

REIVED
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REPORT ON STEAM TURBINE MACHINERY. No. 19933 (a)

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Date of writing Report 10 Feb 45 1945 When handed in at Local Office 10 Port of Sydney, N. S. W. 27 MAR 1945

No. in Survey held at Melbourne & Whyatta Date, First Survey 23rd June 1942 Last Survey 1st Feb 45 1945

Reg. Book. S.S. "RIVER MURCHISON" (Number of Visits 20)

Built at Whyatta (South Aust.) By whom built Broken Hill Pty Co Ltd Yard No. 4 When built 1945

Engines made at Port Kembla N.S.W. By whom made Australian Iron & Steel Ltd Engine No. 6 When made 1945

Boilers made at Newcastle NSW & Renfrew By whom made Broken Hill Pty Co Ltd & Babcock & Wilcox 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 One L.P. Turbine with D.R. Gearing & Hydraulic Coupling

No. of Turbines Ahead 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.

TURBINE LOADING.	H. P.			I. P.			L. P.			ASTERN.		
	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			

Shaft Horse Power at each turbine H.P. ✓ I.P. ✓ L.P. 830 Revolutions per minute, at full power, of each Turbine Shaft H.P. ✓ I.P. ✓ L.P. 3777 1st reduction wheel 502.5" main shaft 89.6"

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

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion F, 10.27/64; A, 8.55/64 1st reduction wheel F, 61.5/8; A, 14.1/64 2nd pinion F & A, 16.41/64 main wheel F & A, 20.21/32

Transmission of Pinion Shafts, diameter at bearings 1st 4.17/32 External 1st 4.59/64 Internal 1st 1.3/8 2nd 12.19/32 9.37/32 1st 8.2074" 2nd 13.511"

Wheel Shafts, diameter at bearings 1st F 9.1/16, A 9.27/32 main F & A 19.1/16 diameter at wheel shroud, 1st 57" Generator Shaft, diameter at bearings ✓ main 75.13/64 Propelling Motor Shaft, diameter at bearings

Intermediate Shafts, diameter as per rule 13.4" as fitted 13.5" Thrust Shaft, diameter at collars as per rule 17.078 as fitted 17.1/64

Screw Shaft, diameter as per rule as fitted Screw Shaft, diameter as per rule as fitted Is the tube Is the 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 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

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 after If so, state type Length of Bearing in Stern Bush metal Developed Surface square feet.

Propeller, diameter Pitch No. of Blades State whether Moveable Can the H.P. or I.P. Turbine exhaust direct to the

Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine 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

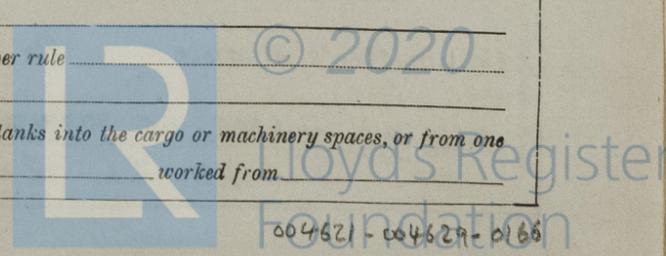
Holds, &c. Main Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes

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

attached Machinery Report



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 _____ Main Boilers _____ Auxiliary Boilers _____ Donkey Boilers _____
 (If not state date of approval)

Superheaters _____ General Pumping Arrangements _____ Oil Fuel Burning Arrangements _____

Has the spare gear required by the Rules been supplied _____

State the principal additional spare gear supplied _____

attached Machinery Report
SPARE GEAR.
See

Commonwealth Government Marine Engine Works

K. Macfarlane
 Manufacturer.

The foregoing is a correct description,

Dates of Survey while building
 During progress of work in shops -- 23/6/42, 28/7/42, 8/9/42, 5/10/42, 23/11/42, 5/1/43, 27/2/43, 20/8/43, 30/8/43, 21/2/44, 17/7/44
 During erection on board vessel --- 16/8/44, 8/9/44, 30/10/44, 14/1/45, 29/1/45, 30/1/45, 31/1/45, 1/2/45
 Total No. of visits 20

Dates of Examination of principal parts—Casings 30/8/43. Rotors 30/8/43 Blading 23/9/43 Gearing 17/7/44

Wheel shaft 23/9/43 Thrust shaft 23/9/43 Intermediate shafts --- Tube shaft --- Screw shaft ---

Propeller --- Stern tube --- Engine and boiler seatings *see attached Machinery Report* Engine holding down bolts ---

Completion of fitting sea connections --- Completion of pumping arrangements --- Boilers fixed --- Engines tried under steam ---

Main boiler safety valves adjusted --- Thickness of adjusting washers ---

Rotor shaft, Material and tensile strength *M.S. long. 34.8 Tangential 35.8, Radial 35.0 tons/sq. in.* Identification Mark *M.315/3 P.A.M. 17-7-44*

Pinion shaft, Material and tensile strength *M.S. 30.4 tons/sq. in.* Identification Mark *M.317/8 B.P.F. 17-7-44*
1st Red. 3 1/2 nickel steel. Longitudinal 41.6 Transverse 42.0 tons/sq. in.

1st Reduction Wheel Shaft, Material and tensile strength *M.S. 28.8 tons/sq. in.* Identification Mark *M.317/8 P.A.M. 17-7-44*

Wheel shaft, Material *M.S. 34.8 tons/sq. in.* Identification Mark *M.317/7 B.P.F. 17-7-44* Thrust shaft, Material *M.S. 30.8 tons/sq. in.* Identification Mark *M.316/3 B.P.F. 17-7-44*

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

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

Date of test --- Is an *explosion* fitted for burning oil fuel _____

Is the flash point of the oil to be used over 150°F. *see attached Machinery Report* _____

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 DERWENT"*

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 & approved Plans. The materials & 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 the record recommended in the attached Machinery Report.

Certificate (if required) to be sent to Sydney N.S.W. (The Surveyors are requested not to write on or below the space for Committee's Minute.)

The amount of Entry Fee ... £	:	:	When applied for,
Special ... £	:	:	19
Donkey Boiler Fee ... £	:	:	When received,
Fee charged on attached Machy. Rpt	:	:	19
Travelling Expenses (if any) £	:	:	

B. P. Fielden
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **FRI. 6 APR 1945**

Assigned **+ LMC2,45** FITTED FOR OIL FUEL. 2.45 FLASH POINT ABOVE 150° F.
F.D. CL. 2 WTB 240/6 (Spt. 220/6).

