

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office)

8-MAR-1949

Date of writing Report 25th Feb 1949 When handed in at Local Office 7/3/49 Port of Belfast
 No. in Reg. Book. Survey held at Belfast Date: First Survey 10th Feb 1948 Last Survey 4th Feb 1949
 95000 (in Suppl.) (No. of Visits) 36
 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 Ltd Yard No. 1354 When built Feb. 1949
 Owners Royal Mail Lines Ltd; Port belonging to London Voyage ✓
 Refrigerating Machinery made by J. & E. Hall Ltd; Machine Nos. 13288, 13289, 13290. When made 1948
 Insulation fitted by Mersey Insulation Co. When fitted during construction System of Refrigeration carb. Anhyd.
 Method of cooling Cargo Chambers Brine & Air Insulating Material used Fibreglass & slab cork
 Number of Cargo Chambers insulated 41 Total refrigerated cargo capacity 451240 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed

Refrigerating Units, No. of _____ No. of machines _____ Is each machine independent _____
 Total refrigeration or ice-melting capacity in tons per 24 hours _____ Are all the units connected to all the refrigerated chambers _____
Compressors, driven direct or through ^{single} reduction gearing. Compressors, single or double acting _____ If multiple effect compression _____
 Are relief valves or safety discs fitted _____ No. of cylinders to each unit _____ Diameter of cylinders _____
 Diameter of piston rod _____ Length of stroke _____ No. of revolutions per minute _____
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 _____
 Breadth and thickness of crank webs _____ No. of sections in crank shaft _____ 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:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule _____
 Can the internal surfaces of the receivers be examined _____ What means are provided for cleansing their inner surfaces _____
 Is there a drain arrangement fitted at the lowest part of each receiver _____ If made under survey _____
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 _____ 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 _____ Cast iron or steel casings _____ Cylindrical or rectangular _____ Are safety valves fitted _____
 to casings _____ No. of coils in each _____ Material of coils _____ Can each coil be readily shut off or disconnected _____
Water Circulating Pumps, No. and size of pumps available _____ how worked _____ **Gas Separators**, No. of _____
Gas Evaporators, No. of _____ Cast iron or steel casings _____ Pressure or gravity type _____ If pressure type, are safety _____
 valves fitted _____ No. of coils in each casing _____ Material of coils _____ Can each coil be readily shut off or disconnected _____
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 _____ 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 _____



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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 *✓*
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 *✓*

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)						
GAS COMPRESSORS						
SEPARATORS						
MULTIPLE EFFECT RECEIVERS						
CONDENSER COILS						
EVAPORATOR COILS						
CONDENSER HEADERS AND CONNECTIONS						
CONDENSER CASINGS						
EVAPORATOR CASINGS						
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE	November 1948	30		90		
BRINE PIPING AFTER ERECTION IN PLACE	15 Jan 1949					

See London Report No 2215

Have important steel 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 *yes*
Dates of test *3:2:49 & 4:2:49.* Density of Brine *47°* by *Swaddell* 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
average 3.55° & *6.87°* outflow and return brine *-2°* & *2°*
atmosphere *46°* cooling water inlet and discharge *52°* & *57°* gas in condensers *70°* and evaporators *-7°*
the average temperature of the refrigerated chambers *7.875°* and the rise of temperature in these chambers upon the expiration of *12* hours
time after the machinery and cooling appliances have been shut off *5.142°*

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:—

See London Report No 2215

The foregoing is a correct description of the Refrigerating Machinery.

DESCRIPTION OF INSULATION.

IN LOWER HOLD CHAMBERS.

IN 'TWEEN DECK CHAMBERS.

