

REPORT ON MACHINERY.

No. 15578

Received at London Office WED. 19 MAY 1909

of writing Report 13th May 1909 When handed in at Local Office 14/5/09 Port of Greenock
 in Survey held at Greenock Date, First Survey 6th Nov. 1908 Last Survey 11th May 1909
 Book. Duffon the Steel S.S. "Bright Wings" (Russell & Co. No. 594) (Number of Visits 68) Tons { Gross 3116
 ster G. H. Moore Built at Port Glasgow By whom built Russell & Co. Net 1992
 engines made at Greenock By whom made J. G. Kincaid & Co. Ld. When built 1909
 oilers made at Do. By whom made Do. when made 1909
 registered Horse Power _____ Owners N. Hallett & Co. Port belonging to London
 m. Horse Power as per Section 28 - 2760 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted No

GINES, &c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3
 a. of Cylinders 23" 37" & 61" Length of Stroke 42" Revs. per minute 80 Dia. of Screw shaft as per rule 12.68 Material of screw shaft W. Iron
 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 ✓ If two
 shafts are fitted, is the shaft lapped or protected between the liners _____ Length of stern bush 51"
 Dia. of Tunnel shaft as per rule 11.42 Dia. of Crank shaft journals as per rule 12.0 Dia. of Crank pin 12" Size of Crank webs 18x8" Dia. of thrust shaft under
 bars 12" Dia. of screw 15-3" Pitch of Screw 16-0" No. of Blades 4 State whether moveable No Total surface 84 sq ft
 No. of Feed pumps two Diameter of ditto 3 1/2" Stroke 26" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps two Diameter of ditto 3 1/2" Stroke 26" Can one be overhauled while the other is at work Yes
 No. of Donkey Engines two Sizes of Pumps 10x10, 10x10 & 7 1/2x5x6" No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room Four - 3" diam. In Holds, &c. No. 1, two-3"; No. 2, two-3"; No. 3, two-3";
No. 4, two-3" and Tunnel well, one-2 1/2"
 No. of Bilge Injections one size 6" Connected to condenser, or to circulating pump Comp. 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 ✓
 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 No. 1 & 2 hold bilge pipes How are they protected 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 20/4/09 of Stern Tube 20/4/09 Screw shaft and Propeller 20/4/09
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from upper deck

OILERS, &c.—(Letter for record 5) Manufacturers of Steel Beardmore & Co. & Lanarkshire Steel Co.
 Total Heating Surface of Boilers 4448 sq ft Is Forced Draft fitted No No. and Description of Boilers Two, S.E. Multitubular
 Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 12/3/09 No. of Certificate 919
 Can each boiler be worked separately Yes Area of fire grate in each boiler 57.5 sq ft No. and Description of Safety Valves to
 each boiler Two, spring loaded Area of each valve 5.9 sq in 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 13" Mean dia. of boilers 16 ft Length 10-6" 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 D.R.
 long. seams J.R.; D.S. Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9 1/2" Lap of plates or width of butt straps 20 1/2"
 Per centages of strength of longitudinal joint rivets 90.40 Working pressure of shell by rules 181 lbs. Size of manhole in shell 16x12"
 plate 85.55 Size of compensating ring 32 1/2 x 28 1/2" No. and Description of Furnaces in each boiler 3 Morison Material Steel Outside diameter 50 1/2"
 Length of plain part top Thickness of plates bottom 19" Description of longitudinal joint welded No. of strengthening rings ✓
 Working pressure of furnace by the rules 188 lbs. Combustion chamber plates: Material Steel Thickness: Sides 5/8" Back 5/8 + 31/32" Top 5/8" Bottom 3/4"
 Pitch of stays to ditto: Sides 9x8" Back 9x9" Top 9x8" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 183 lbs.
 Material of stays Steel Diameter at smallest part 1.79 in Area supported by each stay 81 sq in Working pressure by rules 199 lbs. End plates in steam space:
 Material Steel Thickness 1 1/8" Pitch of stays 19x19" How are stays secured D. Nuts Working pressure by rules 184 lbs. Material of stays Steel
 Diameter at smallest part 5.77 in Area supported by each stay 323 sq in Working pressure by rules 186 lbs. Material of Front plates at bottom Steel
 Thickness 1" Material of Lower back plate Steel Thickness 55/64" Greatest pitch of stays 14" Working pressure of plate by rules 182 lbs.
 Diameter of tubes 3 1/2" Pitch of tubes 14 1/2 x 14 1/2" Material of tube plates Steel Thickness: Front 1" Back 3/4" Mean pitch of stays 10 3/8"
 Pitch across wide water spaces 14" Working pressures by rules 182 lbs. Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 9 3/4 x 1 1/2" Length as per rule 34 5/8" Distance apart 9" Number and pitch of stays in each 3-8"
 Working pressure by rules 183 lbs. Superheater or Steam chest; how connected to boiler ✓ 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
 holes ✓ Pitch of rivets ✓ Working pressure of shell by rules ✓ Diameter of flue ✓ Material of flue plates ✓ Thickness ✓
 If 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 ✓

