

REPORT ON STEAM TURBINE MACHINERY. No. 98640

Received at London Office JUL 13 1940

NEWCASTLE-ON-TYNE

Date of writing Report 10/7/40 When handed in at Local Office 10/7/40 Port of Newcastle on Tyne
No. in Survey held at Newcastle on Tyne Date, First Survey 29 Dec/1939 Last Survey 28/6/1940
Reg. Book. on the S.S. IKAUMA (Number of Visits 18)

Built at W. Hartlepool By whom built Wm Gray & Co. Yard No. 1106 When built
Engines made at do By whom made Cent. Mar. Eng. Works Engine No. 1106 When made
Boilers made at Newcastle on Tyne By whom made Swan Hunter & Wigham Richardson Ltd L.P. TURBINE No. 1644 When made 1940-6.
Shaft Horse Power at Full Power 1165. Owners British India Steam Navigation Co Ltd Port belonging to Jordan.
Nom. Horse Power as per Rule 194. Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted
Trade for which Vessel is intended Ocean going

STEAM TURBINE ENGINES, &c. — Description of Engines L.P. 2nd Stem Turbine with D/P Gearing & Hydr. Coupling
No. of Turbines Ahead One Direct coupled single reduction geared to One propelling shaft. No. of primary pinions to each set of reduction gearing One
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							61.4	822.4	One			
2ND							79.	858.	one			
3RD							97.	894.	one			
4TH							115.	930.	one			
5TH							137.	974.	one			
6TH							160.	1020.	one			
7TH							185.	1070.	one			
8TH												
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at each turbine { H.P. — I.P. — L.P. 1165 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. — I.P. — L.P. 3677. } 1st reduction wheel 466. main shaft 81.
Rotor Shaft diameter at journals { H.P. — I.P. — L.P. 170 MM } Pitch Circle Diameter { 1st pinion 206.364 MM. 1st reduction wheel 1629.1687 MM. Width of Face { 1st reduction wheel 280 MM. main wheel 580 MM. }
Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 255 MM. 1st reduction wheel 295 MM. 1st reduction wheel 370 MM. For 500 MM. 2nd pinion 440 MM. main wheel 550 MM. }
Flexible Pinion Shafts, diameter { 1st 115 MM. 2nd — } Pinion Shafts, diameter at bearings External 1st 150 MM. 2nd 350 MM. diameter at bottom of pinion teeth { 1st 191.716 MM. 2nd 357.0769 MM. }
Wheel Shafts, diameter at bearings { 1st 250 MM. 2nd 260 MM. } diameter at wheel shroud, { 1st 1550 MM. 2nd 2015 MM. } Generator Shaft, diameter at bearings — Propelling Motor Shaft, diameter at bearings —
Intermediate Shafts, diameter as per rule 13.59 with Recip + LP Turb. as fitted 13 with Recip Eng. alone Thrust Shaft, diameter at collars as per rule 13.65 as fitted 365 MM = 14.37"

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 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
Ballast Pumps, No. and size Lubricating Oil Pumps, including Spare Pump, No. and size Two 9 x 8 x 18 Stroke
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 Control over

If not, state whether, and when, one will be sent? Is a Report also sent in the Hull of the Ship? Note: The words within the red circle should be deleted.

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?

Is the donkey boiler intended to be used for domestic purposes only

Plans. Are approved plans forwarded herewith for Shafting 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

1 Bearing of each axle fitted
1 set of Thrust Pads for each Thrust Bearing
1 spring & 1 set washers for Emergency Governor, etc.

BWAN, HUNTER, & WIGHAM RICHARDSON, LTD.

G. J. Sweeney DIRECTOR

Manufacturer.

The foregoing is a correct description,

Dates of Survey while building 1939 Dec 29 1940 Feb 22, 27 Mar 5, 10, 13, 19, 25 May 7, 16, 17, 20, 21, 24 June 4, 14, 27, 28. Total No. of visits 18.

Dates of Examination of principal parts—Casings 16/5/40 Rotors 11/3/40 Blading 28/6/40 Gearing 24/5/40

Wheel shaft 24/5/40 Thrust shaft 24/5/40 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 fired LPTURBINE ON TEST BED. Engine tried under steam (NO LOAD) 27/6/40

Main boiler safety valves adjusted Thickness of adjusting washers

Rotor shaft, Material and tensile strength OH. 7 Steel 36.2 tons 44.2 tons (Y.P. 32 tons) Identification Mark 8791 HAI. 488.

Flexible Pinion Shaft, Material and tensile strength Forged Nickel Steel 43.75 tons (Y.P. 31.69 min.) Identification Mark 8791 HAI. L. 98

Pinion shaft, Material and tensile strength ditto Identification Mark 25/70 T.S. D.R.W.

1st Reduction Wheel Shaft, Material and tensile strength OH.F.S. 29.4 tons Identification Mark 8791 HAI. 481

Wheel shaft, Material OH.F.Steel Identification Mark 8791 HAI. 488 Thrust shaft, Material OH.F.S. Identification Mark 8791 HAI. 490.

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 Yes If so, state name of vessel Wm Gray's Yard No

General Remarks (State quality of workmanship, opinions as to class, &c.) This Exhaust Steam Turbine & D/R bearing has been constructed under special survey in accordance with the Society's Rules & approved plan, and the materials and workmanship are good. The Turbine was satisfactorily tested under steam (no load) in the works.

The machinery has been sent to W. Hartlepool for installation

This turbine installation has been satisfactorily fitted on board and tried under working conditions

The amount of Entry Fee ... £ ... Special ... £ 19-8/- Donkey Boiler Fee ... £ Travelling Expenses (if any) £

When applied for, 11 JUL 1940

When received, 22nd July 1940

Arthur W. Oxford, West Hartlepool, A. Watt, Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

See Spl. J.E. 1812/1



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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.)