

REPORT ON MACHINERY.

No. 10857

FRI. MAY. 24. 1912

Date of writing Report 22.5.12 When handed in at Local Office 23.5.12 Port of Aberdeen
 No. in Survey held at Aberdeen Date, First Survey 14.2.12 Last Survey 20.5.1912.
 Reg. Book. on the S.S. "PLOUGH" (Number of Visits 22.)
 Master Martin Gardner Built at Aberdeen By whom built A. Hall & Co. Ltd. No. 478 Tons Gross 95.06 Net 39.85
 Engines made at Aberdeen By whom made A. Hall & Co. Ltd. No. 1478 When built 1912
 Boilers made at do By whom made do do do when made 1912
 Registered Horse Power 39 Owners Martin Gardner Port belonging to Kirkcaldy
 Nom. Horse Power as per Section 28 39 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Triple expansion No. of Cylinders 3 No. of Cranks 3
 Dia. of Cylinders 9 $\frac{1}{2}$, 16, 26 $\frac{1}{2}$ Length of Stroke 18 Revs. per minute 145 Dia. of Screw shaft as per rule 5.637 Material of screw shaft as fitted 6 Scrap iron
 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 water tight 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 parcelled & served Length of stern bush 2' 0"
 Dia. of Tunnel shaft as per rule 4.816 Dia. of Crank shaft journals as per rule 5.056 Dia. of Crank pin 5 $\frac{1}{4}$ Size of Crank webs 4 $\frac{3}{4}$ x 5 $\frac{1}{4}$ Dia. of thrust shaft under collars 5 $\frac{1}{4}$ Dia. of screw 6' 6" Pitch of Screw 8' 6" No. of Blades 4 State whether moveable No Total surface 197
 No. of Feed pumps 1 Diameter of ditto 2 $\frac{1}{16}$ Stroke 9 Can one be overhauled while the other is at work
 No. of Bilge pumps 1 Diameter of ditto 2 $\frac{1}{16}$ Stroke 9 Can one be overhauled while the other is at work
 No. of Donkey Engines One Sizes of Pumps 4" x 2 $\frac{1}{2}$ x 4" duplex No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room One of 2" In Holds, &c. Fishhold, one of 2"
 Also ejector, drawing from all parts, and with separate suction to engine room 2" dia.
 No. of Bilge Injections 1 sizes 2 $\frac{1}{2}$ Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size Yes: 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 above
 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 Sucs from Fishhold & F.W. Tank How are they protected Strong wood casing
 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 1.4.12 of Stern Tube 29.3.12 Screw shaft and Propeller 1.4.12
 Is the Screw Shaft Tunnel watertight None Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record (5).) Manufacturers of Steel The Steel Co. of Scotland Ltd. D. Colville & Sons Ltd.
 Total Heating Surface of Boilers 6917 Is Forced Draft fitted No No. and Description of Boilers 1 Single ended
 Working Pressure 180 lbs. Tested by hydraulic pressure to 360 Date of test 8.5.12 No. of Certificate 400
 Can each boiler be worked separately Area of fire grate in each boiler 257 No. and Description of Safety Valves to each boiler 2 direct spring Area of each valve 3.14 Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork About 4" Mean dia. of boilers 10' 3" Length 9' 0" Material of shell plates S
 Thickness 7" Range of tensile strength 28-32 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams d. & lap long. seams dble straps Diameter of rivet holes in long. seams 1 $\frac{1}{16}$ Pitch of rivets 4 $\frac{1}{16}$ x 3 $\frac{1}{16}$ Lap of plates or width of butt straps 15 $\frac{1}{2}$ x 1 $\frac{1}{2}$ OUT } 8"
 Per centages of strength of longitudinal joint rivets 85.3 plate 84.9 Working pressure of shell by rules 184 Size of manhole in shell 16 x 12
 Size of compensating ring No. and Description of Furnaces in each boiler 2: plain Material S Outside diameter 39
 Length of plain part top 65 Thickness of plates crown 10 Description of longitudinal joint weld No. of strengthening rings
 Working pressure of furnace by the rules 182 Combustion chamber plates: Material S Thickness: Sides 8 Back 7 Top 9 Bottom 8
 Pitch of stays to ditto: Sides 9 x 4 $\frac{1}{2}$ Back 10 $\frac{1}{2}$ x 8 Top 4 $\frac{3}{4}$ x 4 $\frac{1}{2}$ If stays are fitted with nuts or riveted heads Yes Working pressure by rules 188
 Material of stays S Diameter at smallest part 1 $\frac{3}{8}$ Area supported by each stay 58 Working pressure by rules 210 End plates in steam space:
 Material S Thickness 4 Pitch of stays 14 $\frac{1}{2}$ x 13 How are stays secured dble nuts Working pressure by rules 181 Material of stays S
 Diameter at smallest part 2 $\frac{1}{16}$ Area supported by each stay 188.5 Working pressure by rules 184 Material of Front plates at bottom S
 Thickness 4 Material of Lower back plate S Thickness 4 Greatest pitch of stays 13 $\frac{3}{4}$ x 8 Working pressure of plate by rules 208
 Diameter of tubes 3 $\frac{1}{2}$ Pitch of tubes 4 $\frac{3}{4}$ x 4 $\frac{5}{8}$ Material of tube plates S Thickness: Front 4 $\frac{1}{16}$ x 2 $\frac{1}{16}$ Back 3 $\frac{1}{4}$ Mean pitch of stays 9 $\frac{3}{8}$
 Pitch across wide water spaces 15 Working pressures by rules B. 229 Girders to Chamber tops: Material S Depth and thickness of girder at centre 6 $\frac{1}{2}$ x 12 Length as per rule 25 $\frac{1}{2}$ Distance apart 4 $\frac{3}{4}$ Number and pitch of stays in each two: 4 $\frac{1}{2}$
 Working pressure by rules 189 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

