

# REPORT ON MACHINERY.

No. 8543.

Received at London Office

THU. JUL. 16. 1914

Date of writing Report 14. 7. 1914. When handed in at Local Office 15. 7. 1914 Port of MIDDLESBRO'  
 No. in Survey held at Middlesbro' Date, First Survey Nov. 28<sup>th</sup> 1913 Last Survey June 30<sup>th</sup> 1914  
 Reg. Book. on the S.S. "Bedale" (Number of Visits 44) Tons 550.59 (Gross) 152 (Net)  
 Master do Built at Londonderry By whom built North of Ireland S.B.C. When built 1914  
 Engines made at Middlesbro' By whom made Richardsons, Westgarth & Co. Ltd when made 1914  
 Boilers made at do By whom made do when made 1914  
 Registered Horse Power do Owners Furness Withy & Co Ltd Port belonging to West Hartlepool  
 Nom. Horse Power as per Section 28 206 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted no

**ENGINES, &c.**—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3  
 Dia. of Cylinders 20 1/2", 33", 54" Length of Stroke 36" Revs. per minute 70 Dia. of Screw shaft 11.4" Material of Steel  
 as per rule 11.4" as fitted 12 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 yes 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 ✓ Length of stern bush 4.3"  
 Dia. of Tunnel shaft 10.04" as per rule 10.2" Dia. of Crank shaft journals 10.54" as per rule 10.8" Dia. of Crank pin 11" Size of Crank webs 16 1/2 x 6 1/2" Dia. of thrust shaft under  
 collars 10 5/8" Dia. of screw 14.3" Pitch of Screw 15.6" No. of Blades 4 State whether moveable no Total surface 73 sq. ft.  
 No. of Feed pumps 2 Diameter of ditto 2 3/4" Stroke 21" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 Diameter of ditto 3 1/4" Stroke 21" Can one be overhauled while the other is at work yes  
 No. of Donkey Engines 2 Sizes of Pumps 2 1/2 x 6 x 4 x 6" Ball 8 x 8 x 8" No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room 2 Stokehold 4-3" & 1 special 3" In Holds, &c. Stokehold 2-2 1/4" : app. hold 2-2 1/4"  
hold well 1-3" : tunnel well 1-2 1/4"  
 No. of Bilge Injections 1 sizes 5" Connected to condenser, or to circulating pump no Is a separate Donkey Suction fitted in Engine room & size yes - 3"  
 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  
 Dates of examination of completion of fitting of Sea Connections 6. 7. 14 of Stern Tube 16. 7. 14 Screw shaft and Propeller 16. 7. 14  
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Eng. Room top platform

**BOILERS, &c.**—(Letter for record (S)) Manufacturers of Steel J. Spencer & Sons Ltd, West. Reinische Stahlwerke  
(plates) (stay bars)  
 Total Heating Surface of Boilers 3386 sq. ft. Is Forced Draft fitted no No. and Description of Boilers Two S.E. Cyl. Multi.  
 Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 27. 3. 14 No. of Certificate 5264  
 Can each boiler be worked separately yes Area of fire grate in each boiler 41 sq. ft. No. and Description of Safety Valves to  
 each boiler double spring loaded Area of each valve 4.9" Pressure to which they are adjusted 185 lbs Are they fitted with easing gear yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 21" Mean dia. of boilers 13'-0" Length 10'-6" Material of shell plates Steel  
 Thickness 1 1/16" Range of tensile strength 29-33 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams S.R. Lap.  
 long. seams S.B.S. Rivets Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 7 1/8" Lap of plates or width of butt straps 1'-5"  
 Per centages of strength of longitudinal joint rivets 86.4 plate 85.1 Working pressure of shell by rules 186 lbs Size of manhole in shell end. 16 x 12"  
 Size of compensating ring flanged No. and Description of Furnaces in each boiler two plain Material Steel Outside diameter 3'-10 1/4"  
 Length of plain part top 4'-10 3/8" bottom 4'-10 3/8" thickness of plates crown 4.9" bottom 6.4" Description of longitudinal joint Welded No. of strengthening rings one  
 Working pressure of furnace by the rules 184 lbs Combustion chamber plates: Material Steel Thickness: Sides 1/16" Back 1/16" Top 1/16" Bottom 1/16"  
 Pitch of stays to ditto: Sides 10 x 8" Back 10 x 8 1/2" Top 10 1/2 x 8" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 190 lbs  
 Material of stays Steel Diameter at smallest part 2.1" Area supported by each stay 85" Working pressure by rules 222 End plates in steam space:  
 Material Steel Thickness 1 3/32" Pitch of stays 19 x 18" How are stays secured nut & w Working pressure by rules 185 lbs Material of stays Steel  
 Diameter at smallest part 6.06" Area supported by each stay 315" Working pressure by rules 200 Material of Front plates at bottom Steel  
 Thickness 1" Material of Lower back plate Steel Thickness 3/32" Greatest pitch of stays 15 x 8 1/2" Working pressure of plate by rules 191  
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/2 x 4 1/2" Material of tube plates Steel Thickness: Front 1" Back 3/32" Mean pitch of stays 11 1/4"  
 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 1/2 x 1 3/4" Length as per rule 2'-2 21/32" Distance apart 10 1/2" Number and pitch of stays in each 2 @ 8"  
 Working pressure by rules 200 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  
 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

