

## Report on Refrigerating Machinery and Appliances.

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 No. in Reg. Book. Survey held at DARTFORD Date: First Survey 11-11-1946 Last Survey 9-5-47  
 (Number of Visits 23)

on the Refrigerating Machinery and Appliances of the \_\_\_\_\_ Tons {Gross  
 Vessel built at GOVAN By whom built HARLAND & WOLFF LTD Yard No. 13456 When built 1946  
 Owners FRENCH GOVERNMENT Port belonging to \_\_\_\_\_ Voyage \_\_\_\_\_  
 Refrigerating Machinery made by J.E. HALL LTD DARTFORD Machine Nos. \_\_\_\_\_ When made 1946  
 Insulation fitted by \_\_\_\_\_ When fitted \_\_\_\_\_ System of Refrigeration AMMONIA  
 Method of cooling Cargo Chambers BRINE & AIR Insulating Material used \_\_\_\_\_  
 Number of Cargo Chambers insulated 5 Total refrigerated cargo capacity 167.560 cubic feet

## DESCRIPTION OF REFRIGERATING MACHINERY.

Refrigerating Units, No. of 3 No. of machines 3 Where placed STARBOARD SIDE. LOWER DECK & E.R. MIDSHIPS  
 Is each machine independent YES

Total refrigeration or ice-melting capacity in tons per 24 hours 51 Are all the units connected to all the refrigerated chambers YES

Compressors, driven direct or through VEE BELTS (5-1 1/2") reduction gearing. Compressors, single or double acting SINGLE If multiple effect compression NO

Are relief valves or safety discs fitted YES No. of cylinders to each unit 2 Diameter of cylinders 6"

Diameter of piston rod TRUNK PISTONS Length of stroke 6" No. of revolutions per minute 475 MAX

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 3 5/8" JOURNALS - 3 1/4" PINS

Breadth and thickness of crank webs 3 3/8" x 4 1/8" OVAL No. of sections in crank shaft ONE Revolutions of engines per minute 475 MAX

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: Have they been made under survey \_\_\_\_\_ State No. of Report or Certificate \_\_\_\_\_

Is each receiver, which can be isolated, fitted with a safety valve as per Rule \_\_\_\_\_

Can the internal surfaces of the receivers be examined and cleaned \_\_\_\_\_ Is a drain fitted at the lowest part of each receiver \_\_\_\_\_

No. of Receivers \_\_\_\_\_ Cubic capacity of each \_\_\_\_\_ Internal diameter \_\_\_\_\_ thickness \_\_\_\_\_

Electric Motors, type ENCLOSED VENTILATED Material \_\_\_\_\_ Range of tensile strength \_\_\_\_\_ Working pressure by Rules \_\_\_\_\_

at 1100 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 3 EACH OF 2 CASINGS STEEL Cylindrical or rectangular CYLINDRICAL Are safety valves fitted \_\_\_\_\_

to casings NO No. of coils in each 14 IN EACH CASING Material of coils STEEL Can each coil be readily shut off or disconnected NO

Water Circulating Pumps, No. and size of pumps available 2-4" CENTE how worked ELECTRICALLY Gas Separators, No. of 3-DELIVERY

Gas Evaporators, No. of 2 Cast iron or steel casings STEEL Pressure or gravity type PRESSURE If pressure type, are safety valves fitted YES

Direct Expansion or Brine Cooled Batteries, No. of 2 Are there two separate systems, so that one may be in use while the other is being cleared of snow NO

No. of coils in each battery 6 Material of coils STEEL Can each coil be readily shut off or disconnected NO

disconnected YES Total cooling surface of battery coils 2640 SQ. FT. Is a watertight tray fitted under each battery YES

Air Circulating Fans, Total No. of 2-37 1/2" each of 17.500 cubic feet capacity, at 1400 MAX 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 2-2" CENTRIFUGAL how worked ELECTRICALLY

Brine Cooling System, closed or open CLOSED Are the pipes and tanks galvanised on the inside NO

No. of brine sections in each chamber GRIDS { 3 - No 6 MT DK  
 { 3 - No 6 LT DK

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.



