

REPORT ON STEAM TURBINE MACHINERY. No. 62783

Rpt. 4a.

Received at London Office.....

Date of writing Report 19 When handed in at Local Office 9. 9. 40 Port of GLASGOW
 No. in Survey held at Glasgow Date, First Survey 1940 Date, Last Survey 2nd Sept. 1940
 Reg. Book. 9, 21 (Number of Visits 9) Gross 6827.83
 on the S/S "EMPIRE LIGHT" Tons Net

Built at Glasgow By whom built Banlay & Co. Ltd. Yard No. 677 When built 1940
 Engines made at do. By whom made do. Engine No. 72 When made 1940
 Boilers made at do. By whom made do. Boiler No. 677 When made 1940
 Shaft Horse Power at Full Power 990 Owners Ministry of Shipping Port belonging to Glasgow
 Nom. Horse Power as per Rule 165 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes
 Trade for which Vessel is intended

STEAM TURBINE ENGINES, &c.—Description of Engines One L.P. turbine with DR gearing + Hyd. Coupling.

No. of Turbines One Direct coupled, single reduction geared to One propelling shafts. No. of primary pinions to each set of reduction gearing One
 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							66 mfm	832 mfm ONE				
2ND							84	868	u			
3RD							103	906	u			
4TH							122	944	u			
5TH							142	984	u			
6TH							163	1026	u			
7TH							185	1070	u			
8TH												
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at each turbine { H.P. — I.P. — L.P. 990 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. — I.P. — L.P. 3730 } 1st reduction wheel 514 main shaft 90

Rotor Shaft diameter at journals { H.P. — I.P. — L.P. 125 mfm } Pitch Circle Diameter { 1st pinion 8.3555" 2nd pinion 14.2834" } 1st reduction wheel 60.6309" main wheel 79.1298" Face { 1st reduction wheel 2.60 main wheel 6.00 FORD. AFT FORD. AFT

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 225 mfm 2nd pinion 422.5 F+A } 1st reduction wheel 360 mfm main wheel 525 mfm F+A

TRANSMISSION Flexible Pinion Shafts, diameter { 1st 115 mfm 2nd — } Pinion Shafts, diameter at bearings { External 1st 125 mfm 2nd 320 mfm } diameter at bottom of pinion teeth { 1st 7.7789" 2nd 13.511" }

Wheel Shafts, diameter at bearings { 1st 230 mfm 2nd 250 mfm } diameter at wheel shroud, { 1st 1460 mfm } Generator Shaft, diameter at bearings — Propelling Motor Shaft, diameter at bearings —

Intermediate Shafts, diameter { as per rule — as fitted — } Thrust Shaft, diameter at collars { as per rule — as fitted 362 mfm } 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.

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 —

If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine { } No. and size { } How driven { }

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 2 @ 8" x 9" x 18" 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-boxes. —

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. — Are they fitted with Valves or Cocks. —

Are all Sea Connections fitted direct on the skin of the ship — Are the Overboard Discharges above or below the deep water line —

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates — Are the Blow Off Cocks fitted with a spigot and brass covering plate —

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel — How are they protected —

What pipes pass through the bunkers — Have they been tested as per rule —

What pipes pass through the deep tanks — 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 } Boiler fitted? _____ If so, is a report now forwarded? _____
 { an Auxiliary }

Plans. Are approved plans forwarded herewith for Shafting _____ Main Boilers _____ Auxiliary Boilers _____ Donkey Boilers _____
 (If not state date of approval)

Superheaters _____ General Pumping Arrangements _____ Oil Fuel Burning Arrangements _____

Spare Gear. State the articles supplied:— *See attached list.*



FOR BAROLAY, CURLE & CO., LTD

Alexander Macneil.

Chief Draughtsman

Manufacturer.

The foregoing is a correct description,

Dates of Survey { During progress of work in shops -- } 1940 *Apr. 12, June 19, July 16, 17, 23, 26, 30*
 { During erection on board vessel --- } *Aug. 1, Sept. 2*
 building { Total No. of visits } *9*

Dates of Examination of principal parts—Casings *12-4-40* Rotors *19-6-40* Blading *16-7-40* Gearing *17-7-40*

Wheel shaft *19-6-40* Thrust shaft *19-6-40* Intermediate shafts — Tube shaft — Screw shaft —

Propeller ✓ Stern tube — Engine and boiler seatings — Engine holding down bolts —

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 *SM. steel 37.2 tons* Identification Mark *167 ERH 3-5-40*

~~Flexible Pinion Shaft~~, Material and tensile strength *SM. steel 32.2 tons* Identification Mark *657 LT 16-1-40*

Pinion shaft, Material and tensile strength *SM steel 48.4 tons* Identification Mark *767 ERH 5-3-40*

1st Reduction Wheel Shaft, Material and tensile strength *SM. steel 30.2 tons* Identification Mark *730 LT. ATB 17-6-40*

Wheel shaft, Material *SM. steel* Identification Mark *169 WTM* Thrust shaft, Material *SM. steel* Identification Mark *716 CSP*
ATB 17-6-40

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 carrying and burning oil fuel been complied with —

Is this machinery a duplicate of a previous case *Yes* If so, state name of vessel *"ITRIA" GLS. R. No. 62382*

General Remarks (State quality of workmanship, opinions as to class, &c. *This machinery has been built under special survey in accordance with the Rules and approved plans, and the materials and workmanship are good. It has been satisfactorily installed in the vessel, tested under full load and found efficient.*

Glasgow

GB
9/19/40

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

A. J. Brown
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 10 SEP 1940** *LM*

Assigned **SEE ACCOMPANYING MACHINERY REPORT.**



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