

REPORT ON MACHINERY.

Port of Middlesbrough

Received at London Office 19

No. in Survey held at Stockton Date, first Survey May 7th 1901 Last Survey 6th March 1902

Reg. Book. Sup. 30. on the S. S. Northam. (Number of Visits 58) Tons { Gross 3842.27
Net 2474.9

Master Cantell Built at Hornaby By whom built Richardson, Durr & Co When built 1902

Engines made at Stockton By whom made Blair & Coy Ltd when made 1902

Boilers made at Stockton By whom made Blair & Coy Ltd when made 1902

Registered Horse Power 349. Owners H. J. Paton & Co Port belonging to Cardiff

Nom. Horse Power as per Section 28 349. Is Refrigerating Machinery fitted no Is Electric Light fitted no

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 26, 42 1/2, 69 1/2 Length of Stroke 45 Revs. per minute 58 Dia. of Screw shaft 12.8 as per rule 14.5 as fitted 15 Lgth. of stern bush 60
Dia. of Tunnel shaft 12.2 as per rule 13.5 as fitted 13.5 Dia. of Crank shaft journals 12.8 as per rule 13.34 as fitted 13.34 Dia. of Crank pin 14 1/4 Size of Crank web 22 1/2 x 9 1/2 Dia. of thrust shaft under collars 14 1/2 Dia. of screw 14-0 Pitch of screw 18-0 No. of blades 4 State whether moveable Sal Total surface 90 sq. ft

No. of Feed pumps 2 Diameter of ditto 3 1/4 Stroke 33 Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 4 3/4 Stroke 33 Can one be overhauled while the other is at work yes

No. of Donkey Engines 3 Sizes of Pumps 2 Ball 9x10 F. 4x8 No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Five 3 1/2 diameter. In Holds, &c. Fore, main, aft and aftermost

holds two in each, all 3 1/2 dia. Tunnel well 2 1/2 dia.

No. of bilge injections 1 sizes 6 1/4 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 — 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 see ship rep.

Is it fitted with a watertight door yes worked from upper platform.

BOILERS, &c.— (Letter for record (S) Total Heating Surface of Boilers 5620 sq. ft. Is forced draft fitted no

No. and Description of Boilers 2 S. E. Multitubular Working Pressure 160 lb Tested by hydraulic pressure to 320 lb

Date of test 30.1.02 Can each boiler be worked separately yes Area of fire grate in each boiler 64 sq. ft. No. and Description of safety valves to each boiler two dir. act. Area of each valve 8.29 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 no side outside Mean dia. of boilers 16-6 Length 11-0 Material of shell plates S.

Thickness 1 1/2 Range of tensile strength 27-32 Are they welded or flanged no Descrip. of riveting: cir. seams d. r. l. long. seams d. butt str.

Diameter of rivet holes in long. seams 1 3/8 Pitch of rivets 9 1/4 & 4 5/8 Lap of plates 2 width of butt straps 6 5/8 & 20 1/8

Per centages of strength of longitudinal joint rivets 88.9 Working pressure of shell by rules 174 lb Size of manhole in shell 17 x 13

Size of compensating ring 31 x 24 x 1 1/2 No. and Description of Furnaces in each boiler 3 Morrison's Material S. Outside diameter 49

Length of plain part 7-0 Thickness of plates 9/16 Description of longitudinal joint welded No. of strengthening rings —

Working pressure of furnace by the rules 179 lb Combustion chamber plates: Material S. Thickness: Sides 7/16 Back 7/16 Top 7/16 Bottom 1

Pitch of stays to ditto: Sides 9 1/2 x 7 1/2 Back 9 5/8 x 9 1/2 Top 9 1/2 x 7 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 183 lb

Material of stays S. Diameter at smallest part 1 9/16 Area supported by each stay 89 Working pressure by rules 194 lb and plates in steam space:

Material S. Thickness 1 1/8 Pitch of stays 20 x 17 1/2 How are stays secured d. nuts washers Working pressure by rules 169 lb Material of stays S.

Diameter at smallest part 2 3/4 Area supported by each stay 350 sq. in. Working pressure by rules 169 lb Material of Front plates at bottom S.

