

REPORT ON MACHINERY.

No. 7841

Received at London Office

WED. APR. 2-1913

Date of writing Report 26.3.13 When handed in at Local Office 21.3.13 Port of MIDDLESBROUGH-ON-TEES.

No. in Survey held at Stockton on Tees Date, First Survey 9th Dec. 1912 Last Survey 20th March 1913

Reg. Book on the Steel screw steamer "Dartwen" (S.S. No. 630) Tons Gross 4793.23 Net 3022.20

Master J. D. Keil Built at Thornaby By whom built Richardson & Co. Ltd. When built 1913

Engines made at Stockton By whom made Messrs Blair & Co. Ltd (No. 1761) when made 1913

Boilers made at Stockton By whom made Messrs Blair & Co. Ltd when made 1913

Registered Horse Power Owners W. B. J. Jones & Co. Ltd. (W. B. J. Jones) Port belonging to Cardiff

Nom. Horse Power as per Section 28 385 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 26-42-70 Length of Stroke 48 Revs. per minute 63 Dia. of Screw shaft as per rule 14.48 as fitted 15.74 Material of screw shaft Ingot Steel

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 in on 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'-4"

Dia. of Tunnel shaft as per rule 12.98 as fitted 13.34 Dia. of Crank shaft journals as per rule 13.63 as fitted 14.4 Dia. of Crank pin 14.3/4 Size of Crank webs 28 1/2 x 9 1/2 Dia. of thrust shaft under collars 14 3/4 Dia. of screw 17'-6" Pitch of Screw 17'-6" No. of Blades 4 State whether moveable no Total surface 96 sq ft

No. of Feed pumps 2 Diameter of ditto 3 1/2 Stroke 34 Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 5 Stroke 34 Can one be overhauled while the other is at work yes

No. of Donkey Engines 3 Sizes of Pumps 2 Ballant-9x10 + 9x6 No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room 3 @ 3 1/2" In Holds, &c. 2 @ 3 1/2" in each hold

Funnel with one @ 2 1/2" 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 fore hold suction 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 12.2.13 of Stern Tube 12.2.13 Screw shaft and Propeller 24.2.13

Is the Screw Shaft Tunnel watertight see hull plat Is it fitted with a watertight door yes worked from top platform

BOILERS, &c.—(Letter for record (S)) Manufacturers of Steel Messrs John Spencer & Sons

Total Heating Surface of Boilers 6169 Is Forced Draft fitted no No. and Description of Boilers 3 single ended

Working Pressure 180 Tested by hydraulic pressure to 360 Date of test 11.2.13 No. of Certificate 5022

Can each boiler be worked separately yes Area of fire grate in each boiler 57.7 sq ft No. and Description of Safety Valves to each boiler 2 direct spring Area of each valve 7.07 Pressure to which they are adjusted 185 Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 3'-0" Mean dia. of boilers 15'-0" Length 11'-0" 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 lat long. seams 2 B-3 Riv Diameter of rivet holes in long. seams 1 1/4" Pitch of rivets 8 1/2" Lap of plates or width of butt straps 18 3/4 x 1 3/4

Per centages of strength of longitudinal joint rivets 88.2 plate 85.29 Working pressure of shell by rules 184 Size of manhole in shell 16" x 12"

Size of compensating ring 7 1/2 x 1 3/4 No. and Description of Furnaces in each boiler 3 Brighton Material steel Outside diameter 45 3/8

Length of plain part top bottom Thickness of plates crown bottom 3/8 Description of longitudinal joint welded No. of strengthening rings 1

Working pressure of furnace by the rules 191 Combustion chamber plates: Material steel Thickness: Sides 1/2 Back 1/2 Top 1/2 Bottom 1/2

Pitch of stays to ditto: Sides 8 3/4 x 10 Back 9 3/4 x 9 Top 9 3/4 x 9 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 186

Material of stays steel Diameter at smallest part 1.59 Area supported by each stay 87.75 Working pressure by rules 204 End plates in steam space: Material steel Thickness 1 1/4 Pitch of stays 18 1/2 x 17 How are stays secured nuts + 2 x 1 washer Working pressure by rules 204 Material of stays steel

Diameter at smallest part 3.04 Area supported by each stay 349 Working pressure by rules 216 Material of Front plates at bottom steel

