

REPORT ON MACHINERY.

No. 3916m

Received at London Office

Date of writing Report 19 When handed in at Local Office 19 Port of Glasgow
 No. in Survey held at Glasgow Date, First Survey 14/11/1917. Last Survey 23/9/1919.
 on the ship "Iron S.S. 'WARDANA' (9 class) (Number of Visits 100.) Gross 4951
 Built at Glasgow By whom built Barclay Curle & Co (No 565) When built 1919 Net 4968
 Engines made at Glasgow By whom made do. (No 565) when made 1919
 Boilers made at do. By whom made do. (No 563) when made 1919
 registered Horse Power Owners British India Steam Navigation Co. Port belonging to Glasgow
 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders 6 No. of Cranks 6
 Dia. of Cylinders 26 1/2 - 44 - 73 Length of Stroke 48 Revs. per minute 87 Dia. of Screw shaft as per rule 4 1/2 as fitted 4 1/2 Material of screw shaft Steel
 the screw shaft fitted with a continuous liner the whole length of the stern tube Yes Is the after end of the liner made water tight
 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 fits whole length If two
 liners are fitted, is the shaft lapped or protected between the liners — Length of stern bush 5-3
 Dia. of Tunnel shaft as per rule 13 6/8 as fitted 13 7/8 Dia. of Crank shaft journals as per rule 14 3/4 as fitted 14 1/2 Dia. of Crank pin 4 3/4 Size of Crank webs 9x28 Dia. of thrust shaft under
 rollers 15 Dia. of screw 17-3 Pitch of Screw 19-0 No. of Blades 4 State whether moveable Yes Total surface 90 ft
 No. of Feed pumps 4 Diameter of ditto 4 1/2 Stroke 24 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 4 Diameter of ditto 4 1/2 Stroke 24 Can one be overhauled while the other is at work Yes
 No. of Donkey Engines 3 Sizes of Pumps (1) 10 1/2 x 14 x 24 No. and size of Suctions connected to both Bilge and Donkey pumps
 in Engine Room (2) 3 1/2 Stroke hold (2) 3 1/2 In Holds, &c. No 1 (2) 3 1/2 No 2 (2) 3 1/2 No 3 (2) 3 1/2
 No 4 (2) 3 1/2 No 5 (2) 3 1/2 No 6 (1) 3 1/2 Tunnel well (1) 3 1/2
 No. of Bilge Injections 2 sizes 13 Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine room & size Yes 3 1/2
 Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are the sluices on Engine room bulkheads always accessible None
 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 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 are carried through the bunkers 7 & Suctions How are they protected Iron casings
 Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes
 Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges Yes
 Dates of examination of completion of fitting of Sea Connections 10.7.19 of Stern Tube 10.7.19 Screw shaft and Propeller 10.7.19
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Engine Room to Platform
ROLLERS, &c.— (Letter for record) Manufacturers of Steel Hobbs & Smith, Stewart & Lloyd & Co

Total Heating Surface of Boilers 17352 ft² Is Forced Draft fitted Yes No. and Description of Boilers 3 Double ended
 Working Pressure 200 lb Tested by hydraulic pressure to 400 lb Date of test 7.3.19 No. of Certificate 14630
 350 lb 5.5.19 No. and Description of Safety Valves to 14645
 14715
 Can each boiler be worked separately Yes Area of fire grate in each boiler 1466 ft²
 Each boiler 3 Spring loaded Area of each valve 14.18 ft² Pressure to which they are adjusted 205 lb Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 1-6 Mean dia. of boilers 16-3 Length 20-6 Material of shell plates Steel
 Thickness 1 1/2 Range of tensile strength 28 to 32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap joint
 Long. seams TRDBS Diameter of rivet holes in long. seams 1 1/2 Pitch of rivets 10 1/2 Lap of plates or width of butt straps 22 1/8
 Percentages of strength of longitudinal joint rivets 85.2 Working pressure of shell by rules 207 Size of manhole in shell 16x12
 plate 85.7
 Size of compensating ring 2 in dia. No. and Description of Furnaces in each boiler 8 Brighton Material Steel Outside diameter 44 1/2
 Length of plain part top 4 Thickness of plates crown 1 1/2 Description of longitudinal joint weld No. of strengthening rings —
 bottom 1 1/2
 Working pressure of furnace by the rules 213 Combustion chamber plates: Material Steel Thickness: Sides 1 1/2 Back — Top 1 1/2 Bottom 1 1/2
 Pitch of stays to ditto: Sides 9 x 8 1/2 Back — Top 1 x 6 3/4 If stays are fitted with nuts or riveted heads None Working pressure by rules 211
 Material of stays Steel Diameter at smallest part 2.03 Area supported by each stay 77 1/8 Working pressure by rules 241 End plates in steam space:
 Material Steel Thickness 1 1/2 Pitch of stays 17 x 16 How are stays secured Rivets Working pressure by rules 201 Material of stays Steel
 Diameter at smallest part 7.0 Area supported by each stay 336 Working pressure by rules 218 Material of Front plates at bottom Steel
 Thickness 1 Material of Lower back plate — Thickness — Greatest pitch of stays — Working pressure of plate by rules —
 Diameter of tubes 3 3/8 Pitch of tubes 2 1/2 Material of tube plates Steel Thickness: Front 1 1/4 Back 3/4 Mean pitch of stays 1 1/4 x 7 1/4
 Each across wide water spaces 13 1/2 Working pressures by rules 203 Girders to Chamber tops: Material Steel Depth and
 Thickness of girder at centre 8 x 3/4 (2) Length as per rule 52 1/2 Distance apart 8 1/2 - 7 Number and pitch of stays in each (6) 8 1/2 x 6 3/4
 Working pressure by rules 235 Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked
 separately Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivet
 Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness
 Stiffened with rings Distance between rings Working pressure by rules End plates: Thickness How stayed
 Working pressure of end plates Area of safety valves to superheater Are they fitted with easing gear