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 _____ 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 _____ Stayed by _____

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

SPARE GEAR. State the articles supplied:— 2 top end, 2 bott. end, 2 main bearing, 6 coupling, 3 holding down, and jang ring, bolts + nuts. one C.I. propeller. one screw shaft. one set of feed and one set of bilge pump valves. one feed escape valve spring. 1 set O.V. springs. 12 boiler + 12 condenser tubes + 100 ferrules. 1 set piston packing rings for each cyl. 3cyl. cover + 3 valve chest, studs + nuts. Assorted bolts, nuts + washers.

The foregoing is a correct description,
 John G. Kincaid & Co Ltd. Manufacturer.

Dates of Survey while building	During progress of work in shops - -	1908. Nov. 6, 20, 25, 26, 30. Dec. 1, 3, 4, 7, 8, 9, 10, 11, 14, 15, 21, 22, 28, 29, 30, 31. 1909.
	During erection on board vessel - -	Jan. 11, 13, 15, 19, 24, 26, 27, 29 Feb. 5, 9, 10, 12, 15, 16, 18, 22, 24, 26 Mar. 1, 3, 5, 8, 10, 11, 12, 17, 18, 24, 26, 29, 30 Apr. 1, 6, 7.
	Total No. of visits	68. Apr. 12, 13, 14, 20, 26, 27, 29, 30, May, 1, 4, 5.

Is the approved plan of main boiler forwarded herewith **Yes**

Is the approved plan of donkey boiler forwarded herewith **Yes**

Dates of Examination of principal parts—Cylinders 15/2/09. Slides 26/2/09. Covers 1/3/09. Pistons 24/3/09. Rods 24/3/09

Connecting rods 24/3/09. Crank shaft 16/2/09. Thrust shaft 5/3/09. Tunnel shafts 29/4/09. Screw shaft 14/4/09. Propeller 14/4/09.

Stern tube 26/3/09. Steam pipes tested 29/4 + 30/4/09. Engine and boiler seatings 29/4/09. Engines holding down bolts 29/4/09.

Completion of pumping arrangements 1/5/09. Boilers fixed 1/5/09. Engines tried under steam 11/5/09.

Main boiler safety valves adjusted 10/5/09. Thickness of adjusting washers Port B² P² 32, S² 32. Star B² P² 16, S² 32.

Material of Crank shaft **Steel** Identification Mark on Do. **2228 A.T.G.** Material of Thrust shaft **Steel** Identification Mark on Do. **2228 A.T.G.**

Material of Tunnel shafts **Steel** Identification Marks on Do. **2228 A.T.G.** Material of Screw shafts **W. Iron** Identification Marks on Do. **2228 A.T.G.**

Material of Steam Pipes **Copper**. Test pressure **360 lbs** ✓

General Remarks (State quality of workmanship, opinions as to class, &c. **Workmanship and material good.**)
 The Engines and Boilers have been built under special survey. They have been efficiently fitted on board and, on trial under a full pressure of steam, worked satisfactorily.

Marks on Main B²
 N^o 919.
 Lloyd's Test.
 360 lbs.
 12-3-09. R.E.

The Engines and Boilers are now in safe working condition and eligible, in my opinion, to have the notation **+ L.M.C. 5.09** entered in the Register Book.

It is submitted that this vessel is eligible for THE RECORD, + L.M.C. 5.09

The amount of Entry Fee	£ 2 : - : -	When applied for, 12/5/1909
Special	£ 33 : 16 : -	
Donkey Boiler Fee	£ : - : -	When received, 18/5/1909
Travelling Expenses (if any)	£ : - : -	

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

Committee's Minute **GLASGOW 18 MAY 1909**

Assigned **+ L.M.C. 5.09**

MACHINERY CERTIFICATE WRITTEN



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Certificate (if required) to be sent to Glasgow