

REPORT ON STEAM TURBINE MACHINERY. No. 20/20. (a)

Rpt. 4a.

Received at London Office 17 AUG 1945

Date of writing Report 10th July 1945 When handed in at Local Office 10 Port of Sydney, N. S. W.
 No. in Survey held at Melbourne & Whyalla Date, First Survey 8th Sept 1942 Last Survey 10th July 1945
 Reg. Book. S.S. "RIVER MURRUMBIDGEE" (Number of Visits 23)
 Built at Whyalla By whom built Broken Hill Pty Co Ltd Yard No. 6 When built 1945
 Engines made at Sydney By whom made Morts Dock & Eng Co Ltd Engine No. 475 When made 1945
 Boilers made at Melbourne & Whyalla By whom made Thomson Camb. Eng. & Shipbuilding Co Ltd Boiler No. ✓ When made 1945
 Shaft Horse Power at Full Power 830 Owners Commonwealth of Australia Port belonging to Port Adelaide
 Nom. Horse Power as per Rule 75 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted yes
 Trade for which Vessel is intended International

STEAM TURBINE ENGINES, &c.—Description of Engines L.P. Turbine with D.R. Gearing & Hydraulic Coupling

No. of Turbines One Direct coupled, single reduction geared to One propelling shafts. No. of primary pinions to each set of reduction gearing One
 direct coupled to Alternating Current Generator phase periods per second rated Kilowatts Volts at revolutions per minute
 for supplying power for driving Propelling Motors, Type
rated Kilowatts Volts at revolutions per minute Direct coupled, single or double reduction geared to propelling shafts

	H. P.			I. P.			L. P.			ASTERN.		
BLADING.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION							2.9134	35.3544	1			
2ND							3.7008	36.9292	1			
3RD							4.4882	38.5040	1			
4TH							5.2756	40.0788	1			
5TH							6.0630	41.6536	1			
6TH							6.9685	43.4646	1			
7TH							7.8740	45.2756	1			
8TH												
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at each turbine H.P. 830 I.P. 830 L.P. 830 Revolutions per minute, at full power, of each Turbine Shaft 1st reduction wheel 502.5 main shaft 89.6

Rotor Shaft diameter at journals H.P. 6.693" I.P. 6.693" L.P. 6.693" Pitch Circle Diameter 1st pinion 8.784" 1st reduction wheel 60.2024" 2nd pinion 14.2834" main wheel 79.1298" Width of Face 1st reduction wheel 10.25" main wheel 23.625"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion F. 10.27" A. 8.55" 1st reduction wheel F. 61.5" A. 14.11" 2nd pinion F. 8.4" A. 16.41" main wheel F. 8.4" A. 20.31"

Transmission Flexible Pinion 1st 4.12" 2nd 4.12" Pinion Shafts, diameter at bearings External 1st 4.59" 2nd 12.19" Internal 1st 1.18" 2nd 9.32" diameter at bottom of pinion teeth 1st 8.2074" 2nd 13.511"

Wheel Shafts, diameter at bearings 1st F. 9.14" A. 9.27" main F. 8.4" A. 19.11" 1st 57" Generator Shaft, diameter at bearings main 75.13" Propelling Motor Shaft, diameter at bearings

Intermediate Shafts, diameter as per rule 13.14" as fitted 13.5" Thrust Shaft, diameter at collars as per rule 14.078" as fitted 14.11"

Tube Shaft, diameter as per rule as fitted Screw Shaft, diameter as per rule as fitted Is the tube screw shaft fitted with a continuous liner

Bronze Liners, thickness in way of bushes as per rule as fitted Thickness between bushes as per rule as fitted Is the after end of the liner made watertight in the

propeller boss. If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner

If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive

If two liners are fitted, is the shaft lapped or protected between the liners Is an approved Oil Gland or other appliance fitted at the after end of the tube

shaft If so, state type Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter Pitch No. of Blades State whether Moveable Total Developed Surface square feet

If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Report on the H.P. or I.P. Turbine exhaust direct to the

Condenser No. of Turbines fitted with astern wheels Feed Pumps No. and size How driven

