

Report on Steam Turbine Machinery. No. 18651

M.D.B. 17867

Received at London Office 18 MAY 1945

Date of writing Report 15/5/1945 When handed in at Local Office 16/5/1945 Port of WEST HARTLEPOOL
 Date, First Survey 23/12/43 Last Survey 7/5/1945
 No. in Survey held at HARTLEPOOL (Number of Visits 126)
 Name of Vessel S/S "WAVE REGENT" Tons (Gross 8184 Net 4554)
 Built at Hartlepool By whom built James Shipbuilding Co. Ltd. Yard No. 363 When built 1945
 Engines made at Hartlepool By whom made Richardsons Westgarth & Co. Ltd. Engine No. 2752 When made 1945
 Boilers made at Hartlepool By whom made Richardsons Westgarth & Co. Ltd. Boiler No. 2752 When made 1945
 Shaft Horse Power at Full Power 6800 Owners Port belonging to
 Nom. Horse Power as per Rule 1226 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes
 Trade for which Vessel is intended M.N. 1470

STEAM TURBINE ENGINES, &c.—Description of Engines Double reduction geared turbines

No. of Turbines Ahead 2 Direct coupled, single reduction geared to 1 propelling shafts. No. of primary pinions to each set of reduction gearing 2
 Astern 1 double reduction geared
 Direct coupled to Alternating Current Generator phase periods per second rated Kilowatts Volts at revolutions per minute;
 or supplying power for driving Propelling Motors, Type Direct Current Generator
 rated Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

| TURBINE LOADING. | 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 | 1.23" | 17.46" | 7 | Rotor Output | 1.815" | 39.75" | 3 | 4" | 49.5" | 1 | | | |
| 2nd " | 1.52" | 18.04" | 7 | | 1.324" | 40" | 1 | 7" | 52.75" | 1 | | | |
| 3rd " | 1.68" | 18.36" | 6 | | 1.896" | 40" | 1 | 9" | 55" | 1 | | | |
| 4th " | 2.07" | 19.14" | 6 | | 2.468" | 40" | 1 | (Rotor) | | | | | |
| 5th " | 2.58" | 20.16" | 6 | | 3.109" | 40" | 1 | | | | | | |
| 6th " | above blading preceded | | | | | 3.824" | 1" | | | | | | |
| 7th " | by 2 rows impulse blades | | | | | 4.539" | 7 | | | | | | |
| 8th " | as per particulars below | | | | | 5.3" | 12 | | | | | | |
| 9th " | 7.15" | 30.47" | 1 | | | 6.13" | expansion | | | | | | |
| 10th " | 1.68" | 31.69" | 1 | | | 7.047" | | | | | | | |
| 11th " | | | | | | 8.185" | | | | | | | |
| 12th " | | | | | | 9" | 56" | | | | | | |

Shaft Horse Power at each turbine H.P. 3500 I.P. 3500 L.P. 3300
 H.P. 3969 1st reduction wheel 731
 I.P. 3969 main shaft 116
 L.P. 2863

Rotor Shaft diameter at journals H.P. 5" I.P. 5" L.P. 7"
 Pitch Circle Diameter 1st pinion 13.068 L.P. 1st reduction wheel 51.204" Width of Face 1st reduction wheel 20 1/2" * 3 GAP
 2nd pinion 19.789" main wheel 124.647" main wheel 39 + 24 1/2" GAP

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 10 1/8" 1st reduction wheel 2' 8 1/8"
 2nd pinion 16 3/4" main wheel 20"

Flexible Pinion Shafts, diameter at bearings External 1st 6 1/2" 2nd 11" diameter at bottom of pinion teeth 1st 8.91, 12.552
 Internal 1st 1 1/2" * 2 1/2" 2nd 5"

Wheel Shafts, diameter at bearings 1st 11" diameter at wheel shroud, 1st 3' 11" Generator Shaft, diameter at bearings
 main 17 1/2" main 9' 11 3/4" Propelling Motor Shaft, diameter at bearings
 as per rule 15.54" as fitted 16" Thrust Shaft, diameter at collars as per rule 16.31" as fitted 17"

Tube Shaft, diameter as per rule 17.04" as fitted 17 3/4" Is the tube screw shaft fitted with a continuous liner Yes
 Screw Shaft, diameter as per rule 17.04" as fitted 17 3/4"

Bronze Liners, thickness in way of bushes as per rule 8.21" as fitted 7 1/8" Thickness between bushes as per rule 6.15" as fitted 3/4" 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 Bades 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" Inboard Feed Pumps (Wain) How driven Steam

Pumps connected to the Main Bilge Line No. and size 2-10" 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" 1-2 1/2" TUNNEL WELL In Pump Room

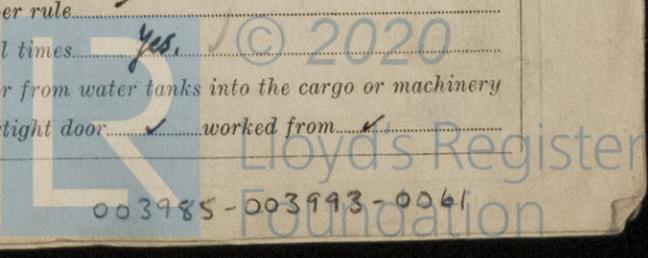
In Holds, &c. Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-13 1/2" Independent Power Pump Direct Suctions to the Engine Room
 Bilges, No. and size 1-5" Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes

