

REPORT ON MACHINERY.

Port of MIDDLESBROUGH-ON-TEES.

Received at London Office SAT. 16 SEP 1905

No. in Survey held at Stockton Date, first Survey 4th May 1905 Last Survey 4th Sept 1905
Reg. Book. (Number of Visits 3.0)

on the Steel S.S. "Arsonian" Tons { Gross 2714.47
Net 1783.67
Master M. Evans Built at Stockton By whom built Richardson Duck & Co When built 1905

Engines made at Stockton By whom made Blain & Co Ltd when made 1905
Boilers made at Stockton By whom made Blain & Co Ltd when made 1905

Registered Horse Power 276 Owners O & W Williams Port belonging to Cardiff
Nom. Horse Power as per Section 28 276 Is Refrigerating Machinery fitted no Is Electric Light fitted no

ENGINES, &c.—Description of Engines Direct acting Trip expansion No. of Cylinders 3 No. of Cranks 3
 Dia. of Cylinders 23 1/2 - 39 - 64 Length of Stroke 42 Revs. per minute 57 Dia. of Screw shaft as per rule 13.18 Material of W Iron
 as fitted 14 1/4 screw shaft)
 Is 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
 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 Yes If two
 liners are fitted, is the shaft lapped or protected between the liners — Length of stern bush —
 Dia. of Tunnel shaft as per rule 11.2 Dia. of Crank shaft journals as per rule 11.76 Dia. of Crank pin 13 Size of Crank webs 20 1/4 x 8 3/8 Dia. of thrust shaft under
 collars 13 Dia. of screw 17-0 Pitch of screw 16 1/2 No. of blades 4 State whether moceable no Total surface 78 sq
 No. of Feed pumps 2 Diameter of ditto 3 Stroke 30 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 4 1/2 Stroke 30 Can one be overhauled while the other is at work Yes
 No. of Donkey Engines Two Sizes of Pumps Two 4 x 8 Ballast 9 x 10 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Three. Two 3" diam. One 3 1/2" diam. In Holds, &c.
Two in each hold 3" diameter
 No. of bilge injections 1 sizes 6 1/4 Connected to condenser, or to circulating pump no Is a separate donkey suction fitted in Engine room & size Yes 4"
 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 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
 Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges Yes
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock New vessel Is the screw shaft tunnel watertight See ship report
 Is it fitted with a watertight door Yes worked from Top platform.

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 4300 sq Is forced draft fitted no
 No. and Description of Boilers Two Cyl Multitubular Working Pressure 160 lb Tested by hydraulic pressure to 320 lb
 Date of test 27-7-05 Can each boiler be worked separately Yes Area of fire grate in each boiler 61 sq No. and Description of safety valves to
 each boiler Two spring Area of each valve 8.29 sq Pressure to which they are adjusted 165 lb Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 18" Dia. of boilers 15-9" Length 10-0" Material of shell plates Steel
 Thickness 1 3/16 Range of tensile strength 28/32 Are they welded or flanged no Descrip. of riveting: cir. seams 2 D Riv long. seams 2 Butt strip
 Diameter of rivet holes in long. seams 1 1/4 Pitch of rivets One row 8 1/2 Two 4 1/4 Lap of plates or width of butt straps 1-6 1/2
 Per centages of strength of longitudinal joint rivets 92.3 Working pressure of shell by rules 162 lb Size of manhole in shell 17 x 13
 plate 85.2
 Size of compensating ring 31-27-1 3/16 No. and Description of Furnaces in each boiler 3 Brown Expansion Material Steel Outside diameter 3-7 1/2
 Length of plain part top 6-4 bottom 6-4 Thickness of plates crown 1 1/2 bottom 1 1/2 Description of longitudinal joint Welded No. of strengthening rings —
 Working pressure of furnace by the rules 178 lb Combustion chamber plates: Material Steel Thickness: Sides 1 1/16 Back 1 1/16 Top 1 1/16 Bottom 3/4
 Pitch of stays to ditto: Sides 9 1/4 x 9 1/4 Back 9 1/4 x 9 1/8 Top 9 x 9 1/2 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 178 lb
 Material of stays Steel Diameter at smallest part 1 9/16 Area supported by each stay 91.4 sq Working pressure by rules 189 lb End plates in steam space:
 Material Steel Thickness 1 1/4 Pitch of stays 21 x 21 1/2 How are stays secured W & W Working pressure by rules 163.8 lb Material of stays Steel
 Diameter at smallest part 3 3/8 Area supported by each stay 451 1/2 sq Working pressure by rules 169.8 lb Material of Front plates at bottom Steel
 Thickness 1" Material of Lower back plate Steel Thickness 1 1/16 Greatest pitch of stays 18 x 9 3/8 Working pressure of plate by rules 187.3 lb
 Diameter of tubes 3 1/4 Pitch of tubes 4 1/2 x 4 7/8 Material of tube plates Steel Thickness: Front 1" Back 1 3/16 Mean pitch of stays 9 1/8
 Pitch across wide water spaces 14 1/2 Working pressures by rules 182 lb Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 7 x 1 3/8 Length as per rule 26 1/4 Distance apart 9" Number and pitch of Stays in each Two 9 1/2
 Working pressure by rules 168 lb 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
 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 —

