

REPORT ON STEAM TURBINE MACHINERY.

No. 10,392

Received at London Office 16 JUN 1930.

Date of writing Report 19 When handed in at Local Office 14th June 1930 Port of Belfast.
 No. in Survey held at Belfast. Date, First Survey 3rd Dec. 1929. Last Survey 10th June 1930.
 Reg. Book. 26171. on the *Stal Sc. "Darien" Ex "LA MAREA"*. (Number of Visits 36)
 Built at *Birkenhead* By whom built *Hammett, Laird & Co Ltd.* Yard No. When built 1924.
 Engines made at *Rugby* By whom made *British Thomson Houston Co.* Engine No. *R.1488* When made 1930.
 Boilers made at *Renfrew* By whom made *Babcock & Wilcox Ltd.* Boiler No. *1251* When made 1930.
 Shaft Horse Power at Full Power 3300. Owners *Balboa Shpgg Co Inc (United Fruit Co) Mgs.* Port belonging to *Panama*.
 Nom. Horse Power as per Rule 839. Is Refrigerating Machinery fitted for cargo purposes *Yes*. Is Electric Light fitted *Yes*.
 Trade for which Vessel is intended *Ocean-going*.

STEAM TURBINE ENGINES, &c.—Description of Engines See London Report No 94979.

No. of Turbines Ahead ☒ Direct coupled, single reduction geared } to ☒ 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 { 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												
2ND												
3RD												
4TH												
5TH												
6TH												
7TH												
8TH												
9TH												
10TH												
11TH												
12TH												

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

Rotor Shaft diameter at journals { H.P. ☒ I.P. ☒ L.P. ☒ } Pitch Circle { 1st pinion ☒ 1st reduction wheel ☒ 2nd pinion ☒ main wheel ☒ } Width of Face { 1st reduction wheel ☒ main wheel ☒

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion ☒ 1st reduction wheel ☒ 2nd pinion ☒ main wheel ☒

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

Wheel Shafts, diameter at bearings { 1st ☒ main ☒ } diameter at wheel shroud, { 1st ☒ main ☒ } Generator Shaft, diameter at bearings ☒ Propelling Motor Shaft, diameter at bearings ☒

Intermediate Shafts, diameter as per rule 11.91" as fitted 12.5" Thrust Shaft, diameter at collars as per rule 12.505" as fitted 13.4" Tube Shaft, diameter as per rule ☒ as fitted ☒

Screw Shaft, diameter as per rule 13.16" as fitted 13.8" Is the ☒ 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 ☒ shaft ☒ Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter 15' Pitch 12'-9" No. of Blades 3 State whether Moveable ☒ Total Developed Surface 68 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 1-2 Inbs. Centrifugal, 1 pair 8" x 12" x 22" 1-6 x 9 1/2" x 18" How driven Steam-driven also 1 pair 4" x 6" x 7" for donkey pumps.

Pumps connected to the Main Bilge Line { No. and size Three 2 @ 65 tons/hr 1 @ 25 tons/hr (also 2 @ 25 tons/hr with bilge pump) How driven Electric.

Ballast Pumps, No. and size One. Lubricating Oil Pumps, including Spare Pump, No. and size 2 @ 10 tons/hr @ 70 lbs/sq in

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 Two 3" in E.R. (2-3" to Oily Bilge & Oil Transfer Pumps) Two 3" in B.R.

In Holds, &c. Main Water Circulating Pump Direct Bilge Suctions, No. and size One 12" Independent Power Pump Direct Suctions to the Engine Room

Bilges, No. and size One 6" One 4 1/2" 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 above.

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 (elec).

BOILERS, &c.—(Letter for record S) Total Heating Surface of Boilers 8660. Superheaters 2352.

Is Forced Draft fitted *yes*. No. and Description of Boilers *Two, Water Tube. (Babcock & Wilcox)* Working Pressure *400*.

Is a Report on Main Boilers now forwarded? *yes*.

