

Report on Steam Turbine Machinery. No. 111271

4a.

Received at London Office **2-APR 1954**
 Date, First Survey **14-9-51** Last Survey **29-3-1954**
 Port of **NEWCASTLE-ON-TYNE** (Number of Visits **159**)

Survey held at **NEWCASTLE/TYNE** on the **SS. "WORLD HARMONY"**
 By whom built **VICKERS ARMSTRONG LTD** Yard No. **135** When built **1953**
 By whom made **PARSONS MARINE SPM. TURB. CO. LTD** Engine No. **483** When made **1953**
 By whom made **RICHARDSONS WESTGARTH LTD** Boiler No. _____ When made _____
 Owners **WORLD TANKERS CORPORATION** Port belonging to **PIREUS**
 Shaft Horse Power at Full Power **12500 @ 103 RPM** Is Refrigerating Machinery fitted for cargo purposes **-** Is Electric Light fitted **-**
 Nom. Horse Power as per Rule **2750 MN**
 Trade for which Vessel is intended **OPEN SEA SERVICE**

STEAM TURBINE ENGINES, &c.—Description of Engines **HP & L.P. TURBINES, DOUBLE REDUCTION GEARING.**

No. of Turbines Ahead **2** Direct coupled, single reduction geared to **ONE** 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** _____
 Rated _____ Kilowatts _____ Volts at _____ revolutions per minute. Direct coupled, single or double reduction geared to **ONE** propelling shafts.

TURBINE BLADING.	H. P.	I. P.	L. P.	ASTERN.
No. of rows	15 STAGES	—	—	2 STAGES
No. of stages	ONE ROTOR ROW EACH STAGE	—	—	2 CYL. 3 ROTOR EACH STAGE.
No. of rows in each stage	—	—	19	—
			3 ROWS IN 1ST STAGE	
			1 ROW IN REMAINING STAGES	

Shaft Horse Power at each turbine
 H.P. **7150** I.P. **—** L.P. **6600** **MAX.** Revolutions per minute, at full power, of each Turbine Shaft
 H.P. **4170** I.P. **—** L.P. **3127** 1st reduction wheel **774**
 main shaft **103 max**

Rotor Shaft diameter at journals
 H.P. **5" ✓** I.P. **—** L.P. **8" ✓** Pitch Circle Diameter
 1st pinion **16.2825"** 1st reduction wheel **65.7726"** Width of Face
 2nd pinion **21.8519"** main wheel **164.2748"** 1st reduction wheel **27"**
 main wheel **48"**

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings
 1st pinion **19.75"** 1st reduction wheel **20"**
 2nd pinion **33"** main wheel **37.5"**
 External **HP 8 1/2"** Internal **LP 10"** diameter at bottom of pinion teeth
 1st **HP 12.066"** 2nd **LP 16.1367"**

Pinion Shafts, diameter at bearings
 1st **11" ✓** diameter at wheel shroud, 1st **60.75"** Generator Shaft, diameter at bearings _____
 2nd **25" ✓** main **159.375"** Propelling Motor Shaft, diameter at bearings _____
 Intermediate Shafts, diameter as per rule **19.42"** Thrust Shaft, diameter at collars as per rule **21.38"**
 as fitted **20"** as fitted **21 1/4"** **21" at coupling**

Tube Shaft, diameter as per rule _____ as fitted _____ Screw Shaft, diameter as per rule **21.25"** Is the **tube** shaft fitted with a continuous liner **YES ✓**
 as fitted _____ as fitted **22 1/4" at cone** as per rule **0.716"** Is the after end of the liner made watertight in the
 as per rule **0.953"** as fitted **1 1/16"** as fitted **15/16"**

Bronze Liners, thickness in way of bushes as per rule _____ as fitted _____ Thickness between bushes as per rule _____ as fitted _____
 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

Propeller, diameter **22' 0"** Pitch **16.35' MEAN** No. of Blades **4** State whether Moveable **NO** Total Developed Surface **210** square feet.
 Length of Bearing in Stern Bush next to and supporting propeller **7' 8"**
 If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine **YES** Can the H.P. Turbines exhaust direct to the

Condenser **YES** No. of Turbines fitted with astern wheels **ONE** 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 both to Main Bilge Pumps and Auxiliary
 Bilge Pumps, No. and size: In Engine and Boiler Room _____ In Pump Room _____

Main Water Circulating Pump Direct Bilge Suctions, No. and size _____ Independent Power Pump Direct Suctions to the Engine Room _____
 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 _____

BOILERS, &c.—(Letter for record _____) Total Heating Surface of Boilers **8620 sq. ft. GEN. SURFACE + 1255 sq. ft. SUPERHEATER SURFACE PER BOILER**
 Is Forced Draft fitted **YES** No. and Description of Boilers **2 TYPE 'D' FOSTER WHEELER WATER TUBE** Working Pressure **850 LB/D"**
875 LB/D"

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 16-5-51 Main Boilers. GEARING. 27-8-51 Auxiliary Boilers. Donkey Boilers.

