

REPORT ON MACHINERY.

No. 12646

Port of WEST HARTLEPOOL

Received at London Office

FRI. 16 JUN 1905

No. in Survey held at Hartlepool Date, first Survey 13th January 1905 Last Survey 10th June 1905
 Reg. Book. Sup. 108 on the Steel S.S. "Archbank" (Number of Visits 78)
 Master A. Milne Built at Hartlepool By whom built Furness, Withy & Co. Ltd. Tons { Gross 3766.87
 Engines made at Hartlepool By whom made Richardsons, Westgarth & Co. Ltd. Net 2455.04
 Boilers made at Do. By whom made Do. When built 1905
 Registered Horse Power 314 Owners Barth S.S. Co. Ltd. (Birmingham & Co. Mgrs) Port belonging to Newcastle
 Nom. Horse Power as per Section 28 314 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Triple expansion No. of Cylinders three No. of Cranks three
 Dia. of Cylinders 24" 39" 66" Length of Stroke 45" Revs. per minute 60 Dia. of Screw shaft 13.6" Material of screw shaft as per rule
 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 ✓ 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 Yes If two
 liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 4'-10 1/2"
 Dia. of Tunnel shaft 12" Dia. of Crank shaft journals 12.6" Dia. of Crank pin 13 1/8" Size of Crank webs 8" x 25 1/2" Dia. of thrust shaft under
 collars 13 1/8" Dia. of screw 16-9" Pitch of screw 16-6" No. of blades 4 State whether moveable No Total surface 84.6 sq'
 No. of Feed pumps 2 Diameter of ditto 3" Stroke 24" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 3 3/4" Stroke 24" Can one be overhauled while the other is at work Yes
 No. of Donkey Engines 2 Sizes of Pumps 1 1/2" x 4" & 1" x 4" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Three 3 1/2" dia In Holds, &c. One 2 1/2" dia to Top peak, One 3 1/2" dia
to No. 1 hold, One 3 1/2" dia to No. 2 hold, One 3 1/2" dia to No. 3 hold, One 3 1/2" dia to No. 4 hold, One 2 1/2" to hold.
 No. of bilge injections one sizes 5" 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 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
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock New vessel Is the screw shaft tunnel watertight Yes
 Is it fitted with a watertight door Yes worked from upper platform

BOILERS, &c.—(Letter for record S.) Total Heating Surface of Boilers 4810 sq. ft. Is forced draft fitted No
 No. and Description of Boilers One single ended byf. Mult. Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs.
 Date of test 14-5-05 Can each boiler be worked separately Yes Area of fire grate in each boiler 52.3 sq' No. and Description of safety valves to
 each boiler 2 Spring direct Area of each valve 4.06 sq' 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 20" Mean dia. of boilers 16'-0" Length 10'-6" Material of shell plates steel
 Thickness 1 1/2" Range of tensile strength 38.5 Are they welded or flanged no Descrip. of riveting: cir. seams double long. seams treble
 Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 8 5/8" Lap of plates or width of butt straps 18"
 Per centages of strength of longitudinal joint 86.8 Working pressure of shell by rules 181.5 lbs. Size of manhole in shell 13" x 16 1/2"
 Size of compensating ring 24" x 30" x 1 1/2" No. and Description of Furnaces in each boiler 3 Monson Material steel Outside diameter 50 1/2"
 Length of plain part 8" Thickness of plates 1 1/2" Description of longitudinal joint weld No. of strengthening rings —
 Working pressure of furnace by the rules 184 lbs. Combustion chamber plates: Material steel Thickness: Sides 1 1/2" Back 1 1/2" Top 1 1/2" Bottom 1 1/2"
 Pitch of stays to ditto: Sides 8 1/2" x 4 1/2" Back 8 1/2" Top 4 1/2" x 8 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 183 lbs.
 Material of stays steel Diameter at smallest part 1 3/8" Area supported by each stay 65 sq" Working pressure by rules 181 lbs. End plates in steam space:
 Material steel Thickness 1 1/2" Pitch of stays 16 1/2" x 16 1/2" How are stays secured O.N.Y. Working pressure by rules 182 lbs. Material of stays steel
 Diameter at smallest part 2 3/4" Area supported by each stay 246 sq" Working pressure by rules 202 lbs. Material of Front plates at bottom steel
 Thickness 7/8" Material of Lower back plate steel Thickness 2 5/32" Greatest pitch of stays 12 3/4" Working pressure of plate by rules 185 lbs.
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" Material of tube plates steel Thickness: Front 1" Back 3/4" Mean pitch of stays 9"
 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 8" x 1 1/4" Length as per rule 31" Distance apart 8 3/4" Number and pitch of Stays in each 3 — 4 1/2"
 Working pressure by rules 181 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 ✓

