

See later report
dated 18th Oct 38
for 4 machines

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office 21 APR 1938)

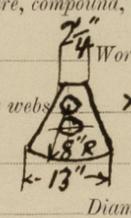
Date of writing Report 21 APR 1938 When handed in at Local Office 21 APR 1938
Port of London
No. in Reg. Book. Survey held at London Date: First Survey 28th Jan Last Survey 16th Mar 1938
(No. of Visits 21)

on the Refrigerating Machinery and Appliances of the Amra Tons } Gross 8314
Net 3993
Vessel built at Wallsend-on-Tyne By whom built Swan Hunter & Wigham Yard No. 1540 When built 1938
Richardson & Co.
Owners British India Ste. Nav. Co. Ltd. Port belonging to Richardson & Co. Voyage
Refrigerating Machinery made by G. E. Hall Ltd. Machine Nos. 9890 When made 1938
9891
Insulation fitted by _____ When fitted _____ System of Refrigeration CO2 + Brine
Method of cooling Cargo Chambers Brine Grids Insulating Material used _____
Number of Cargo Chambers insulated 5 Total refrigerated cargo capacity 2000 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Queen deck aft main E.R.

Refrigerating Units, No. of 2 No. of machines 2 Is each machine independent yes
Refrigeration or ice-melting capacity in tons per 24 hours 5 1/2 Are all the units connected to all the refrigerated chambers yes
Compressors, driven direct or through single reduction gearing Compressors, single or double acting single If multiple effect compression no
Safety valves or safety discs fitted yes No. of cylinders to each unit one Diameter of cylinders 1 1/16"
Diameter of piston rod 1/8" Length of stroke 6" No. of revolutions per minute 500
Motive Power supplied from _____ (State number of boilers, oil engines or electric generators supplying the motive power.)

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"
Thickness and thickness of crank webs 7/16" x 1 1/16" No. of sections in crank shaft one Revolutions of engines per minute 500
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 _____
Working pressure in cylinders _____ Diameter of crank shaft journals and pins _____
Thickness and thickness of crank webs _____ No. of sections in crank shaft _____ Revolutions of engine per minute _____



RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule _____
Are the internal surfaces of the receivers be examined _____ What means are provided for cleansing their inner surfaces _____
Is a drain arrangement fitted at the lowest part of each receiver _____ If made under survey _____
Number of Receivers _____ Cubic capacity of each _____ Internal diameter _____ thickness _____
Type, lap welded or riveted longitudinal joint _____ Material _____ Range of tensile strength _____ Working pressure by Rules _____

Electric Motors, type Enclosed ventilated No. of 2 Rated 10 H.P. Kilowatts _____
Voltage 220 volts at 500 revolutions per minute. Diameter of motor shafts at bearings _____
Type of Gearing reduction Pitch circle diameter, pinion _____ Main wheel _____ Width of face _____
Clearance between centres of pinion and wheel faces and the centre of the adjacent bearings, pinion _____ Main wheel _____
Diameter of shafts, diameter at bearings _____ Main wheel shaft, diameter at bearings _____

Condensers, No. of 2 in one casing _____ Cast iron or steel casings _____ Cylindrical or rectangular cylindrical Are safety valves fitted _____
Type yes No. of coils in each 2 Material of coils S.D. Copper 3/4" dia Can each coil be readily shut off or disconnected yes

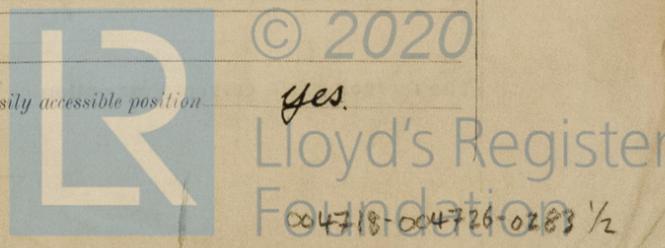
Circulating Pumps, No. and size of 1-1/2" horiz centrifugal how worked electrically Gas Separators, No. of 4
Evaporators, No. of 2 in one casing _____ Cast iron or steel casings steel Pressure or gravity type gravity If pressure type, are safety valves fitted _____
No. of coils in each 2 Material of coils S.D. steel 1 1/2" dia x 1 1/8" dia 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 used _____
Type _____ 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 _____

Circulating Fans, Total No. of _____ each of _____ cubic feet capacity, at _____ revolutions per minute _____
Type 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 2-1/2" horizontal centri. how worked elec. direct
Brine Cooling System, closed or open open Are the pipes and tanks galvanised on the inside no
No. of brine sections in each chamber one to each

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



Im. 1.3.6-1

Are thermometers fitted to the ^{common} 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.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)						
GAS COMPRESSORS	11-3-38	1000 lbs	3000 lbs	1500 lbs	St.	
SEPARATORS	11-3-38	do.	do.	do.	St.	
MULTIPLE EFFECT RECEIVERS						
CONDENSER COILS	28-1-38	do.	do.	do.	St.	
EVAPORATOR COILS	15-2-38	do.	do.	do.	St.	
CONDENSER HEADERS AND CONNECTIONS	16-3-38	do.	do.	do.	St.	
CONDENSER CASINGS	11-3-38	5 to 10 lbs	20 lbs		St.	
EVAPORATOR CASINGS		open top.				
NH ₃ 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 _____ Density of Brine _____ by _____ hydrometer _____
Temperatures (when the cargo chambers are cooled down to the required test temperatures)
 or, 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:-
 6 lubricator piston leathers
 6 do. gland do.
 1 set of 2 leather moulds
 1 pair main bearing brasses with bolts & nuts
 1 do. crank pin do. do.
 12 safety discs
 12 additional valve springs for comp.
 1 - 1/8" CO₂ valve + 3 spare pipes
 2 bolts & nuts for crosshead.
 1 impeller, 1 spindle & 1 bearing assembly for Brine & Water Pumps.
 2 springs for CO₂ safety valve
 2 do. water relief valve
 2 brass cased thermometers
 1 hand pump for pressure lubricator
 1 CO₂ gauge
 1 hydrometer
 1 fitted box for compressor parts

ELECTRICAL SPARES.

1 Armature
 1 set of bearings
 1 field coil
 1 interpole coil
 1 line of brush holder
 1 set of brushes
 1 set of controller spares
 } For machine motor and Pump motors (interchangeable)

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL
 J. Wells
 Director
 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.	F									
FRAME No. (Boiler Room)	A									
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										

	BOTTOM	AND 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 _____
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 _____

