

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

17 MAY 1940

(Received at London Office 17 MAY 1940)

Date of writing Report 19 When handed in at Local Office 17 MAY 1940 Port of London
No. in Reg. Book. Survey held at London. Date: First Survey 15th Dec 1939 Last Survey 22nd April 1940
(No. of Visits 9)

on the Refrigerating Machinery and Appliances of the *M. "Burnside"* Tons { Gross
Vessel built at *Glasgow* By whom built *Barclay Curlew & Co Ltd* Ward No. *646* When built *1940*
Owners *Burns Philp & Co* Port belonging to Voyage
Refrigerating Machinery made by *J. & E. Hall Ltd* Machine Nos. *10491* When made *1940*
Insulation fitted by When fitted System of Refrigeration *CO₂ + 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. & 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* 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 2 1/2"* 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" b. 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

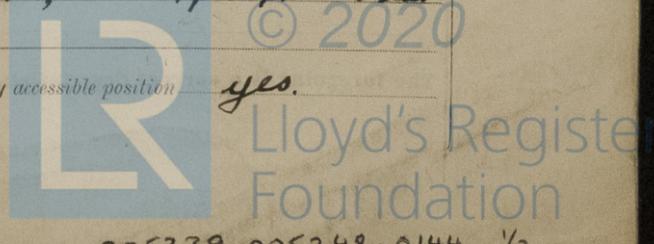
Air Circulating Fans, Total No. of *4*
1 each of *3500* cubic feet capacity, at *900* for agitation only
2 *12340* revolutions per minute
2 *1570*
2 *7600*
Steam or electrically driven *electrically* Where spare fans are supplied are these fitted in position ready for coupling up *no*

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

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 pair CO ₂ 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. |
| 17 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 ₂ safety valve | 1 pump for press. lubr. | 1 set steam piston rings |
| 1 half crankshaft with bolts | 1 CO ₂ gauge | for each size fan motor. |
| 1 steam piston rod + nut | 1 hydrometer | 1 armature |
| 1 H.P. piston | 2 brass cased thermo | 1 set bearings |
| 1 set steam piston rings | 12 safety discs | 1 set brushes |
| 1 HP valve spindle + nuts | 1 - 1/8" CO ₂ valve + spare pipe | 1 set starter spares. |
| 1 ecc 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

© 2020
 Lloyd's Register
 Foundation

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.	
BULKHEADS.	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) {	F									
		A									
	FRAME No. {	F									
		A									
	FRAME No. {	F									
		A									
FRAME No. (After Peak) F											
ES											
RHEADING											
DOORS OF CHAMBERS											
BUNK HATCHWAYS											
BULKHEAD 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 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. Tons.	Is Refrigerating Machinery Electrically Driven?	INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				No.	Capacity. Cubic ft.
2	2	Cast. Ruby	J. E. Hall Ltd.	1940	(1) Brine	29		4	39,105

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

D. Gemmell
Surveyor to Lloyd's Register.

Committee's Minute _____

Assigned _____

See letter 17/Jan 1941

Certificate to be sent to



© 2020

Lloyd's Register
Foundation