Pumps connected to the Main Bilge Line No. and size How driven

Ballast Pumps, No. and size Lubricating Oil Pumps, including Spare Pump, No. and size

Are two independent means arranged for circulating water through the Oil Cooler Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge

Pumps, No. and size:—In Engine and Boiler Room In Pump Room

In Holds, &c. Main Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room

Bilges, No. and size Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes

Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges

Are all Sea Connections fitted direct on the skin of the ship Are they fitted with Valves or Cocks

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Overboard Discharges above or below the deep water line

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Are the Blow Off Cocks fitted with a spigot and brass covering plate

That pipes pass through the bunkers How are they protected

That pipes pass through the deep tanks Have they been tested as per rule

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one

apartment to another Is the Shaft Tunnel watertight Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record) Total Heating Surface of Boilers
Is Forced Draft fitted No. and Description of Boilers Working Pressure
Is a Report on Main Boilers now forwarded?
Is { a Donkey } Boiler fitted? If so, is a report now forwarded?
{ an Auxiliary }
Is the donkey boiler intended to be used for domestic purposes only
Plans. Are approved plans forwarded herewith for Shafting
(If not state date of approval)
Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements
Has the spare gear required by the Rules been supplied see attached Machinery Report.
State the principal additional spare gear supplied

The foregoing is a correct description,

Commonwealth Government Marine Engine Works
A. Macfarlane Manufacturer.

Dates of Survey while building { During progress of work in shops -- 8/9/42, 23/11/42, 6/4/43, 27/5/43, 10/6/43, 20/8/43, 30/8/43, 29/9/43, 21/2/44, 6/9/44, 10/4/44.
During erection on board vessel --- 27/1/45, 30/1/45, 16/2/45, 22/2/45, 26/2/45, 27/3/45, 11/4/45, 12/4/45, 14/5/45, 20/6/45, 21/6/45, 10/7/45.
Total No. of visits 23.

Dates of Examination of principal parts—Casings Rotors Blading Gearing
Wheel shaft Thrust shaft Intermediate shafts Tube shaft Screw shaft
Propeller Stern tube Engine and boiler seatings Report Engine holding down bolts
Completion of fitting sea connections Completion of pumping arrangements Boilers fired Engines tried under steam
Main boiler safety valves adjusted Thickness of adjusting washers

Rotor shaft, Material and tensile strength M.S. Longitudinal 32.0 tons, Tangential 32.4 tons, Radial 35.2 tons, Identification Mark M 315/4 B.P.F. 10-10

Transmission Flexible Pinion Shaft, Material and tensile strength M.S., 28.8 tons per sq in Identification Mark M 317/7 B.P.F. 10-10

Pinion shafts Material and tensile strength 3 1/2 % Nickel Steel { 1st Reduction—Longitudinal 42.0 tons, Transverse 42.0 tons Identification Mark M 317/6 B.P.F. 10-10
2nd Reduction—Longitudinal 42.2, Transverse 41.4 Identification Mark M 317/3 B.P.F. 10-10

1st Reduction Wheel Shaft, Material and tensile strength M.S. 36.6 tons Identification Mark M 317/9 B.P.F. 10-10

Wheel shaft, Material M.S. Identification Mark M 317/8 B.P.F. Thrust shaft, Material M.S. Identification Mark M 316/5 B.P.F.

Intermediate shafts, Material Identification Marks Tube shaft, Material Identification Marks

Screw shaft, Material Identification Marks Steam Pipes, Material Test pressure

Date of test Is the flash point of the oil to be used over 150°F. Have the requirements of the Rules for the use of oil as fuel been complied with

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo If so, have the requirements of the Rules been complied with

If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with

Is this machinery a duplicate of a previous case Yes If so, state name of vessel s.s. "River Murchison"

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

This Turbine and Gearing have been built under Special Survey in accordance with

the Rules and approved plans, and the materials and workmanship are good.

The Installation has been efficiently fitted on board the vessel, tried under

full power working conditions with satisfactory results and, in our opinion,

is now eligible for record recommended in attached Machinery Report.