

## REPORT ON MACHINERY.

No. 10491

Received at London Office  
MIDDLESBRO'

Date of writing Report 19 When handed in at Local Office 2/10/19 10 Port of MIDDLESBRO'

No. in Survey held at Stockton-on-Tees Date, First Survey 30<sup>th</sup> Decr 1918 Last Survey 25<sup>th</sup> Sept 1919  
Reg. Book. on the Steel Screw Steamer Clearton (S.S. N<sup>o</sup> 677) (Number of Visits 81) Tons } Gross  
Master Built at Stockton By whom built Messrs Richardson Duck & Co When built } Not  
Engines made at Stockton By whom made Messrs Blair & Co Lim<sup>d</sup> (N<sup>o</sup> 1905) when made 1919  
Boilers made at Stockton By whom made Messrs Blair & Co Lim<sup>d</sup> when made 1919  
Registered Horse Power Owners Port belonging to  
Nom. Horse Power as per Section 28 397 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted no

ENGINES, &c.—Description of Engines Tri-compound No. of Cylinders 3 No. of Cranks 3  
Dia. of Cylinders 26-44-73 Length of Stroke 48 Revs. per minute 77 Dia. of Screw shaft as per rule 14-7 as fitted 15-2 Material of screw shaft as fitted 15-2  
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  
n the propeller boss yes If the liner is in more than one length are the joints burned in one 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 tight fit If two  
liners are fitted, is the shaft lapped or protected between the liners Length of stern bush 5'-15"

Dia. of Tunnel shaft as per rule 12-9 as fitted 13-5 Dia. of Crank shaft journals as per rule 14-0 as fitted 14-5 Dia. of Crank pin 14-5 Size of Crank webs 22x9 Dia. of thrust shaft under  
collars 14-3 Dia. of screw 17-6 Pitch of Screw 17-6 No. of Blades 4 State whether moveable no Total surface 100 sq  
No. of Feed pumps 2 Diameter of ditto 4 Stroke 24 Can one be overhauled while the other is at work yes  
No. of Bilge pumps 2 Diameter of ditto 4 Stroke 24 Can one be overhauled while the other is at work yes  
No. of Donkey Engines 3 Sizes of Pumps 10 1/2 x 14 x 24 20 9 1/2 x 7 x 15 No. and size of Suctions connected to both Bilge and Donkey pumps  
In Engine Room 40 3/2 In Holds, &c. 20 3/2 in each hold except aftermost  
where one at 3 1/2: Tunnel will one at 3"

No. of Bilge Injections 1 sizes 13" Connected to condenser or to circulating pump yes 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 none  
Are all connections with the sea direct on the skin of the ship yes, main & donkey 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  
That pipes are carried through the bunkers suction to forward holds How are they protected wood ceiling  
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 28.7.19 of Stern Tube 14.7.19 Screw shaft and Propeller 8.8.19  
Is the Screw Shaft Tunnel watertight see hull Rpt. Is it fitted with a watertight door yes worked from top platform

WILERS, &c.—(Letter for record (S)) Manufacturers of Steel Messrs John Hume & Sons Lim<sup>d</sup>

Total Heating Surface of Boilers 6066 Is Forced Draft fitted no No. and Description of Boilers 2 single ended  
Working Pressure 180 Tested by hydraulic pressure to 360 Date of test 25.7.19 No. of Certificate 6017  
Can each boiler be worked separately yes Area of fire grate in each boiler 68.5 No. and Description of Safety Valves to  
each boiler 2 direct spring Area of each valve 9.62 sq Pressure to which they are adjusted 185 lb Are they fitted with easing gear yes  
Smallest distance between boilers and bunkers on woodwork 3'-6" Mean dia. of boilers 16'-9" Length 11'-6" Material of shell plates steel  
Thickness 1 1/2 Range of tensile strength 28-32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams 2-R-lap  
Long. seams 2B-3 Riv Diameter of rivet holes in long. seams 1 3/8 Pitch of rivets 9 1/4 Lap of plates or width of butt straps 20 1/2 x 1 1/2  
Percentage of strength of longitudinal joint rivets 89.5 plate 85.15 Working pressure of shell by rules 185 Size of manhole in shell 16" x 12"  
Size of compensating ring 7 1/2 x 1 1/2 No. and Description of Furnaces in each boiler 3 Sington Material steel Outside diameter 49 7/8  
Length of plain part top 19 1/2 bottom 32 Thickness of plates crown 19 bottom 32 Description of longitudinal joint Weld No. of strengthening rings 1  
Working pressure of furnace by the rules 190 Combustion chamber plates: Material steel Thickness: Sides 1/2 Back 1/2 Top 1/2 Bottom 22 1/2  
Pitch of stays to ditto: Sides 8 1/4 x 10 1/2 Back 9 1/2 x 9 1/2 Top 9 1/2 x 9 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 185  
Material of stays steel Diameter at smallest part 1.99 Area supported by each stay 87.87 Working pressure by rules 204 End plates in steam space:  
Material steel Thickness 1 1/2 Pitch of stays 20 1/2 x 18 How are stays secured nuts & washers Working pressure by rules 184 Material of stays steel  
Diameter at smallest part 7.85 Area supported by each stay 485 Working pressure by rules 180 Material of Front plates at bottom steel  
Thickness 1 Material of Lower back plate steel Thickness 1 1/2 Greatest pitch of stays 10 1/2 x 9 1/2 Working pressure of plate by rules 271  
Diameter of tubes 3 1/2 Pitch of tubes 4 3/4 x 4 3/4 Material of tube plates steel Thickness: Front 1 1/2 Back 1 1/2 Mean pitch of stays 9 5/8  
Pitch across wide water spaces 14 1/2 Working pressures by rules 181 Girders to Chamber tops: Material steel Depth and  
Thickness of girder at centre 8" x 2" Length as per rule 32 Distance apart 9 1/2 Number and pitch of stays in each 20 9 1/4  
Working pressure by rules 197 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 374-0030



