

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

31 AUG 1946

(Received at London Office)

Date of writing Report 19-6-1946 When handed in at Local Office Port of BRISBANE
 No. in Reg. Book. Survey held at BRISBANE Date: First Survey 11-7-45 Last Survey 13-6-1946
 (No. of Visits 25)

on the Refrigerating Machinery and Appliances of the S.S. "RIVER NORMAN" Tons Gross 6659.17
Net 3908.81

Vessel built at BRISBANE By whom built EVANS DEAKIN & CO. LTD Yard No. 19 When built 1946-6
 Owners COMMONWEALTH OF AUSTRALIA Port belonging to BRISBANE Voyage INTERNATIONAL
 (DEPT. OF SUPPLY & SHIPPING)
 Refrigerating Machinery made by J. & E. HALL LTD DARTFORD Machine No. _____ When made 1945
 Insulation fitted by EVANS DEAKIN & CO. LTD When fitted 1946 System of Refrigeration C.O.2 & BRINE
 Method of cooling Cargo Chambers BRINE CIRCULATION Insulating Material used SLAGWOOL (INSULWOOL)
 Number of Cargo Chambers insulated SIX Total refrigerated cargo capacity 28,772 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY.

Refrigerating Units, No. of TWO NO OF MACHINES TWO Where placed ENGINE ROOM TANK TOP
Single, double, or triple IS EACH MACHINE INDEPENDENT. YES
 Cubic feet of air delivered per hour _____

Total refrigeration or ice-melting capacity in tons per 24 hours _____ 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 No. of cylinders TO EACH UNIT 2

Diameter of cylinders _____ Diameter of piston rod _____ Length of stroke _____ No. of strokes per minute _____

Motive Power supplied from TWO BOILERS

Steam Engines, high pressure, compound, or triple expansion, surface condensing. No. of cylinders ONE Diameter _____

Length of stroke _____ Working pressure 110 LBS PER SQ" 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 ✓ No. of ✓ Rated ✓ Kilowatts ✓

Volts at ✓ revolutions per minute. Diameter of motor shafts at bearings ✓

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 2 EACH WITH 3 CASINGS Cast iron or steel casings COPPER Cylindrical or rectangular CYL. ARE SAFETY VALVES FITTED TO WATER HEADS. YES

No. of coils in each ONE PER CASING. Material of coils COPPER Can each coil be readily shut off or disconnected YES

Water Circulating Pumps, No. and size of _____ how worked ELECTRICALLY Gas Separators, No. of 4

Gas Evaporators, No. of 2 IN ONE CASING. Cast iron or steel casings STEEL Pressure or gravity type PRESSURE. IF PRESSURE TYPE ARE SAFETY VALVES FITTED. YES

No. of coils in each casing 1 - SET OF 4 1 - SET OF 3 Material of coils STEEL Can each coil be readily shut off or disconnected YES VENT PIPES FITTED.

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 1/2 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 PORT & STARB² CHAMBERS NO. 1. TWEEN DECK, 3 SECTIONS EACH, PORT & STARB² CHAMBERS NO. 2. TWEEN DECK

8 SECTIONS EACH, PORT & STARB² CHAMBERS NO. 3. TWEEN DECK, 3 SECTIONS EACH.

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



CERTIFIED
 Surveyed the
 in accordance
 Special Survey
 Complete
 Modern
 Committee
 stating that
 have been
 recommended

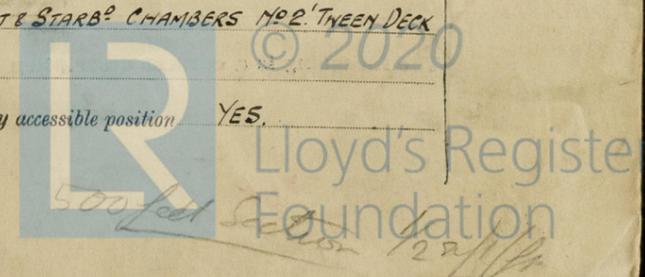
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COMMON
 Are thermometers fitted to the outflow and to each return brine pipe Yes. Where the tanks are closed are they ventilated as per Rule Yes.
 Where the tanks are not closed is the compartment in which they are situated efficiently ventilated ✓
Steam Condensing Plant. State what provision is made for condensing steam, in terms of Section 4, Clauses 13 and 14 EXHAUST LED TO MAIN AND AUXILIARY CONDENSERS

HYDRAULIC AND OTHER TESTS.