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  
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 YES  
Is the exhaust steam led to the main and auxiliary condensers YES

### HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure. lbs/d"	Hydraulic Test Pressure lbs/d"	Air Test Pressure. lbs/d"	Stamped.	REMARKS.
Engine Cylinders (if tested) ...	17.3.47	—	—	—	—	—
Gas Compressors ...	19.3.47	185	600	350	RD	—
„ Separators ...	21.3.47	185	500	250	RD	—
COMPRESSOR CRANKCASES	7.3.47	—	—	—	—	—
„ Multiple Effect Receivers	10.3.47	15.75	300	175	RD	—
„ Condensers Coils (SHELL & TUBE)	12.3.47	185	500	250	RD	—
„ Evaporators Coils (SHELL & TUBE)	22.1.47	185	500	250	RD	—
„ D.E. AIR COOLER COILS	7.2.47	—	—	—	—	—
„ Condenser Headers and Connections	24.3.47	185	1500	500	RD	—
„ Condenser Casings END COVERS	9.5.47	20	100	—	RD	—
„ Evaporator Casings END COVERS	29.1.47	25	100	—	RD	—
NH <sub>3</sub> 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 YES  
Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory YES  
Dates of test 21.3.47 Density of Brine 1.085 by hydrometer  
Temperatures (when the cargo chambers are cooled down to the required test temperatures) of 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 YES  
Has the spare gear required by the Rules been supplied YES  
Additional Spare Gear Supplied:—  
1 CONNECTING ROD, LESS BUSHES : 1 MAIN BEARING FOR ONE MACHINE : 1 NH<sub>3</sub> GAUGE  
6 " " BUSHES : 1 COMPRESSOR CYLINDER COVER : 1 SET "VEE" BELTS  
6 " " BIG END BUSHES : 9 SAFETY DISCS : 2 SPRINGS FOR BRINE RELIEF VALVES.  
1 HYDROMETER : 1 NH<sub>3</sub> STOP VALVE : 1 PLUNGER FOR FORCED LUBRICATING PUMP.  
4 TUBES FOR NH<sub>3</sub> CONDENSERS & 1 EXPANDING TOOL FOR TUBES  
4 " " NH<sub>3</sub> EVAPORATORS & 1 " " " "  
1 IMPELLER, 1 IMPELLER SHAFT & 1 SET BEARINGS, FOR EACH SEA WATER & BRINE PUMP

### ELECTRICAL SPARES

1 ARMATURE PACKED FOR STOWAGE } FOR MACHINE MOTORS  
1 SET OF FIELD COILS } & BRINE & WATER PUMP  
1 " " INTERPOLE COILS } MOTORS

1 SPARE FAN ROTOR FOR EACH SIZE FAN FITTED

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL LTD.  
F. L. Jells  
Manufacturer.

### 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) ...	A									
Frame No. ...	F									
Frame No. ...	A									
Frame No. ...	F									
Frame No. ...	A									
Frame No. (Boiler Room) ...	F									
Frame No. (Engine Room) ...	A									
Frame No. ...	F									
Frame No. ...	A									
Frame No. ...	F									
Frame No. ...	A									
Frame No. (After Peak) ...	F									
Sides ...										
Overheading ...										
Floors of Chambers ...										
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 —  
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 — Where —  
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. In my opinion the refrigerating machinery and appliances of this vessel will be eligible for the notation + Lloyd's RMC (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.
3	6	AMMONIA	J.E. HALL LTD DARTFORD	1946	(1) BRINE & AIR	51	YES	5	1750

Low M<sub>c</sub> £8.13.4  
GLS M<sub>c</sub> £17.6.8  
Fee £26: 0: 0 (Fee applied for, 19.....  
Travelling Expenses £ : : (Received by me, 19.....

R. J. Dunn  
Surveyor to Lloyd's Register.

Committee's Minute.....

Assigned.....

See GLS 72107



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Foundation