

REPORT ON MACHINERY.

WED. MAR. 4-1914

Date of writing Report 26.2.14 When handed in at Local Office 3/3/14 Port of MIDDLESBRO
 No. in Survey held at Stockton-on-Tees Date, First Survey Nov. 19. 1913 Last Survey Feb. 23. 1914
 Reg. Book. 38 Sup. on the Steel Screw Steamer "FRISIA" (S.S. No. 214) (Number of Visits 38)
 Master _____ Built at Newcastle By whom built Northumberland S.S. Co Tons { Gross 4985 Net 3137 When built 1914
 Engines made at Stockton By whom made Messrs Blair & Co Lim. (No. 1793) when made 1914
 Boilers made at Stockton By whom made Messrs Blair & Co Lim. when made 1914
 Registered Horse Power _____ Owners Hamburg America line Port belonging to Hamburg
 Nom. Horse Power as per Section 28 586 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Tri-compound No. of Cylinders 3 No. of Cranks 3
 Dia. of Cylinders 28-46 1/2 - 78 Length of Stroke 54 Revs. per minute 65 Dia. of Screw shaft 16 1/2 Material of screw shaft Iron 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 one 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 light fit If two liners are fitted, is the shaft lapped or protected between the liners yes Length of stern bush 5-11
 Dia. of Tunnel shaft 14.8 Dia. of Crank shaft journals 15.53 Dia. of Crank pin 16 1/2 Size of Crank webs 3 1/2, 10 1/2 Dia. of thrust shaft under collars 16 1/2 Dia. of screw 19-0 Pitch of Screw 19-0 No. of Blades 4 State whether moveable no Total surface 108 sq ft
 No. of Feed pumps 2 Diameter of ditto 4 Stroke 36 Can one be overhauled while the other is at work yes
 No. of Bilge pumps 2 Diameter of ditto 5 Stroke 36 Can one be overhauled while the other is at work yes
 No. of Donkey Engines 2 Sizes of Pumps Ballast 13x12; Fuel 4 1/2 x 10 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 each hold; Jummel one @ 2 1/2
Deep tank 2 @ 3 1/2 and two tank (5" diam) filling & suction, all provided with blank flanges
 No. of Bilge Injections 1 sizes 9 1/2 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 below
 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 suctions to forward holds How are they protected wood ciling
 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 20/1/14 of Stern Tube 29/1/14 Screw shaft and Propeller 9.2.14
 Is the Screw Shaft Tunnel watertight see hull Rpt 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
Howden's System
 Total Heating Surface of Boilers 7995 Is Forced Draft fitted yes No. and Description of Boilers 3 single ended
 Working Pressure 200 Tested by hydraulic pressure to 400 Date of test 3.2.14 No. of Certificate 5229
 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 direct spring Area of each valve 11.04 sq in Pressure to which they are adjusted 205 lbs Are they fitted with easing gear yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 10'-0" Mean dia. of boilers 15'-4 1/2" Length 11'-6" Material of shell plates steel
 Thickness 1 1/2 Range of tensile strength 28 1/2 - 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 1/8" Pitch of rivets 9 1/4" Lap of plates or width of butt straps 21 x 1 1/2
 Per centages of strength of longitudinal joint rivets 92.6 Working pressure of shell by rules 213 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 Morrison Material steel Outside diameter 46 15/32
 Length of plain part top 39 Thickness of plates bottom 64 Description of longitudinal joint Weld No. of strengthening rings 3
 Working pressure of furnace by the rules 210 Combustion chamber plates: Material steel Thickness: Sides 1/2" Back 3/32" Top 1/2" Bottom 3/32"
 Pitch of stays to ditto: Sides 7 1/2 x 7 1/2 Back 7 1/2 x 7 1/2 Top 8 3/4 x 7 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 243
 Material of stays steel Diameter at smallest part 1.69 Area supported by each stay 63 Working pressure by rules 214 End plates in steam space 8 x 3/8 washers
 Material steel Thickness 1 1/2 Pitch of stays 17 1/2 x 15 How are stays secured nuts Working pressure by rules 240 Material of stays steel
 Diameter at smallest part 7.24 Area supported by each stay 285 Working pressure by rules 265 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 17 x 7 1/2 Working pressure of plate by rules 249
 Diameter of tubes 2 1/2 Pitch of tubes 3 3/4 x 3 3/4 Material of tube plates steel Thickness: Front 1 1/2" Back 27/32" Mean pitch of stays 7 1/2"
 Pitch across wide water spaces 13 1/2" Working pressures by rules 222 Girders to Chamber tops: Material steel Depth and thickness of girder at centre 7 3/4 x 1 1/2 Length as per rule 28 1/2 Distance apart 9 Number and pitch of stays in each 3 @ 7"
 Working pressure by rules 217 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* **NONE**

