

# Report on Steam Turbine Machinery.

No. 111672

4a.

Date of writing Report 19... When handed in at Local Office 3<sup>rd</sup> Aug. 1954 Port of NEWCASTLE-ON-TYNE  
 No. in Survey held at NEWCASTLE-ON-TYNE Date, First Survey 3. 8. 54 Last Survey 30 - 7 - 1954  
 Reg. Book (Number of Visits 32)  
 on the S.S. "WORLD HARMONY"  
 Built at NEWCASTLE ON TYNE By whom built VICKERS ARMSTRONG & CO. Ltd. No. 135 When built 1954  
 Engines made at WALLSEND By whom made PARSONS MAR. STM. TURB. CO. Ltd. Engine No. 483 When made 1953  
 Boilers made at HARTLEPOOL By whom made RICHARDSON WESTGARTH & CO. Ltd. Boiler No. When made 1954  
 Shaft Horse Power at Full Power 13,750 MAX. 12,500 SER. Owners WORLD TANKERS CORPORATION Port belonging to PIREUS  
 Nom. Horse Power as per Rule 2,750 V Is Refrigerating Machinery fitted for cargo purposes NO Is Electric Light fitted YES  
 Trade for which Vessel is intended CARRYING PETROLEUM IN BULK.

## STEAM TURBINE ENGINES, &c.—Description of Engines HP & LP D.R. TURBINES

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;  
 or supplying power for driving Propelling Motors, Type Direct Current Generator }  
 at Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

TURBINE	H. P.	I. P.	L. P.	ASTERN.
BLADING.				
Impulse Blading	No. of rows			
Reaction Blading	No. of stages			
	No. of rows in each stage			

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 1st reduction wheel 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 2nd pinion 1st reduction wheel main wheel

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

Wheel Shafts, diameter at bearings 1st 2nd main diameter at wheel shroud 1st 2nd main Generator Shaft, diameter at bearings 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

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 tube shaft If so, state type Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter 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 I.P. Turbines exhaust direct to the

Condenser No. of Turbines fitted with astern wheels. Feed Pumps No. and size Two @ 133,600/174,000 LBS/HR. ONE @ 108,500/141,000 LBS/HR. How driven TURBINE

Pumps connected to the Main Bilge Line No. and size ONE G.S. @ 134 T/H; ONE BILGE PP @ 340 GAL/MIN; ONE FIRE BUTT @ 140 TONS/HR. How driven STM. RECIP. ELECT. MOTOR - RECIP. TURBINE

Ballast Pumps, No. and size NONE Lubricating Oil Pumps, including Spare Pump, No. and size TWO - 340 GALS/MIN. 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 ONE 4" AFT WELL ONE 4" P.S. AFT. ONE 3 1/2" P.S. FOR ONE 2 1/2" ER. C/D. In Pump Room In Holds, &c. FOR STORE. 1-2" EJECTOR P.S. FOR HOLD. 1-2" EJECT P.S. FOR C/D. 1-2 1/2" P.S. 1-3" SS. FOR P.R. 1-3" AFT C/D. 1-3" P.S. AFT P.R. 1-4" CENT. 1-2" P.S.

Main Water Circulating Pump Direct Bilge Suctions, No. and size ONE 16" Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size ONE 7" P.S. ONE 7" S.S. 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 FORE PEAK TANK SUCTION Have they been tested as per rule YES 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 Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record) Total Heating Surface of Boilers 2 x 9,875 sq. ft. 2 x 8,420 = 16,840 sq. ft. Is Forced Draft fitted YES No. and Description of Boilers TWO - FOSTER WHEELER Working Pressure 850 LBS.

Is a Report on Main Boilers now forwarded? YES



Is ☒ a Donkey ☐ an Auxiliary Boiler fitted? ☒ No  
 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? ☒ Yes. Main Boilers. ☒ Auxiliary Boilers. ☒ Donkey Boilers. ☒  
 (If not, state date of approval)  
 Superheaters. ☒ General Pumping Arrangements. ☒ Please See SHIP PLAN. Oil Fuel Burning Arrangements. ☒ Yes.  
 Geared turbines situated aft. Have torsional vibration characteristics of system been approved? ☒ Yes. Date of approval. 27. 8. 51.

### SPARE GEAR.

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

The foregoing is a correct description.

