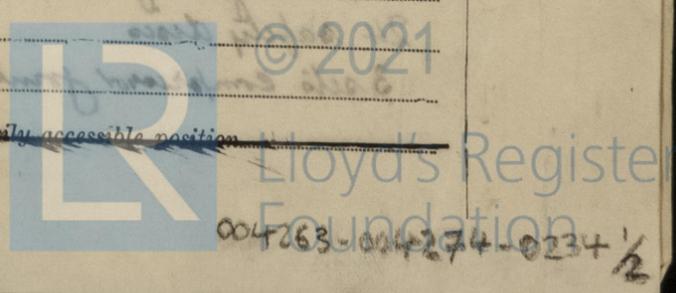
~~Gas Evaporators, No. of 3 Cast iron or steel casings Steel Pressure or gravity type pressure If pressure type, are safety
discs Yes No. of coils in each casing 410 Material of coils brass Can each coil be readily shut off or disconnected no~~

~~Direct Expansion or Brine Cooled Batteries, No. of 28 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 as above Material of coils steel Can each coil be readily shut off or
disconnected Yes Total cooling surface of battery coils 28210 sq feet Is a watertight tray fitted under each battery Yes~~

~~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 _____ how worked _____
Brine Cooling System, closed or open _____ Are the pipes and tanks galvanised on the inside _____
No. of brine sections in each chamber _____~~

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



Are thermometers fitted to the outflow and to each return brine pipe. 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.
 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)	11.9.56	120	600	350	H.E	
Gas Compressors cylinder covers	25.9.56	120	600	350	EMS	
Separators crankcases	7.9.56	120	300	175	EMS	
Liquid Receiver	28.8.56	120	350	200	EMS	
Multiple Effect Receivers	31.8.56	120	350	200	EMS	
Condenser Coils and Covers	21.8.56	15	150	-	EMS	
Evaporator Coils and Covers	31.8.56	20	150	-	EMS	
Oil Rectifier	29.5.56	120	350	200	EMS	
Condenser Headers and Connections	14.8.56	120	350	200	EMS	
Condenser Casings 2 tubes	17.8.56	120	350	200	EMS	
Evaporator Casings 2 tubes	21.8.56	120	350	200	EMS	
NH ₃ Condenser, Evaporator and Air Cooler Coils after erection in place	31.8.56	120	350	200	EMS	
Brine Piping after erection in place						

Have important castings and forgings been tested in accordance with the Rules. *Yes*
 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 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:-

- 4 each inner & outer connecting rods complete
- 8 piston assemblies 8 cyl liners
- 8 delivery valve assemblies
- 8 suction valve guards, 4 delivery valve centres
- 16 ring valve suction pieces
- 8 sets piston ring delivery pieces
- 4 " delivery valve springs
- 4 " piston seat valve springs
- 2 - buffer springs
- 16 " piston rings
- 2 - main bearings
- 1 thrust washer
- 6 crankshaft gland seal
- 1 set coupling bolts
- 2 springs oil relief valve
- 2 oil pump gear wheels + 1 idler
- 1 set oil pump rotor & shaft
- 3 sets sight glasses
- 24 safety discs
- 3 sets compression joints
- 3 sets valve packing
- 2 AB gauges
- 8 brine thermometers
- 3 oil filler mats
- 1 N.P.L. thermometer
- 2 press cut outs & bellows
- 1 brine gauge
- 1 hydrometer
- 1 leak test lamp
- 2 float valve assemblies
- 12 drive charges
- 1 hand regulator spindle
- 1 liquid slip valve each size
- 1 brine valve
- Sundry brine piping, sluice, bolts
- 2 pipe line flanges
- Screwing disc
- 1 fitted spare gear box

J. & E. HALL, LTD

DIRECTOR

The foregoing is a correct description of the Refrigerating Machinery.

Manufacture all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers.

DESCRIPTION OF INSULATION.

IN LOWER HOLD CHAMBERS.

IN 'TWEEN DECK CHAMBERS.

Frame No.	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.
(Fore Peak)	A									
	F									
	A									
	F									
	A									
(Boiler Room)	F									
	A									
(Engine Room)	F									
	A									
	F									
	A									
	F									
	A									
(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
 Solid Pillars
 Casts Ventilators
 Are insulated plugs fitted to provide easy access to bilge suction roses tank, air, and sounding pipes heels of pillars.
 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.
 Provision 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
 Poling 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.
 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. 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.
 Fan room water circulating pump room.
 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.

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 and appliances of this vessel have been constructed under special survey in conformity with the Society's Rules, Regulations and the Secretary's letter. The scantlings and arrangements are in accordance with those shown on the approved plans. The materials and workmanship are good.
 In my opinion the refrigerating machinery and appliances of the vessel will be eligible for the notation **LLOYDS RMC** (with date) when the installation and testing have been satisfactorily carried out and the spare gear verified.

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	Ice melting capacity per 24 hours. Tons.	Is Refrigerating Machinery Electrically Driven?	INSULATED CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				No.	Capa Cubi
3	24	Freon	J.P. Hall	1956		129	Yes		

FEE'S TO SHIP BUILDER.
 Fee £ : : (Fee applied for, 19.....
 Travelling Expenses £ : : (Received by me, 19.....

P. Sully
 Surveyor to Lloyd's Register

Committee's Minute.....
 Assigned..... See gsk 25918

Certificate to be sent to.....



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