BULKHEADS.			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. 100 (Fore Peak)	A	NIL	NIL	FIBREGLASS	10"	3/4" PLY-WOOD	NIL	NIL	FIBREGLASS	10"	3/4" PLY-WOOD
	FRAME No. ✓	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	FRAME No. 68	F	NIL	NIL	FIBREGLASS	8"	3/8" SUPER-HARD BOARD	NIL	NIL	FIBREGLASS	10" x 8"	3/8" SUPER-HARD BOARD
		A	NIL	NIL	"	3" Low Hold 4" ORLOP TW.	"	NIL	NIL	"	4"	"
	FRAME No. 39	F	NIL	NIL	"	10"	3/4" PLY-WOOD	NIL	NIL	"	8"	3/4" PLY-WOOD
		A	NIL	NIL	"	3"	3/8" SUPER-HARD BOARD	NIL	NIL	"	4"	3/8" SUPER-HARD BOARD
	FRAME No. 6 (Boiler Room)	F	NIL	NIL	"	12"	3/4" PLY-WOOD	NIL	NIL	"	12"	3/4" PLY-WOOD
		A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	FRAME No. 41A (Engine Room)	A	✓	TUNNEL SPACE	✓	✓	✓	NIL	NIL	FIBREGLASS	12"	3/8" SUPER-HARD BOARD
	FRAME No. 69A	F	✓	"	"	✓	✓	NIL	NIL	FIBREGLASS	4"	3/4" PLY-WOOD
		A	✓	"	"	✓	✓	NIL	NIL	"	8"	3/8" SUPER-HARD BOARD
	FRAME No. ✓	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		F	✓	TUNNEL SPACE	✓	✓	✓	✓	✓	✓	✓	✓
		A	✓	"	"	✓	✓	✓	✓	✓	✓	✓
		F	✓	"	"	✓	✓	NIL	NIL	FIBREGLASS	10"	3/4" PLY-WOOD
		A	✓	NIL	FIBREGLASS	10"	3/8" SUPER-HARD BOARD	NIL	NIL	"	10"	3/8" SUPER-HARD BOARD
		F	✓	NIL	"	10"	3/8" PLY-WOOD	NIL	NIL	"	10"	3/8" PLY-WOOD
		A	✓	NIL	SLAB CORK	8"	2" NOM P. T&G. BOARDS	✓	✓	✓	✓	✓
	...	...	...	...	...	...	...	NIL	NIL	SLAB CORK	6"	3/4" PLY-WOOD
	...	...	...	...	...	...	...	NIL	NIL	- do -	8"	2" NOM P. T&G. BOARD
	...	...	...	...	...	...	...	NIL	NIL	- do -	8"	- do -
	...	...	...	...	...	...	...	NIL	NIL	FIBREGLASS	12"	- do -

FACE 2" thick SLAB CORK.

3" x 2 1/2" GROUND.

BOTTOM 4" x 2" GROUND TO 2" NOM P. T&G. BOARD.

AND FACE 2" thick SLAB CORK.

NIL.

NIL.

NIL.

BOTTOM

AND FACE

BOTTOM

AND FACE

AND FACE 4" x 2" GROUNDS.

3" P.P. FRAMES, DOUBLE LAYER
IES, MAIN 3/4" x 1 1/4" T&G BOARDS TOP & BOTTOM, BILGE 6" FIBREGLASS.

3" P.P. FRAME, DBLE LAYER
3/4" x 1 1/4" T&G. BOARDS TOP & BOTTOM, 6" FIBREGLASS.

2 1/4" P.P. FRAME, DOUBLE THICKNESS
MANHOLE 3/4" NOM. P. T&G. BOARDS TOP & BOT., 4" FIBREGLASS, 2" NOM P. COVER.

INGS, MAIN 6" P.P. INSULATED WITH 3/16" G.M. STEEL.

BILGE 10" P.P. COAMINGS.

3" SECTIONAL CORK WITH 3/16" GALV. M.S. COVERING SHEETS.

NIL.

