

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office)

Date of writing Report 14th DEC. 1942. When handed in at Local Office 17th DECEMBER 1942 Port of GREENOCK.

No. in

Reg. Book. Survey held at Port GLASGOW. Date: First Survey 4th SEPT. 1942. Last Survey 14th DECEMBER 1942 (No. of Visits 25.

on the Refrigerating Machinery and Appliances of the EMPIRE PENNANT.

Tons { Gross 7043
Net 4909

Vessel built at PORT GLASGOW. By whom built LITHGOWS LIMITED Yard No. 972. When built 1942.

Owners MINISTER OF WAR TRANSPORT Port belonging to GREENOCK Voyage ✓

Refrigerating Machinery made by J. E. HALL, DARTFORD. Machine No. 11081 When made 1942.

Insulation fitted by MILLER INSULATION CO When fitted 1942. System of Refrigeration NH₃ AIR.

Method of cooling Cargo Chambers AIR CIRCULATION. Insulating Material used SPLITTED SLAB CORK

Number of Cargo Chambers insulated FOUR. Total refrigerated cargo capacity 229,900 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Turret Deck

Refrigerating Units, No. of Single, double, or triple Cubic feet of air delivered per hour

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 No. of cylinders

Diameter of cylinders Diameter of piston rod Length of stroke No. of strokes per minute

Motive Power supplied from 2 Main and One Auxiliary boilers

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

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 Cast iron or steel casings Cylindrical or rectangular

No. of coils in each Material of coils Can each coil be readily shut off or disconnected

Water Circulating Pumps, No. and size of how worked Gas Separators, No. of

Gas Evaporators, No. of Cast iron or steel casings Pressure or gravity type

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

NOTE.—THE WORDS WHICH DO NOT APPLY SHOULD BE DELETED.



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

Steam Condensing Plant. *State what provision is made for condensing steam, in terms of Section 4, Clauses 13 and 14.*

Main and/or 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						
„ CONDENSER COILS						
„ EVAPORATOR COILS						
„ CONDENSER HEADERS AND CONNECTIONS						
„ CONDENSER CASINGS						
„ EVAPORATOR CASINGS						
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE	6/12/42	185 lbs	—	250 lbs.	M.C.	
BRINE PIPING AFTER ERECTION IN PLACE...	—	—	—	—	—	

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

Dates of test 11th 12th 13th 14th / 12/42. Density of Brine — by — 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. -6° & 0° , outflow and return brine $—$ & $—$

atmosphere 45° cooling water inlet and discharge 48° & 50° gas in condensers 71° and evaporators -17°

the average temperature of the refrigerated chambers -5.5° and the rise of temperature in these chambers upon the expiration of 18 hours

time after the machinery and cooling appliances have been shut off 17.7°

SPARE GEAR.

ARTICLES SUPPLIED AS PER RULE.	ADDITIONAL SPARE GEAR SUPPLIED.
<p>Spam gear as per London R.M.C. Report. N^o 1300 Tanker checked and found correct. Except Compression Crank shaft - not allowed.</p>	

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

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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)										
FRAME No. 133	A	NONE	3/4 H.F. FIBRE BOARD STILLITE	14	NONE	NONE	3/4 H.F. FIBRE BOARD STILLITE		8	NONE
FRAME No. 96	F	"	"	14	"	"	"	"	8	"
FRAME No.	A									
FRAME No.	H									
FRAME No. (Boiler Room)	H									
FRAME No. 66 (Engine Room)	A	NONE	3/4 H.F. FIBRE BOARD STILLITE	14	NONE	NONE	3/4 H.F. FIBRE BOARD STILLITE		8	NONE
FRAME No. 40	F	"	"	14"	"	"	"	"	8	"
FRAME No.	A									
FRAME No.	H									
FRAME No.	A									
FRAME No.	H									
FRAME No. (After Peak)	T									
SIDES		NONE	3/4 H.F. FIBRE BOARD STILLITE	14	NONE	NONE	3/4 H.F. FIBRE BOARD STILLITE	14 1/2"		NONE
OVERHEADING		A.E.O.F. NO. 2 UNDER MAIN DK	ONE @ 1/4" ONE @ 1/4" WOOD 6" SLAB CORK	14	"	"	"	"	11"	"
FLOORS OF CHAMBERS		NONE		6	"					
TRUNK HATCHWAYS						NONE				
THRUST RECESS, SIDES AND TOP						NONE	SIDES WOOD TOP ELM. SIDES WOOD TOP ELM.	STILLITE	8	NONE
TUNNEL SIDES AND TOP						"	"	"	8	"
TUNNEL RECESS, FRONT AND TOP						✓				

