

REPORT ON MACHINERY.

THUR 25 APR 1895

Port of WEST HARTLEPOOL

Received at London Office

No. in Survey held at WEST HARTLEPOOL. Date, first Survey 17th Oct. 1894 Last Survey 20th April 1895
 Reg. Book. on the S.S. "Leebend" (Number of Visits 48.)
 Master Thomas Owen Built at Hartlepool By whom built Gunnep & Pithy & Co Tons Gross 2363.59 Net 1504.58
 Engines made at Hartlepool By whom made J. Richardson & Son L^{td} when made 1895
 Boilers made at Do By whom made Do when made 1895
 Registered Horse Power 224 Owners Messrs J. Lilly & Co Port belonging to Hartlepool
 Nom. Horse Power as per Section 28 224

ENGINES, &c.— Description of Engines Triple expansion No. of Cylinders 3
 Diameter of Cylinders 32, 36 $\frac{1}{2}$, 59 Length of Stroke 39 Revolutions per minute 58 Diameter of Screw shaft as per rule 10.4 as fitted 10.38
 Diameter of Tunnel shaft as per rule 9.88 as fitted 10 $\frac{1}{2}$ Diameter of Crank shaft journals 10 $\frac{3}{8}$ Diameter of Crank pin 10 $\frac{3}{4}$ Size of Crank webs 16 $\frac{1}{4}$ x 7 $\frac{1}{4}$
 Diameter of screw 15.6 Pitch of screw 15.6 No. of blades 4 State whether moveable No Total surface 67.8
 No. of Feed pumps 2 Diameter of ditto 2 $\frac{3}{4}$ Stroke 23" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 3 $\frac{3}{4}$ Stroke 23" Can one be overhauled while the other is at work Yes
 No. of Donkey Engines 2 Sizes of Pumps 3 $\frac{1}{2}$, 5, 8 $\frac{1}{2}$, 7 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 2, P. 2 $\frac{3}{4}$, S. 2 $\frac{3}{4}$, Well 3", donkey 3 $\frac{1}{2}$ " In Holds, &c. Fore peak 2 $\frac{1}{2}$ ", Fore well 3", Main hold P. 2 $\frac{3}{4}$, S. 2 $\frac{3}{4}$, After hold P. 2 $\frac{3}{4}$, S. 2 $\frac{3}{4}$, Well 3", Tunnel well 3", After peak 2 $\frac{1}{2}$ "
 No. of bilge injections 1 sizes 6 Connected to condenser, or to circulating pump Pump Is a separate donkey suction fitted in Engine room & size Yes 3 $\frac{1}{2}$ "
 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 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 Main hold Suctions How are they protected With wood
 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 No Ship Is the screw shaft tunnel watertight Yes
 Is it fitted with a watertight door Yes worked from Upper platform

