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

Date of writing Report 10 Feb 45 1945 When handed in at Local Office 10 Port of Sydney, N. S. W. 22 MAR 1945
No. in Survey held at Melbourne & Whyalla Date, First Survey 23rd June 1942 Last Survey 1st Feb 45 1945
Reg. Book. S.S. "RIVER MURCHISON" (Number of Visits 20)
Built at Whyalla (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
Astern ✓ double reduction geared
Direct coupled to { Alternating Current Generator ✓ phase periods per second rated ✓ Kilowatts ✓ Volts at ✓ revolutions per minute;
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 MOUNTING.	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			
8th												
9th												
10th												
11th												
12th												
13th												
14th												
15th												

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 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, 10.27/64; 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 { 1st 4.12/32 2nd ✓ Pinion Shafts, diameter at bearings { External 1st 4.59/64 Internal 1st 1.3/8 2nd 12.19/32 9.37/32 diameter at bottom of pinion teeth { 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 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 not to and supporting propeller
Propeller, diameter Pitch No. of Blades State whether Moveable Report Developed Surface square feet.
Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Can 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
Holds, &c. attached
Main Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room
Pipes, No. and size see Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes
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
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
compartment 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?
{ an Auxiliary }

If so, is a report now forwarded?

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)

Main Boilers

Auxiliary Boilers

Donkey Boilers

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

SPARE GEAR.

The foregoing is a correct description,

Commonwealth Government Marine Engine Works

Manufacturer.

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 20/8/43 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 Tensile 35.8, Radial 35.0 tons/sq. in. Identification Mark M.315/3 P.A.M.I. 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 Reduction Wheel Shaft, Material and tensile strength M.S. 28.8 tons/sq. in. Identification Mark M.317/8 P.A.M.I. 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 oil burner 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.

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

Committee's Minute FRI. 6 APR 1945

Assigned + LMC2,45 FITTED FOR OIL FUEL 2.45 FLASH POINT ABOVE 160° F.
F.D. CL. 2 WTB 240lb (Spt. 220lb).



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