Dates of Survey while building: During progress of work in shops - (1954) 15. 15. 15. 16. MAR. 5. 19. 22. APR. 6. 14. 20. 24. 28. JUN. 4. 11. 17. 25. JUL. 1. 5. 7. 9. 13. 15. 19. 20. 21. 22. 23. 26. 27. 28. 30.  
 During erection on board vessel -  
 Total No. of visits 32.

Dates of Examination of principal parts - Casings. ☒ Rotors. ☒ Blading. ☒ Gearing. ☒  
 Wheel shaft. ☒ Thrust shaft. ☒ Intermediate shafts. ☒ Tube shaft. ☒ Screw shaft. ☒  
 Propeller. 5-2-54 Stern tube. 28-1-54 Engine and boiler seatings. 5-3-54 Engine holding down bolts. 24-5-54  
 Completion of fitting sea connections. 15-2-54 Completion of pumping arrangements. 13-7-54 Boilers fixed. 19-3-54 Engines tried under steam. 27-28-7/5  
 Main boiler safety valves adjusted. 26-7-54 Thickness of adjusting washers. PORT: DRUM. 307 OUT. 320 STAR DRUM. 411 OUT. 320  
 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.

Chemical analysis: If Pinion Shafts are made of special steel state date of chemical analyses, physical properties and heat treatment.  
 1st Reduction Wheel Shaft, Material and length. Identification Mark.  
 Wheel shaft, Material. Identification Mark.  
 Intermediate shafts, Material. Identification Marks.  
 Screw shaft, Material. Identification Marks.  
 Date of test. Identification Marks.  
 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. ☒ Yes. If so, have the requirements of the Rules been complied with. ☒ Yes.  
 If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with. ☒ Yes.  
 Is this machinery a duplicate of a previous case. ☒ Yes. If so, state name of vessel. S.S. WORLD ENTERPRISE.

General Remarks. (State quality of workmanship, opinions as to class, &c.)  
 This machinery has been constructed and installed under Special Survey in accordance with the rules of the Society, approved plans and Surveyor's letters.  
 The quality of workmanship is good.  
 The machinery was examined under working conditions during basin trials and under full load conditions at sea, with satisfactory results and is eligible in my opinion for Classification with the records. L.M.C. 7-54 T.S.-CL.

13,750 S.H.P.  
 The amount of Entry Fee ... £ 179 0. : When applied for. 17 AUG 1954  
 Special ...  
 DAMAGE. Donkey Boiler Fee ... £ 6 6. :  
 Travelling Expenses (if any) £ : : When received. 19