VENTILATORS

NIL.

ed plugs fitted to provide easy access to bilge suction roses

yes

tank, air, and sounding pipes

yes

heels of pillars

yes

hole doors of tanks

yes

Are insulated plugs fitted to ventilators

✓

cargo ports

✓

and side lights

✓

insulation of the lower hold floor and tunnel top in way of the hatchways protected

yes

if so, how

2" thick Elm.

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

Steel cofferdam between No 3 Hold and Oil fuel Bunkers.

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

No - STEEL COFFERDAM.

Where Cooling Pipes pass through watertight bulkheads or deck plating, are the fittings and packing of the stuffing boxes both watertight and fireproof

yes.

Cargo Battens, Dimensions and spacing, sides

✓

floors

✓

tunnel top

✓

fixed or portable

✓

Are screens fitted over the brine grids at chamber sides

yes

hinged or permanently fixed permanent G.M. St.

Thermometer Tubes, No. and position in each chamber

"Malone" distance thermometers.

diameter

✓

are they fitted in accordance with Section 3, Clause 8

as approved

Protection of Pipes. Are all pipes, including air and sounding pipes, which pass through or into insulated chambers, well insulated

yes

Draining Arrangements. What provision is made for draining the inside of the chambers

scuppers trapped to bilges.

Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off

trapped scuppers to bilges, with screws plugs in Refrigerated spaces.

What provision is made for draining the refrigerating machinery room

trapped scuppers to bilges.

brine return room

trapped scuppers to bilge

✓

water circulating pump room

trapped scuppers to bilge

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

yes.

Sounding Pipes, No. and position in each chamber situated below the load water line *Nº 1, 2, & 3 forward Holds One p.s. at after end. Nº 4 aft Hold one p.s. at forward & after ends. Nº 5 after Hold, one p.s. at forward end. All fitted above & below insulation.*

Diameter *2 1/2"* Are all sounding pipes in way of insulated chambers fitted in accordance with Section 3, Clause 11. *yes*

Are all wood linings tongued and grooved *yes on tank tops* Are cement facings reinforced with expanded steel lattice. *✓*
elsewhere patent G.M.S. as approved.

How is the expanded metal secured in place *✓*

How are the cork slabs secured to the steel structure of the vessel *bedded in bitumen*

Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the approved plans *yes*

Are they permanently fixed or collapsible, or portable *permanently fixed*

Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors *none* Are the door frames efficiently insulated *✓*

Are insulated plugs supplied for the doorways *✓*

Where are the doors worked from *✓*

Cooling Pipes in Chambers, diameter *1 1/2"*

Minimum thickness *7 w.g.*

Are they galvanised externally *yes.*

How are they arranged in the chambers *in batteries as coolers and brine grids.*

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers *hot brine*

The foregoing is a correct description of the Insulation and Appliances.

THE MERSEY INSULATION CO. LTD.

Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery *yes* and Insulation *yes*
(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 *completed.*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The insulation has been fitted under special survey. The materials and workmanship is good. The machinery has been efficiently installed and tested under full working conditions with satisfactory results. Electric fan motors have been fitted & inspected during construction. Report form 7(b) issued by the London Surveyors is attached herewith together with the relevant works test certificates.*

*The installation is eligible in our opinion to have the notation * R.M.C. 2,49.*

*It is submitted that
this vessel is eligible for
THE RECORD.*

+ Lloyd's Rec. 2.49

TRM 17.3.49

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.				No.	Capacity.
<i>3</i>	<i>6</i>	<i>carb. Amhy.</i>	<i>J. & E. Hall</i>	<i>1948.</i>	<i>(1) Brine & Air (2) Fibreglass.</i>	<i>180.</i>	<i>yes</i>	<i>41</i>	<i>4512.40.</i>

LONDON 7/6 50/-

Fee Belfast 10/-

£ 150: 0 : 0

Travelling Expenses £ : :

Committee's Minute

Assigned

+ Lloyd's Rec 2.49

A. S. Fletcher, W. Russell & R. I. Murchison.
Surveyors to Lloyd's Register.

18 MAR 1949



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