

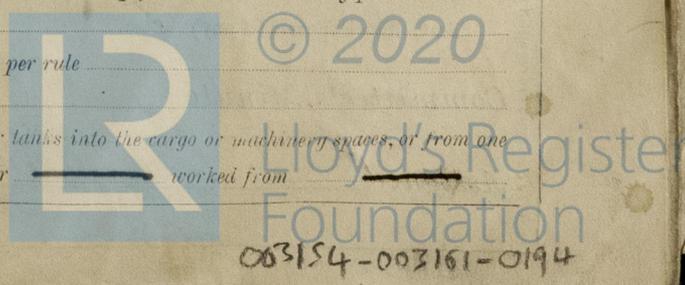
REPORT ON STEAM TURBINE MACHINERY. No. 99305

4a. Received at London Office 26.3.41 Port of NEWCASTLE-ON-TYNE
 Date, First Survey 30 Aug/1929 Last Survey 17 March 1941
 Survey held at Newcastle on Tyne (Number of Visits 54)
 on the T.S.S. "Aronda" Tons Gross 9031 Net 4463
 By whom built Swain Hunter & Wigham & Son Ltd Yard No. 1640 When built 1941
 By whom made Parsons Marine S. Turb. Co Ltd Engine No. 346 When made 1941
 By whom made Swain Hunter & Wigham & Son Ltd Boiler No. 1640 When made 1941
 Owners British India S. N. Co Ltd. Port belonging to London
 Shaft Horse Power at Full Power 9700 Is Refrigerating Machinery fitted for cargo purposes yes Is Electric Light fitted yes
 Is Electric Light fitted yes
 Intended for which Vessel is intended because going

STEAM TURBINE ENGINES, &c. — Description of Engines Twin Screw SR geared turbines Impulse React. type
 of Turbines Ahead 6 Direct coupled, single reduction geared } to 2 propelling shafts. No. of primary pinions to each set of reduction gearing 3
 Astern 4 Direct coupled, double reduction geared }
 Alternating Current Generator — phase — periods per second — rated — Kilowatts — Volts at — revolutions per minute;
 Direct Current Generator — rated — Kilowatts — Volts at — revolutions per minute;
 Propelling Motors, Type —
 Direct coupled, single or double reduction geared to — propelling shafts.

TURBINE LOADING.	H.P.			I.P.			L.P.			LP 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.
EXPANSION	Impulse			Reaction			Reaction			Impulse		
"	1.3"	2'-6 3/8"	1	1"	21 1/2"	7	2 9/8"	36 1/4"	3	1.53"	2'-11 1/8"	1
"	1.36"	2'-7 3/8"	1	1 3/16"	22 3/8"	7	3 3/8"	38 3/4"	2	2.31"	2'-1 1/2"	1
"	Reaction			1 3/4"	23"	6	4 1/4"	40 1/2"	2	Reaction		
"	1 1/4"	17 3/8"	10	2 5/16"	24 3/8"	6	5 1/4"	42 1/2"	2	2"	30 1/2"	2
"	1 3/16"	17 3/8"	10	3 1/16"	25 5/8"	6	6 1/2"	45"	2	2 1/4"	32"	2
"	1 5/16"	17 5/8"	10	Astern			7 1/2"	47"	4	3 3/4"	34"	2
"	1 9/8"	18 1/4"	10	Impulse			—	—	—	3 3/4"	34"	2
"	—	—	—	1.24"	2'-6 3/8"	1	—	—	—	3 3/4"	34"	2
"	—	—	—	1.88"	2'-7"	1	—	—	—	—	—	—
"	—	—	—	2.89"	2'-8 3/4"	1	—	—	—	—	—	—

Shaft Horse Power at each turbine { H.P. 1590 ✓ I.P. 1470 ✓ L.P. 1790 ✓ } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 2886 ✓ I.P. 2886 ✓ L.P. 2474 ✓ }
 Shaft diameter at journals { H.P. 5" ✓ I.P. 5" ✓ L.P. 6" ✓ } Pitch Circle Diameter { 1st pinion 6.4273 ✓ 1st reduction wheel — ✓ 2nd pinion — ✓ main wheel 137.7582 ✓ } Width of Face { 1st reduction wheel — ✓ main wheel 2.6.15" ✓ }
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 12 5/8" - 11 1/2" ✓ 1st reduction wheel — ✓ 2nd pinion — ✓ main wheel 19 3/8" ✓ }
 Pinion Shafts, diameter at bearings { External HP 4 3/4" LP 5 1/4" ✓ Internal " 1st 1 1/2" - 1 1/2" 2nd — } diameter at bottom of pinion teeth { HP TIP 5.8507" ✓ LP 6.9219" ✓ }
 Wheel Shafts, diameter at bearings { 1st — } Generator Shaft, diameter at bearings { 1st — } Propelling Motor Shaft, diameter at bearings { main 11-1/4" ✓ }
 Intermediate Shafts, diameter as per rule — as fitted — Thrust Shaft, diameter at collars as per rule — as fitted —
 Main Shaft, diameter as per rule — as fitted — Screw Shaft, diameter as per rule — as fitted — Is the { tube } shaft fitted with a continuous liner { screw }
 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 after 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 —
 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. —
 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 after end —
 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 —
 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 —
 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 fitted 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 —
 How are they protected —
 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 3) Total Heating Surface of Boilers 17895 4/4
Is Forced Draft fitted yes No. and Description of Boilers 3 W.T.B. Babcock Wilson Working Pressure 450 lb