DONKEY BOILER— No. Description

Made at By whom made When made Where fixed

Working pressure tested by hydraulic pressure to No. of Certificate Fire grate area Description of safety valves

No. of safety valves Area of each Pressure to which they are adjusted 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 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

Thickness of furnace crown plate Stayed by Working pressure of shell by rules

Working pressure of furnace by rules Diameter of uptake Thickness of uptake plates Thickness of water tubes

SPARE GEAR. State the articles supplied:— *Set of top & bottom end connecting rods bolts & nuts, set of coupling bolts, two main bearing bolts set of feed & bridge pump valves & M.P. piston rings & piston pins*

FOR BLAIR & CO., LIMITED

The foregoing is a correct description,

W. Borrie Manufacturer of main engines & boilers. **SECRETARY.**

Dates of Survey while building

During progress of work in shops— 1905. May 4. June 2. 7. 9. 14. 15. 17. 23. 26. 29. 30. July 14. 18. 19. 20. 21. 24. 26. 27. 28. 31. Aug 2. 3. 8. 9.

During erection on board vessel— 15. 29. Sept 1. 4.

Total No. of visits *Thirty*

Is the approved plan of main boiler forwarded herewith *No. Blair*

" " " donkey " " " *Yes*

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

The engine and boilers of this vessel have been constructed under special survey, the materials and workmanship are good and efficient and when tested under steam were found satisfactory and in my opinion now eligible for the notification + L.M.C. 9.05. in the Register Book.

It is submitted that this vessel is eligible for THE RECORD L.M.C. 9.05

J.M. Paul 16.9.05

The amount of Entry Fee.. £ 2 : 0 : 0

Special .. £ 33 : 16 : 0

Donkey Boiler Fee .. £ : : :

Travelling Expenses (if any) £ : : :

When applied for, 14.9.1905

When received, 14.9.1905

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

Committee's Minute **TUES. 19 SEP 1905**

Assigned *Lmb 9.05*



Certificate (if required) to be sent to

No. in Survey Reg. Book.

on the

laster

Engines made at

Boilers made at

Registered Horse

MULTITUBU

Letter for record

Boilers

No. of Certificate

safety valves to

Are they fitted with

Smallest distance

Material of shell

Descrip. of riveting

Lap of plates or

rules

boiler

Description of long

plates: Material

Top

smallest part

Pitch of stays

Area supported by

Lower back plate

Pitch of tubes

water spaces

girder at centre

Working pressure

separately

holes

If stiffened with

Working pressure

VERTICAL

Made at

Working pressure

No. of safety valves

enter the donkey

strength

Lap of plating

Radius of do.

Thickness of fur

plates

The fe

Dates of Survey while building

During work while building

Total