

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office)

Date of writing Report 18 FEB 1926 When handed in at Local Office Port of London
 No. in Reg. Book 25688 Survey held at Trieste Date: First Survey 6 JANUARY 1926 Last Survey 6 FEBRUARY 1926
 (No. of Visits SIX)

on the Refrigerating Machinery and Appliances of the S.S. "LEME" Tons { Gross 8108 Net 5733
 Vessel built at Trieste By whom built Stabilimento Tecnico Triestino Yard No. 443 When built 1926
 Owners Navigazione Libera Triestina Port belonging to Trieste Voyage Vancouver
 Refrigerating Machinery made by J. E. Hall Ltd. Machine No. When made 1926
 Insulation fitted by Phosphor When fitted 1926 System of Refrigeration CO₂ + Brine
 Method of cooling Cargo Chambers Brine Grids + Air Circulation Insulating Material used Gran. Cork + Silicate Cotton
 Number of Cargo Chambers insulated 2 Total refrigerated cargo capacity 13,500 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Flat-storeroom.

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 10 tons Are all the units connected to all the refrigerated chambers yes.

Compressors, driven direct through single } reduction gearing. Compressors, single or double acting Double Acting No. of cylinders one.

Diameter of cylinders 3" Diameter of piston rod 1 3/8" Length of stroke 9" No. of strokes per minute 240

Motive Power supplied from Electric motor thro' spur gearing

Steam Engines, high pressure, compound, or triple expansion, surface condensing. No. of cylinders 1 Diameter 10"

Length of stroke 10" Working pressure 100 lb. CO₂ machine Diameter of crank shaft journals and pins 1 1/2" journals + pins

Breadth and thickness of crank webs 2 1/2" x 4 3/4" No. of sections in crank shaft one CO₂ machine Revolutions of crank per minute 120

Oil Engines, type 2 or 4 stroke cycle Single or double acting

No. of cylinders 2 Diameter 10" Length of stroke 10" Span of bearings as per Rule

Maximum pressure in cylinders 100 lb. Diameter of crank shaft journals and pins 1 1/2"

Breadth and thickness of crank webs 2 1/2" x 4 3/4" No. of sections in crank shaft one Revolutions of engine per minute 120

Electric Motors, type Enclosed Air Cooled No. of one Rated 23 B.H.P. Kilowatts 18.9

Volts 110 at 605 revolutions per minute. Diameter of motor shafts at bearings 55 mm

Reduction Gearing, maximum shaft horse power at 1st pinion 23 Revolutions per minute at full power at 1st pinion 605.

2nd pinion 120 Pitch circle diameter, 1st pinion 9.6" 2nd pinion 6.0"

1st reduction wheel 48.4" Width of face, 1st reduction wheel 5 1/2" Main wheel 8"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, 1st pinion 8" 2nd pinion 6.0"

1st reduction wheel 6 1/8" Flexible pinion shafts, diameter 1st 1 1/2" 2nd 1 1/2"

Pinion shafts, diameter at bearings, External, 1st 55 mm 2nd 1 1/2" Internal, 1st 1 1/2" 2nd 1 1/2"

Diameter at bottom of teeth of pinion, 1st 8.68" 2nd 10.4" Wheel shafts, diameter at bearings, 1st 1 1/2"

Main 4" Diameter at wheel shroud, 1st pinion 10.4" Main not shrouded.

Gas Condensers, No. of one Cast iron or steel casings Cast iron Cylindrical or rectangular cylindrical

No. of coils in each 3 Material of coils S.D. Copper 3/4" bore x 10" o.d. Can each coil be readily shut off or disconnected yes.

Water Circulating Pumps, No. and size of 1 - centrifugal how worked Elec. direct Gas Separators, No. of 1

Gas Evaporators, No. of one Cast iron or steel casings Steel D. Shaped Pressure or gravity type gravity.

No. of coils in each casing 2 Material of coils S.D. Steel 1" bore x 1 1/2" o.d. Can each coil be readily shut off or disconnected yes.

Direct Expansion or Brine Cooled Batteries, No. of one Are there two separate systems, so that one may be in use while the other is being

cleared of snow One only. No. of coils in each battery one Material of coils S.D. steel Can each coil be readily shut off or

disconnected Yes. Total cooling surface of battery coils 58 sq metres Is a watertight tray fitted under each battery Yes.

