

REPORT ON STEAM TURBINE MACHINERY.

No. 83646
28 DEC 1928

Received at London Office

Date of writing Report 19 When handed in at Local Office 27/12/1928 Port of Newcastle-on-Tyne
No. in Survey held at Wallsend-on-Tyne Date, First Survey 24 Sept. Last Survey 14 Dec 1928
Reg. Book. 49144 on the Low pressure exhaust turbines for the T.S.S. "NARDANA" Tons Gross 4951. Net 4968.
Built at Glasgow By whom built Barclay, Curle & Co. Yard No. - When built 1919-9.
Engines made at ~ do ~ By whom made ~ do ~ Engine No. - When made ~ do ~
Boilers made at - By whom made - Boiler No. - When made -
Shaft Horse Power at Full Power 2240 Owners British India Steam Navigation Co. Ltd. Port belonging to Glasgow
Nom. Horse Power as per Rule - Is Refrigerating Machinery fitted for cargo purposes - Is Electric Light fitted yes
Trade for which Vessel is intended (Green Swan Hunter, Wigan, Richardson & Co. 121306.)

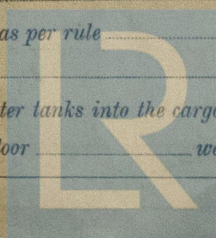
STEAM TURBINE ENGINES, &c.—Description of Engines L.P. exhaust turbines.

No. of Turbines Ahead 4 (Direct coupled, single reduction geared) to 6 propelling shafts. No. of primary pinions to each set of reduction gearing 6.
Astern - double reduction geared
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 BLADING.	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							89 mm	928 mm	1			
2ND							110 "	940 "	1			
3RD							130 "	1010 "	1			
4TH							151 "	1052 "	1			
5TH							145 "	1100 "	1			
6TH							200 "	1150 "	1			
7TH												
8TH												
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at each turbine { H.P. - I.P. - L.P. 1175 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. - I.P. - L.P. 91.4 } 1st reduction wheel 91.4.
Rotor Shaft diameter at journals { H.P. - I.P. - L.P. 140 mm } Pitch Circle { 1st pinion 230.95 mm 1st reduction wheel 1489.4 mm Width of 1st reduction wheel 250 mm }
Diameter { 2nd pinion 345.46 mm main wheel 2165.45 mm Face { main wheel 530 mm }
Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 235 mm 1st reduction wheel 260 mm 1480 mm }
2nd pinion 410 mm main wheel 530 mm.
Flexible Pinion Shafts, diameter { 1st 95 mm } Pinion Shafts, diameter at bearings { External 1st 140 mm 2nd 285 mm } diameter at bottom of pinion teeth { 1st 216.319 mm }
2nd 190 mm. CENTRE 1st 320 mm Generator Shaft, diameter at bearings -
Wheel Shafts, diameter at bearings { 1st 260 mm } diameter at wheel shaft { main 543 mm } Propelling Motor Shaft, diameter at bearings -
main 500 mm. Thrust Shaft, diameter at collars { as per rule 13.55 " as fitted 13.45 " } Tube Shaft, diameter { as per rule 14.23 " as fitted 388 mm }
Intermediate Shafts, diameter { as per rule 13.55 " as fitted 13.45 " } Tube Shaft, diameter { as per rule 14.23 " as fitted 388 mm }
Screw Shaft, diameter { as per rule 13.55 " as fitted 13.45 " } 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. 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 Can the H.P. or L.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 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
What pipes pass through the bunkers How are they protected
What 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
compartment to another Is the Shaft Tunnel watertight Is it fitted with a watertight door worked from



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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 }

Plans. Are approved plans forwarded herewith for Shafting yes Main Boilers — Auxiliary Boilers — Donkey Boilers —
(If not state date of approval)

Superheaters. — General Pumping Arrangements — Oil Fuel Burning Arrangements —

Spare Gear. State the articles supplied:—

Please see attached list.

FOR

BWAN, HUNTER & WIGHAM RICHARDSON, LTD.

The foregoing is a correct description,

E. J. Duncanson

Manufacturer.

DIRECTOR.

Dates of Survey while building { During progress of work in shops -- 1928 Sep. 24, 25, Oct. 1, 3, 9, 16, 18, 22, 30, Nov. 21, 22, 27, 29, Dec. 14.
During erection on board vessel ---
Total No. of visits 14.

Dates of Examination of principal parts—Casings 21.11.28 Rotors 21.11.28 Blading 21.11.28 Gearing 29.11.28

Wheel shaft 29.11.28 Thrust shaft 29.11.28 Intermediate shafts 29.11.28 Tube shaft — Screw shaft —

Propeller — Stern tube — Engine and boiler seatings — Engine holding down bolts —

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	Steel 39.8 + 39.9 TONS PER SQ IN	Identification Mark	8149.12.10.28
Pinion shaft, Material and tensile strength	Steel 42 TONS PER SQ IN	Identification Mark	26.10.28 W.B.
1st Reduction Wheel Shaft, Material and tensile strength	Steel 42 TONS PER SQ IN	Identification Mark	5924.5
Intermediate shafts, Material	Steel	Identification Marks	29.11.28 E.A.H.
Thrust shaft, Material	Steel	Identification Mark	5924.5
Tube shaft, Material	—	Identification Marks	29.11.28
Screw shaft, Material	—	Identification Marks	E.A.H.
Steam Pipes, Material	—	Test pressure	—

Date of test — Is an installation fitted for burning oil fuel —

Is the flash point of the oil to be used over 150° F. — Have the requirements of the Rules for carrying and burning oil fuel been complied with —

Is this machinery a duplicate of a previous case No If so, state name of vessel —

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

The Machinery has been built under special survey in accordance with the approved plans, the Rules of the Society.

The workmanship & materials are of good quality throughout.

The turbines have been forwarded to Falmouth & will be fitted on board the vessel at that Port.

The amount of Entry Fee ... £ : : When applied for,

Special ... £ 34 : 8 27 DEC 1928

Donkey Boiler Fee ... £ : : When received,

Travelling Expenses (if any) £ : : 11/11/29

Thos. A. Hargreaves

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE 26 MAR 1929

Assigned

See Minute on
Fal Rm 6963



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