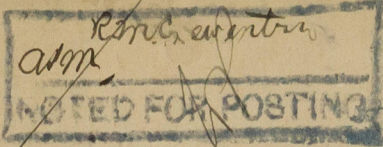


Rpt. 17.



R. M. C. No.

48836

No. 103170

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office)

30 DEC 1933

23 JAN 1934

Date of writing Report

19

When handed in at Local Office

28 DEC. 1933

Port of

LIVERPOOL

No. in

Reg. Book.

24523

Survey held at

Warrington Date: First Survey

13/12/33

Last Survey

28/12/

1933

2-11-33 - 22-1-34

(No. of Visits)

3

Total 11.

on the Refrigerating Machinery and Appliances of the

S.S. DEARNE

Tons

Gross 1043

Net 427

Vessel built at

Barrow

By whom built

Vickers Ltd

Yard No.

When built 1924-9m

Owners

London Midland Scottish Railway

Port belonging to

Goole

Voyage

North Sea

Refrigerating Machinery made by

The Liverpool Refrigeration Co. Ltd

Machine No. 1544

When made

1933

Insulation fitted by

The Liverpool Refrigeration Co. Ltd

When fitted

1933

System of Refrigeration

CO2

Method of cooling Cargo Chambers

Bonne piping

Insulating Material used

Cork

Number of Cargo Chambers insulated

Three

Total refrigerated cargo capacity

45200

cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Main Engine Room

Refrigerating Units, No. of

one

Single, double, or triple

single

Cubic feet of air delivered per hour

Total refrigeration or ice-melting capacity in tons per 24 hours

Ten

Are all the units connected to all the refrigerated chambers

Yes

Compressors, driven direct or through

reduction gearing

Compressors, single or double acting

double

No. of cylinders

one

Diameter of cylinders

3 1/4"

Diameter of piston rod

1 1/2"

Length of stroke

8"

No. of strokes per minute

320

Motive Power supplied from

Main Boilers

Steam Engines, high pressure, compound, or triple expansion, surface condensing.

No. of cylinders

one

Diameter

10"

Length of stroke

8"

Working pressure

120 lbs

Diameter of crank shaft journals and pins

4 1/4"

Breadth and thickness of crank webs

6" x 2 3/4"

No. of sections in crank shaft

one

Revolutions of engines per minute

160

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

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

1

Cast iron or steel casings

Cast Iron

Cylindrical or rectangular

Rectangular.

No. of coils in each

6

Material of coils

Solid drawn Copper

Can each coil be readily shut off or disconnected

Yes

Water Circulating Pumps, No. and size of

one 4 1/2 x 5 x 6 Duplex

how worked

Steam

Gas Separators, No. of

one

Gas Evaporators, No. of

one

Cast iron or steel casings

steel

Pressure or gravity type

Gravity. (Open top)

No. of coils in each casing

5

Material of coils

Solid drawn 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

one 4 1/2 x 5 x 6 Duplex

how worked

Steam

Brine Cooling System, closed or open

open

Are the pipes and tanks galvanised on the inside

no

No. of brine sections in each chamber

two on roof only

Can each section be readily shut off or disconnected

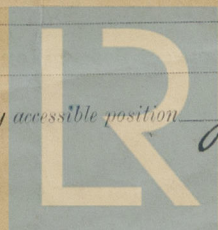
yes

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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Where the tanks are not closed is the compartment in which they are situated efficiently ventilated

Refrig. Exhaust to Main Exhaust line in Main Engine Room

HYDRAULIC AND OTHER TESTS.

Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory Yes

Dates of test 19th & 20th Jan. 1934 Density of Brine 47 by Swaddell 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 -4°F & 3.3°F MEAN

atmosphere 40°F cooling water inlet and discharge 42°F & 48°F gas in condensers 58°F and evaporators -6½°F

the average temperature of the refrigerated chambers 12°F and the rise of temperature in these chambers upon the expiration of Twelve hours

time after the machinery and cooling appliances have been shut off No 1 Hold (10°F) No 2 Hold (11°F) No 3 Hold (15°F)

SPARE GEAR.

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

For THE LIVERPOOL REFRIGERATION CO. LTD

Managing Director.