FRAMES OR REVERSE FRAMES, FACE UNDER INSULATION (12" FRAMES)

BULKHEAD STIFFENERS, TOP UNDER INSULATION BOTTOM UNDER INSULATION. AND FACE UNDER INSULATION.

RIBBAND ON TOP OF DECKS 4 x 3 BOLTED TO 2ND DK. ALSO FLAT BAR WELDED TO DECK.

SIDE STRINGERS, TOP ✓ BOTTOM ✓ AND FACE ✓

WEB FRAMES, SIDES ✓ AND FACE ✓

BRACKETS, TOP ✓ BOTTOM ✓ AND FACE ✓

INSULATED HATCHES, MAIN 6" SLAB CORK. BILGE 6" SLAB CORK MANHOLE 4" SLAB CORK

HATCHWAY COAMINGS, MAIN 6 1/2" P.P. 17" DEEP. BILGE 5 x 8 1/2" P.P.

HOLD PILLARS NONE

MASTS ✓ VENTILATORS ✓

Are insulated plugs fitted to provide easy access to bilge suction roses YES tank, air, and sounding pipes YES 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 NOT YET if so, how TO BE CARRIED OUT ABOARD

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 YES

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 2 x 2 VERT. 18" APART floors TO BE CARRIED OUT ABOARD tunnel top 3 x 3 BATTENS 18" APART

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 " " " TWN DKS 4 " NO 2 TWN DKS.

diameter 2 1/2" INSIDE DIAR. are they 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 YES

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

4" SCUPPERS TO BILGES FITTED WITH N.R. VALVES 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 SCUPPERS TO BILGE

brine return room SCUPPERS TO BILGE fan room SCUPPERS TO BILGE 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 TWO IN N°2 HOLD

Diameter 3" 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/TANK TOP ONLY 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 ONLY FITTED ON TANK TOP

Air Trunkways in Chambers, inside dimensions, main N°2 HOLD, SEMI-CIRCULAR 22" RAD^S and branch AS PER PLAN

Are they permanently fixed or collapsible, or portable PORTABLE State position in chambers ON TANK TOP UNDER DK

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 ✓ 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.

For LITHGOWS LIMITED

R. Campbell

Builders.

PLAN APPROVED

14-3-42

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery NO. SEE PREVIOUS VESSELS and Insulation 14-3-42

(If not, state date of approval)

Is the Refrigerating Machinery and Appliances duplicate of a previous case YES If so, state name of vessel EMPIRE GALAHAD

If the survey is not complete, state what arrangements have been made for its completion and what remains to be done SURVEY COMPLETE

Note The Gas condenser can in addition to the circulating pump, be circulated by the ballast pump

General Remarks (State quality of workmanship, opinions as to class, &c.)

The refrigerating machinery & appliances have been efficiently installed in the vessel & tried out under full working conditions with satisfactory results.

The materials & workmanship are good.

The installation is eligible, in our opinion, to be closed in the Society's Register book with record

+ LLOYDS R.M.C 11-42 (IN RED) as recommended in London R.M.C report of 13.

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

+ Lloyd's Rule No. 2

DA

21/1/42

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					POWER.		INSULATED CARGO CHAMBERS.	
No. and whether Single or Duplex.	Makers.	Date of Construction.	System.	Type.	(1) Refrigerating (2) Insulating the Chambers.	Cubic feet of air delivered per hour.	No.	Capacity.
	J+E HALL LTD	1942	AMMONIA		(1) AIR (2) <i>Slab Cork</i>	72	4	229,900

Fee INSULATION... £ 7:0 0 { Fee applied for, 18th DEC. 1942

Travelling Expenses £ : : { Received by me, 19

Committee's Minute

TUE 22 DEC 1942

Assigned

+ Lloyd's Rule 12.42

CERTIFICATE WRITTEN



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