

REPORT ON MACHINERY.

No. 12719

Port of WEST HARTLEPOOL

Received at London Office MUN. 2 OCT 1905

No. in Survey held at W Hartlepool Date, first Survey 9th March Last Survey 29th Sept. 1905

Reg. Book. 174 on the SS "HARLEY" (Number of Visits 87)

Master E. E. Smith Built at W Hartlepool By whom built Furness Withy & Co Ltd Tons { Gross 3518.24 Net 2277.85 When built 1905

Engines made at W Hartlepool By whom made Richardsons Westgarth & Co Ltd when made 1905

Boilers made at W Hartlepool By whom made Richardsons Westgarth & Co Ltd when made 1905

Registered Horse Power _____ Owners J & C Harrison Limited Port belonging to London

Nom. Horse Power as per Section 28 319 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 FP 24" IP 39" LP 66" Length of Stroke 45" Revs. per minute 62 Dia. of Screw shaft as per rule 13.55 Material of cast iron screw shaft as fitted 14.8"

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 4-8 1/2"

Dia. of Tunnel shaft as per rule 12.07" Dia. of Crank shaft journals as per rule 12.67" 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 16-6" Pitch of screw 16-0" No. of blades 4 State whether moveable No Total surface 85 sq

No. of Feed pumps two Diameter of ditto 3" Stroke 27" Can one be overhauled while the other is at work yes

No. of Bilge pumps two Diameter of ditto 3 3/4" Stroke 27" Can one be overhauled while the other is at work yes

No. of Donkey Engines two Sizes of Pumps 4" x 6" duplex, 8 1/2" x 7" double acting No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 3 Port, Starboard & Centre all 3 1/2" dia In Holds, &c. two each to Nos. 1, 2, 3 & 4 holds, all 3 1/2" diam Also 1 to fore peak 2 1/2" diam & 1 to tunnel well 2 1/2" diam.

No. of bilge injections 1 sizes 5" dia Connected to condenser, or to circulating pump, line pumps Is a separate donkey suction fitted in Engine room & size yes 3 1/2" dia

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 Cargroom top platform

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 4933 Is forced draft fitted No

No. and Description of Boilers Two single ended Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs

Date of test 25.8.05 Can each boiler be worked separately yes Area of fire grate in each boiler 52.31 sq No. and Description of safety valves to each boiler Two spring loaded Area of each valve 7.068" 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 17" Mean dia. of boilers 16-0" Length 10-9" Material of shell plates steel

Thickness 1 7/16" Range of tensile strength 28 1/2-31 1/4" Are they welded or flanged No Descrip. of riveting: cir. seams triple long. seams triple

Diameter of rivet holes in long. seams 1 7/16" Pitch of rivets 9 3/8" Lap of plates or width of butt straps 19 1/2"

Percentages of strength of longitudinal joint rivets 85% plate 85.4% Working pressure of shell by rules 206 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 6-8" Thickness of plates crown 3 1/2" bottom 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 7/8"

Number of stays to ditto: Sides 7 1/2" x 7 1/2" Back 7 1/2" x 7 1/2" Top 7 1/2" x 7 1/2" Are stays fitted with nuts or riveted heads Nuts Working pressure by rules 193.5 lbs

Material of stays steel Diameter at smallest part 1 3/8" Area supported by each stay 63" Working pressure by rules 186 lbs End plates in steam space:

Material steel Thickness 1 7/16" Pitch of stays 17 1/4" How are stays secured All nuts & washers Working pressure by rules 183.5 lbs Material of stays steel

Diameter at smallest part 3" Area supported by each stay 315" Working pressure by rules 224 lbs Material of Front plates at bottom steel

Thickness 7/8" Material of Lower back plate steel Thickness 1 3/16" Greatest pitch of stays 12 3/4" Working pressure of plate by rules 205 lbs

Diameter of tubes 3 1/2" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates steel Thickness: Front 1 3/2" Back 3/4" Mean pitch of stays 9"

Clearance across wide water spaces 14 1/2" Working pressures by rules 194 lbs Girders to Chamber tops: Material steel Depth and

Thickness of girder at centre 8" x 1 3/4" Length as per rule 31 1/2" Distance apart 7 1/16" Number and pitch of Stays in each Three 9 1/2"

Working pressure by rules 185 lbs Superheater or Steam chest; how connected to boiler _____ Can the superheater be shut off and the boiler worked

Material _____ Diameter _____ Length _____ Thickness of shell plates _____ Material _____ Description of longitudinal joint _____ Diam. of rivet

Pitch of rivets _____ Working pressure of shell by rules _____ Diameter of flue _____ Material of flue plates _____ Thickness _____

Strengthened 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 _____

Richardsons Westgarth & Co Ltd 1701192

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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 ca _____

enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____ Material of shell plates _____ Thickness _____ Range of tensil _____

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 _____

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 of coupling bolts, 1 set of feed & budge pump valves, 1 set of springs for each piston, 1 spare propeller, assorted bolts, nuts & iron, 1 spare propeller shaft.*

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

S.P. Brjate

Dates of Survey while building

During progress of work in shops - -	1905 Mar. 9, 30 Apr. 14, 17, 18, 19, 20, 26, 27, 28 May. 1, 2, 4, 8, 10, 11, 12, 13, 16, 17, 18, 19, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 June. 3, 5, 10, 14, 15, 16, 20, 21, 22, 23, 26
During erection on board vessel - -	30 July. 4, 7, 11, 13, 17, 18, 19, 20, 24, 25, 28 Aug. 1, 2, 3, 14, 17, 18, 21, 22, 23, 24, 25, 26, 29, 30, 31 Sept. 1, 4, 5, 7, 8, 11, 12, 13, 14, 16, 19, 22, 25, 26, 28, 29
Total No. of visits	87

Is the approved plan of main boiler forwarded herewith *Yes*

" " " donkey " " " *Yes*

General Remarks (State quality of workmanship, opinions as to class, &c. *These engines and boilers have been constructed under special survey, & are in accordance with the requirements of the rules of this Society. The materials & workmanship are good. When completed & fitted on board the vessel the machinery was tried under steam with satisfactory results. The main steam pipes (iron) have been tested to 360 lbs per sq inch with cold water pressure. In my opinion this machinery is eligible to have notation of * L.M.C. 9.05 in the Register Book.*

It is submitted that this vessel is eligible for THE RECORD L.M.C. 9.05

Wm. J. Graham
2.10.05

The amount of Entry Fee. £ 3 : :
Special ... £ 35 : 19 :
Donkey Boiler Fee ... £ : :
Travelling Expenses (if any) £ : :

When applied for, 28.9.05
When received, 4/10/05

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

TUES. 3 OCT 1905

Committee's Minute
Assigned *+ Lmb 903*



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.