

AUG -5 1940

REPORT ON STEAM TURBINE MACHINERY. No. 98226

pt. 4a.

Received at London Office 4/2/40
NEWCASTLE-ON-TYNE

Date of writing Report 5/2/40 When handed in at Local Office 5/2/40 Port of Newcastle-on-Tyne
No. in Survey held at Newcastle on Tyne Date, First Survey 13 Oct 39 Last Survey 2 Feb 1940
Reg. Book. (Number of Visits 14)

on the steel screw steamer **"ITOLA"** Tons } Gross }
 } Net }
Built at West Hartlepool By whom built Wm Gray & Co Yard No. 1102 When built 1940-
Engines made at ditto By whom made Central Mar. Eng. Wks Engine No. 1102 When made "
Boilers made at Newcastle on Tyne By whom made Swan, Hunter & Wigham Richardson L.P. Turbine No. 1634 When made 1940-
Shaft Horse Power at Full Power 1165 Owners British India Steam Nav. Co Port belonging to London
Nom. Horse Power as per Rule 194 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes
Trade for which Vessel is intended Ocean going

TEAM TURBINE ENGINES, &c.—Description of Engines 3 Cyl. Triple Exp. Recip + LP Turb. with D/P bearing and hydr. coupling.

No. of Turbines Ahead One Direct coupled, single reduction geared to One propelling shafts. No. of primary pinions to each set of reduction gearing One
Asteron double reduction geared }
direct coupled to Alternating Current Generator phase periods per second } rated Kilowatts Volts at revolutions per minute;
Direct Current Generator }
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. <i>m/m.</i>	DIAMETER AT TIP. <i>m/m.</i>	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION	/	/	/	/	/	/	61.	822.	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 turbine Exh. Stm. H.P. L.P. 1165. Revolutions per minute, at full power, of each Turbine Shaft Exh. Stm. H.P. L.P. 3677. 1st reduction wheel 466. main shaft 81.

Rotor Shaft diameter at journals H.P. L.P. 170 m.m. Pitch Circle Diameter 1st pinion 206.3614 1st reduction wheel 1629.1687 2nd pinion 378.6211 main wheel 2115.0556 1st reduction wheel 280 m.m. main wheel 580 m.m.

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 255 m.m. 2nd pinion 440 m.m. 1st reduction wheel 370 m.m. main wheel 550 m.m.

Flexible Pinion Shafts, diameter 1st 115 m.m. 2nd Pinion Shafts, diameter at bearings External 1st 150 m.m. 2nd 285 m.m. Internal 1st 1550 m.m. Generator Shaft, diameter at bearings main 2015 m.m. Propelling Motor Shaft, diameter at bearings main 2015 m.m.

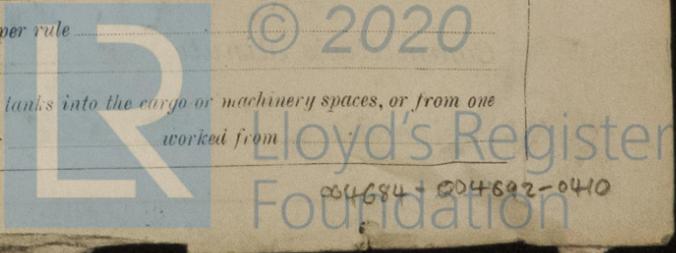
Wheel Shafts, diameter at bearings main 500 m.m. as per rule 13.59" with Recip. Eng. & L.P. Turbine comb. (13" with Recip. Eng. alone). Thrust Shaft, diameter at collars as per rule 13.65 as fitted 365 m.m. = 14.37"

Intermediate Shafts, diameter as per rule as fitted Screw Shaft, diameter as per rule as fitted Is the tube shaft fitted with a continuous liner? Yes

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? Yes

If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner? Yes
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? Yes
If two liners are fitted, is the shaft lapped or protected between the liners? Yes Is an approved Oil Gland or other appliance fitted at the after end of the tube? Yes

Propeller, diameter Pitch No. of Blades State whether Moveable Total Developed Surface square feet. Can the H.P. or I.P. Turbine exhaust direct to the L.P. Turbine? Yes
If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine? Yes
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 Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room In Holds, &c. Independent Power Pump Direct Suctions to the Engine Room
Main Water Circulating Pump Direct Bilge Suctions, No. and size Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-bones? Yes
Bilges, No. and size 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? Yes
Are all Sea Connections fitted direct on the skin of the ship? Yes Are they fitted with Valves or Cocks? Yes
Are they fired sufficiently high on the ship's side to be seen without lifting the stokehold plates? Yes Are the Overboard Discharges above or below the deep water line? Yes
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel? Yes Are the Blow Off Cocks fitted with a spigot and brass covering plate? Yes
What pipes pass through the bunkers? Yes How are they protected? Yes
What pipes pass through the deep tanks? Yes Have they been tested as per rule? Yes
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times? Yes
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? Yes Is the Shaft Tunnel watertight? Yes Is it fitted with a watertight door? Yes



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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 Thrust 3/5/39 Main Boilers Auxiliary Boilers Donkey Boilers
 (If not state date of approval) _____
 Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements

SPARE GEAR.

