

REPORT ON STEAM TURBINE MACHINERY

No. 77121

MON. 15 OCT. 1923

Date of writing Report 12th Oct 1923 When handed in at Local Office 12th Oct 1923 Port of Newcastle on Tyne
 No. in Survey held at WALKER Date, First Survey 13th Dec. 1922 Last Survey 11th October 1923
 Reg. Book. 38178 on the STEEL SCREW STEAMER. British Hussar (Number of Visits 71)

Built at WALKER By whom built SWAN HUNTER W. RICHARDSON LD Yard No. 1138 When built 1923
 Engines made at WALKER By whom made S. H. - W. R. LD Engine No. 1138 When made 1923
 Boilers made at WALKER By whom made S. H. - W. R. LD Boiler No. 1138 When made 1923
 Shaft Horse Power at Full Power 3200 Owners BRITISH TANKERS LD Port belonging to LONDON
 Nom. Horse Power as per Rule 64% Is Refrigerating Machinery fitted for cargo purposes NO Is Electric Light fitted YES

P. L.P. METROPOLITAN-VICKERS RATEAU IMPULSE STEAM TURBINES WITH DOUBLE REDUCTION. GEARS
TEAM TURBINE ENGINES, &c.—Description of Engines 3 GEARED BOXES No. of Turbines Ahead 2
FLOATING FRAME TYPE Astern 2

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

PARTICULARS OF TURBINE BLADING. PLEASE SEE MANCHESTER REPORT.

	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												

Shaft Horse Power at each turbine 1600 ⁹ Revolutions per minute, at full power, of each Turbine Shaft 3125 1st reduction wheel 493
 main shaft 73.3 Pitch Circle Diameter, 1st pinion 6.79 2nd pinion 11.649 1st reduction wheel 43.100 main wheel 78.268
 Width of Face, 1st reduction wheel 20" main wheel 40" Distance between centres of pinion and wheel faces and the centre of the adjacent bearings,
 1st pinion 10³/₈ 2nd pinion 17³/₄ 1st reduction wheel 21 main wheel 2' 11¹/₂" Flexible Pinion Shafts, diameter 1st 3⁷/₈ 2nd 5³/₄
 Pinion Shafts, diameter at bearings External 1st 6" 2nd 10" diameter at bottom of teeth of pinion 1st 6.287" 2nd 10.737"
 Internal 1st 3⁷/₁₆ 2nd 6"
 Wheel Shafts, diameter at bearings, 1st 10" main 19" diameter at wheel shroud, 1st 12" main 22"
 Generator Shafts, diameter at bearings Propelling Motor Shafts, diameter at bearings

Main Shafting, diameter of Tunnel Shafting as per rule 14.1" as fitted 19" diameter of Thrust Shafting as per rule 14.81" as fitted 19"
 diameter of Screw Shaft as per rule 16.38" as fitted 19¹/₄" Is the screw shaft fitted with a continuous liner the whole length of the stern tube NO 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 joints burned — 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 appliance fitted at the after end of the shaft to permit of it being efficiently
 lubricated VICKERS. GLAND. Length of Stern Bush 5-6⁷/₈ Diameter of Propeller 18-6
 Pitch of Propeller 17.6 No. of Blades 4 State whether Moveable YES Total Surface 103⁴/₅ square feet. If Single Screw, are

arrangements made so that steam can be led direct to the L.P. Turbine, and either the H.P. or I.P. Turbine can exhaust direct to the Condenser YES

No. of Turbines fitted with astern wheels 2 HP & LP Total number of power driven Main and Auxiliary Pumps (18) one 20 HP Motor driven one 10¹/₂ x 10¹/₂ x 10¹/₂ steam
 No. and size of Feed Pumps one 10¹/₂ x 10¹/₂ x 10¹/₂ steam No. and size of Pumps connected to the Main Bilge Line one 10¹/₂ x 10¹/₂ x 10¹/₂ steam

How driven one 10¹/₂ x 10¹/₂ x 10¹/₂ steam No. and size of Ballast Pumps one 10¹/₂ x 10¹/₂ x 10¹/₂ steam No. and size of Lubricating Oil Pumps, including
 Spare Pump one 5¹/₂ HP Motor driven Are two independent means arranged for circulating water through the Oil Cooler yes No. and size of suction

connected to both Main Bilge Pumps and Auxiliary Bilge Pumps;—In Engine and Boiler Room four 3¹/₂" diam and in Holds, &c. 3¹/₂" in for hold
 No. and size of Main Water Circulating Pump Bilge Suctions one 11" line No. and size of Donkey Pump Direct Suctions

one 3¹/₂" line 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 connections with the sea direct on the skin of the ship YES Are they 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 Discharge Pipes above or below the deep water line BOTH

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.
 Are pipes carried through the bunkers None How are they protected —

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 Screw Shaft Tunnel watertight NONE Is it fitted with a watertight door worked from

Boilers, &c. (Letter for record S) Total Heating Surface of Boilers 8225⁴/₅
 Forced Draft fitted YES No. and Description of Boilers 3 SE CYL MULTITUBULAR Working Pressure 200 lb²/_{sq} in

Is a Report on Main Boilers now forwarded? *yes.*

Is a Donkey Boiler fitted? *yes. or donk*

If so, is a report now forwarded? *yes*

Plans. Are approved plans forwarded herewith for Shafting *No*
(If not state date of approval)