9800-19m

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. _____ Description *none*

Made at _____ By whom made _____ When made _____ Where fixed _____

Working pressure tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of Safety _____

Valves _____ No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____

If fitted with easing gear _____ If steam from main boilers can enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____

Material of shell plates _____ Thickness _____ Range of tensile strength _____ Descrip. of riveting long. seams _____ Rivets _____

Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____ Lap of plating _____ Per centage of strength of joint _____ Plates _____

Working pressure of shell by rules _____ Thickness of shell crown plates _____ Radius of do. _____ No. of stays to do. _____ Dia. of stays _____

Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace plates _____ Description of joint _____

Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Radius of do. _____ Stayed by _____

Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— *Two top end bolts and nuts, two bottom end bolts & nuts & main bearing bolts & nuts, 1 set coupling bolts & nuts feed and bilge pump valves from bolts and nuts assorted and other articles.*

The foregoing is a correct description,

Manufacturer.

FOR BARCLAY, CURLE & CO., LTD.

A. Benjamin Irvine
Assistant Manager

Dates of Survey while building	During progress of work in shops	1917. Nov 14-1918 Jan 20-28. Mar 6-13. 12-27. Apr 2-5. 4-8. 24-26. May 20-28. June 25. July 24-31. Aug 4-21.
	During erection on board vessel	28-29. Feb 11-12. 13-24. 27. Mar 11-14. 20-21. 31. Apr 1-3. 9-30. May 5-19. 20-22. 26-27. 29-31. June 2-4. 6-12.
	Total No. of visits	100

Dates of Examination of principal parts	Cylinders 5-12-18	Slides 5-12-18	Covers 31-10-19	Pistons 31-10-18	Rods 5-12-18
Connecting rods	5-12-18	Crank shaft 14-1-19	Thrust shaft 9-4-19	Tunnel shafts 31-3-19	Screw shaft 20-5-19
Stern tube	1-7-19	Steam pipes tested 11-12-18. 5-9-19	Engine and boiler seatings 19-5-19	Engines holding down bolts 26-8-19	
Completion of pumping arrangements	16-9-19	Boilers fixed 26-8-19	Engines tried under steam 16-9-19. 23-9-19		
Main boiler safety valves adjusted	16-9-19	Thickness of adjusting washers 5/8" 3/4" 7/8"	Identification Mark on Do. 4675 C.M.	Material of Thrust shaft Steel	Identification Mark on Do. 4675 C.M.
Material of Crank shafts	Steel	Identification Marks on Do. 4675 C.M.	Material of Screw shafts Steel	Identification Marks on Do. 4675 C.M.	Material of Steam Pipes Iron
Material of Tunnel shafts	Steel	Test pressure 600 lb			

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

The machinery of this vessel has been constructed under special survey in accordance with the Rules and approved Plans and has been seen satisfactorily working under steam. Materials and workmanship are good.

The machinery is eligible in my opinion to be classed + LMC 9-19.

It is submitted that this vessel is eligible for THE RECORD. + LMC. 9.19 FD.

Roll 10/10/19
APR

The amount of Entry Fee	£ 3	When applied for, 7-10-19
Special Charge for Donkey Boiler Fee	£ 73	When received, 10/10/19
Travelling Expenses (if any)	£ 150	
Committee's Minute	GLASGOW	7-OCT-1919
Assigned + LMC. 9.19.		FD

as Easthope J.P. Murray
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

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GLASGOW

Certificate (if required) to be sent to

2-10-19