Has the spare gear required by the Rules been supplied *Yes*
 State the principal additional spare gear supplied:
 1. Bearing for each prop fitted.
 1 set Thrust pads for each Thrust Bearing.
 1 Spring & 1 set of washers for Emergency Governor, etc.

FOR
SWAN, HUNTER, & WIGHAM RICHARDSON, LTD. Manufacturer.

The foregoing is a correct description,

A. J. Dwyer
 DIRECTOR.

Dates of Survey while building	During progress of work in shops --	1939 Oct. 13, 26, Nov. 10, 13, 15, 16, Dec. 21, 27.	1940 Jan. 3, 10, 11, 19.
	During erection on board vessel --	Feb. 1, 2.	
	Total No. of visits	14.	

Dates of Examination of principal parts—	Casing	21/12/39	Rotor	10/11/39.	Blading	19/1/40	Gearing	19/1/40	
Wheel shaft	19/1/40	Thrust shaft	19/1/40	Intermediate shafts	<input checked="" type="checkbox"/>	Tube shaft	<input checked="" type="checkbox"/>	Screw shaft	<input checked="" type="checkbox"/>
Propeller	<input checked="" type="checkbox"/>	Stern tube	<input checked="" type="checkbox"/>	Engine and boiler seatings	<input checked="" type="checkbox"/>	Engine holding down bolts	<input checked="" type="checkbox"/>		
Completion of fitting sea connections	<input checked="" type="checkbox"/>	Completion of pumping arrangements	<input checked="" type="checkbox"/>	Boilers fixed	<input checked="" type="checkbox"/>	L.P. Turbine	<input checked="" type="checkbox"/>	in Works.	1-2-40
Main boiler safety valves adjusted	<input checked="" type="checkbox"/>	Thickness of adjusting washers	<input checked="" type="checkbox"/>						

Rotor shaft, Material and tensile strength	Forged Steel	36.4 tons (sg in.)	Identification Mark	8788 HAI. 364. QN			
Flexible Pinion Shaft, Material and tensile strength	Nickel Steel	42.5 tons (Y.P. 26 tons)	Identification Mark	8788 HAI. L. 95. QN			
Pinion shaft, Material and tensile strength	Nickel Steel	44.4 tons (Y.P. 27.2 tons)	Identification Mark	59148/B2. CSP. QN			
1st Reduction Wheel Shaft, Material and tensile strength	F. Steel	29.4 tons	Identification Mark	8788 HAI. 357. QN			
Wheel shaft, Material	F. Steel	Identification Mark	8788 HAI. 359. QN	Thrust shaft, Material	F. Steel	Identification Mark	8788 HAI. 366. QN
Intermediate shafts, Material	<input checked="" type="checkbox"/>	Identification Marks	<input checked="" type="checkbox"/>	Tube shaft, Material	<input checked="" type="checkbox"/>	Identification Marks	<input checked="" type="checkbox"/>
Screw shaft, Material	<input checked="" type="checkbox"/>	Identification Marks	<input checked="" type="checkbox"/>	Steam Pipes, Material	<input checked="" type="checkbox"/>	Test pressure	<input checked="" type="checkbox"/>

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 _____

General Remarks (State quality of workmanship, opinions as to class, &c.)
This Exhaust Steam Turbine & D/R Gearing have 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 installing on board.
This turbine installation has now been satisfactorily fitted on board and tried under working conditions with satisfactory results.

The amount of Entry Fee ... £ : _____
 Special ... £ 19 : 8 : _____
 Donkey Boiler Fee ... £ : _____
 Travelling Expenses (if any) £ : _____
 When applied for, West Hartlepool. *A Watt.*
 -5 FEB 1940
 When received, _____
 21-2-1940
 16 AUG 1940

Committee's Minute
 Assigned *See Spl. J.C. 18061*

Certificate (if required) to be sent to Newcastle-on-Tyne