T. J. Morris & Co. R. Renscliffe  
 Engineer Surveyor to Lloyd's Register of Shipping.

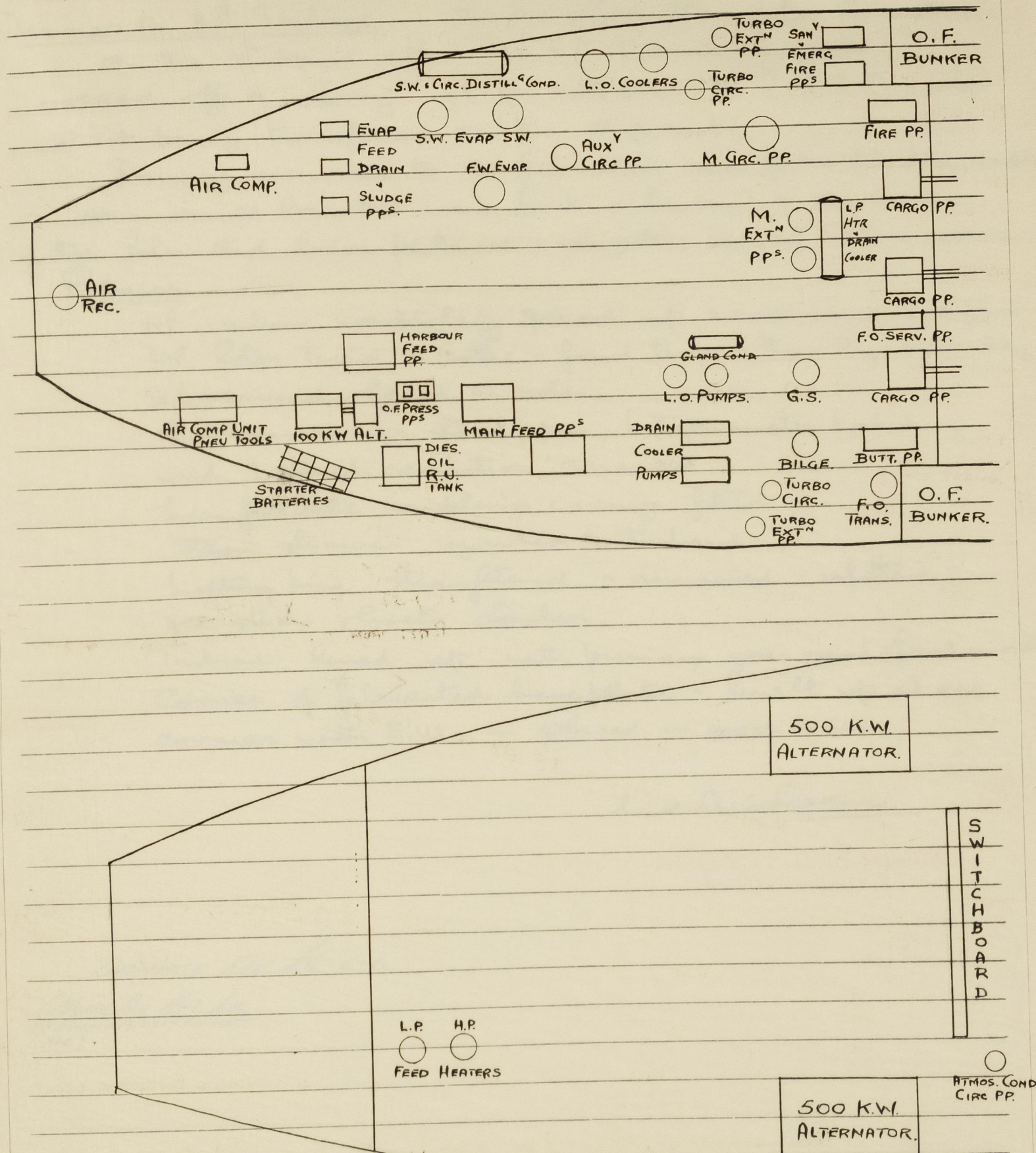
Assigned. + LMC 7-54 Fitted for D.E. 7-54 F.P. above 150°F.  
 2 WTB 965 ll.  
 CL.

Rpt. 9a

Port of NEWCASTLE-ON-TYNE.

Continuation of Report No. 111672 dated 3rd AUG. 1954 on the

## S.S. "WORLD HARMONY" ARRANGEMENT OF AUXILIARIES



SURVEYOR TO LLOYD'S REGISTER  
 NEWCASTLE-ON-TYNE.

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# SURVEY OF MACHINERY.

Rpt. 9a.

Port of **NEWCASTLE-ON-TYNE**

Continuation of Report No. **111672** dated

**FIRST SURVEY** 8-4-54.

**LAST SURVEY** 21-4-54.

**No. OF VISITS** 5.

on the

**S.S. 'WORLD HARMONY' PMST. ENG. N°483.**

Damage to H.P. Turbine - For the information of the Committee.

On the 3<sup>rd</sup> April 1954 the H.P. turbine complete rolled off a lorry at the entrance to P.M.S.T. works, whilst being transferred to the shipyard.

Damage occurred to the fabricated cover for the flexible coupling - some small branches were bent or broken. & one corner of the fabricated base plate very slightly set up at one corner.

## Repairs.

H.P. Turbine completely opened up & examined throughout  
H.P. Rotor tried in lathe - found true - then dynamically rebalanced & found in order.

4. pressure gauge stand pipes, 1 thermometer pocket and 1 gland connection renewed.

New flexible coupling casing fitted.

Steam strainer rejoined to turbine

Lifting lug straightened & annealed - refitted

All studs & bolts checked.

Turbine lined up with primary gear case, found in order.

Corner of fabricated base plate - built up at one corner with E.W. & placed in good order.

L. J. Nicholson

**SURVEYOR TO LLOYD'S REGISTER,  
NEWCASTLE-ON-TYNE.**

DAMAGE FEE: £6-6-0.

(Please See Rpt. 4A.  
& Rendered With Invoice  
Fee.)



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