Superheaters. General Pumping Arrangements. Oil Fuel Burning Arrangements.

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 LIFTING GEAR FOR GEARING, CONDENSER DOORS, TURBO DIESEL ALTERNATOR COND. TUBES, FERRULES, MAIN-AUXIL. CIRC. PUMP IMPELLERS - SPINDLES, EXTRACTION PUMP SHAFT - IMPELLER MAIN-AUXIL. TURBO. FEED PUMP SHAFTS - IMPELLERS, ETC.

The foregoing is a correct description. AND THE MACHINERY PARTICULARS ARE AS APPROVED FOR TORSIONAL VIBRATIONS.

FOR THE PARSONS MARINE STEAM TURBINE CO. LIMITED.

Andrew Walker MANAGING DIRECTOR

Dates of Survey while building

During progress of work in shops -	(1951) Jan 14, 21, 28, Nov 6, 9, 16, 20, Dec 14 (1952) Jan 14, 22, 26, 29, Feb 9, 22, 29, Mar 7, 11, 14, 18, 21, Apr 8, 15, 22, May 26, 29, 31, 30, 31
During erection on board vessel -	(1951) Jan 26, 20, (1952) Jan 8, 6, 9, 12, 15, 22, 27, 30, Feb 2, 4, 6, 11, 17, 18, 20, 23, 27, Mar 9, 5, 6, 10, 11, 12, 17, 20, 24, 31, Apr 1, 10, 14
Total No. of visits	(1951) Jan 7, 8, 15, 18, 25, 28, Feb 11, 18, Mar 1, 2, 4, 5, 11, 26, 29, 10, 11, 53, 159, 3, 11, 53

Dates of Examination of principal parts - Casings 29. 10. 53 Rotors 23. 10. 53 Blading 29. 10. 53 Gearing 22. 12. 53

Wheel shaft 11. 12. 53 Thrust shaft - Intermediate shafts 16. 10. 52 Tube shaft - Screw shaft 24. 9. 53

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 LP. FORGED STEEL, 41 TONS. HP. 38-41 TONS. Identification Mark HP. 47766 LP. 14356 C.D.

Flexible Pinion Shaft, Material and tensile strength FORGED STEEL, 33 TONS. Identification Mark 18933 C.D.

Pinion shaft, Material and tensile strength HP-LP. 59-60 TONS/2" Identification Mark HP. 18994 C.D. LP. 18997 C.D.

; Chemical analysis 2 1/2% Ni. - CR. - Mo.

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment 25/6/52.

1st Reduction Wheel Shaft, Material and tensile strength FORGED STEEL, 35 TON. Identification Mark 18992, 18993

Wheel shaft, Material FORGED STEEL Identification Mark 18988 C.D. Thrust shaft, Material FORGED STEEL Identification Mark 19014 C.D.

Intermediate shafts, Material DITO Identification Marks 45687 19017 Tube shaft, Material - Identification Marks -

Screw shaft, Material 19021 19023 C.D. Identification Marks 4 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 YES If so, state name of vessel ENG. 480. V.A. HULL 132.

General Remarks. (State quality of workmanship, opinions as to class, &c.) The main turbines and gearing and fabricated gear case of this vessel have been constructed under Special Survey in accordance with approved plans and the requirements of the Rules or their equivalent, to our satisfaction. On completion the machinery was operated on the test bed under "NO LOAD" conditions, and the over speed governors operated.

The materials & workmanship are good

The fabricated gear case should be specially examined on completion of full power trials, the continuous operation of the machinery should be 'barred' between 50 & 59 RPM. as per harbor letter 27/8/51. The machinery has now been despatched to Vickers Armstrong Naval Yard for installation in their Hull No 135.

It is recommended for the favourable consideration of the Committee that this machinery is eligible, in our opinion, to be classed + LMC, when installed in the vessel and tested as required by the Rules.

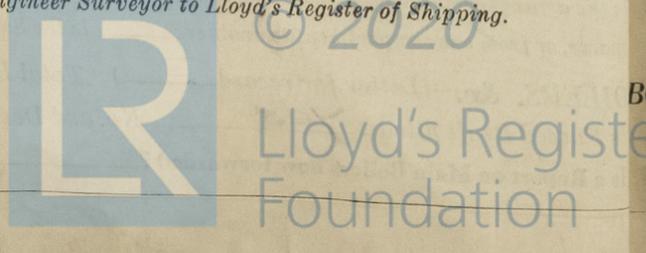
The amount of Entry Fee ... £ 180 : 16 : When applied for.

WELDED GEAR CASE. Special (40 TONS) ... £ 11 : 5 : 1 APR 1954

Donkey Boiler Fee ... £ : : When received.

Travelling Expenses (if any) £ : :

Leo Nelson & J.O. White Engineer Surveyor to Lloyd's Register of Shipping.



Committee's Minute FRIDAY 22 OCT 1954

Assigned See Rep. 48.

NEWCASTLE-ON-TYNE. Certificate (if required) to be sent to the space for Committee's Minute.