Is *a Donkey* Boiler fitted? *yes (not new)* If so, is a report now forwarded? *yes (Survey Report)*.

Plans. Are approved plans forwarded herewith for Shipping (If not state date of approval)

Main Boilers

Auxiliary Boilers

Donkey Boiler

Original boiler used Report herewith.

Superheaters

General Pumping Arrangements *yes*.

Oil Fuel Burning Arrangements

Spare Gear. State the articles supplied:— 1-Thrust Bearing: 1-Governor & turbine bearing, 1-Centre turbine bearing: 1-Centre alternator bearing, 1-alternator end bearing & friction collar: 18 Coupling bolts: 1 set shaft packing: For alternator:— 1 pole of rotor winding: 2 brush holders: 12 brush springs: 12 slip ring brushes: 16 Stator coils: For Propelling motor:— 2 bearing liners: 2 Rotor field coils, 12 brush springs: 3 Stator holders: 2 sets of springs.

1-Tail shaft: 3 propeller blades. 1 set Feed Pump valves: 1 set bilge pump valves: Impeller & spindles for all Centrifugal pumps Assorted Bolts, nuts, bars & steel plates.

24 Superheater tubes: 34 inclined tubes (large) 118 inclined tubes (small) 8-return tubes: 16 safety valve springs

6 feed check valves: 2 feed regulation liners: 2 feed floats & levers: 200 main Condenser tubes: 50 Amc. Condenser tubes

50 oil cooler tubes: 4 tubes for donkey boiler.

PRO WORKMAN CLARK (1928) LIMITED,

J. Cunningham

Secretary.

Manufacturer.

The foregoing is a correct description.

Dates of Survey while building *During progress of work in shops: 1929 Dec 3. 1930 Jan 1, 27 Feb 5, 12, 17, 25 Mar 2, 3, 6, 17, 21, 24, 27, 28 Apr 4, 7, 9, 13, 28, 29 May 7, 8*
During erection on board vessel: 9, 13, 16, 19, 21, 22, 27, 28, 31 June 3, 4, 9, 10.
Total No. of visits *36*.

Dates of Examination of principal parts—Casings

Also see London Rept No 94949.

Gearing

Wheel shaft

Thrust shaft

5/2/30.

Intermediate shafts

3/3/30.

Tube shaft

Screw shaft

3/3/30.

Propeller

Stern tube

1/1/30

Engine and boiler seatings

27/5/30.

Engine holding down bolts

27/5/30.

Completion of pumping arrangements

10. 6. 30

Boilers fired

13/5/30.

Engines tried under steam

3. 6. 30

Main boiler safety valves adjusted

22/5/30.

Thickness of adjusting washers

FOR P 5/8" SUP 5/8" AFT P 7/16" S 5/8" SUP 1/2"

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

yes.

Is the flash point of the oil to be used over 150°F.

yes.

Have the requirements of the Rules for carrying and burning oil fuel been complied with

yes.

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 new Turbo. Electric machinery and water tube boilers now fitted in this vessel have been constructed under special survey and to the Society's requirements. They have been efficiently installed and fastened on board. The safety valves are fitted with easing gear and have been adjusted under steam. The installation was tried out at moored and sea trials with satisfactory results.

The vessel is now eligible, in our opinion, for notation in the Society's Register book - i.e. NE & B. 6.30: i.e. L.M.C. 6.30 D.S. 6.30. C.L. D.G. One turbine connected to electric motor & screw shaft N.H.P. 839. 2 water tube boilers H.S. 8660 F.D. main boiler pressure 400 lbs. Donkey boiler pressure 140 lbs. Fitted for oil fuel 6.30 F.P. above 150°F.

The amount of Entry Fee

£

When applied for,

Special

£

When received,

Donkey Boiler Fee

£

Travelling Expenses (if any)

£

When received,

Committee's Minute

FRI. 11 JUL 1930

Assigned

See ypt-9 attached

John K. Williams, J.D. Philston.
Engineer Surveyor to Lloyd's Register of Shipping.



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Foundation