Is a Report on Main Boilers now forwarded? yes
Is a Donkey Boiler fitted? no If so, is a report now forwarded? yes
an Auxiliary

Is the donkey boiler intended to be used for domestic purposes only? yes
Plans. Are approved plans forwarded herewith for Shafting Gearing Main Boilers yes Auxiliary Boilers yes Donkey Boilers yes
(If not state date of approval)

Superheaters yes General Pumping Arrangements yes Oil Fuel Burning Arrangements yes
SPARE GEAR.

Has the spare gear required by the Rules been supplied? yes
State the principal additional spare gear supplied: 1. HP & IP pinion, 16P pinion. Relief Valve Springs for each size, fitted bolts for flexible coupling sleeves; Stud & nuts for HP, IP & LP rotor bearings; Stud & nuts, fitted bolts & nuts, ordinary bolts & nuts for HP, IP & LP turbine horizontal joints; Stud & nuts for main gear wheel shaft bearings; collar studs & nuts for pinion bearings; Stud & nuts, fitted bolts & nuts, ordinary bolts & nuts for gear on main joints. Gauges, lifting gear & adjusting gear etc.

FOR THE PARSONS MARINE STEAM TURBINE CO., LIMITED.

D. Jones Brown
DIRECTOR

The foregoing is a correct description,

Dates of Survey while building: During progress of work in shops -- 1939 Aug 30. Sep 4. 13. 19. 27. 28. Oct 6. 19. 24. Nov 1. 10. 15. 29. Dec. 12. 1940 Jan 5. 17. 26.
During erection on board vessel -- Feb. 7. 14. 21. 29. Mar. 8. 13. 20. Apr. 2. 9. 15. 30. May 14. 22. June 5. 18. 21. 24. 28. July 2. Aug. 1. 5. 23. Sep. 9. 21. Oct 3. 9. 30. Nov. 6. 12. Dec. 11. 18. 26. 1941 Jan 17.
Total No. of visits 54.

Dates of Examination of principal parts—Casings 30.8.39 to 26.12.40 Rotors 6.10.39 to 26.12.40 Blading 21.2.40 to 26.12.40 Gearing 19.10.39 to 26.12.40

Wheel shaft 29.11.40 to 26.12.40 Thrust shaft yes Intermediate shafts yes Tube shaft yes Screw shaft yes
Propeller yes Stern tube yes Engine and boiler seatings yes Engine holding down bolts yes

Completion of fitting sea connections yes Completion of pumping arrangements yes Boilers fixed yes Engines tried under steam yes
Main boiler safety valves adjusted yes Thickness of adjusting washers yes

Rotor shaft, Material and tensile strength Steel 34/38 tons Identification Mark See list

Flexible Pinion Shaft, Material and tensile strength Nickel Steel 40 tons Identification Mark See list

Pinion shaft, Material and tensile strength Nickel Steel 40 tons Identification Mark See list

1st Reduction Wheel Shaft, Material and tensile strength Steel 31/35 tons Identification Mark See attached list

Wheel shaft, Material Steel 31/35 tons Identification Mark See attached list Thrust shaft, Material yes Identification Mark yes

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

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

Date of test yes Is an installation fitted for burning oil fuel no
Is the flash point of the oil to be used over 150°F. yes Have the requirements of the Rules for the use of oil as fuel been complied with yes

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

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

Is this machinery a duplicate of a previous case yes If so, state name of vessel SS AMRA. NWC Rpt 96890

General Remarks (State quality of workmanship, opinions as to class, &c.) These turbines & gearing have been constructed under special survey: the materials & workmanship are good. The units have been erected in the shop & subjected to steam trials on the test bed with satisfactory results, and afterwards dismantled, examined & found satisfactory and forwarded to Messrs Swan Hunter & Wiggin Richardson Ltd Wallsend to be installed in the vessel.

The above machinery has been satisfactorily installed in the vessel & tested under working conditions at Watt 25 March 1941.

The amount of Entry Fee ... £ See separate report. When applied for, 19.
Special ... £ See separate report. When received, 19.
Donkey Boiler Fee ... £ See separate report.
Travelling Expenses (if any) £ See separate report.

Committee's Minute Assigned See other Rpt NWC J.C. 99305

H. Forster & R. Cluffitt
Engineer Surveyor to Lloyd's Register of Shipping.



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