

REPORT ON MACHINERY.

Port of WEST HARTLEPOOL.

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No. in Survey held at Hartlepool. Date, first Survey 5th June, 1905 Last Survey 22nd Nov^r 1905.
 Reg. Book. Supplement 52 on the SS "Clan Macpherson" (Number of Visits 77)
 Master S. Beer 79-05 Built at W Hartlepool By whom built Furness, Withy & Co Ltd When built 1905
 Engines made at Hartlepool By whom made Richardsons Westgarth & Co Ltd when made 1905
 Boilers made at Hartlepool By whom made Richardsons Westgarth & Co Ltd when made 1905
 Registered Horse Power _____ Owners Bayzer, Irvine & Co Port belonging to Glasgow
 Nom. Horse Power as per Section 28 448 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple expansion No. of Cylinders 3 No. of Cranks 3
 Dia. of Cylinders 26 1/4 3 1/2 7 1/2 Length of Stroke 48 Revs. per minute 69 Dia. of Screw shaft 14.9 Material of Ingt. 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 one length 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 7-5
 Dia. of Tunnel shaft 13 1/2 as per rule 14 Dia. of Crank shaft journals 14.18 as per rule 15 Dia. of Crank pin 15 Size of Crank webs 9 3/4 x 29 Dia. of thrust shaft under
 collars 16 Dia. of screw 17.9 Pitch of screw 17.9 No. of blades 4 State whether moveable Yes Total surface 91 1/2
 No. of Feed pumps 2 Diameter of ditto 4 1/2 Stroke 27 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 4 1/2 Stroke 27 Can one be overhauled while the other is at work Yes
 No. of Donkey Engines Four Sizes of Pumps 2 Weirs General Ballast 7x21 6x4x6 11x13x11 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Four 3 1/2" diam In Holds, &c. Twelve. One 2 1/2" dia in fore peak
Two 3 1/2" dia in each hold and one 2 1/2" dia in tunnel well
 No. of bilge injections One sizes 6 1/2" dia Connected to condenser, or to circulating pump pump 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 Now new Is the screw shaft tunnel watertight Yes
 Is it fitted with a watertight door Yes worked from Engine room top platform

BOILERS, &c.— (Letter for record S.) Total Heating Surface of Boilers 6028 1/2 Is forced draft fitted Yes Indus
 No. and Description of Boilers 2 single ended cylindrical multibore Working Pressure 200 lbs Tested by hydraulic pressure to 400 lbs
 Date of test 20.9.05 Can each boiler be worked separately Yes Area of fire grate in each boiler 62.9 1/2 No. and Description of safety valves to
 each boiler Two spring loaded Area of each valve 11.045 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 2-2 Mean dia. of boilers 16-2 Length 11-9 Material of shell plates steel
 Thickness 1 7/16 Range of tensile strength 28-32 Are they welded or flanged No Descrip. of riveting: cir. seams treble long. seams treble
 Diameter of rivet holes in long. seams 1 7/16 Pitch of rivets 9 3/4 Lap of plates or width of butt straps 21
 Per centages of strength of longitudinal joint 85.9 rivets 85.2 plate Working pressure of shell by rules 201 lbs Size of manhole in shell 13 x 16 1/2
 Size of compensating ring 29 x 30 x 1 7/16 No. and Description of Furnaces in each boiler 3 Morrison Material steel Outside diameter 50 3/4
 Length of plain part 7-11 1/2 Thickness of plates 3 1/2 Description of longitudinal joint Weld No. of strengthening rings ✓
 Working pressure of furnace by the rules 211 lbs Combustion chamber plates: Material steel Thickness: Sides 3 1/2 Back 3 1/2 Top 3 1/2 Bottom 1
 Pitch of stays to ditto: Sides 9 x 7 3/4 Back 8 1/4 x 8 3/4 Top 8 1/2 x 8 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 212 lbs
 Material of stays steel Diameter at smallest part 1 1/2 Area supported by each stay 70.1 Working pressure by rules 201 lbs End plates in steam space:
 Material steel Thickness 1 3/24 Pitch of stays 17 x 17 How are stays secured by nuts Working pressure by rules 202 lbs Material of stays steel
 Diameter at smallest part 2 3/4 Area supported by each stay 289 Working pressure by rules 205 lbs Material of Front plates at bottom steel
 Thickness 7/8 Material of Lower back plate steel Thickness 7/8 Greatest pitch of stays 13 1/2 Working pressure of plate by rules 211 lbs
 Diameter of tubes 2 1/2 Pitch of tubes 3 3/4 Material of tube plates steel Thickness: Front 1 Back 3/4 Mean pitch of stays 7 1/2
 Pitch across wide water spaces 13 1/2 Working pressures by rules 211 lbs Girders to Chamber tops: Material steel Depth and
 thickness of girder at centre 8 x 1 3/4 Length as per rule 30 Distance apart 8 1/2 Number and pitch of Stays in each Two 8 1/4
 Working pressure by rules 208 lbs Superheater or Steam chest; how connected to boiler ✓ 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. _____ Description _____
 Made at _____ By whom made _____ When made _____ Where fixed _____
 Working pressure _____ tested by hydraulic pressure to _____ No. of Certificate _____ Fire grate area _____ Description of safety valves _____
 No. of safety valves _____ Area of each _____ Pressure to which they are adjusted _____ 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 _____ 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 _____
 Thickness of furnace crown plates _____ Stayed by _____ Working pressure of shell by rules _____
 Working pressure of furnace by rules _____ Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____