| DESCRIPTION. | Date of Test. | Working Pressure. | Hydraulic Test Pressure. | Air Test Pressure. | Stamped. | REMARKS. |
|--|--------------------|-------------------|--------------------------|--------------------|----------|----------|
| ENGINE CYLINDERS (IF TESTED) | | | | | | |
| GAS COMPRESSORS | | | | | | |
| SEPARATORS | | | | | | |
| CONDENSER COILS | | | | | | |
| EVAPORATOR COILS | | | | | | |
| CONDENSER HEADERS AND CONNECTIONS | | | | | | |
| CONDENSER CASINGS | | | | | | |
| EVAPORATOR CASINGS | | | | | | |
| NH, CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE | 9-4-46 | | | | | |
| BRINE PIPING AFTER ERECTION IN PLACE | 26-4-46 21-8-46 | 25 LBS PER D | 75 LBS PER D | - | | |

HAVE IMPORTANT STEEL BORGINGS BEEN TESTED IN ACCORDANCE WITH THE RULES:-
Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory YES.
 Dates of test 7th & 8th JUNE 1946 Density of Brine 45 DEGREES by TRAWDEL 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 0°F & 9°F atmosphere 75°F (MAX) cooling water inlet and discharge 63°F & 68°F gas in condensers 82°F and evaporators -5°F
 the average temperature of the refrigerated chambers 14°F and the rise of temperature in these chambers upon the expiration of TWELVE hours time after the machinery and cooling appliances have been shut off 10°F

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.

| ARTICLE SUPPLIED AS PER RULE | ADDITIONAL SPARE GEAR SUPPLIED |
|---|---|
| ARE THE WORKING PARTS OF THE MACHINES, PUMPS AND MOTORS RESPECTIVELY, INTERCHANGEABLE? <u>YES</u> | |
| HAS THE SPARE GEAR REQUIRED BY THE RULES BEEN SUPPLIED? <u>YES</u> | |
| THE FOLLOWING ADDITIONAL ITEMS OF SPARE GEAR HAVE BEEN SUPPLIED:- | |
| 10. LUBRICATOR PISTON LEATHERS. | 2. BOLTS & NUTS FOR CROSSHEADS |
| 11. " GLAND " | 2. " " " CRANK PIN BEARINGS |
| 1. LEATHER MOULD. | 2. " " " COMPRESSOR COUPLING |
| 12. ADDITIONAL COMPRESSOR VALVE SPRINGS. | 1. IMPELLER & SPINDLE FOR WATER PUMP |
| 1. " SET OF COMPRESSOR JOINT RINGS. | 1. IMPELLER & SPINDLE FOR BRINE PUMP |
| 1. REGULATOR VALVE COMPLETE. | 1. 1/8" CO ₂ VALVE WITH THREE SPARE PIPES |
| 2. SPRINGS FOR WATER RELIEF VALVE. | 1. HYDROMETER. 1. HAND LUBRICATING PUMP. |
| 2. " " CO ₂ " " | 1. SET OF TOOLS. 1. SET OF RATCHET SCREW DRIVERS FOR PUMP MOTORS. |
| 12. SAFETY DISCS. | |
| 2. BRASS CASED THERMOMETERS. | 1. SET OF BRUSH SPRINGS. |
| 2. BOLTS & NUTS FOR MAIN BEARINGS. | |
| FOR STEAM ENGINES. | |
| 1. SET OF DISTON RINGS. | |
| 1. SET OF GOVERNOR SPRINGS. | |
| 1. SET OF GLAND PACKING. | |

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. 132 F | | | | | | ✓ | ✓ | "INSULWOOL" | 8 INS. | 1/8" T&G DOUBLE |
| FRAME No. 146 F | | | | | | ✓ | ✓ | " | 4 INS. | 1/8" T&G SINGLE |
| FRAME No. 116 F | | | | | | ✓ | ✓ | " | 4 INS. | " |
| FRAME No. 98 (Boiler Room) F | | | | | | ✓ | ✓ | " | 8 INS. SIDES 1/8" T&G SINGLE 8 INS. CENTRE " DOUBLE | |
| FRAME No. (Engine Room) A | | | | | | ✓ | ✓ | " | 8 INS. | 1/8" T&G SINGLE |
| FRAME No. F | | | | | | ✓ | ✓ | " | 8 INS. | 1/8" T&G DOUBLE |
| FRAME No. A | | | | | | | | | | |
| FRAME No. F | | | | | | | | | | |
| FRAME No. A | | | | | | | | | | |
| FRAME No. F | | | | | | | | | | |
| FRAME No. A | | | | | | | | | | |
| FRAME No. (After Peak) F | | | | | | ✓ | ✓ | "INSULWOOL" | 10 INS. | 1/8" T&G DOUBLE |
| SIDES | | | | | | ✓ | ✓ | " | 12 INS. | " |
| OVERHEADING | | | | | | ✓ | ✓ | " | 8 INS. | 1/8" T&G 1/2" T&G 1/2" FLUTE |
| FLOORS OF CHAMBERS | | | | | | | | | | |
| TRUNK HATCHWAYS (ACCESS TRUNKS TO HOLDS) | | | | | | ✓ | ✓ | "INSULWOOL" | 6 INS. | 1/8" T&G DOUBLE |
| TRUNK RECESS, SIDES AND TOP TRIMMING HATCHWAY PLUGS | | | | | | 1/2" | 1/8" T&G. | " | 6 INS. | 1/2" T&G. |
| TUNNEL SIDES AND TOP | | | | | | | | | | |
| TUNNEL RECESS, FRONT AND TOP | | | | | | | | | | |
| FRAMES OR REVERSE FRAMES, FACE | | | | | | | | | | FOUR INCHES "INSULWOOL" AND DOUBLE 1/8" T&G LINING |
| BULKHEAD STIFFENERS, TOP | | ✓ | | | | | | | | BOTTOM ✓ AND FACE 2" AND DOUBLE 1/8" T&G. |
| RIBBAND ON TOP OF DECKES | | ✓ | | | | | | | | |
| 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 6" "INSULWOOL" & DOUBLE 1/8" T&G LINING. |
| Are insulated plugs fitted to provide easy access to bilge suction roses | | ✓ | | | | | | | | ✓ tank, air, and sounding pipes YES 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 | | | | | | | | | | 2" x 2" SPACED 15" floors ✓ 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 | | | | | | | | | | ONE EACH IN NO 1. THREE IN CHAMBERS, THREE EACH IN NO 2. & TWO EACH IN NO 3. |
| diameter | | 3 INCHES | | | | | | | | INSIDE 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 | | | | | | | | | | |
| SCUPPERS WITH LIQUID SEALED TRAPS. Where sluices, 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 | | | | | | | | | | PUMP SUCTIONS IN ENGINE ROOM BILGE. |
| 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. | | | | | | | | | | ✓ |

