

REPORT ON STEAM TURBINE MACHINERY.

No. 105938

pt. 4a.

Date of writing Report 28 May 38 When handed in at Local Office 30 MAY 1938 Port of London
No. in Survey held at Bedford Date, First Survey 10 Jan 1938 Last Survey 27 May 1938
Reg. Book. on the TWIN SC. AMRA. (Number of Visits 10) Gross 8314 Tons Net 3993
Built at Newcastle By whom built Swan Hunter & Wigham Richardson Yard No. 1570 When built
Engines made at Bedford By whom made W. H. Allen, Lane & Co. Ltd. Engine No. 7/69022/1243 When made 1938
Boilers made at By whom made Boiler No. When made
Shaft Horse Power at Full Power 410 e.h.p. Owners British India Steamer Co. Ltd Port belonging to
Nom. Horse Power as per Rule Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted yes.
Trade for which Vessel is intended

STEAM TURBINE ENGINES, &c.—Description of Engines *Curtis Ratiau type.*

No. of Turbines Ahead ☒ Direct coupled, single reduction geared to *Synsco* propelling shafts. No. of primary pinions to each set of reduction gearing ☒
Astern ☒ double reduction geared
direct coupled to ☒ Alternating Current Generator ☒ phase ☒ periods per second ☒ Direct Current Generator rated 275 Kilowatts 220 Volts at 1000 revolutions per minute;
for supplying power for driving *Genarator* Propelling Motors, Type *D.C. open 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	MOV	7/16"	15 3/4"	1									
2ND	GUIDE	5/8"	14 5/8"	1									
3RD	MOV	7/8"	16 25/32"	1									
4TH	2nd	3/4"	16 7/8"	1									
5TH	3rd	3/4"	16 7/8"	1									
6TH	4th	3/4"	16 7/8"	1									
7TH	5th	3/4"	16 7/8"	1									
8TH													
9TH													
10TH													
11TH													
12TH													

Shaft Horse Power at each turbine { H.P. 410 I.P. 2 e.h.p. L.P. 2 e.h.p. } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 8000 I.P. 8000 L.P. 1000 } 1st reduction wheel main shaft

Rotor Shaft diameter at journals { H.P. 2 1/2" I.P. 2 1/2" L.P. 2 1/2" } Pitch Circle Diameter { 1st pinion 3.379 2nd pinion 3.379 } 1st reduction wheel main wheel 26.89 Width of Face { 1st reduction wheel 22 4 1/2" main wheel 22 4 1/2" }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 40 5/8" 10 5/8" 2nd pinion 40 5/8" 10 5/8" } 1st reduction wheel main wheel

Flexible Pinion Shafts, diameter { 1st 2 1/2" 2nd 2 1/2" } Pinion Shafts, diameter at bearings External 1st 2 1/2" 2nd 2 1/2" Internal 1st 2 1/2" 2nd 2 1/2" diameter at bottom of pinion teeth { 1st 3.135" 2nd 3.135" }

Wheel Shafts, diameter at bearings { TURB END 4" GEN END 4 1/2" } diameter at wheel shroud, { 1st 27.089" main 27.089" } Generator Shaft, diameter at bearings 4" Propelling Motor Shaft, diameter at bearings

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

Tube 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

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 If so, state type Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter Pitch No. of Blades State whether Movable 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 Pump 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

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 }
an Auxiliary Boiler fitted? ✓

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 ✓

SPARE GEAR.

Has the spare gear required by the Rules been supplied

State the principal additional spare gear supplied

The foregoing is a correct description,

L. Barber Turbine Set. W. H. Allen & Co. Manufacturer.

Dates of Survey while building
During progress of work in shops ---
During erection on board vessel ---
Total No. of visits 10

1938 Jan 10. March 11. April 1, 13, 20, 25. May 12, 17, 19, 27.

Dates of Examination of principal parts—Casings 13.4.38 Rotors 13.4.38 Blading 13.4.38 Gearing 25.4.38

Wheel shaft 13.4.38 Thrust shaft ✓ Intermediate shafts ✓ Tube shaft --- Screw shaft ---

Propeller ✓ Stern tube ✓ Engine and boiler seatings --- 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 ✓ Identification Mark ✓

Flexible Pinion Shaft, Material and tensile strength ✓ Identification Mark ✓

Pinion shaft, Material and tensile strength ✓ Identification Mark ✓

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

Wheel shaft, Material ✓ Identification Mark ✓ Thrust shaft, Material ✓ Identification Mark ✓

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 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 the use of oil as fuel been complied with ✓

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 ✓ If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.)
These turbo generators have been surveyed during construction, hydraulic pressure tests carried out on the steam belts & casings; so far as can be seen the materials are sound & free from defects. The workmanship is good & on completion full power & overload tests were witnessed on the bench with satisfactory results.

The sets have been dispatched to Newcastle for installing on board & when completed, will, in my opinion merit the notation of Electric Light.
These 3 Steam turbo Dynamos sets have been satisfactorily fitted on board the AMRA & tried under working conditions. Advatt Newcastle a type 9/11/38.

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

Special ... £ 18-18-0 : : 30 MAY 1938

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

Travelling Expenses (if any) £ 2 15 0 : : 4.7.1938

A. T. Jameth
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE 22 NOV 1938

Assigned

See FE machy rpl.



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Notes of diagrams, copies of certificates, Generator Test Sheet, &c.

ENCLOSURE