

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office 23 JAN 1948)

Date of survey Report 1-11-47 When handed in at local office Port of NEWCASTLE, N.S.W.
 No. in Reg. Book Sydney, N.S.W. & Newcastle, N.S.W. Date: First Survey 14/3/47 Last Survey 89-10-47
 (No. of Vessels 24)

on the Refrigerating Machinery and Appliances of the S. S. "DELUNGRA" Tons 2333
 No. 1161

Vessel built at Newcastle, N.S.W. By whom built State Dockyard Yard No. 26 When built 1947

Owners Commonwealth of Australia. Port belonging to Newcastle, N.S.W. Voyage Interstate

Refrigerating Machinery made by York Air Conditioning Ltd. Machine No. When made 1947

Insulation fitted by State Dockyard When fitted 1947 System of Refrigeration Freon

Method of cooling Cargo Chambers Direct Expansion Insulating Material used Insulwool

Number of Cargo Chambers insulated One Total refrigerated cargo capacity 920 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed

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

Total refrigeration or ice-melting capacity in tons per 24 hours 4.2 Are all the units connected to all the refrigerated chambers 1 chamber

Compressors, driven direct or through single reduction gearing. Compressors, single or double acting Single No. of cylinders Two
V belt drive.

Diameter of cylinders 4" Diameter of piston rod Length of stroke 4" No. of strokes per minute 320

Motive Power supplied from Elec. motors

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 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 D.C. compound wound. No. of One for each Rated 5 H.P. Kilowatts 220
unit.

Volts at 1440 revolutions per minute. Diameter of motor shafts at bearings 1 1/2"

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

2nd pinion 1st reduction wheel main shaft Pitch circle diameter, 1st pinion 2nd pinion

1st reduction wheel Main wheel Width of face, 1st reduction wheel Main wheel

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

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

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

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

Main Diameter at wheel shroud, 1st Main

Gas Condensers, No. of Two Cast iron or steel casings M.S. Cylindrical or rectangular Cylindrical
 Tubes

No. of 14 in each 14 Material of coils Aluminium Bronze Can each coil be readily shut off or disconnected Yes

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

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 Two Are there two separate systems, so that one may be in use while the other is being

cleared of snow Yes No. of coils in each battery Two Material of coils Copper Can each coil be readily shut off or

disconnected Yes Total cooling surface of battery coils 236 sq.ft. in each Is a watertight tray fitted under each battery "Flintcoat"
system. floor covering.

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

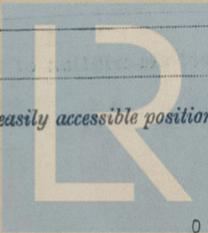
Brine Cooling System, closed or open Are the pipes and tanks galvanised on the inside

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.

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Are the 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 --
 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	22/4/47	100/150lbs	350 lbs.	200 lbs.	Lloyds No. 614 & 615 H.G.	
LIQUID RECEIVERS	14/3/47	"	"	"	Lloyds No. 603 & 604 H.G.	
" SEPARATORS	17/3/47	"	"	"	Lloyds No. 603 & 604 H.G.	
" CONDENSER COILS	"	"	"	"		
" EVAPORATOR COILS	"	"	"	"	Lloyd's No. 605 & 606 H.G.	
" CONDENSER HEADERS AND CONNECTIONS	"	"	"	"		
" CONDENSER CASINGS	"	"	"	"		
" EVAPORATOR CASINGS	"	"	"	"		
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
BRINE PIPING AFTER ERECTION IN PLACE	10/47			300 lbs.		Gas Test

Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory **Yes**
 Dates of test **28th. & 29th. Oct., 1947** Density of Brine -- by -- 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 & , outflow and return brine &
 atmosphere **69°** cooling water inlet and discharge **67°** & X gas in condensers **72°** and evaporators **-20°**
 the average temperature of the refrigerated chambers **10°** 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 **16°**

SPARE GEAR.

Are the machines in accordance with Section 4, Clause 2 of the Rules --
 Are the working parts of the machines, pumps and motors respectively, interchangeable **Yes**

ARTICLES SUPPLIED AS PER RULE	ADDITIONAL SPARE GEAR SUPPLIED.
The installation for small cargo chamber in bridge was supplied by York Air Conditioning Ltd. and is similar to that being supplied to other "D" class vessels now building and supplied to "Dorrigo" and "Dubbo" already completed (See Secretary's letter E 19th. September 1945) Spare gear as per attached list.	

