

REPORT ON STEAM TURBINE MACHINERY.

No. 83646
25 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 24th Sept. Last Survey 14th 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 Baird & C. Ltd 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 (Messrs Swan Hunter, Wiggin & Richardson Eng. 191306.)

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

No. of Turbines Two (P. & S.) 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 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	928	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 }
 Rotor Shaft diameter at journals { H.P. - I.P. - L.P. 140 mm. } Pitch Circle Diameter { 1st pinion 230.95 mm. 1st reduction wheel 1489.4 mm. 2nd pinion 345.46 mm. main wheel 2165.45 mm. } Width of Face { 1st reduction wheel 250 mm. main wheel 530 mm. }
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 235 | 1st reduction wheel 260 | 2nd pinion 410 | main wheel 530 }
 Flexible Pinion Shafts, diameter { 1st 95 mm. 2nd - } Pinion Shafts, diameter at bearings { External 1st 140 mm. 2nd 340 mm. Internal 1st - 2nd 285 mm. } diameter at bottom of pinion teeth { 1st 216.319 mm. 2nd 360.826 mm. }
 Wheel Shafts, diameter at bearings { 1st 260 mm. main 500 } diameter at wheel shaft { 1st 320 mm. } Generator Shaft, diameter at bearings - Propelling Motor Shaft, diameter at bearings -
 Intermediate Shafts, diameter { as per rule 13.55 } Thrust Shaft, diameter at collars { as per rule 14.23 } Tube Shaft, diameter { as per rule - }
 Screw Shaft, diameter { as per rule - } Is the { tube } shaft fitted with a continuous liner { - } Bronze Liners, thickness in way of bushes { as per rule - }
 Thickness between bushes { as per rule - } 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 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 - } Lubricating Oil Pumps, including Spare Pump, No. and size -
 Ballast Pumps, 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 they fitted with Valves or Cocks -
 Are all Sea Connections fitted direct on the skin of the ship - Are the Overboard Discharges above or below the deep water line -
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates - Are the Blow Off Cocks fitted with a spigot and brass covering plate -
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel - How are they protected -
 What pipes pass through the bunkers - Have they been tested as per rule -
 What pipes pass through the deep tanks - 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 -

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. Duddy

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

2nd Red Pinion Shaft, Material and tensile strength Steel 42 TONS PER SQ IN Identification Mark 26.10.28 W.B.

Pinion shaft, Material and tensile strength Steel 42 TONS PER SQ IN Identification Mark 5924.D

1st Reduction Wheel Shaft, Material and tensile strength Steel 42 TONS PER SQ IN Identification Mark 29.11.28

Wagon shaft, Material Steel Identification Mark 5924D Thrust shaft, Material Steel Identification Mark 29.11.28

Intermediate shafts, Material Steel Identification Marks 346 Tube shaft, Material — Identification Marks —

Screw shaft, Material — Identification Marks — 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 and will be fitted on board the vessel at that Port.

The amount of Entry Fee ... £ : :
 Special ... £ 34 : 8 :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : :
 When applied for, 27 DEC 1928
 When received, 1/1/29 Kell

Thos. A. Ferguson
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE 26 MAR 1929

Assigned See Minute on
Fal R/M 6963



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