

## REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

17 MAY 1940

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19

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Port of London

No. in

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Date: First Survey 15<sup>th</sup> Dec 1939 Last Survey 22<sup>nd</sup> April 1940

(No. of Visits 9)

on the Refrigerating Machinery and Appliances of the M. "Burnside".

Tons { Gross  
Net

Vessel built at Glasgow

By whom built Barclay Curle &amp; Co Ltd

Hull No. 646

When built 1940

Owners Burns Philp &amp; Co

Port belonging to

Voyage

Refrigerating Machinery made by J. &amp; E. Hall Ltd

Machine Nos. 10491 When made 1940

Insulation fitted by

When fitted

System of Refrigeration CO<sub>2</sub> + Brine

Method of cooling Cargo Chambers Brine grids

Insulating Material used

Number of Cargo Chambers insulated 4

Total refrigerated cargo capacity 39,105 cubic feet.

## DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Main engine room Starboard

Refrigerating Units, No. of 2.

No. of machines one

Is each machine independent H.P. &amp; L.P. Sides can be run independently

Total refrigeration or ice-melting capacity in tons per 24 hours 29

Are all the units connected to all the refrigerated chambers yes

Compressors, driven direct or through single or double reduction gearing.

single or double

reduction gearing.

Compressors, single or double acting double acting

If multiple effect compression no

are relief valves or safety discs fitted yes

No. of cylinders to each unit 2

Diameter of cylinders 4 1/8"

Diameter of piston rod 2"

Length of stroke 12"

No. of revolutions per minute 100

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 2

Diameter 11" + 20"

Length of stroke 12"

Working pressure 120 lbs sq. in.

Diameter of crank shaft journals and pins journals 5", pins 5 1/4"

Breadth and thickness of crank webs 6 3/4" x 21 3/32"

No. of sections in crank shaft 2

Revolutions of engines per minute 100

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

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 2

Cast iron or steel casings

Cast iron

Cylindrical or rectangular

rectangular

Are safety valves fitted

to casings yes

No. of coils in each 4

Material of coils S.D. Copper 3" x 1/2"

Can each coil be readily shut off or disconnected yes

Water Circulating Pumps, No. and size of one 4" x 8 x 8

how worked Steam

Gas Separators, No. of 4

Gas Evaporators, No. of one

Cast iron or steel casings

Steel

Pressure or gravity type

pressure

If pressure type, are safety

valves fitted vent pipe

No. of coils in casing 11 5/8"

Material of coils S.D. Steel 1 1/2" x 1/8"

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 4

1 each of 3500

cubic feet capacity, at 1400

for agitation only

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 two 6" x 4" x 8"

how worked Steam

Brine Cooling System, closed or open closed

Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber 2 - hot port, 2 - N°2 Starboard, 4 - N°3 port + Starboard, 1 - N°4 port, 1 - N°5 Starboard

3 - N°6 port, 3 - N°4 Starboard

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.



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  
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) <u>H.P.</u>	<u>1-3-40</u>	<u>145</u>	<u>350 lb sq"</u>		<u>OK</u>	
<u>L.P.</u>	<u>9-2-40</u>		<u>250 " "</u>		<u>OK</u>	
<u>Steam condenser</u>	<u>9-2-40</u>		<u>20 lb sq"</u>		<u>OK</u>	
GAS COMPRESSORS	<u>16-4-40</u>	<u>1000 lb sq"</u>	<u>3000 lb sq"</u>	<u>1500 lb sq"</u>	<u>OK</u>	
" SEPARATORS	<u>14-2-40</u>	<u>do.</u>	<u>do.</u>	<u>do.</u>	<u>OK</u>	
" MULTIPLE EFFECT RECEIVERS	<u>none</u>					
" CONDENSER COILS	<u>18-1-40</u>	<u>do.</u>	<u>do.</u>	<u>do.</u>	<u>OK</u>	
" EVAPORATOR COILS	<u>18-12-39</u>	<u>do.</u>	<u>do.</u>	<u>do.</u>	<u>OK</u>	
" CONDENSER HEADERS AND CONNECTIONS	<u>9-2-40</u>	<u>do.</u>	<u>do.</u>	<u>do.</u>	<u>OK</u>	
" CONDENSER CASINGS	<u>30-1-40</u>	<u>do.</u>	<u>do.</u>	<u>do.</u>	<u>OK</u>	
" EVAPORATOR CASINGS	<u>22-4-40</u>	<u>do.</u>	<u>do.</u>	<u>do.</u>	<u>OK</u>	
NH <sub>3</sub> CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE	<u>5-4-40</u>	<u>do.</u>	<u>do.</u>	<u>do.</u>	<u>OK</u>	
BRINE PIPING AFTER ERECTION IN PLACE	<u>5-4-40</u>	<u>do.</u>	<u>do.</u>	<u>do.</u>	<u>OK</u>	
	<u>5-4-40</u>	<u>40 lb sq"</u>	<u>20 lb sq"</u>	<u>-</u>	<u>OK</u>	
	<u>14-2-40</u>	<u>20 lb sq"</u>	<u>40 lb sq"</u>	<u>-</u>	<u>OK</u>	