W 1557-0008

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. Description
 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
 Dia. of rivet holes Whether punched or drilled Pitch of rivets Lap of plating Per centage of strength of joint Rivets
 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, & 2 bottom end bolts & nuts; 2 main bearings & 1 set coupling bolts & nuts; 1 set each Aix, circulating, feed & Bilge pump valves; 1 main and 1 donkey feed check valve; bolts & nuts assorted, and iron of various sizes ✓

The foregoing is a correct description,
 For ALL

Manufacturers of Main Engines & Boilers.

Dates of Survey while building
 During progress of work in shops --
 During erection on board vessel ---
 Total No. of visits

1912 Feb. 14, 22, 28. March 5, 15, 20, 22, 29. April 1, 2, 3, 12, 14, 23, 25, 29. May 3, 9, 14, 16, 18, 20

Is the approved plan of main boiler forwarded herewith yes.

Dates of Examination of principal parts—Cylinders 28 29 30 Slides 19 Covers 15 22 3 Pistons 28 29 3 Rods 28 15 22 3
 Connecting rods 15 3 4 Crank shaft 3. 4. 12 Thrust shaft 3. 4. 12 Tunnel shafts 14. 5. 12 Screw shaft 1. 4. 12 Propeller 20. 3. 12
 Stern tube 20. 3. 12 Steam pipes tested 14. 5. 12 Engine and boiler seatings 29. 3. 12 Engines holding down bolts 14. 5. 12
 Completion of pumping arrangements 16. 5. 12 Boilers fixed 16. 5. 12 Engines tried under steam 18. 5. 12
 Main boiler safety valves adjusted 18. 5. 12. Thickness of adjusting washers Port 5 1/2" Starboard 3"
 Material of Crank shaft I & S. Identification Mark on Do. 2959 (LTH) Material of Thrust shaft S. Identification Mark on Do. 2959 (LTH)
 Material of Tunnel shafts S. Identification Marks on Do. 2959 (LTH) Material of Screw shafts S. Identification Marks on Do. 2959 (LTH)
 Material of Steam Pipes Copper, solid drawn, 2 3/4" bore No. 2, B. W. G. Test pressure 360 lbs per sq inch.

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

These Engines, and the Boiler, have been constructed under Special Survey, and in accordance with the Secretary's letter, the Rules, and approved plan. The materials, and workmanship, are good. When completed, and properly fitted on board, they were tried under steam at moorings with satisfactory results, and are now in good working order, and in my opinion entitled to the record L.M.C. 5.12. in the Register Book.

It is submitted that this vessel is eligible for THE RECORD. + LMC 5.12.

J.W.D. 24/5/12

Ridley Howell

Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

The amount of Entry Fee ... £ 1. : : When applied for, 23. 5. 1912
 Special ... £ 8 : :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : : When received, 6. 6. 1912

WED. MAY. 29. 1912

Committee's Minute

Assigned

L.M.C. 5.12



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