

Report on Refrigerating Machinery and Appliances.

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(Number of Visits 10)

on the Refrigerating Machinery and Appliances of the T.W. Sc. "MAGDALENA" Tons (Gross 17,547 Net 9,886)

Vessel built at Belfast By whom built Harland & Wolff Yard No. 1354 When built

Owners Port belonging to Voyage

Refrigerating Machinery made by J & E Hall Ltd Machine Nos. 13288
13289
13290 When made 1948

Insulation fitted by When fitted System of Refrigeration CO2

Method of cooling Cargo Chambers Insulating Material used

Number of Cargo Chambers insulated Total refrigerated cargo capacity 522 cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Main Deck - Midships

Refrigerating Units, No. of 3 No. of machines 3 Is each machine independent yes

Total refrigeration ice-melting capacity in tons per 24 hours 180 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 Cooling

Are relief valves or safety discs fitted yes No. of cylinders to each unit 2 Diameter of cylinders 4 1/2

Diameter of piston rod 2" Length of stroke 9" No. of revolutions per minute 360/240

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 5 3/4" journals, 6 1/4" pins

Breadth and thickness of crank webs 8" x 4" No. of sections in crank shaft one Revolutions of engines per minute

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 Open type with canopy No. of 3 Rated 160 BHP Kilowatts 220 Volts

at 360/240 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 each of 10 casings Cast iron or steel casings Copper Cylindrical or rectangular Cylindrical Are safety valves fitted

to casings yes No. of coils in each 1 per casing Material of coils Alum. bronze Can each coil be readily shut off or disconnected yes

Water Circulating Pumps, No. and size of pumps available 2-5" Cent how worked Electrically Gas Separators, No. of 6

Gas Evaporators, No. of 3 Cast iron or steel casings Steel Pressure or gravity type pressure If pressure type, are safety

valves fitted vent pipes fitted No. of coils in each casing 13 Material of coils Steel Can each coil be readily shut off or disconnected yes

Direct Expansion or Brine Cooled Batteries, No. of 40 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 see list Material of coils steel Can each coil be readily shut off or

disconnected yes Total cooling surface of battery coils 41,000 sq ft Is a watertight tray fitted under each battery yes

Air Circulating Fans, Total No. of 48 each of see list cubic feet capacity, at 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 4-6", 4-2 1/2", 1-1 1/2" Cent how worked electrically

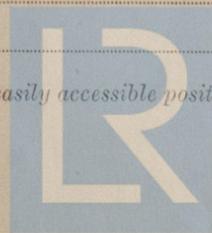
Brine Cooling System, closed or open closed Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber total 146 see list

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 *yes*
 Where the tanks are not closed is the compartment in which they are situated efficiently ventilated *yes*
 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 *yes*
 Is the exhaust steam led to the main and auxiliary condensers *yes*

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure	Air Test Pressure.	Stamped.	REMARKS.
Engine Cylinders (if tested)		16 sq in	16 sq in	16 sq in		
Gas Compressors	29-9-48 3-10-48	1000	3000	1500	Emd	
Separators	27-10-48	1000	3000	1500	Emd	
Foster Wheeler Co ₂ Liquid Cooling Coils	28-9-48					
Multiple Effect Receivers	17-9-48	1000	3000	1500	Emd	
Condenser Coils	11-8-48 16-8-48	1000	3000	1500	Emd	
Evaporator Coils	9-8-48 18-8-48	1000	3000	1500	Emd	
Condenser Headers and Connections						
Condenser Casings	24-9-48	10/15	30	-	Emd	
Evaporator Casings	18-10-48 21-10-48 26-10-48		40		ROB ROB NK	made at Belfast.
Condenser, Evaporator and Air Cooler Coils after erection in place	Nov. '48					
Brine Piping after erection in place	10 JAN '49	30 lbs		90		

Have important steel castings and forgings been tested in accordance with the Rules
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

Additional Spare Gear Supplied:-

- 24 lubricator piston leathers
- 24 do gland do
- 1 set of 2 leather moulds
- 2 main bearing bolts & nuts
- 2 crankpin do
- 2 Xhead do
- 6 spare pipes for gauge valves
- 2 regulator valve spindles
- 2 springs for water pipe valves
- 2 do " Co₂ do
- 2 do " brine do
- 1 pump for pressure lub.
- 2 brass gauges
- 1 hydrometer
- 2 brass coated thermos
- 24 safety discs
- 2-1/8" Co₂ gauge valves
- 2 pipe flanges for Co₂ pipes
- spare turn & cone for condensers

Pumps, each size

- 1 impeller, 1 spindle with nut & key
- 1 set wearing rings where fitted

Electrical spares

- Armature packed for stowage
- Set field coils
- Set interpole coils
- Set bearings
- 1 Compressor motor
- 1 set water pump do
- 1 Brine pump do each size
- 2 Fan motors (each size)
- 2 complete motors
- 2 sets field coils
- 2 sets interpole coils
- 2 sets bearings
- 1 spare fan motor for each size fitted

The foregoing is a correct description of the Refrigerating Machinery.

J & E. HALL, LTD.

J. Wells

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. (Boiler Room)	F									
Frame No. (Engine Room)	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 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 _____
 and 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 _____
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. 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. 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.

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 and appliances of this vessel as now reported have been constructed under Special Survey in conformity with the Society's Rules, Regulations and the Secretary's letters. The scantlings and arrangements are in accordance with, or equivalent to, those shown on the approved plans.

The materials and workmanship are good.

The Refrigerating machinery and appliances of this vessel in my opinion 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.	Is Refrigerating Machinery Electrically Driven?	INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				Tons.	No.
3	6	carb anhyd	J & E Hall Ltd	1948	Brine & Air Subregas	180	Yes	41	451240

Low No. 158:6:8
 Fee Bel No. 116:13:4 £175:0:0 (Fee applied for, 19.....) *Bel 13/1/45*

Travelling Expenses £ : (Received by me, 19.....) *Am Sully*

Committee's Minute..... *2150 SEE B'FAST RPT.*
M. 12 MAR 1949

Assigned..... *See minute*
on Bel 14714

Surveyor to Lloyd's Register.



Certificate to be sent to