Thickness 1 Material of Lower back plate S. Thickness 1 1/16 Greatest pitch of stays 14 Working pressure of plate by rules 228 lb

Diameter of tubes 3 1/2 Pitch of tubes 4 1/2 x 4 7/8 Material of tube plates S. Thickness: Front 1 Back 1 1/16 Mean pitch of stays 9 5/8

Pitch across wide water spaces 14 1/2 Working pressures by rules 182 lb Girders to Chamber tops: Material S. Depth and

thickness of girder at centre 7 3/4, 1 3/4 Length as per rule 30 Distance apart 9 1/2 Number and pitch of Stays in each 3, 7 3/4

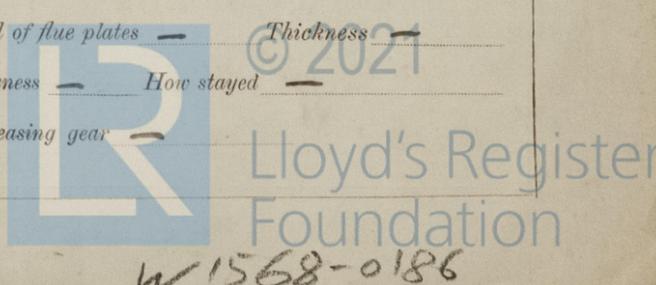
Working pressure by rules 164 lb Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked

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. *One* Description *Cyl. Multar 2 plain furnaces*
 Made at *Stockton* By whom made *Riley Brothers* When made *17.1.02* Where fixed *deck house*
 Working pressure *90 lbs* Untested by hydraulic pressure to *180 lbs* No. of Certificate *2664* Fire grate area *29* Description of safety valves *d. act. Spring*
 No. of safety valves *2* Area of each *7.6* 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* Dia. of donkey boiler *10'-0"* Length *10'-0"* Material of shell plates *S.* Thickness *9/16"* Range of tensile strength *24-32* Descrip. of riveting long. seams *d. butt str.* Dia. of rivet holes *1 1/16"* Whether punched or drilled *dr.* Pitch of rivets *3 1/2"*
 Type of plating *8 1/2* Per. centage of strength of joint Rivets *78.5* Thickness of shell plates *25* Riv. wash. *yes* Radius of do. *Pitch of Stays to do. 18"*
 Dia. of stays *2 1/2* Diameter of furnace Top *36"* Bottom *36"* Length of furnace *6'-7"* Thickness of furnace plates *1/2"* Description of joint *welded* Thickness of furnace crown plates *1/2* Top *3/16"* Stayed by *1 3/8* off *8 1/2* to *9 1/2* p. nuts Working pressure of shell by rules *94 lbs*
 Working pressure of furnace by rules *94.5 lbs* Diameter of uptake *3 1/2"* Thickness of uptake plates *F. 32* B *13* Thickness of water tubes *5/16* (34.010)

SPARE GEAR. State the articles supplied:— *Propeller and Shaft Complete. —*
Top and bottom end bolts & nuts, main bearing & coupling bolts and nuts. Feed, and donkey pump valves. Bolts nuts etc.

The foregoing is a correct description,
 FOR BLAIR & Co, LIMITED. Manufacturer.s of Engines and Main boilers. —

P. W. Blair

Dates of Survey while building	During progress of work in shops - -	1901 May 7-13-20-30 June 4-12-21-25 July 4-10-17-20-29 Aug 6-12-16 Sept 5-10-17-24-26	
		During erection on board vessel - -	Oct 7-13-21-29 Nov 6-13-15-18-21-26 Dec 3-5-13-17-24-30 1902 Jan 7-8-14-15-17-22-24-27-30 Feb 1-4-5-6
		Total No. of visits	10-13-15-24-26-27-28. Mar 6

Is the approved plan of main boiler forwarded herewith *Blair's*
 " " " donkey " " *no plans retained for dup.*

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

Material of screw shaft *wrought 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 *yes*

These engines and boilers have been built and tested as required by the Society's Rules for Special Survey and are of good workmanship and materials, they have been properly fitted and secured on board and on completion tried under steam with good results at moorings. —

The vessel's machinery is now in my opinion in a good and efficient working order and eligible to the notation of: **L.M.C. 3.02.**

It is submitted that this vessel is eligible for THE RECORD **L.M.C. 3.02.**

The amount of Entry Fee... £ 3	When applied for, 12.3.1902
Special £ 27 9	When received, 12.3.1902
Donkey Boiler Fee £ :	
Travelling Expenses (if any) £ :	

P. W. Blair
13.3.02
14.3.02
 R. S. John Sanderson
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRI, MAR 14 1902**

Assigned *+ L.M.C. 3.02*



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

MACHINERY CERTIFICATE WRITTEN