No. _____ Description _____

Made at _____ By whom made _____ When made _____ Where fired _____

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 top end & 2 bottom end bolts, 2 main bearing bolts, 1 set of coupling bolts, 1 set of feed & bilge pump valves, 1 set of H.P. piston rings, a quantity of assorted bolts nuts & iron & spore propeller.*

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

Dates of Survey while building { During progress of work in shops --- } 1913 Nov. 19. 20. 21. 24. 26. 28. Dec. 1. 3. 5. 10. 12. 15. 17. 19. 23. 30. 1914 Jan. 5. 6. 7. 9. 12. 14. 16. 19. 21. 23. 26. 29.

{ During erection on board vessel --- } 1914 Feb. 2. 3. 9. 12. 13. 16. 17. 19. 20. 23. Feb. 5 Mar. 9. 23. Apr. 1. (at sea)

Total No. of visits *38 + 4* Is the approved plan of main boiler forwarded herewith *yes*

Dates of Examination of principal parts—Cylinders *30.12.13* Slides *17.12.13* Covers *17.12.13* Pistons *30.12.13* Rods *30.12.13*

Connecting rods *30.12.13* Crank shaft *6.1.14* Thrust shaft *1.12.13* Tunnel shafts *22.11.13* Screw shaft *16.1.14* Propeller *16.1.14*

Stern tube *9.1.14* Steam pipes tested *19.2.14* Engine and boiler seatings _____ Engines holding down bolts *16.2.14*

Completion of pumping arrangements *23.2.14* Boilers fixed *23.2.14* Engines tried under steam *23.2.14*

Main boiler safety valves adjusted *23.2.14* Thickness of adjusting washers *P 1 1/32 : 6 P 1/32 : 3 P 1/32 : S P 1/32*

Material of Crank shaft *By Steel* Identification Mark on Do. *6874* Material of Thrust shaft *By Steel* Identification Mark on Do. *141-N*

Material of Tunnel shafts *By Steel* Identification Marks on Do. *141-N* Material of Screw shaft *By Steel* Identification Marks on Do. *6874*

Material of Steam Pipes *Solid drawn steel (5" x .225")* Test pressure *600 lbs.*

General Remarks (State quality of workmanship, opinions as to class, &c. *To complete the survey the spare gear requires to be examined. It is proposed to have this done at Newcastle. The Surveyors have been advised.*)

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 will be eligible to have the notation of L.M.C. with a date, when the survey has been completed.

The spare gear has now been examined and the survey completed. In my opinion the vessel is eligible for record of L.M.C. 4.14.

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 4.14.

J.W.D. 7/1914 *A.P.P.*

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

The amount of Entry Fee .. £ *3-0-0* When applied for, _____

Special £ *49-6-0* 2. 3. 19. 14.

Donkey Boiler Fee £ *✓* : _____

Travelling Expenses (if any) £ *✓* : _____

Committee's Minute *FRI. MAY. 8 - 1914*

Assigned *+ L.M.C. 4.14*

Certificate (if registered) to be sent to Middlesbrough.