SPARE GEAR. State the articles supplied:— 2 Top end bolts & nuts, 2 Bottom end bolts & nuts, 2 Main bearing bolts & nuts, 1 set coupling bolts & nuts, 1 set of springs for IP & IP pistons, 1 set of feed, bilge, air, circulating & ballast pump valves, assorted bolts nuts & iron, 2 propeller blades, 3 propeller studs & nuts, 1 propeller shaft, 6 boiler & condenser tubes, 24 condenser ferrules, 1 main safety valve spring

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

Henry G. Murray

Dates of Survey while building
 During progress of work in shops— 1905, April 5, 6, 7, 8, 10, 14, 15, 16, 17, 19, 20, 21, 22, 23, 26, 27, 29, July 3, 4, 6, 7, 13, 17, 18, 19, 20, 24, 25, 28, Aug. 1, 3, 14, 16, 17, 18
 During erection on board vessel— 21, 22, 23, 24, 25, 28, 29, 30, 31, Sept. 1, 4, 5, 6, 7, 11, 12, 13, 14, 15, 18, 19, 20, 21, 22, 25, 26, 27, 28, Oct. 5, 5, 5, 6, 9, 14, 20, 25, 26, 27, Nov. 9, 18, 20, 22
 Total No. of visits _____
 Is the approved plan of main boiler forwarded herewith Yes/No
 " " " donkey " " " Yes/No

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

The main steam pipes (copper) have been tested to 400 lbs per sq inch with cold water pressure & found satisfactory.
 The engines & boilers of this vessel have been built under special survey and are in accordance with the requirements of the rules; the materials and workmanship are good.
 When completed & placed on board the vessel the machinery was tried under steam & found to work well, and in my opinion is eligible to have record of * L M C 11.05 in the Register book.
 (This machinery is similar to that of the S S "Clair Macleod" W. Hartlepool Report No 12166.)

It is submitted that this vessel is eligible for THE RECORD L.M.C. 11.05 F.D. ELEC. LIGHT.

Emb.
30.11.05
30.11.05

The amount of Entry Fee... £ 3 : :
 Special ... £ 42 : 8 :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : :
 When applied for, 25.11.05
 When received, 29.11.05

A. J. Graham
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

FRI. 1 DEC 1905

Assigned

+ L.M.C. 11.05
 F.D. Elec. light

MACHINERY CERTIFICATE WRITTEN.



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Certificate (if required) to be sent to West Hartlepool

The Surveyors are requested not to write on or below the space for Committee's Minute.

Form No. 1B