Main Boilers *Yes.*

Auxiliary Boilers *✓*

Donkey Boilers *Yes.*

Spare Gear. State the articles supplied:

2 bolts & nuts for each turbine or gear case bearing, one set of bolts & nuts for main shaft, 5% of bolts, studs & nuts for each gear case & turbine joint, 2 manometers for oil circulating system, 4 diaphragm gland rings, 1 sealing gland box, one set of pads for turbine thrust blocks, 2 bearing bushes for turbine rotors, two spud & internal gear wheels respectively, 3 bearing bushes for H.S. pinion shaft and 3 for L.S. pinion shaft, one H.S. pinion with flexible coupling, one set of pads for main shaft thrust block, one spare tail shaft, 2 C.I. prop. blades, 24 condenser tubes, one impeller & spindle for motor driven feed pump, one impeller & spindle for motor driven circulating pump, half set of valves for motor driven feed pump, half set of valves for general service pump, one set of valves for lubricating oil pump & one bucket for same, one escape valve for each size fitted, assorted iron plates, nuts & bolts and general spares for oil fuel installation etc.

The foregoing is a correct description,

W. H. HUNTER & WILKINSON, LTD.

Manufacturer.

G. F. Sweet

Dates of Survey while building
During progress of work in shops -- 1922 1923
Dec. 13. Jan. 8. 15. Feb. 2. 12. 16. 23. Mar. 5. 9. 13. 21. 22. 26. Apr. 10. 16. 19. 24. 25. 27. 30. May 1. 7. 11. 14. 16. 17. 18. 23. 25. 28. 29. 30. 31. June 4.
During erection on board vessel --- 5. 6. 7. 11. 13. 15. 20. July 4. 10. 12. 17. 20. 24. 25. 27. 31. Aug. 2. 3. 7. 16. 21. 23. 24. 29. 30. 31. Sept. 11. 17. 18. 19. 20. 27. 28. Oct. 2. 5. 8. 11.
Total No. of visits *71.*

HP turbine tested under test 80 lbs. 11. 6. 23. L.P. 30 lbs. 13. 6. 23. *Manchester Report*
Dates of Examination of principal parts - Casings 12/7/23 Rotors *do 5136* Blading *do 4. 7. 23* Gearing *do 13. 6. 23*

Wheel shaft *do July 23* Thrust shaft 16/2/23 Tunnel shafts 16/2/23 Screw shaft 16/2/23 Propeller 20/6. 4/7/23

Stern tube 25/6/23 Engine and boiler seatings 24/7. 17/9/23 Engines holding down bolts 24/5. 31/8/23

Completion of pumping arrangements 2/10/23 Boilers fixed 24/7. 31/8/23 *Shop Steam tests 12. 7. 23*
Engines tried under steam 2/10/23

Main boiler safety valves adjusted 2/10 + 27/9/23 Thickness of adjusting washers *3/8", 1/2", 3/4", 1/2", 3/8", 1/2", 3/8", 1/2"*

Material and tensile strength of Rotor shaft *Manchester rpt do 5136* Identification Mark on Do. *do*

Material and tensile strength of Flexible Pinion Shaft *do* Identification Mark on Do. *do*

Material and tensile strength of Pinion shaft *do* Identification Mark on Do. *do*

Material and tensile strength of 1st Reduction Wheel Shaft *do* Identification Mark on Do. *do*

Material of Wheel shaft *Steel* Identification Mark on Do. *do* Material of Thrust shaft *Steel* Identification Mark on Do. *4160 D. MR 298 16/2/23*

Material of Tunnel shafts *Steel* Identification Marks on Do. *4160 MR 298 16/2/23* Material of Screw shafts *do* Identification Marks on Do. *do*

Material of Steam Pipes *Steel & Copper* Test pressure *600 + 400 lbs* Date of test 17/7/23, 19/9/23

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 carrying and burning oil fuel been complied with *yes*

Is this machinery a duplicate of a previous case *yes* If so, state name of vessel *SISTER VESSEL 551134. 1130. 1126*

SS British Fusilier do 76397R

General Remarks (State quality of workmanship, opinions as to class, &c.) *The boilers & machinery built under*

special survey, the materials & workmanship found good & efficient.

The turbines & boilers fitted up on board satisfactorily, the machinery tested

under steam (at moorings) and found satisfactory. The auxiliary machinery

tested and found in order, (for particulars of electric installation please see report

to follow) Note. The turbine casings, condensers, feed heaters, steamers, pipes,

valves etc tested under hydraulic pressures as required with satisfactory results.

In my opinion this vessel is now eligible for the notification of L.M.C 10-2.

to be made in the register book.

Boiler etc invoices, forgings & castings reports. (etc now forwarded) also Manchester rpt do 5136.

Please see your letter of the 5th February 1923 re-

garding the omission of the tricker's name from certificate

L. G. Shallcross.

Engineer Surveyor to Lloyd's Register of Shipping.

The amount of Entry Fee ... £ 6 : 0 : When applied for.

Special Balance £ 89 : 2 : 9/10/23

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

Travelling Expenses (if any) £ ✓ : 11/10/23.

Committee's Minute TUE OCT. 16 1923

Assigned + L. G. 10.23

F. D. O. G. D. R.

Listed for oil fuel 10.23

F.P. above 150°F.

Newcastle (in duplicate)

(Certificate (if required) to be sent to...)

(The Surveyors are requested not to write on or below...)

(Certificate written in duplicate)

(The Surveyors are requested not to write on or below...)

(Certificate written in duplicate)