

REPORT ON STEAM TURBINE MACHINERY. No. 60190

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Date of writing Report 19 When handed in at Local Office 20:9:38 Port of Glasgow
 No. in Survey held at Glasgow Date, First Survey 4th Mar 1937 Last Survey 11th Sept 1938
 Reg. Book. 11676 on the "Jun. H. Leanton" (Number of Visits 129)
 Tons Gross 15784 Net 9255
 Built at Glasgow By whom built Messrs. Stephen & Sons Ltd Yard No. 554 When built 1938
 Engines made at do By whom made do Engine No. 554 When made 1938
 Boilers made at do By whom made do Boiler No. 554 When made 1938
 Shaft Horse Power at Full Power 18500 Owners P.O. Steam Navigation Co. Ltd. Port belonging to
 Nom. Horse Power as per Rule 3898 M.N. = 4642 ¹⁹⁴⁷ ~~reinstatement of class~~ Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted
 Trade for which Vessel is intended Foreign

STEAM TURBINE ENGINES, &c.—Description of Engines Steam Turbines Single reduction gearing.

No. of Turbines Ahead 6 Direct coupled, single reduction geared } to 2 propelling shafts. No. of primary pinions to each set of reduction gearing 1.
 Astern 4 } 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	0.6"	3'-3.355"	ONE.	1 1/8"	2'-2 1/2"	7.	2 1/4"	4'-2 1/2"	3.	0.9"	3'-3.4"	ONE.
2ND "	1.5"	3'-4.495"	ONE.	1 1/2"	2'-3"	7.	3"	4'-4"	3.	2.0"	3'-4.745"	ONE.
3RD "	7/8"	1'-9 1/2"	14.	2 1/16"	2'-3 3/8"	6.	3 1/16"	4'-5 1/8"	2.	4.0"	3'-7"	ONE.
4TH "	1 1/2"	1'-10 1/2"	14.	2 3/8"	2'-5 1/4"	6.	4 1/16"	4'-6 3/8"	2.			
5TH "	1 3/16"	1'-11 1/8"	14.	3 3/8"	2'-7 1/2"	6.	5 3/8"	4'-9 1/2"	2.	1 3/8"	4'-11 1/8"	ONE.
6TH "							8"	5'-2"	2.	2 1/16"	5'-0 1/16"	ONE.
7TH "							9 1/2"	5'-4 1/2"	ONE.			
8TH "							10 3/4"	5'-7 1/2"	ONE.	2 3/8"	3'-7 1/2"	2.
9TH "							10 3/4"	5'-7 1/2"	ONE.	3 3/8"	3'-9 3/4"	2.
10TH "							10 3/4"	5'-7 1/2"	ONE.	5 1/2"	4'-1"	2.
11TH "							10 3/4"	5'-7 1/2"	ONE.	5 1/2"	4'-1"	2.
12TH "										5 1/2"	4'-1"	2.

Shaft Horse Power at each turbine { H.P. 3006 I.P. 2960 L.P. 3290 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 2347 I.P. 2147 L.P. 1707 }
 Rotor Shaft diameter at journals { H.P. 6" I.P. 6" L.P. 9 1/2" } Pitch Circle Diameter { HP 8.54" I.P. 11.78" LP }
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 15" 2nd pinion - } 1st reduction wheel - main shaft 125" main wheel 160.9" main wheel 35 1/2"

Flexible Pinion Shafts, diameter { 1st - 2nd - } Pinion Shafts, diameter at bearings External { HP 6 1/2" LP 7 1/2" } Internal { MP 6 1/2" } diameter at bottom of pinion teeth { HP 8.4339" LP 11.6376" }
 Wheel Shafts, diameter at bearings { 1st - 2nd - } Generator Shaft, diameter at bearings - Propelling Motor Shaft, diameter at bearings -
 Intermediate Shafts, diameter as per rule 17.60" as fitted 17" Thrust Shaft, diameter at collars as per rule 17.60" as fitted 19" Tube Shaft, diameter as per rule - as fitted -
 Screw Shaft, diameter as per rule 18.24" as fitted 19 1/4" Is the tube screw shaft fitted with a continuous liner Bronze Liners, thickness in way of bushes as per rule .86" as fitted 1"

Thickness between bushes as per rule 3.3" as fitted 3/4" 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 Length of Bearing in Stern Bush next to and supporting propeller 6'-6"
 Propeller, diameter 17'-9" Pitch 17.4 ft. No. of Blades 3 State whether Moveable Total Developed Surface 95. 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 4 Feed Pumps { No. and size Main 2 D 5" Auxiliary 2 D 3 1/2" How driven Steam turbine (3); Elec Drive (1) }