# VERTICAL DONKEY BOILER—

Manufacturers of Steel

See Report forwarded herewith

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 S  
 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  
 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:— Two each of connecting rod top-end, bottom-end and main bearing bolts and nuts: 3 crank shaft and 3 tunnel shaft coupling bolts and nuts: One set each of feed and bilge pump valves: 3 each of main and donkey check valves: One set each of HP & MP rams bottom piston rings, assorted bolts & nuts, iron of various sizes, cast iron propeller & minor gear as per specification  
 The foregoing is a correct description,

Manufacturer.

FOR BLAIR & CO., LIMITED

H. P. Hamilton

Dates of Survey  
 During progress of work in shops— 1918 1919  
 Dec 30 Feb 17 19 21 24 27 28 Mar 3 5 7 10 11 13 17 19 21 24 28 31 Apr 3 10 11 15 17 23 25 28 29 May 1 2 5  
 During erection on board vessel— 12 13 15 19 21 23 25 28 29 June 2 4 6 11 16 18 20 23 25 27 Jul 1 3 8 11 14 16 17 18 23 24 25 28 29 Aug 1 5 12 1  
 while building 25 26 28 29 Sep 1 4 8 12 16 19 25  
 Total No. of visits 81  
 Is the approved plan of main boiler forwarded herewith ☒ Yes  
 Return for duplicate boilers ☒ Yes  
 " " donkey " " ☒ Yes

Dates of Examination of principal parts—Cylinders 25.4.19 Slides 24.3.19 Covers 25.4.19 Pistons 3.4.19 Rods 3.4.19  
 Connecting rods 8.5.19 Crank shaft 29.4.19 Thrust shaft 7.3.19 Tunnel shafts 10.4.19 Screw shaft 1.8.19 Propeller 1.8.19  
 Stern tube 11.7.19 Steam pipes tested 18.6.19 Engine and boiler seatings 28.7.19 Engines holding down bolts 15.8.19  
 Completion of pumping arrangements 19.9.19 Boilers fixed 19.9.19 Engines tried under steam 19.9.19  
 Main boiler safety valves adjusted 19.9.19 Thickness of adjusting washers P.B.  $\frac{3}{8}$  S.B.  $\frac{3}{8}$   
 Material of Crank shafts Ing Steel Identification Mark on Do. 7184 Material of Thrust shaft Ing Steel Identification Mark on Do. 421  
 Material of Tunnel shafts Ing Steel Identification Marks on Do. 4217 N Material of Screw shafts Ing Steel Identification Marks on Do. 7184  
 Material of Steam Pipes Lap welded steel Test pressure 540 lbs

General Remarks (State quality of workmanship, opinions as to class, &c. The machinery of this vessel has been examined under special survey. The materials and workmanship are sound and good, and on completion the engines, boilers and auxiliaries were examined under steam and all found satisfactory.  
 The machinery is now in a good and safe working condition and renders the vessel eligible in our opinion to have the notation of LMC-9.19 in the Register Book

Note:— This vessel is fitted with "Wireless" but not Electric Light

It is submitted that this vessel is eligible for THE RECORD. + LMC. 9.19.

The amount of Entry Fee.. £ : : When applied for, 11.10.19  
 Special .. £ 115.19/6  
 Donkey Boiler Fee .. £ : : When received, 21.10.19  
 Travelling Expenses (if any) £ : :  
 Committee's Minute FRI. 10 OCT. 1919  
 Assigned Lmb 9.19  
 Wm Morrison & H. McF. 1919  
 Engineer Surveyor to Lloyd's Register of British & Foreign Ships