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 Safety \_\_\_\_\_

Valves \_\_\_\_\_ No. of Safety Valves \_\_\_\_\_ Area of each \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ Date of adjustment \_\_\_\_\_

If fitted with casing 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:— 2 top end bolts & nuts: 2 bottom end bolts & nuts: 2 main bearing bolts & nuts: 1 set of coupling bolts: 1 set of feed & bridge pump valves: a quantity of assorted bolts & nuts: iron of various sizes: spare tail shaft.

For and on behalf of  
**RICHARDSONS, WESTGARTH & Co., Ltd.**  
 The foregoing is a correct description,  
*W. H. Brown* Manufacturer.

Dates of Survey while building	During progress of work in shops	1913. Nov. 28. Dec. 1. 5. 8. 10. 12. 15. 19. 22. 1914. Jan. 6. 8. 12. 21. 26. 27. Feb. 2. 3. 6. 12. 13. 17. 19. 24. 25. 27. 15.
	During erection on board vessel	Mar. 5. 6. 9. 18. 19. 23. 27. Apr. 1. 16. 21. 27. May. 2. 7. 13. 18. 23. 27. Jun. 10. 19. 22. 26. 30. July 6. 16. 28. Aug. 4. 11. 14.
	Total No. of visits	44 + 7 = 51

Is the approved plan of main boiler forwarded herewith yes

Dates of Examination of principal parts—Cylinders	5. 3. 14	Slides	21. 4. 14	Covers	21. 4. 14	Pistons	19. 3. 14	Rods	19. 3. 14
Connecting rods	19. 3. 14	Crank shaft	24. 12. 13	Thrust shaft	18. 5. 14	Tunnel shafts	18. 5. 14	Screw shaft	26. 6. 14
Propeller	26. 6. 14	Stern tube	30. 6. 14	Steam pipes tested	4. 8. 14	Engine and boiler seatings	6. 7. 14	Engines holding down bolts	4. 8. 14
Completion of pumping arrangements	14. 8. 14	Boilers fixed	11. 8. 14	Engines tried under steam	15. 8. 14	Main boiler safety valves adjusted	14. 8. 14	Thickness of adjusting washers	Port Blt { P. 3/8" S 1/2" } Star Blt { P. 3/8" S 3/8" }
Material of Crank shaft	Steel	Identification Mark on Do.	5497AB	Material of Thrust shaft	Steel	Identification Mark on Do.	650WS	Material of Tunnel shafts	Steel
Material of Tunnel shafts	Steel	Identification Marks on Do.	652WS, 157AL, 652WS, 651WS, 156AL.	Material of Screw shafts	Steel	Identification Marks on Do.	649WS	Material of Steam Pipes	Copper
Test pressure	360 lbs per sq	Spare	3695 M.B.						

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

The Engines and Boilers of this vessel have been constructed under Special Survey and are of good material and workmanship. They have now been sent to London Dry Dock to be fitted on board the vessel.

The machinery has been recently fitted aboard, and when tried under steam was found satisfactory.

It is submitted that the machinery is eligible for a record + L.M.C. 8.14 in the Register Book.

It is submitted that this vessel is eligible for **THE RECORD, + L.M.C. 8.14**

*J.P.*  
20.8.14

The amount of Entry Fee	£ 2	When applied for,	15.7.14
Special dues	£ 20	When received,	22.8.14
Donkey Boiler Fee	£ 10		
Travelling Expenses (if any)	£ 10-7-6		

*A. S. Thomas*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute FRI. AUG. 21. 1914  
 Assigned + L.M.C. 8.14

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

Date of writing Rep. \_\_\_\_\_  
 No. in Survey Reg. Book. \_\_\_\_\_  
 on the \_\_\_\_\_  
 Master \_\_\_\_\_  
 Boiler made at \_\_\_\_\_  
 Owners J.P.  
**VERTICAL**  
 Made at Aun  
 tested by hydraulic \_\_\_\_\_  
 No. of safety valve \_\_\_\_\_  
 enter the donkey boiler \_\_\_\_\_  
 strength 28-32 D. \_\_\_\_\_  
 Lap of plating 4 \_\_\_\_\_  
 Radius of do. 3 \_\_\_\_\_  
 Thickness of furnace plates 17/32 \_\_\_\_\_  
 Thickness of water \_\_\_\_\_  
 Dates of Survey while building { During work in shops, During erection on board vessel, Total No. }  
**GENERAL R**  
 The \_\_\_\_\_  
 The \_\_\_\_\_  
 Survey Fee \_\_\_\_\_  
 Travelling Exp \_\_\_\_\_  
 Committee's \_\_\_\_\_  
 Assigned \_\_\_\_\_