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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 ✓
 How is the expanded metal secured in place ✓

How ^{IS THE INSULATION} are the cork slabs secured to the steel structure of the vessel PACKED BETWEEN WOOD GROUNDOS BOLTED TO FRAMES, BEAMS & STIFFENERS

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 1/4 INCH BORE. Are they galvanised externally NO

How are they arranged in the chambers NO. 1. TWEEN DK. CHAMBERS, 3 SECTIONS EACH (1) CEILING (2) SHIPS SIDE (3) WALL GRIDS. NO. 2. TWEEN DK. CHAMBERS, 8 SECTIONS EACH (1, 2 & 3) CEILING, (4 & 5) SHIPS SIDE (6, 7 & 8) WALL GRIDS. NO. 3. TWEEN DK. CHAMBERS, 3 SECTIONS EACH (1) CEILING, (2) SHIPS SIDE & AFTER BULKHEAD (3) INBOARD BULKHEAD & FORWARD END.
 Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers THAWING BRINE SERVICE FITTED.

The foregoing is a correct description of the Insulation and Appliances. EVANS DEAKIN & CO. LIMITED.
 Daniel E. Evans Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery and Insulation. SECRETARY'S LETTER 'E' 17-11-44. TO SYDNEY OFFICE.
 (If not, state date of approval)

Is the Refrigerating Machinery and Appliances duplicate of a previous case YES. If so, state name of vessel "RIVER MITTA"
 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 INSTALLATION OF THIS VESSEL HAS BEEN CONSTRUCTED UNDER SPECIAL SURVEY IN ACCORDANCE WITH THE RULES. THE MATERIALS AND WORKMANSHIP ARE GOOD. TESTS HAVE BEEN CARRIED OUT AS REQUIRED BY THE RULES WITH SATISFACTORY RESULTS AND THE INSTALLATION, IN MY OPINION IS ELIGIBLE TO BE CLASSED WITH RECORD OF LLOYD'S R.M.C. 6.46, IN THE SOCIETY'S REGISTER BOOK.

It is submitted that this vessel is eligible for THE RECORD. + LLOYD'S R.M.C. 6.46 Roll 9/9/46

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

| REFRIGERATING MACHINES. | | | | | POWER. | | INSULATED CARGO CHAMBERS. | | |
|--------------------------------------|---------------------|-----------------------|-----------|-------------------|--|---------------------------------------|------------------------------------|-----|-----------|
| No. and whether Single or otherwise. | Makers. | Date of Construction. | System. | NO OF COMPRESSORS | System of (1) Refrigerating (2) Insulating the Chambers. | Cubic feet of air delivered per hour. | Ice melting capacity per 24 hours. | No. | Capacity. |
| 2 UNITS | J.B. & E. HALL LTD. | 1944 | CARB. AMM | 4 | (1) BRINE (2) SLAQNOOL | - | Tons. 28 | 6 | 28,772 |

Fee £42: 0 : 0 { Fee applied for, 19
 Travelling Expenses £ ✓ : { Received by me, 19

Committee's Minute FRI. 13 SEP 1946

Assigned + Lloyd's R.M.C. 6.46

CERTIFICATE WRITTEN



Certificate to be sent to