

REPORT ON STEAM TURBINE MACHINERY.

No. 99305

Received at London Office... MAR 28

4a.

Date of writing Report

19

When handed in at Local Office

26.3.41

19

Port of

NEWCASTLE-ON-TYNE

Survey held at

Newcastle on Tyne

Date, First Survey

30 Aug 1929

Last Survey

17 March 1941

Reg. Book.

on the T.S.S

"Aronda"

(Number of Visits 54)

Tons Gross 9031

Net 4463

built at Newcastle on Tyne

By whom built Swan Hunter & Wigham & Sons Ltd. Yard No. 1640

When built 1941

engines made at

By whom made Parsons Marine S. Turb. Co. Ltd. Engine No. 346

When made 1941

boilers made at Harland & Wolff Newcastle

By whom made Swan Hunter & Wigham & Sons Ltd. Boiler No. 1640

When made 1941

Shaft Horse Power at Full Power 9700

Owners British India S. N. Co. Ltd.

Port belonging to London

nom. Horse Power as per Rule 2156

Is Refrigerating Machinery fitted for cargo purposes yes

Is Electric Light fitted yes

made for which Vessel is intended because going

STEAM TURBINE ENGINES, &c.—Description of Engines Turbine 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 double reduction geared
connected to Alternating Current Generator — phase — periods per second — rated — Kilowatts — Volts at — revolutions per minute;
supplying power for driving — 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 7/8"	36 1/4"	3	1.53"	2'-11 1/8"	1
"	1.36"	2'-7 3/8"	1	1 1/4"	22 3/8"	7	3 3/8"	38 3/4"	2	2.31"	3'-1 1/8"	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 3/8"	10	Astern			7 1/2"	47"	4	3 3/4"	34"	2
"	1 9/8"	18 1/4"	10	Impulse			1.24"	2'-6 3/8"	1	3 3/4"	34"	2
"				1.88"	2'-7"	1				3 3/4"	34"	2
"				2.89"	2'-8 1/4"	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
2nd pinion 7.4985
1st reduction wheel —
main wheel 137.7582
1st reduction wheel —
main wheel 19 3/8"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 12 3/8" - 11 1/8"
2nd pinion —
main wheel 19 3/8"
Pinion Shafts, diameter at bearings { External 1 1/2" - 1 1/2"
Internal 1 1/2" - 1 1/2"
diameter at bottom of pinion teeth { 1st 5.8507"
2nd 6.9219"

Wheel Shafts, diameter at bearings { 1st —
main 15 1/2"
Generator Shaft, diameter at bearings { 1st —
main 11'-1 1/4"
Propelling Motor Shaft, diameter at bearings { 1st —
main 11'-1 1/4"

Intermediate Shafts, diameter { as per rule
as fitted
Thrust Shaft, diameter at collars { as per rule
as fitted

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 }

Liner 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 so, state type
Is an approved Oil Gland or other appliance fitted at the after end of the tube
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
tender

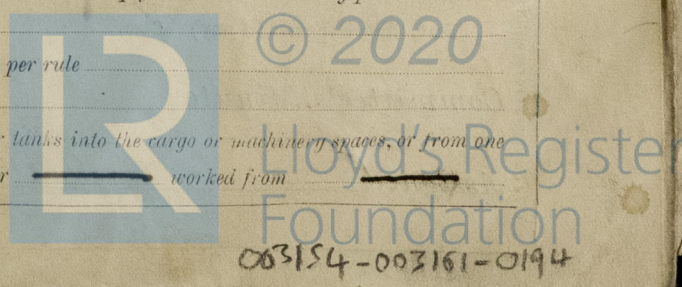
No. of Turbines fitted with astern wheels
Feed Pumps { No. and size
How driven
No. and size
How driven
Lubricating Oil Pumps, including Spare Pump, No. and size
two independent means arranged for circulating water through the Oil Cooler
Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge
Pumps, No. and size:—In Engine and Boiler Room
In Pump Room

Water Circulating Pump Direct Bilge Suctions, No. and size
Independent Power Pump Direct Suctions to the Engine Room
No. and size
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
all Sea Connections fitted direct on the skin of the ship
Are they fitted with Valves or Cocks

Are they fired 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 the pipes pass through the bunkers
Are the 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 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 & LP pinion, 1 LP pinion. Relief Valve Springs for each size, fitted bolts for flexible coupling sleeves; Studs & nuts for HP, IP & LP rotor bearings; Studs & nuts, fitted bolts & nuts, ordinary bolts & nuts for HP, IP & LP turbine horizontal joints; Studs & nuts for main gear wheel shaft bearings; collar studs & nuts for pinion bearings; Studs & nuts, fitted bolts & nuts, ordinary bolts & nuts for gear case main joints. Gauges, lifting gear & adjusting gear etc.

FOR THE PARSONS MARINE STEAM TURBINE CO., LIMITED.

D. L. Brown

The foregoing is a correct description,

DIRECTOR

Dates of Survey while building 1939
During progress of work in shops -- Aug 30. Sep 4. 13. 19. 27. 28. Oct 6. 19. 24. Nov 1. 10. 15. 29. Dec. 12. Jan 5. 17. 26. 1940
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. 1940
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 yes Identification Mark marked

Pinion shaft, Material and tensile strength Nickel Steel 40 tons Identification Mark forging by attach

1st Reduction Wheel Shaft, Material and tensile strength yes Identification Mark yes

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 755 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 & Wigham Richardson Ltd Wallsend to be installed in the vessel.

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

The amount of Entry Fee ... £
Special ...
Donkey Boiler Fee ... £
Travelling Expenses (if any) £

When applied for, 19.
When received, 19.

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

Committee's Minute

Assigned

See Other Rpt
NWC J.C. 99305



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Foundation