Manufacturer.

DESCRIPTION OF INSULATION.

FRAMES OR REVERSE FRAMES, FACE		back 1/2" proud of frames.			
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	3" cork 1 1/2" Pitch Pine each side		3" ceiling 1-3/4"		MANHOLE 1 1/2" Slab cork 1 1/2" Pitch Pine each side
HATCHWAY COAMINGS, MAIN	4 1/2" Pitch Pine		BILGE	✓	
HOLD PILLARS	Rope covering.				
MASTS	6" cork 1-3/4" + 1-1/4" T & G.		VENTILATORS	✓	
Are insulated plugs fitted to provide easy access to bilge suction roses					
Yes		lark, air, and sounding pipes		Yes ^{screwed} heels of pillars ✓	
and manhole doors of tanks					
Yes		Are insulated plugs fitted to ventilators		Yes cargo ports ✓ and side lights ✓	
Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected					
Yes		if so, how <u>sounding in way 1 1/2" thick</u>			
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* $2\frac{1}{4} \times 1\frac{1}{2}$ $1\frac{1}{2}$ " center *doors* ✓ *tunnel top* ✓

fixed or portable Fixed Are screens fitted over the brine grids at chamber sides ☒ hinged or permanently fixed ☒

Thermometer Tubes, No. and position in each chamber 4 in each hold (Fore & aft - port & starboard) 1

diameter 2 1/2" nom. bore are then fitted in accordance with Section 3, Clause 8 yes

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

Drainage Arrangements. Where the chambers are situated below the load water line what provision is made for draining the inside of

Portable bilge blugs with grid. Where sluices, ~~sourer pipes~~ and drain pipes are fitted are means provided for blanking them off.

What provision is made for draining the refrigerating machinery room? *Raise pump suction screw down*

brine return room	✓	fan room	✓	water circulating pump room	✓
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them off no, except
w down valve.

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No 1 HOLD 1 Tank & 2 Bidge } aft end.
No 2 " " " } No 3 HOLD 2 Bidge Fore end
Sounding Pipes, No. and position in each chamber situated below the load water line
Diameter $1\frac{1}{2}$ " 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. 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 $1\frac{1}{2}$ " Are they galvanised externally Yes
How are they arranged in the chambers In grids on roof only.
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. For THE LIVERPOOL REFRIGERATION CO. LTD
W. B. Jones Builders.
Managing Director.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery and Insulation Yes
Is the Refrigerating Machinery and Appliances duplicate of a previous case No 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
To complete the Survey the machinery remains to be installed and the insulation and piping fitted, spare gear checked and a cooling down test applied.
This will be done at Goolle.

Survey completed at Goolle. Aug.

General Remarks (State quality of workmanship, opinions as to class, &c.) The Refrigerating Machinery and appliances of this vessel have been built under Special Survey.
The workmanship & materials are good. After erection in the shop the machinery has been forwarded to Goolle for installation on board.
On Completion the refrigerating machinery and appliances of this vessel will be eligible for record of Lloyd's R.M.C. 12.33 for temperature of 32°F.

The insulation and brine pipes have been fitted in accordance with the approved plan and after erection on board, the brine pipes were tested by hydraulic pressure to 100 lb. sq. in.
The spare gear as detailed overleaf checked & found good.
A "cooling down" test was made according to rule requirements and the installation found efficient.

The Refrigerating Machinery of this vessel is in good & efficient condition and eligible in my opinion to record of Lloyd's R.M.C. 12.33.
"For temperature of 32°F"

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.
1 Unit 1 Compr. Co. Co.	Liverpool Refrigeration	1933	CO ₂	✓	Brine pan cork.	✓	10	3	45200

£ 9 : 0 : 0 { Fee applied for, 29 DEC 1933
Travelling Expenses £ : 9 : 6 { Received by me, 16 DEC 1933
Hull " " 1 6 0 { 29 DEC 1933
Committee's Minute LIVERPOOL 29 DEC 1933
Assigned Referred for comp.
H. B. Murray & C. Moffatt
Surveyor to Lloyd's Register.
TUE 30 JAN 1934
+ Lloyd's R.M.C. 1.34
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