

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

DEUCALION No.

(Received at London Office)

8 JUN 1928

Date of writing Report **- 8 JUN 1928** When handed in at Local Office **8 JUN 1928** Port of **London**

No. in Reg. Book. **22831** Survey held at **London**. Date: First Survey **18th Jan 1928**. Last Survey **17 May 1928**. (No. of Visits **11**)

on the Refrigerating Machinery and Appliances of the **S.S. "GLENOGLE"** Tons { Gross **9513** Net **5880**

Vessel built at **Glasgow**. By whom built **Harland & Wolff Ltd.** Yard No. When built **1920-8**

Owners **Glen Line Ltd.** Port belonging to **London** Voyage

Refrigerating Machinery made by **J. E. Hall Ltd.** Machine No. **4311, 4312** When made **1928**

Insulation fitted by **Harland & Wolff Ltd.** When fitted **1928** System of Refrigeration **Brine**

Method of cooling Cargo Chambers **Brine grids** Insulating Material used **Granulated Cork**

Number of Cargo Chambers insulated **6** Total refrigerated cargo capacity **45,000** cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed **lower deck level fore of E.R.**

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

Total refrigeration or ice-melting capacity in tons per 24 hours **30** Are all the units connected to all the refrigerated chambers

Compressors, driven ~~direct~~ through **single** reduction gearing. Compressors, single or double acting **double acting** No. of cylinders **2 per mach**

Diameter of cylinders **2 1/16"** Diameter of piston rod **1 1/4"** Length of stroke **4"** No. of strokes per minute **300 each**

Motive Power supplied from **Electric motors thro' spur gearing.**

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 **3 3/4"**

Breadth and thickness of crank webs **5" x 2 1/8"** No. of sections in crank shaft **one** Revolutions of **CO2 machine** per minute **150**

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 **enclosed ventilated** No. of **one per mach.** Rated **32 H.P.** Kilowatts

Volts at **220 at 450** revolutions per minute. Diameter of motor shafts at bearings **3"**

Reduction Gearing, maximum shaft horse power at 1st pinion **32** Revolutions per minute at full power at 1st pinion **450**

2nd pinion 1st reduction wheel main shaft **150** Pitch circle diameter, 1st pinion **8.8"** 2nd pinion

1st reduction wheel Main wheel **44.4** Width of face, **pinion 6 1/4"** Main wheel **6"**

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, 1st pinion **5 5/8"** 2nd pinion

1st reduction wheel Main wheel **7"** Flexible pinion shafts, diameter 1st 2nd

Pinion shafts, diameter at bearings, External, 1st **3"** 2nd Internal, 1st 2nd

Diameter at bottom of teeth of pinion, 1st **4.88** 2nd Wheel shafts, diameter at bearings, 1st

Main **3 3/4"** Diameter at wheel shroud, 1st **9.6"** Main **not shrouded.**

Gas Condensers, No. of **2** 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" x 1 1/2" d.** Can each coil be readily shut off or disconnected **yes.**

Water Circulating Pumps, No. and size of **1 - 2 1/2" centrifugal** how worked **electrically** Gas Separators, No. of **4**

Gas Evaporators, No. of **2** Cast iron or steel casings **steel D shaped.** Pressure or gravity type **gravity.**

No. of coils in each casing **3** Material of coils **S.D. steel 1 1/8" x 1 5/16" d.** 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 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 **2 - 2" centrifugal** how worked **electrically.**

Brine Cooling System, closed or open **open** Are the pipes and tanks galvanised on the inside

No. of brine sections in each chamber **2 to A chamber, 2 to D chamber.**

4 each in B, C, E, F chambers

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.

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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

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

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)						
GAS COMPRESSORS	18-1-28	1000lb □	3000lb □	1500lb □	94	
SEPARATORS	18-1-28	do.	do.	do.	94	
CONDENSER COILS	2-2-28	do.	do.	do.	94	
EVAPORATOR COILS	2-2-28	do.	do.	do.	94	
CONDENSER HEADERS AND CONNECTIONS	18-1-28	do.	do.	do.	94	
CONDENSER CASINGS	26-3-28		30lb □		94	
EVAPORATOR CASINGS		open top.				
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
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 15th & 16th May 28. Density of Brine 48 by Tu. 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 & -2.
 atmosphere 51 cooling water inlet and discharge 58 & 64 gas in condensers 78 and evaporators -6
 the average temperature of the refrigerated chambers. 8°F and the rise of temperature in these chambers upon the expiration of 60/2 hours
 time after the machinery and cooling appliances have been shut off 7.2 & 11

SPARE GEAR.