Pumps connected to the Main Bilge Line { No. and size 4 D 6" + 1 D 2 1/2" How driven Elec Motor } Lubricating Oil Pumps, including Spare Pump, No. and size 2 D 6"
 Ballast Pumps, No. and size 1 D 6" ^{interchangeable with bilge pump} 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 3 D 4" 4 D 3 1/2" 2 D 3" + 2 D 1 1/2" In Holds, &c. No. 1-1 D 3" No. 2-2 D 3 1/2" No. 3-1 D 2 1/2" No. 4-1 D 3 1/2" No. 5-1 D 3" No. 6-2 D 3" 8 Suctions 5 D 2 1/2"

Main Water Circulating Pump Direct Bilge Suctions, No. and size 2 D 16" Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 3 D 6" 1 D 6" to emergency pump ^{3" S.P.} 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 Both
 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 Below
 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 Bridge



BOILERS, &c.—(Letter for record *S*) Total Heating Surface of Boilers *31800* ^{465 lbs}
 Is Forced Draft fitted *Y/no* No. and Description of Boilers *4 James Water tubs* Working Pressure *435 lbs at 9*
 Is a Report on Main Boilers now forwarded? *Y/no* If so, is a report now forwarded? *-*
 Is *a Donkey* Boiler fitted? *No* If so, is a report now forwarded? *-*
 Plans. Are approved plans forwarded herewith for Shafting *24.11.36* Main Boilers *Y/no* Auxiliary Boilers *-* Donkey Boilers *-*
 (If not state date of approval)
 Superheaters *Y/no* General Pumping Arrangements *Y/no* Oil Fuel Burning Arrangements *Y/no*
 Spare Gear. State the articles supplied:—

As per list attached.

FOR
ALEXANDER STEPHEN & SONS LIMITED

Alex MacLellan Director Manufacturer.

The foregoing is a correct description,

Dates of Survey while building
 During progress of work in shops -- 1937 Mar: 4-15-17 May: 5 June: 9-18-28 July: 6-13-30 Aug: 4-30 Sep: 6-13-17-21 Oct: 1-4-11-18-26-29
 During erection on board vessel --- Nov: 2-5-8-9-13-23-25-30 Dec: 6-10-16-20-22-28 (1938) Jan: 6-11-14-17-20-21-24-28 Feb: 1-4-7-8-10-14-15-16-18-21-23
 Total No. of visits *129*

Dates of Examination of principal parts—Casings *5-4-38* Rotors *8-3-38* Blading *23-5-38* Gearing *30-5-38*

Wheel shaft *8-3-38* Thrust shaft *2-3-38* Intermediate shafts *7-6-38* Tube shaft *-* Screw shaft *2-3-38*

Propeller *29-9-38* Stern tube *4-2-38* Engine and boiler seatings *20-1-38* Engine holding down bolts *13-4-38*

Completion of pumping arrangements *11-9-38* Boilers fixed *5-5-38* Engines tried under steam *11-9-38*

Main boiler safety valves adjusted *1-9-38* Thickness of adjusting washers *DIF. SAT. 10 Sup F 1/2 AS 3 PIA SAT 1/2 Sup F 1/2 AS 3*

Rotor shaft, Material and tensile strength *S. In Engst Steel 34-36 Tons* Identification Mark *4394/S. 4750 - Fol.*

Flexible Pinion Shaft, Material and tensile strength *-* Identification Mark *-*

Pinion shaft, Material and tensile strength *Nickel Steel 46.6-50.4 Tons* Identification Mark *4293-4291-26*

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

Wheel shaft, Material *S. In Engst Steel* Identification Mark *4267-8 26* Thrust shaft, Material *S. In Engst Steel* Identification Mark *363807-HAI*

Intermediate shafts, Material *do.* Identification Marks *3621-3634-HAI* Tube shaft, Material *-* Identification Marks *-*

Screw shaft, Material *do.* Identification Marks *3635, 647 HAI* Steam Pipes, Material *Steel* Test pressure *1305 lb*

Date of test *27.7.38* Is an installation fitted for burning oil fuel *Y/no*

Is the flash point of the oil to be used over 150°F. *Y/no* Have the requirements of the Rules for carrying and burning oil fuel been complied with *Y/no*

Is this machinery a duplicate of a previous case *No* If so, state name of vessel *-*

General Remarks (State quality of workmanship, opinions as to class, &c.)

The Machinery of this vessel has been built under special Survey and in accordance with the Rules. The materials and workmanship are good. It has been efficiently secured in position and adjustments built under full working conditions with satisfactory results.

The Machinery of this vessel is eligible, in my opinion, to be entered in the Register Book with notation of +Lmc 9.38.

The amount of Entry Fee ... £ *6* : - :
 Special ... £ *197* : *9* :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : :
 When applied for, *20/9/38*
 When received, *19/11 1938*

Committee's Minute *GLASGOW 20 SEP 1938*

Assigned *+ Lmc 9.38 Y.S.*
Fitted for oil fuel 9.38 Y.P. above 1500F

