

# REPORT ON MACHINERY.

Port of MIDDLESBROUGH-ON-TEES.

Received at London Office THUR. 9 MAR 1899

No. in Survey held at Stockton

Date, first Survey 6<sup>th</sup> Sept 1898 Last Survey 27<sup>th</sup> Feb 1899

Reg. Book. —

(Number of Visits 43)

No. Sup. on the

J. S. Bardsey.

Tons { Gross 3381.81  
Net 2184.45

Master R. Gare.

Built at Hornaby

By whom built Richardson, Duck & Coy

When built 1899.

Engines made at Stockton

By whom made Blair & Coy Limited

when made 1899.

Boilers made at Stockton

By whom made Blair & Coy Limited

when made 1899.

Registered Horse Power 294.

Owners Jarrat, Groves & Coy

Port belonging to London

Nom. Horse Power as per Section 28 294.

Is Electric Light fitted No.

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders Three No. of Cranks 3.  
 Diameter of Cylinders 24 1/2, 40 1/2 & 66 1/2 Length of Stroke 42 Revolutions per minute 58 Diameter of Screw shaft as per rule 12 7/8  
 Diameter of Tunnel shaft as per rule 10 9/16 Diameter of Crank shaft journals 12 3/4 Diameter of Crank pin 13 1/4 Size of Crank webs 20 x 8 7/8 B.  
 Diameter of screw 17'-0" Pitch of screw 16'-6" No. of blades 4. State whether moveable Not. Total surface 78 1/2 sq. ft.  
 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 9 x 10" 4 x 8" No. and size of Suctions connected to both Bilge and Donkey pumps  
 Engine Room Three 3 1/2" diameter. In Holds, &c. Fore & Main holds two each 3 1/2" dia  
Aft and Aftermost holds two each 3 1/2" dia. Tunnel well one 2 1/2" dia.  
 No. of bilge injections 1 sizes 7" Connected to condenser, or to circulating pump Yes 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 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 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 on stocks Is the screw shaft tunnel watertight Apparently  
 Is it fitted with a watertight door Yes worked from upper platform.

BOILERS, &c.— (Letter for record (S) Total Heating Surface of Boilers 4530 sq. ft. Is forced draft fitted No.  
 No. and Description of Boilers 2. S. & B. Multitubular Working Pressure 166 lbs Tested by hydraulic pressure to 320 lbs  
 Date of test 24.1.99 Can each boiler be worked separately Yes Area of fire grate in each boiler 61.5 sq. ft. No. and Description of safety valves to  
 each boiler 2 d. a. Spring Area of each valve 8.29 sq. in. Pressure to which they are adjusted 165 lbs Are they fitted  
 with easing gear Yes Smallest distance between boilers or uptakes and bunkers or woodwork no side Outside  
bunkers Mean diameter of boilers 15'-6"  
 Length 10'-6" Material of shell plates steel Thickness 1 7/16" Description of riveting: circum. seams ends d. r. lap long. seams d. butt str.  
 Diameter of rivet holes in long. seams 1 1/4" Pitch of rivets 8 1/4" 1 row Lap of plates & width of butt straps 6 1/2" & 18 3/4"  
4 1/8" 2 row  
 Percentages of strength of longitudinal joint 90.6 Working pressure of shell by rules 168 lbs Size of manhole in shell 17" x 13"  
 Size of compensating ring 31 x 27 x 1 1/2" No. and Description of Furnaces in each boiler 3 Corrugated Material steel Outside diameter 46"  
 Length of plain part top 3'-9" Thickness of plates bottom 3 1/2" Description of longitudinal joint welded No. of strengthening rings —  
 Working pressure of furnace by the rules 178 lbs Combustion chamber plates: Material steel Thickness: Sides 1/16" Back 1/16" Top 1/16" Bottom 1"  
 Pitch of stays to ditto: Sides 9 3/4" x 9 3/4" Back 9 3/4" x 9 3/4" Top 9 3/4" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 176 lbs  
 Material of stays steel Diameter at smallest part 1 9/16" Area supported by each stay 92.6 sq. in. Working pressure by rules 186 lbs and plates in steam space:  
 Material steel Thickness 1 3/16" Pitch of stays 20 x 19 3/4" How are stays secured d. nuts Working pressure by rules 169 lbs Material of stays steel  
 Diameter at smallest part 2 7/8" Area supported by each stay 395 sq. in. Working pressure by rules 164 lbs Material of Front plates at bottom steel  
 Thickness 1" Material of Lower back plate steel Thickness 1 1/8" Greatest pitch of stays 14" Working pressure of plate by rules 305 lbs  
 Diameter of tubes 3 1/2" Pitch of tubes 4 7/8" x 4 3/4" Material of tube plates steel Thickness: Front 1" Back 1 3/16" Mean pitch of stays 9 5/8"  
 Pitch across wide water spaces 14 1/4" Working pressures by rules 189 lbs Girders to Chamber tops: Material steel Depth and  
 thickness of girder at centre 7" x 1 5/8" Length as per rule 27 1/4" Distance apart 9 1/2" Number and pitch of Stays in each 2. 9 1/2"  
 Working pressure by rules 171 lbs 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  
 as — 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 —

