

## REPORT ON STEAM TURBINE MACHINERY.

No. 96703

Rpt. 4a.

Received at London Office 17 SEP 1931

Date of writing Report 8<sup>th</sup> Sept. 31. When handed in at Local Office 1<sup>st</sup> SEP 1931, Port of LondonNo. in Survey held at Brit. & Witten Date, First Survey 15<sup>th</sup> July 1930 Last Survey 8<sup>th</sup> June 1931

Reg. Book 28831 on the Steel Quad. Se. "MONARCH OF BERMUDA" (Number of Visits 36) Tons Gross 20,500

Built at Newcastle By whom built Kickers, Armstrongs, Ltd. Yard No. 1 When built 1931

Engines made at Brit. By whom made Fraser &amp; Chalmers Engine No. 1218 When made 1931

Boilers made at Witten, Birmingham By whom made Babcock &amp; Wilcox Ltd. Boiler No. 6/1266 When made 1931

Shaft Horse Power at Full Power 19,000 Owners Furness, Withy &amp; Co., Ltd. Port belonging to London

Nom. Horse Power as per Rule 4411 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted Yes

Trade for which Vessel is intended

## STEAM TURBINE ENGINES, &amp;c.—Description of Engines. Single-casing, multi-stage, impulse turbines

No. of Turbines Ahead 2 Direct coupled to propelling shafts No. of primary pinions to each set of reduction gearing

Aster 2 none single reduction geared double reduction geared

direct coupled to 2 Alternating Current Generators 3 phase 50 periods per second rated 15,000 Kilowatts 3000 Volts at 3000 revolutions per minute;

for supplying power for driving 4 Propelling Motors, Type Synchronous, three-phase

rated 4750 H.P. Volts at 155 revolutions per minute. Direct coupled, single or double reduction geared to 4 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	1 1/8"	43 1/2"	2									
2ND	1 1/2"	47 1/2"	1									
3RD	1 1/2"	47 1/2"	1									
4TH	1 1/2"	47 1/2"	1									
5TH	2 1/2"	48 1/2"	1									
6TH	3"	50 1/2"	1									
7TH	4 1/2"	52 1/2"	1									
8TH	6 1/2"	56"	1									
9TH	8 1/2"	59 1/2"	1									
10TH	11 1/2"	64 1/2"	1									
11TH												
12TH												

Shaft Horse Power at each turbine H.P. 10,050 Revolutions per minute, at full power, of each Turbine Shaft H.P. 3,000

Rotor Shaft diameter at journals H.P. 7" Pitch Circle Diameter 1st pinion 1st reduction wheel Width of 1st reduction wheel

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 1st reduction wheel

Flexible Pinion 1st Pinion Shafts, diameter at bearings 1st 2nd Diameter at bottom of pinion teeth 1st 2nd

Wheel Shafts, diameter at bearings 1st 2nd Diameter at wheel shafts 1st 2nd

Generator Shaft, diameter at bearings 9"

Propelling Motor Shaft, diameter at bearings 15"

Intermediate Shafts, diameter as per rule 12.58" as fitted 13.45" Thrust Shaft, diameter at collars as per rule 13.66" as fitted 14.875"

Tube Shaft, diameter as per rule 13.66" as fitted 14.875" Is the screw shaft fitted with a continuous liner Yes

Bronze Liners, thickness in way of bushes as per rule 1.0" as fitted 1.0" 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

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 13-0" 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 L.P. Turbine be led direct to the

Condenser No. of Turbines fitted with stern 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

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, &amp;c. Independent Power Pump Direct Suctions to the Engine Room

Main Water Circulating Pump Direct Bilge Suctions, No. and size

Bilges, No. and size Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-bones

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 from



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BOILERS, &c. — (Letter for record ☒) Total Heating Surface of Boilers 42,200 square feet  
Is Forced Draft fitted Yes No. and Description of Boilers 8 Babcock & Wilcox W.T. Working Pressure 400 lb.  
Is a Report on Main Boilers now forwarded? ☒  
Is ☒ a Donkey ☒ an Auxiliary 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 12-9-30 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 ☒

State the principal additional spare gear supplied See blue print No. 89556 for main turbines.  
" " " " 89557 " auxiliary "

FOR VICKERS-ARMSTRONGS LIMITED

Hubert Thompson  
DIRECTOR

The foregoing is a correct description,

Dates of Survey while building  
During progress of work in shops -- Written: 1930 July 15, Aug. 28, Nov. 20, Dec. 18. 1931 Jan. 13, Feb. 4, 13, 14, 16.  
During erection on board vessel -- Mar. 2, 3, 10, 13, 16, 20, 31. Apr. 20, 22. June 8.  
Total No. of visits 36  
Erith: 1930 Aug. 26, Sep. 23. Oct. 8, 16, 21, 31. Nov. 11, 20, 27, Dec. 8.  
1931 Feb. 4, 25. Mar. 18, 24, 27, 31. June 5.

Dates of Examination of principal parts—Casings 20-11-30 Rotors 4-2-31 Blading 4-2-31 Alternator Shaft  
Motor 28-8-30 Thrust shafts 24/1/31 Intermediate shafts 24/2/31, 2/3/31 Tube shaft ☒ Gearing 28-8-30.  
Propellers 14/2/31 Stern tube 22/12/30, 23/12/30, 4/1/31 Engine and boiler seatings ☒ Engine holding down bolts ☒  
Completion of fitting sea connections ☒ Completion of pumping arrangements ☒ Boilers fired ☒ Engines tried under steam 24-3-31  
Main boiler safety valves adjusted ☒ Thickness of adjusting washers ☒ 31-3-31

Rotor shaft, Material and tensile strength O.H.S. 41 and 43 tons

Identification Mark 3982 L.V. 21-10-30.

Alternator Pinion shaft, Material and tensile strength O.H.S. 39 to 42 tons

Identification Mark 8781 L.V. 9-8-30

Pinion shaft, Material and tensile strength

Identification Mark

Motor Wheel Shaft, Material and tensile strength

Identification Mark

Thrust shafts, Material O.H.S. Identification Mark 3824 J.P. 28-8-30.

Thrust shafts, Material Ingot Steel Identification Mark 584 W.C.

Intermediate shafts, Material Ingot Steel Identification Marks 584 W.C.

Tube shaft, Material ☒ Identification Marks ☒

Screw shafts, Material Ingot Steel Identification Marks 584 W.C.

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 No If so, state name of vessel ☒

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

The Machinery has been constructed under special survey and in accordance with the requirements of the Rules and the approved plans. The materials and workmanship are good. The machinery has been despatched to Newcastle for fitting on board. In our opinion the Machinery on completion of installation will be eligible to be classed with the record of L.M.C. (with date). This machinery has now been satisfactorily fitted on board the vessel — see Newcastle Rpt. H.B. Foster Newcastle 2-11-31

The amount of Entry Fee ... £ 243 - 1 - 11

Special ... £

Donkey Boiler Fee ... £

Travelling Expenses (if any) ... £ 100 - 1 - 11

Committee's Minute

Assigned

TUE. 10 NOV 1931

See F.C. Rpt.

L. Young & Arthur Palmer  
Engineer Surveyors to Lloyd's Register of Shipping.



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