DONKEY BOILER— No. *One* Description *Single ended byl. Mult.*
 Made at *Stockton* By whom made *Piley Bros. Ltd* When made *1905* Where fixed *Stoke hold*
 Working pressure *80 lb* tested by hydraulic pressure to *160 lb* No. of Certificate *3425* Fire grate area *22.5* Description of safety valves *Spring direct*
 No. of safety valves *2* Area of each *5.94* Pressure to which they are adjusted *85 lb* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No*
 Dia. of donkey boiler *9-0"* Length *9-0"* Material of shell plates *steel* Thickness *1/2"* Range of tensile strength *27-32* Descrip. of riveting long. seams *Lap treble riv.* Dia. of rivet holes *13/16"* Whether punched or drilled *drilled* Pitch of rivets *3 1/4"*
 Lap of plating *6 1/2"* Per centage of strength of joint *81.5* Rivets *81.5* Thickness of shell crown plates *3/4"* Radius of do. *—* No. of Stays to do. *4*
 Dia. of stays. *2 1/2"* Diameter of furnace *Top 2-4" Bottom 7-8 1/2"* Length of furnace *5-11"* Thickness of furnace plates *1/2"* Description of joint *weld* Thickness of furnace crown plates *15/32"* Stayed by *screwed stay* Working pressure of shell by rules *91.2 lb.*
 Working pressure of furnace by rules *93 lb.* Diameter of uptake *8 1/4"* Thickness of uptake plates *5/16"* Thickness of water tubes *5/16"*

SPARE GEAR. State the articles supplied:— *2 bon. rod top + 2 bon. rod bottom end bolt + nuts, 2 Main bearing and one set of coupling bolts, one set of feed + bilge pump valves, a quantity of assorted bolts + nuts, and iron various sizes, propellers, propeller shaft, HP piston packing ring, + two HP piston Valve ring.*

The foregoing is a correct description,
RICHARDSONS, WESTGARTH & CO. LIMITED
 Manufacturer.

Dates of Survey while building
 During progress of work in shops— *1905 Jan. 13, 16, 17, 18, 20, 23, 25, 26, 27, 30, 31. Feb. 1, 2, 3, 6, 7, 8, 9, 10, 13, 14, 16, 20, 23, 24, 27, 28. Mar. 1, 2, 3, 4, 6, 7, 9, 10, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24*
 During erection on board vessel— *28, 29, 30, 31. April 3, 4, 5, 6, 7, 10, 14, 17, 18, 19, 20, 26. May 1, 2, 4, 5, 8, 10, 11, 13, 17, 19, 22, 23, 26, 27, 30. June 10.*
 Total No. of visits *78* Is the approved plan of main boiler forwarded herewith *Yes*
 " " " donkey " " " *Yes*

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

*The main steam pipes have been tested by hydraulic to 360 lbs per sq. in and found tight.
 The engines and boilers of this vessel have been built under special survey in accordance with the Rules requirements, the material and workmanship being good and efficient. When completed and fitted on board were tried under steam at moorings with satisfactory results, and is now eligible in my opinion, to have record + LMC 6.05 marked in the Register Book.*

It is submitted that
 this vessel is eligible for
 THE RECORD *ELM.C. 6.05.*

Imd.
16.6.05.
J.M.

The amount of Entry Fee. £ *3* :
 Special £ *35* :
 Donkey Boiler Fee £ :
 Travelling Expenses (if any) £ :
 When applied for, *15.1.11*
 When received, *16.6.105*

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

Committee's Minute

TUES. 20 JUN 1905

Assigned

+ LMC 6.05