**DONKEY BOILER**— Description *Cylindrical Mult<sup>or</sup> 2 plain furnaces*  
 Made at *Stockton* By whom made *Blair & Coy L<sup>d</sup>* When made *24.1.99* Where fixed *deckhouse*  
 Working pressure *90 lbs* tested by hydraulic pressure to *180 lbs* No. of Certificate *1877* Fire grate area *28 1/2* Description of safety valves *d. spring*  
 No. of safety valves *2*. Area of each *5.94* Pressure to which they are adjusted *90 lbs* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No.* Diameter of donkey boiler *9' 6"* Length *9' 6"* Material of shell plates *steel* Thickness *9/16*  
 Description of riveting long seams *d. butt str.* Diameter of rivet holes *1 5/16* Whether punched or drilled *dr.* Pitch of rivets *1 1/2 in*  
 Lap of plating *10 1/4* Per centage of strength of joint Rivets *92* Plates *84* Thickness of shell plates *7/8* Radius of do. *1 1/2 in* Pitch of stays to do. *18*  
 Dia. of stays *2 3/8* Diameter of furnace Top *35* Bottom *—* Length of furnace *6' 2"* Thickness of furnace plates *1/2* Description of joint *d. butt str.* Thickness of furnace crown plates *9/16* Stayed by *1 5/16* off stays *8 to 9 ft.* Working pressure of shell by rules *108*  
 Working pressure of furnace by rules *98 lbs* Diameter of tubes *3"* Thickness of tubes plates *7/8* Thickness of water tubes *—*

**SPARE GEAR.** State the articles supplied:— *Propeller and tailshaft. — Top and bottom end bolts and nuts. Main bearing and coupling bolts & nuts. Seed, bridge and donkey pump valves. — Bolts nuts, iron etc.*

The foregoing is a correct description,  
**FOR BLAIR & CO., LIMITED.** Manufacturer.

*P. W. Blair* DIRECTOR  
 During progress of work in shops— *1898. Sept. 6, 13, 27. Oct. 18, 26. Nov. 2, 4, 7, 11, 15, 21, 25, 30. Dec. 5, 12, 19, 22, 28. 1899. Jan. 6, 9, 12, 16, 18, 19, 21, 23.*  
 Dates of Survey while building *31. Feb. 3, 4, 7, 8, 9, 10, 11, 13, 13, 14, 15, 21, 22, 23, 27.*  
 Total No. of visits *Forty-three.*

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
*These engines and boilers have been built under special survey and are of good workmanship and materials, they have been properly fitted and secured on board the vessel and were on completion tried under steam at moorings with satisfactory results.  
 The machinery is now in my opinion in a good and efficient working condition and eligible to the notation of: **H.L.M.C. 2.99.** in the Society's Register.*

It is submitted that  
 this vessel is eligible for  
**THE RECORD. H.L.M.C. 2.99.**

*A.C.A.*  
*9.3.99.*  
*10.3.99*

Certificate (if required) to be sent to  
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)

The amount of Entry Fee.	£ 2 :	0 :	0	When applied for,	
Special	£ 34 :	14 :	0	8.3.1899	
Donkey Boiler Fee	£ 2 :	2 :	0	When received,	
Travelling Expenses (if any)	£ :	:		8.3.1899	

*RWA* *John Sanderson*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute  
 Assigned  
**FRI, 10 MAR 1899**  
 MACHINERY CERTIFICATE  
 WRITTEN  
*H.L.M.C. 2.99*

