

# REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office...)

Date of writing Report 19... When handed in at Local Office 3/9/47 Port of Barron  
 No. in Reg. Book. 18679 Survey held at Barron. Date: First Survey 24/3/47 Last Survey 27/8 1947  
 (No. of Visits 9)

on the Refrigerating Machinery and Appliances of the T.S.M.V. ACCRA Tons 11599.8 Gross 644.8 Net  
 Vessel built at Barron By whom built Vickers-Armstrongs Ltd. Yard No. 948 When built 1947  
 Owners Elder Dempster Lines Ltd. Port belonging to Liverpool Voyage -  
 Refrigerating Machinery made by J. & E. Hall Ltd Machine Nos 12875 12876 When made 1946  
 Insulation fitted by Vickers-Armstrongs Ltd When fitted 1947 System of Refrigeration carb. aqy.  
 Method of cooling Cargo Chambers Brine & air Insulating Material used slab cork  
 Number of Cargo Chambers insulated 3 Total refrigerated cargo capacity 12,800 cubic feet.

## DESCRIPTION OF REFRIGERATING MACHINERY. Where placed shaft tunnel

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 <sup>single</sup>/<sub>double</sub> 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... Spacing 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 riveled 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... 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... 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

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

See London Rpt. 1725.



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Are thermometers fitted to the outflow and to each return brine pipe — 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) ...						
GAS COMPRESSORS ...						
" SEPARATORS ...						
" MULTIPLE EFFECT RECEIVERS ...						
" CONDENSER COILS ...						
" EVAPORATOR COILS ...						
" CONDENSER HEADERS AND CONNECTIONS ...						
" CONDENSER CASINGS ...						
" EVAPORATOR CASINGS ...						
NH <sub>3</sub> CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
BRINE PIPING AFTER ERECTION IN PLACE...	13/8/47	35 lb.	90 lb.	—	—	—

*See London Report* (with arrows pointing to the 'Air Test Pressure' and 'Working Pressure' columns)

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 *yes*  
 Dates of test *26<sup>th</sup> & 27<sup>th</sup> Aug. 1947* Density of Brine *24°* by *Twaddles* hydrometer  
 Temperatures (when the cargo chambers are cooled down to the required test temperatures) *12.5° P.* *7.5° S.* & *4° S.*  
 or, delivery and return air at direct expansion or brine cooled batteries & outflow and return brine *-9° F.* & *-6° F.*  
 atmosphere *78° F.* cooling water inlet and discharge *66° F.* & *69.5° F.* gas in condensers *80° F.* and evaporators *-10° F.*  
 the average temperature of the refrigerated chambers *F* 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 *15.1° F.* (*Day time test*):

**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:—

*as stated in London Report* (with arrows pointing to the 'Additional Spare Gear Supplied' and 'Additional Spare Gear Supplied' sections)

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.
BULKHEADS.										
FRAME NO. (Fore Peak)	A									
FRAME NO.	F									
FRAME NO.	A									
FRAME NO.	F									
FRAME NO.	A									
FRAME NO. (Boiler Room)	F									
FRAME NO. (Boiler Room)	A									
FRAME NO. 76 (Engine Room)	A	-	-	slab cork	12"	5/8" Port. Cem. & Mat.				
FRAME NO. 68 Centre	F									
FRAME NO. 68 Centre	A	-	-	do.	10"	do.				
FRAME NO. 59	F	-	-	do.	do.	do.				
FRAME NO. 59	A	-	-							
FRAME NO.	F									
FRAME NO.	A									
FRAME NO. (After Peak)	F									
DES		-	-	do.	13"	do.				
OVERHEADING		-	-	do.	do.	do.				
FLOORS OF CHAMBERS		-	-	do.	8 1/2"	1/2" asphalt & 1/2" Mat.				
BUNK HATCHWAYS										
CRUST RECESS, SIDES AND TOP										
TUNNEL SIDES AND TOP										
TUNNEL RECESS, FRONT AND TOP										

FRAMES OR REVERSE FRAMES, FACE *minimum 3" slab cork & 5/8 cement.*

BULKHEAD STIFFENERS, TOP *do.* BOTTOM *do.* AND FACE *do.*

RIBBAND ON TOP OF DECKS *-*

SIDE STRINGERS, TOP *-* BOTTOM *-* AND FACE *-*

WEB FRAMES, SIDES *-* AND FACE *-*

BRACKETS, TOP *-* BOTTOM *-* AND FACE *-*

INSULATED HATCHES, MAIN *9 3/4" 1/8" wood & 6" gas cork.* BILGE *-* MANHOLE *-*

HATCHWAY COAMINGS, MAIN *1 3/8" by 3 1/2" to 6" galv. steel fittings* BILGE *3" & 5/8 cement.*

HOLD PILLARS *minimum 3" cork & 5/8 cement*

MASTS *-* VENTILATORS *8" thick plugs & 6" slab cork*

Are insulated plugs fitted to provide easy access to bilge suction roses *yes* tank, air, and sounding pipes *6" portable* heels of pillars *no*

and manhole doors of tanks *none* Are insulated plugs fitted to ventilators *yes* cargo ports *none* and side lights *none*

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 *clear of cargo chambers*

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 *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"x2" @ 15"* floors *3"x1" or 3"x1"* tunnel top *3"x1" or 3"x1"*

~~fixed~~ portable *-* Are screens fitted over the brine grids at chamber sides *none* hinged or permanently fixed *-*

Thermometer Tubes, No. and position in each chamber *Stbd 2 (inboard); Centre 1 p. 41.9; Port 2 (inboard).*

diameter *3"* 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. What provision is made for draining the inside of the chambers *scuppers*

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 *part of shaft tunnel*

brine return room *in shaft tunnel* fan room *-* water circulating pump room *in shaft tunnel*

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 *yes*

How is the expanded metal secured in place *galv. nails & staples*

How are the cork slabs secured to the steel structure of the vessel *bitumen, galv. nails to grounds & cane screws.*

Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the ~~approved plan~~ *specification* - *yes*.

Are they permanently fixed or collapsible, or portable *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 *1 1/2" 1/4*. Minimum thickness *7. W. G.* Are they galvanised externally *yes*

How are they arranged in the chambers *in battens.*

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers *Steam operated brine heater.*

FOR VICKERS-ARMSTRONGS LIMITED.

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

*Low Moor*  
SHIPBUILDING MANAGER,  
BARROW WORKS, Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery *5/3/46*. and Insulation *1/11/46*.  
(If not, state date of approval)

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 *Complete.*

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

The machinery mentioned in London Report R.M.C. No 1725 and appliances have been fitted on board this vessel in accordance with the approved plans & specification, the Secretary's letters and the requirements of the Rules. Material & workmanship are good. The installation has been tried on board & the results were satisfactory.

The vessel is eligible for the

NOTATION \* Lloyd's R.M.C. 9.47.

It is submitted that the vessel is eligible for THE RECORD. + Lloyd's Rule 9.47 From 15.9.47

CERTIFICATE WRITTEN.

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. Cubic ft.
2	4	carb. Aushy.	J. & E. Hall, L.P.	1946	(1) Brine & air (2) Salt carb.	Tons. 34.56	yes	3	12,800

Lon. G.O.O.

Fee £18 : 0 : 0 { Fee applied for, 19  
Barrs 12.0.0. { Received by me, 19  
Travelling Expenses £ : :

*L.R. Horne*  
Surveyor to Lloyd's Register.

Committee's Minute **19 SEP 1947**

Assigned *+ Lloyd's Rule 9.47*



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