Thickness 1 1/2 Material of Lower back plate steel Thickness 1 1/2 Greatest pitch of stays 14 1/2 x 9 Working pressure of plate by rules 229

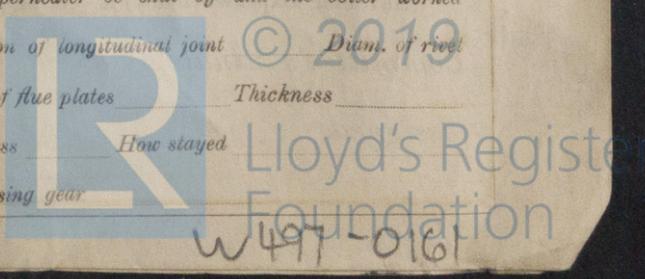
Diameter of tubes 3 1/2 Pitch of tubes 4 3/4 x 4 3/4 Material of tube plates steel Thickness: Front 1 1/2 Back 1 1/2 Mean pitch of stays 11"

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 7 1/2 x 1 3/4 Length as per rule 29 Distance apart 9 3/4 Number and pitch of stays in each 209

Working pressure by rules 185 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



VERTICAL DONKEY BOILER— *Manufacturers of Steel* *See Middlesbrough Report No 7751*

No.	Description			When made	Where fixed
Made at	By whom made				
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	Radius of do.	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 con. rod top end, bottom end and main bearing bolts and nuts; one set of coupling bolts and nuts; one set of feed and bilge pump valves assorted bolts & nuts, iron of various sizes; one tail end shaft & one propeller.*

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

Dates of Survey while building	During progress of work in shops	SECRETARY. 1912 Dec. 9. 11. 12. 16. 17. 18. 20. 22. 24. 1913 Jan. 8. 9. 10. 12. 14. 15. 16. 17. 20. 22. 23. 27. 29. 30. & by J.
	During erection on board vessel	6. 7. 10. 11. 12. 15. 17. 18. 19. 21. 26. 27. Dec. 2. 11. 17. 20.
	Total No. of visits	40

Is the approved plan of main boiler forwarded herewith *yes*
 " " " donkey " " "

Dates of Examination of principal parts—	Cylinders 10.1.13	Slides 8.1.13	Covers 8.1.13	Pistons 23.1.13	Rods 23.1.13
Connecting rods 27.1.13	Crank shaft 22.1.13	Thrust shaft 30.1.13	Tunnel shafts 6.2.13	Screw shaft 19.2.13	Propeller 17.2.13
Stern tube 7.2.13	Steam pipes tested 27.2.13	Engine and boiler seatings 12.2.13	Engines holding down bolts 26.2.13		
Completion of pumping arrangements 11.3.13	Boilers fixed 11.3.13	Engines tried under steam 11.3.13			
Main boiler safety valves adjusted 11.3.13	Thickness of adjusting washers P.B.H.s - 5/16; 6 P.B.H.s - 5/16; 5 P.B.H.s - 5/16				
Material of Crank shaft <i>By Steel</i>	Identification Mark on Do. 6800	Material of Thrust shaft <i>By Steel</i>	Identification Mark on Do. 9311-N		
Material of Tunnel shafts <i>By Steel</i>	Identification Marks on Do. 9311-N	Material of Screw shafts <i>By Steel</i>	Identification Marks on Do. 6800		
Material of Steam Pipes <i>Solid drawn copper (4 1/2 dia x 1/2 S.S.G)</i>	Test pressure 400 lbs.				

General Remarks (State quality of workmanship, opinions as to class, &c. *The machinery of this vessel has been built under special survey. The materials and workmanship are sound and good. The boilers and main steam pipes were tested by hydraulic pressure and the engines and boilers examined under steam and all found satisfactory. In my opinion this vessel is eligible to have the notation of L.M.C. 3-13 in the Register Book.*

It is submitted that this vessel is eligible for THE RECORD. **L.M.C. 3.13.**

Wm Morrison
 2.4.13

The amount of Entry Fee	£ 3-0-0	When applied for.	1912
Special	£ 39-5-0	When received.	1913
Donkey Boiler Fee	£		
Travelling Expenses (if any)	£		

Committee's Minute
 Assigned
 + L.M.C. 3.13

Wm Morrison
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



MACHINERY CERTIFICATE WRITTEN.

Certificate (if required) to be sent on or below the space for Committee's Minute.