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

 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.	F									
FRAME NO.	F									
FRAME NO.	F									
FRAME NO. (Boiler Room)	F									
FRAME NO. (Engine Room)	A		"B"	(Bridge Front Frame No. 71/2)				Small chamber at fore end starbd. side of Bridge Space.		
FRAME NO.	F			(Coal Shoot, Frame No. 57/9)						
FRAME NO.	F									
FRAME NO.	F									
FRAME NO. (After Peak)	F							Insulwool 6"	2 1/2 T&G	
SIDES								" "	9"	" "
OVERHEADING								" "	6"	" "
FLOORS OF CHAMBERS										1/2" Fltnt coat.
TRUNK HATCHWAYS										
THRUST RECESS, SIDES AND TOP										
TUNNEL SIDES AND TOP										
TUNNEL RECESS, FRONT AND TOP										
FRAMES OR REVERSE FRAMES, FACE										
BULKHEAD STIFFENERS, TOP										
Bridge Dk. Space.										
Boundary Bulkhd. Stiffeners										2" Insulwool, Double 3/4" T & G. lining.
SIDE STRINGERS, TOP										
WEB FRAMES, SIDES										
BRACKETS, TOP										
INSULATED HATCHES, MAIN										
HATCHWAY COAMINGS, MAIN										
HOLD PILLARS										
MASTS										
Are insulated plugs fitted to provide easy access to bilge suction roses										heels of pillars
and manhole doors of tanks										and side tights
Are insulated plugs fitted to ventilators										
Are screens fitted over the brine grids at chamber sides										
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										Portable tunnel top
Are screens fitted over the brine grids at chamber sides										Yes hinged or permanently fixed Sliding
Thermometer Tubes, No. and position in each chamber										One in centre
diameter										3" 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										Yes
Draining Arrangements. Where the chambers are situated below the load water line, what provision is made for draining the inside of the chambers										Yes
Screw down scupper to bilge. Where staves, scupper pipes, and drain pipes are fitted are means provided for blanking them off										Yes
What provision is made for draining the refrigerating machinery room										
brine return room										san 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 13

Are all wood linings tongued and grooved Yes Are cement facings reinforced with expanded steel lath

How is the expanded metal secured in place

How are the Insulwool slabs secured to the steel structure of the vessel By Bitumastic

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 Yes Where are the doors worked from From Bridge Space alleyway

Cooling Pipes in Chambers, diameter 7/8" O.D. (Direct Exp.) Are they galvanised externally Copper

How are they arranged in the chambers As per approved plan.

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
Hutchell for STATE DOCKYARD, N.S.W. Govt. Engineering and Shipbuilding Undertaking. Builders.

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

Is the Refrigerating Machinery and Appliances duplicate of a previous case Yes If so, state name of vessel "DORRIGO", "DUBBO"
 (See Secretary's letter E.19-9-45)

If the survey is not complete, state what arrangements have been made for its completion and what remains to be done

The Refrigerating Installation of this vessel with the exception of the compressor cranks shafts has been constructed under Special Survey, in accordance with the Rules and approved plans, and the materials and workmanship are good. The installation has been examined and tested under working conditions with satisfactory results and is now eligible in our opinion for record of Lloyd's R.M.C., 10,47.

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

It is submitted that this record be made for THE RECORD.
 Lloyd's Rule 1047.

Run
10.2.48

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

No. of Units. Comps.		REFRIGERATING MACHINES.				System of (1) Refrigerating (2) Insulating the Chambers.	POWER.		INSULATED CARGO CHAMBERS.	
Name and description of machines.	Makers.	Date of Construction.	System.	Type.	Cubic feet of air delivered per hour.		Ice melting capacity per 24 hours. Tons.	No.	Capacity.	
2	4	York Air Cond. Ltd.	1947	Freon	--	Direct Exp. Insulwool.	--	4.2	1	920

Fee £ 20 : 0 : 0 { Fee applied for, 6/11 1947
 Travelling Expenses £ : : { Received by me, 1947

Ernst Hughes & Co
 Surveyors to Lloyd's Register.

Committee's Minute FRI. 13 FEB 1948

Assigned Lloyd's RMC 10.47

Surveyors (Nov 1946)
Ernst Hughes & Co
 Copy/Specs to be sent to

CERTIFICATE WRITTEN.