ARTICLES SUPPLIED AS PER RULE.	ADDITIONAL SPARE GEAR SUPPLIED.
4 Compressor pistons + rods complete with rings.	1 guide for grinding in compr valves
4 Suction valves Seats + Springs for compressor.	2 Springs for CO ₂ safety valves
4 do do do.	1 hand pump for pressure lubricator.
12 additional valve springs	1 CO ₂ pressure gauge.
1 spare crankshaft.	1 hydrometer
1 pair bolts + nuts for main bearings	2 brass cased thermometers
1 do do do for crank pin bearings.	1-5/8" CO ₂ valve + 3 spare pipr.
1 spare brine pump in engine room.	12 Copper safety discs.
1 impeller + spindle for water pump.	1 fitted box.
1 do do for brine pump.	1 rawhide pinion in case.
1 CO ₂ regulator spindle.	
1 set of 2 leather moulds.	
12 piston leathers for lubricator.	
12 gland do.	
3 lengths W.I. pipe 1 1/2" & 1 1/2" bore.	
3 W.I. bends each 1 1/2" & 1 1/2" bore	
12 sockets + 12 backnuts each 1 1/2" & 1 1/2"	
1 set hatchet dies to screw 1 1/2" & 1 1/2"	
2 sets copper joints rings for compressor joints	
1 set do do for other joints.	
2 pair CO ₂ pipe flanges.	
Assorted bolts + nuts	
Sundry brine cocks + valves	
2 sets of metallic packing rings for each compr gland.	

	Machine Motor	Brine Pump Motor	Circ. water Pump Motor
Armature	1	1	1
Set of brushes.	2	2	1
Set of brush springs	1	1	1
Set of bearings	1	1	1
Controller spares for machine motor		Brine pump + water pump motors	

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

FOR J. & E. HALL, LTD
 Chichester
 Manufacturer.

Frame numbers run from 0 at midships Fore & Aft.

DESCRIPTION OF INSULATION.

	TWEEN DECK IN LOWER HOLD CHAMBERS.					UPPER 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. 27A (Lower Deck)	None	1/4 HCWP	gum cork	9"	-	27A	1/4 HCWP	gum cork	9"	-
FRAME No. 9F	F	do	1/4 HCWP	-	-	-	1/4 HCWP	-	9"	-
	A	do	2-1/4 HCWP	gum cork	10"	-	1/4 HCWP	gum cork	8"	1/4 HCWP
FRAME No. 5A	F						1/4 HCWP	do	10"	-
	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.	F									
	A									
FRAME No. (After Peak)	F									
	A									
SIDES		1/4 HCWP	gum cork	10"	-	-	1/4 HCWP	gum cork	10"	-
OVERHEADING		1/4 HCWP	do	10"	-	-	1/4 HCWP	do	10"	-
FLOORS OF CHAMBERS		Under/over BK	do	11"	-					
TUNNEL SIDES AND TOP										
TUNNEL RECESS, FRONT AND TOP										

FRAMES OR REVERSE FRAMES, FACE 1" Slab cork

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 Yes 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

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 floors 3" x 3" spaced 12" tunnel top Yes

fixed or portable Portable Are screens fitted over the brine grids at chamber sides Yes hinged or permanently fixed Portable

Thermometer Tubes, No. and position in each chamber 2-A, 4-B, 4-C, 2-D, 4-E, 4-F

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 Trapped Scupper 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 Open to main engine room

brine return room Trapped Scupper sun 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 *Half check* 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, inside dimensions, main and branch

Are they permanently fixed or collapsible, or portable State position in chambers

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"* Are they galvanised externally

How are they arranged in the chambers *Grids*

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers *Hot Brine*

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

FOR HARLAND & WOLFE LTD.

Robert Cairns Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery and Insulation *25.10.27*

Is the Refrigerating Machinery and Appliances duplicate of a previous case If so, state name of vessel *Glenbeg*

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 refrigerating machines have been constructed under special survey and the materials and workmanship are good, is now installed aboard the vessel, for particulars see previous page. The insulation is fitted in accordance with the approved plans, workmanship & materials are good. This vessel is in my opinion eligible to have record of survey + LLOYD'S RMC 5.28.

It is submitted that this vessel is eligible for THE RECORD. + Lloyd's RMC 5.28.

MJ JWD

8/6/28. CERTIFICATE WRITTEN. 96.18

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.	Ice melting capacity per 24 hours. Tons.	No.	Capacity.
<i>2 Single</i>	<i>J.E. Hall Ltd.</i>	<i>1928</i>	<i>Carb. Amby</i>	<i>Hall</i>	<i>(1) Brine (2) Fran. Cook</i>		<i>30</i>	<i>6</i>	<i>45,000</i>

Fee £ *9:0:0* Fee applied for, *28 JUN 1928*
Travelling Expenses £ *:10:3* Received by me, *4.7.1928*

Charles H. Hunt D. Gummell
Surveyor to Lloyd's Register.

Committee's Minute

FRL 15 JUN 1928

Assigned *see minute on Lon RMC R/H 30591*



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