Air Circulating Fans, Total No. of one each of 85 cubic feet capacity, at 1000 revolutions per minute

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 2 - Centrifugal how worked Elec. direct coupled.

Brine Cooling System, closed or open open. Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber meat chamber - 3

Can each section be readily shut off or disconnected yes Are the control valves situated in an easily accessible position yes.

DUAL CLASS NOTE - THE WORDS WHICH DO NOT APPLY SHOULD BE DELETED.



Are thermometers fitted to the outflow and to each return brine pipe *Yes* Where the tanks are closed are they ventilated as per Rule *Yes*

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

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

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)	<i>✓</i>					
GAS COMPRESSORS	<i>26-1-26</i>	<i>1000 lb. sq. in.</i>	<i>3000 lb. sq. in.</i>	<i>1500 lb. sq. in.</i>	<i>D.G.</i>	
SEPARATORS	<i>28-1-26</i>	<i>1000 lb. sq. in.</i>	<i>3000 lb. sq. in.</i>	<i>1500 lb. sq. in.</i>	<i>D.G.</i>	
CONDENSER COILS	<i>26-1-26</i>	<i>1000 lb. sq. in.</i>	<i>3000 lb. sq. in.</i>	<i>1500 lb. sq. in.</i>	<i>D.G.</i>	
EVAPORATOR COILS	<i>6-2-26</i>	<i>1000 lb. sq. in.</i>	<i>3000 lb. sq. in.</i>	<i>1500 lb. sq. in.</i>	<i>D.G.</i>	
CONDENSER HEADERS AND CONNECTIONS	<i>28-1-26</i>	<i>1000 lb. sq. in.</i>	<i>3000 lb. sq. in.</i>	<i>1500 lb. sq. in.</i>	<i>D.G.</i>	
CONDENSER CASINGS	<i>2-2-26</i>	<i>10-15 lb. sq. in.</i>	<i>30 lb. sq. in.</i>	<i>✓</i>	<i>D.G.</i>	<i>Open top.</i>
EVAPORATOR CASINGS						
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
BRINE PIPING AFTER ERECTION IN PLACE	<i>25-5-26.</i>		<i>90 lb. sq. in.</i>			

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

Dates of test *2/6/26* Density of Brine *45°* by *Sivassell* 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 *✓* & *MEAT -12.5°C*

or, delivery and return air at direct expansion or brine cooled batteries *✓* & *✓*, outflow and return brine *-13°C* & *FRUIT -11°C*

atmosphere *19°C* cooling water inlet and discharge *16°C* & *20°C* gas in condensers *23°C* and evaporators *-22°C*

the average temperature of the refrigerated chambers *FRUIT -7.5°C* 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 *MEAT 4°C* *FRUIT 6.5°C*

SPARE GEAR.

ARTICLES SUPPLIED AS PER RULE.	ADDITIONAL SPARE GEAR SUPPLIED.
<i>1 Crankshaft.</i> <i>1 piston and rod complete for compressor.</i> <i>1 pair main bearing brasses.</i> <i>1 pair crank pin brasses.</i> <i>1 set crosshead brasses.</i> <i>1 addl. brine pump in Engine Room.</i> <i>2 bolts + nuts for main bearings.</i> <i>2 bolts + nuts for conn. rod crank pin end.</i> <i>2 bolts + nuts for crosshead bearing.</i> <i>1 set of 4 valves seats + springs for compressor.</i> <i>1 set of 2 leather moulds.</i> <i>1 pair of CO₂ pipe flanges each size fitted.</i> <i>1 regulator spindle.</i> <i>Subsidiary brine cocks + valves.</i> <i>Assorted bolts + nuts.</i> <i>6 lubricator piston leathers.</i> <i>6 lubricator gland leathers.</i> <i>2 sets of copper joint rings for compressor joints.</i> <i>1 set of copper joint rings for other joints.</i> <i>2 sets special metal packing rings for comp. gland.</i> <i>1 impeller + spindle for water pump.</i>	<i>8 addl. Springs for comp. valves.</i> <i>1 guide for grinding in valves.</i> <i>1 spring for water relief valve.</i> <i>1 spring for brine relief valve.</i> <i>1 spring for CO₂ safety valve.</i> <i>1 hand pump for lubricator.</i> <i>1 CO₂ pressure gauge.</i> <i>1 hydrometer.</i> <i>2 brass cased thermometer.</i> <i>6 copper safety discs.</i> <i>1-8" CO₂ gauge valve + 3.</i> <i>1 fitted box for comp. parts.</i> <i>Electrical Spares</i> <i>for each size motor fitted.</i> <i>1 Armature</i> <i>1 set of bearings.</i> <i>1 line of brush holders.</i> <i>Set of Carbon brushes.</i>

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

FOR J. & E. HALL LTD. Manufacturer.