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
 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 Yes Is it fitted with a watertight door Yes worked from



Total H.S. of Boilers :- Boilers 6840
 2 Spts 1660 } 10905 sq ft
 Information received on "Wain Sovereign" from HPL 16.7.45
 2 Econ 2405 }
 50%

BOILERS, &c.—(Letter for record S) Total Heating Surface of Boilers 6840 sq ft
 Is Forced Draft fitted Yes No. and Description of Boilers 2 Foster Wheeler D Sign Working Pressure 490 lbs
 Is a Report on Main Boilers now forwarded? Yes
 Is a Donkey Boiler fitted? Yes If so, is a report now forwarded? No
 (an Auxiliary)
 Is the donkey boiler intended to be used for domestic purposes only?
 Plans. Are approved plans forwarded herewith for Shafting 19.6.42 Main Boilers 18.6.42 Auxiliary Boilers ✓ Donkey Boilers 29.6.42
 (If not, state date of approval)
 Superheaters 22.7.42 General Pumping Arrangements 30.9.43 Oil Fuel Burning Arrangements 1.6.44

SPARE GEAR.

Has the spare gear required by the Rules been supplied?
 State the principal additional spare gear supplied.

For RICHARDSONS, WESTGARTH & Co. T. M. D. DIRECTOR Manufactur

The foregoing is a correct description,

| | | |
|--------------------------------|--|--|
| Dates of Survey while building | During progress of work in shops - - - | 1942 Dec 23, 1944 Jan 10, 14, 15, 20, 27, Feb 2, 3, 6, 10, 11, 12, 21, 24, Mar 1, 2, 4, 5, 19, 24, 27, 28, 29, May 1, 7, 8, 9, 10, 12, 22, 23, 30, Jun 2, 8, 13, 14, 15, 26, July 3, 12, 13, 16, 19, 27, Aug 10, 15, 16, 22, 25, 30, 31, Sept 15, 19, 21, 22, 23, 29, Oct 4, 6, 9, 10, 11, 13, 16, 19, 20, 21, 24, 17, 30, 31, Nov 1, 2, 6, 8, 9, 16, 20, 22, 23, 24, 27, 28, Dec 1, 2, 7, 11, 12, 15, 18, 25, 1945 Jan 3, 10, 13, 14, 17, 18, 20, 22, 23, 26, Feb 7, 19, 21, 21, Mar 20, 21, 28, 30, April 6, 11, 13, 17, 20, 24, 25, 26, 27, May 1, 2, 7 |
| | During erection on board vessel - - - | |
| | Total No. of visits | 126 |

Dates of Examination of principal parts—Casings 10-5-44 Rotors 10-5-44 Blading 13-6-44 Gearing ✓
 Wheel shaft ✓ Thrust shaft 19-9-44 Intermediate shafts 11-4-45 Tube shaft - Screw shaft 11-4-45
 Propeller - Stern tube - Engine and boiler seatings - Engine holding down bolts -
 Completion of fitting sea connections - 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 Steel 3H/38 Identification Mark S 7910WH
COUPLINGS
 Flexible Pinion Shaft, Material and tensile strength Steel Stan 28/32 sleeves 3H/38 Identification Mark S 6571WH
 Pinion shaft, Material and tensile strength Nickel Steel 40 Identification Mark N° 1064 JLS
 1st Reduction Wheel Shaft, Material and tensile strength Nickel Steel 40 Identification Mark J 2499
J 2478
J 2544 FW
S 8080
7108 WH
 Wheel shaft, Material Steel Identification Mark N° F9694WH Thrust shaft, Material Steel Identification Mark N° 8204 CP
 Intermediate shafts, Material Steel Identification Marks N° 8198 EP Tube shaft, Material ✓ Identification Marks ✓
93 REG
FT 773 HRI
 Screw shaft, Material Steel Identification Marks N° 8214 CP Steam Pipes, Material SD Steel Test pressure 1470 lbs
 Date of test 15-5-45 Is an installation fitted for burning oil fuel Yes
 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 Yes If so, state name of vessel N° 2748 HPLRPT N° 18591

General Remarks. (State quality of workmanship, opinions as to class, &c.) The engines and boilers of this vessel have been constructed under special survey and in accordance with the approved plans and specification. The workmanship and materials have been found good. The machinery of this vessel will be eligible, in my opinion to have the record of L.M.C. (with date) on completion. This machinery has been forwarded to Staverden Steel for fitting on board vessel "Sumner S.B. 6" yard N° 363.

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

| | |
|---|-------------------|
| The amount of Entry Fee ... £ 6 : 0 : | When applied for. |
| <u>1/2 L.M.C. less heart 25 pence.</u> Special ... £ 81 : 9 : | <u>16/5/45</u> |
| SUPERVISION Donkey Boiler Fee ... £ 28 : 15 : | When received. |
| Travelling Expenses (if any) £ : | 19 |

Arthur W. Oxford
 Engineer Surveyor to Lloyd's Register of Shipping.

FRI, 13 JUL 1945

Committee's Minute
 Assigned See Mdb fe made N. 17867