BOILERS, &c.— (Letter for record (B.)) Total Heating Surface of Boilers 3474.8
 No. and Description of Boilers 200 Single ended Steel Working Pressure 160 Tested by hydraulic pressure to 320
 Date of test 19.2.95 Can each boiler be worked separately Yes Area of fire grate in each boiler 42.6 No. and Description of safety valves to each boiler 2 Yes Spring Area of each valve 5.9 Pressure to which they are adjusted 165 Are they fitted with easing gear Yes Smallest distance between boilers or uptakes and bunkers or woodwork 2.0" Mean diameter of boilers 13.9"
 Length 10.0" Material of shell plates Steel Thickness 1 $\frac{3}{8}$ " Description of riveting: circum. seams Lap double long. seams A.B. treble
 Diameter of rivet holes in long. seams 1 $\frac{3}{4}$ " Pitch of rivets 7 $\frac{3}{8}$ " Lap of plates or width of butt straps 19 $\frac{1}{2}$ "
 Percentages of strength of longitudinal joint rivets 85.6 Working pressure of shell by rules 165 Size of manhole in shell ends 16 x 12
 Size of compensating ring No. and Description of Furnaces in each boiler 3 Morrison Material Steel Outside diameter 3.6"
 Length of plain part top 6.0" Thickness of plates crown 1 $\frac{1}{2}$ " Description of longitudinal joint Welded No. of strengthening rings 13/16
 bottom 6.9" Thickness of plates bottom 1 $\frac{1}{2}$ " Working pressure of furnace by the rules 180 Combustion chamber plates: Material Steel Thickness: Sides 5/8" Back 19/32" Top 5/8" Bottom 13/16"
 Pitch of stays to ditto: Sides 8 $\frac{1}{4}$ " Back 8 $\frac{1}{2}$ " Top 8 $\frac{3}{4}$ " If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 168.5
 Material of stays Steel Diameter at smallest part 1 $\frac{3}{8}$ " Area supported by each stay 720 Working pressure by rules 164 End plates in steam space: Material Steel Thickness 1 $\frac{1}{16}$ " Pitch of stays 18 $\frac{1}{4}$ x 16 $\frac{1}{2}$ " How are stays secured Riveted Working pressure by rules 160.5 Material of stays Steel
 Diameter at smallest part 2 $\frac{5}{8}$ " Area supported by each stay 3010 Working pressure by rules 161 Material of Front plates at bottom Steel
 Thickness 1 $\frac{3}{16}$ " Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 12 $\frac{1}{2}$ " Working pressure of plate by rules 164
 Diameter of tubes 3 $\frac{1}{2}$ " Pitch of tubes 4 $\frac{1}{2}$ " Material of tube plates Steel Thickness: Front 31/32" Back 3/4" Mean pitch of stays 9"
 Pitch across wide water spaces 14 $\frac{1}{4}$ " Working pressures by rules 165 Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 4 $\frac{1}{2}$ " x 1 $\frac{3}{4}$ " Length as per rule 2.5" Distance apart 8 $\frac{3}{4}$ " Number and pitch of Stays in each Two 8 $\frac{1}{4}$ "
 Working pressure by rules 185 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 rivets
 Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness
 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

2 DONKEY BOILERS Description *Vertical with three crop tubes*
 Made at *Stockton* By whom made *J. Hudson & Co. Ld.* When made *1894* Where fixed *Stockholm*
 Working pressure *80* tested by hydraulic pressure to *100* No. of Certificate *966* Fire grate area *15.9* Description of safety valves *Spring*
 No. of safety valves *2* Area of each *4.91* Pressure to which they are adjusted *82 lb* If fitted with easing gear *yes* If steam from main boilers enter the donkey boiler *no* Diameter of donkey boiler *5.5"* Length *12.0"* Material of shell plates *Steel* Thickness *3/8"*
 Description of riveting long seams *Lap double* Diameter of rivet holes *13/16"* Whether punched or drilled *Punched* Pitch of rivets *2"*
 Lap of plating *4 1/4"* Per centage of strength of joint Rivets *86* Thickness of shell crown plates *1/2"* Radius of do. *5.9"* No. of Stays to do. *5*
 Dia. of stays *1 5/8"* Diameter of furnace Top *4.4"* Bottom *4.10"* Length of furnace *5.6"* Thickness of furnace plates *9/16"* Description of joint *Lap Simple* Thickness of furnace crown plates *1/2"* Stayed by *Same as shell* Working pressure of shell by rules *80*
 Working pressure of furnace by rules *81 lb* Diameter of uptake *12"* Thickness of uptake plates *3/8"* Thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *Propeller. 2 Main bearing bolts & nuts. 2 top end bolts & nuts. 2 bottom end bolts & nuts. 1 Set of Shaft 1 Coupling bolts & nuts. 1 Set of feed valves. 1 Set of bilge valves. piston pump, nuts & bolts & iron assorted.*

The foregoing is a correct description,
 For THOMAS RICHARDSON & SONS, LIMITED,
T. Richardson Managing Director, Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c.) *The machinery has been specially surveyed during construction the material and workmanship good and renders the vessel eligible in my opinion to have the Record **L.M.C. 4.95** in the Register Book of the Society.*

This vessel is fitted with Messrs. Kitchin & Smiths, Short Tube.

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 4-95

W.A.
25-4-95

Large handwritten signature in blue ink.

MACHINERY CERTIFICATE WRITTEN.

Certificate (if required) to be sent to

The amount of Entry Fee..	£ 2:	:	When applied for,
Special	£ 21:	4:	23.4.95
Donkey Boiler Fee	£ :	:	When received,
Travelling Expenses (if any) £	:	:	23.4.95

Richard Sturt
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute **FRI 26 APL 1895**
 Assigned *+ L.M.C. 4.95*