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)

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

Has the spare gear required by the Rules been supplied

Additional Spare Gear Supplied:-

1 set rings each compr piston	1 plunger, bucket, & conn rod	3 bends each 1 1/2" + 1 1/4" pipe
2 " " " gland	+ brasses for air pump	12 sockets & backnuts each 1 1/2" + 1 1/4"
12 lubr piston leathers	1 set air pump valves	1 set ratchet screwing dies do do
12 " gland "	1 " feed " "	2 pairs CO <sub>2</sub> pipe flanges
2 leather moulds	6 steam condr tubes	Sundry brine cocks
2 Compr pistons + rods	24 " " ferrules	Assorted bolts + nuts
8 " valves + springs	1 pair main bearing shells	1 fitted box for compr parts
12 add compr valve springs	with bolts + nuts	For Water Pump
2 sets copper joint rings compr	1 pair crank pin shells	1 bucket + rod
1 set " " " other fts	with bolts + nuts	1 set valves + springs
1 regulator valve spindle	1 pair X head brasses	1 set steam piston rings
2 springs water relief valve	with bolts + nuts	For Brine Pumps
2 " brine " "	2 coupling bolts + nuts	1 set valves + springs
2 " CO <sub>2</sub> safety valve	1 pump for press. lubr	1 set steam piston rings
1 half crankshaft with bolts	1 CO <sub>2</sub> gauge	For each size fan motor
1 Steam piston rod + nut	1 hydrometer	1 armature
1 H.P. piston	2 brass cased thermos	1 set bearings
1 set Steam piston rings	12 Safety discs	1 set brushes
1 HP valve spindls + nuts	1 - 1/8" CO <sub>2</sub> valve + spare pipe	1 set starter spares
1 ecc 3 sheave, strap + rod	3 lengths each 1 1/2" + 1 1/4" piping	
with brasses each pattern		

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL, LTD

J. Wells

Director

Manufacturer.

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DESCRIPTION OF INSULATION.

IN LOWER HOLD CHAMBERS.										IN 'TWEEN DECK CHAMBERS.				
BULKHEADS.		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												
		A												
	FRAME No.	F												
		A												
	FRAME No.	F												
		A												
	FRAME No. (Boiler Room)	F												
		A												
FRAME No. (Engine Room)	A													
FRAME No.	F													
	A													
FRAME No.	F													
	A													
FRAME No.	F													
	A													
FRAME No. (After Peak)	F													
ES ...	...													
RHEADING ...	...													
ORS OF CHAMBERS	...													
UNK HATCHWAYS	...	...	...	...	...	...	...	...	...	...	...			
RUST RECESS, SIDES AND TOP	...	...	...	...	...	...	...	...	...	...	...			
NNEL SIDES AND TOP	...	...	...	...	...	...	...	...	...	...	...			
NNEL 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.



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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 has been constructed under special survey and the materials and workmanship are good and it will be eligible for the notation + Lloyds R.M.C. with date when the installation and testing have been satisfactorily completed.

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.
						Tons.			Cubic ft.
2	2	Cash. Duty	J. E. Hall Ltd.	1940	(1) Brine	29		4	39,105

Fee £ 6 : 0 : 0  
Travelling Expenses £ : :  
Fee applied for, 19  
Received by me, 19

D. Gemmell  
Surveyor to Lloyd's Register.

Committee's Minute

Assigned



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