C. Nicholson
DIRECTOR

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				Transverse bulkheads.					
	FRAME No.	F				None	None	Brn Cork	10"	1 1/2"	
		A									
	FRAME No.	F				Bulkhead at main engine space.					
		A				None	None	Sil. cotton	12"	1 1/2"	
	FRAME No.	F				Divisional bulkheads.					
		A				None	1 1/2"	Brn Cork	9"	1 1/2"	
	FRAME No. (Boiler Room)	A									
	FRAME No. (Engine Room)	A									
	FRAME No.	F									
		A									
	FRAME No.	F									
	A										
FRAME No.	F										
	A										
FRAME No.	F										
	A										
FRAME No. (After Peak)	F										
SIDES						None	None	Brn Cork	10 3/4"	1 1/2"	
OVERHEADING						None	None	Brn Cork	10"	1 1/2"	
FLOORS OF CHAMBERS						None	None	Brn Cork	9"	1" + 1 1/2"	
TRUNK HATCHWAYS											
THRUST 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 *4" Iron. Cork.*

MASTS *✓*

VENTILATORS *✓*

Are insulated plugs fitted to provide easy access to bilge suction roses *None.* tank, air, and sounding pipes *None* heels of pillars *No.*

and manhole doors of tanks *None* Are insulated plugs fitted to ventilators *None* 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 *✓*

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 *2x2"* floors *3x3"* tunnel top *✓*

fixed or portable *fixed* Are screens fitted over the brine grids at chamber sides *No.* hinged or permanently fixed *✓*

Thermometer Tubes, No. and position in each chamber *2 - one forward and one aft in each chamber.*

diameter *2 1/2"* 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

Drains to bilges of lower hold. Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off *Blank seal*

What provision is made for draining the refrigerating machinery room *Drain to engine room bilge.*

brine return room *Engine room bilge* fan room *Engine room bilge* water circulating pump room *Pumps in engine 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. *Yes.* Are cement facings reinforced with expanded steel lattice. *None.*
 How is the expanded metal secured in place. ✓
 How are the cork slabs secured to the steel structure of the vessel. *None*
Air Trunkways in Chambers, inside dimensions, main *17" x 17"* and branch *8 x 8" for changing air.*
 Are they permanently fixed or collapsible, or portable. *permanently fixed* State position in chambers *top corner - each side of space*
 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 1/8"* Are they galvanised externally. *No*
 How are they arranged in the chambers. *In neat space. 3 coils - on sides bulkheads + overhead.*
Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers. *Steam heater for home.*

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

Stabilimento Tecnico Triestino

Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery (If not, state date of approval)

and Insulation *Yes.*

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. ✓

DUAL CLASS

L.R. & R.I.

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.

The insulation and refrigerating appliances have been fitted on board under special survey and in accordance with the Rules. The materials and workmanship are good. On completion the installation was examined under working conditions and found in order.

The refrigerating machinery and appliances of this vessel are eligible in my opinion to be classed in the Register Book with notation of + Lloyd's RMC 6.26.

It is submitted that this vessel is eligible for THE RECORD. + Lloyd's RMC 6.26.

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 Single for E. Hall Ltd.	1926	Carl Aubrey Hall			1. Brine Water 2. From cold ice. from.		10	2	13500.
Fee £ 2 : 0 : 0					Fee applied for, 16.6. 1926.				
Travelling Expenses £ 10 : 3					Received by me, 19 ..				
Fee for a/c dit 512.-, Exps dit 30.-					George Dunlop for Self and V Lockney. D. Gemmell. Surveyor to Lloyd's Register.				
Committee's Minute					+ Lloyd's RMC 6.26				
Assigned					FRI. 25 JUN 1926				



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