

RECEIVED

19 MAR 1946

Rpt. 4a.

# Report on Steam Turbine Machinery.

No. 17999

Received at London Office 14 MAR 1946

Date of writing Report 19 When handed in at Local Office 23 1946 Port of MIDDLESBROUGH

No. in Survey held at MIDDLESBROUGH Date, First Survey 28th May 1944 Last Survey 6th July 1945 1946

Reg. Book on the s.s. "WAVE SOVEREIGN" (Number of Visits 56) Tons {Gross 8182 Net 4559

Built at Haverton Hill-on-Tees. By whom built Furness Shipbuilding Co. Ltd. Yard No. 364 When built 1946-2

Engines made at West Hartlepool By whom made Richardsons Westgarth & Co. Ltd. Engine No. 2754 When made 1946

Boilers made at -do- By whom made -do- Boiler No. 2754 When made 1946

Shaft Horse Power at Full Power 6800 Owners Admiralty. Port belonging to London.

Nom. Horse Power as per Rule 1216 1226 NHP Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

Trade for which Vessel is intended MN 1318 1470

## STEAM TURBINE ENGINES, &c.—Description of Engines

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; } 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.	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 Diameter 1st pinion 2nd pinion 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 2nd pinion 1st reduction wheel main wheel

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

Wheel Shafts, diameter at bearings 1st main diameter at wheel shroud, 1st Propelling Motor Shaft, diameter at bearings

Intermediate Shafts, diameter as per rule as fitted Thrust Shaft, diameter at collars as per rule as fitted

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 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

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 5'10"

Propeller, diameter 18'0" Pitch Varying No. of Blades 4 State whether Moveable No Total Developed Surface 121 square feet If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes Can the H.P. or I.P. Turbines exhaust direct to the

Condenser Yes No. of Turbines fitted with astern wheels one Feed Pumps No. and size 2 - 3" Weirs. How driven Turb. driven.

Pumps connected to the Main Bilge Line No. and size 1 Fire & Bilge 10" x 9" x 10" & 1 ballast 10" x 9" x 10". How driven Steam

Ballast Pumps, No. and size 1 - 10" x 9" x 10" Lubricating Oil Pumps, including Spare Pump, No. and size 2 - 9" x 8" x 18"

Are two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected both to Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room 4 - 3 1/2" & 2 - 2 1/2" Tunnel well 1 - 2 1/2" In Pump Room Fore Peak 1 - 4"

In Holds, &c. Main Water Circulating Pump Direct Bilge Suctions, No. and size 1 - 1 1/2" Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1 - 5" Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes

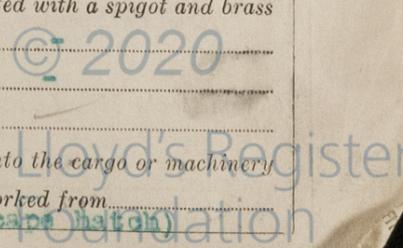
Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges Yes

Are all Sea Connections fitted direct on the skin of the ship Yes Are they fitted with Valves or Cocks Both

Are they fixed 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 below 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 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 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 No Is it fitted with a watertight door No worked from

NOTE.—The words which do not apply should be deleted. Is a Report also sent on the Hull of the Ship?



TOTAL H.S. <sup>Boiler 6840</sup> 2 Spts 1660 } 10905# <sup>boilers only</sup>  
 50% of 2 Econ. 2405

**BOILERS, &c.**—(Letter for record.....) Total Heating Surface of Boilers..... 6840 sq. ft.  
 Is Forced Draft fitted Yes No. and Description of Boilers 2 Foster Wheeler "D" Type Working Pressure 490 lbs per sq. in. (Sp. 475 lb.)  
 Is a Report on Main Boilers now forwarded? Yes See West Hartlepool Report No. 13639  
 Is <sup>a Donkey</sup> <sub>an Auxiliary</sub> Boiler fitted? Yes 2 If so, is a report now forwarded? Yes See Middlesbrough Rpt Nos. 17840 & 17860  
 Is the donkey boiler intended to be used for domestic purposes only? No  
 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.**

Has the spare gear required by the Rules been supplied? Yes  
 State the principal additional spare gear supplied. See attached list.

The foregoing is a correct description,

Manufacturer.

Dates of Survey while building  
 During progress of work in shops - - - 1944. Nov. 9, 1945, Jan. 9, July 26, Sept. 20, 24, 25, Oct. 3, 24, Nov. 7, 14, 15, 16, 17, 19, 20, 21, 22, 26, 27, 29, 30, Dec. 3, 4, 6, 7, 10, 12, 13, 14, 17, 18, 19, 20, 21, 24, 27, 28, 31, 1946, Jan. 3, 1946.  
 During erection on board vessel - - - 4 (SEE REPORT 9)  
 Total No. of visits 56

Dates of Examination of principal parts—Casings..... Rotors..... Blading..... Gearing.....  
 Wheel shaft..... Thrust shaft..... Intermediate shafts 27.11.45 Tube shaft..... Screw shaft 24.9.45  
 Propeller 24.9.45 Stern tube 20.9.45 Engine and boiler seatings 24.9.45 Engine holding down bolts 27.12.45  
 Completion of fitting sea connections 19.11.45 Completion of pumping arrangements 4.2.46 Boilers fixed 12.12.45 Engines tried under steam 23.1.46  
 Main boiler safety valves adjusted 23.1.46 Thickness of adjusting washers P. Blr. Sat. Spt.  $\frac{1}{4}$ " Spt. P.  $\frac{7}{32}$ " S =  $\frac{3}{4}$ "  
 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 Steel Identification Mark 13489 HAT. 7.  
 Intermediate shafts, Material Steel Identification Marks 13489 HAT 7.9.45 Tube shaft, Material..... Identification Marks.....  
 Screw shaft, Material Steel Identification Marks 13489 HAT 7.9.45 Steam Pipes, Material Steel Test pressure 1440 lbs per sq. in.  
 Date of test 10.1.46 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 the use of oil as fuel been complied with? Yes  
 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 S.S. "WAVE REGENT"

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

These engines and boilers were fitted on board this vessel, in accordance with the approved plans and Rule Requirements and on completion the machinery was tried out under working conditions and found satisfactory and in my opinion is now eligible for record of R.M.C. 2.46 and notation of TS. (C.L) 2.46. Forced draught and superheated.

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

The amount of Entry Fee	LMC £ 26 : 1 : 6	When applied for.
Special Supervision	£ 6 : 10 : 4	13/3/1946
Donkey Boiler Fee	£ :	When received.
Travelling Expenses (if any)	£ :	19

*S. Roman Stuart*  
 Engineer Surveyor to Lloyd's Register of Shipping.

FRI. 5 APR 1946

Committee's Minute  
 Assigned LMC\* 2.46  
 2.46. FLASH POINT ABOVE 150°F. F.D. C.L. 2WTR. (Sp. 475 lb.)  
 2 DB 18016

