

REPORT ON MACHINERY.

No. 8768

Intro No. 704

Port of West Hartlepool
 No. in Survey held at West Hartlepool Date, first Survey 3rd Oct 1891 Last Survey 22nd March 1892
 Reg. Book. on the Steamer "Lulu" (Number of Visits 19)
 Built at Middlesbrough By whom built W. Raynton Dixon & Co. When built 1892
 Engines made at Hartlepool By whom made Messrs. J. Richardson & Sons when made 1892
 Silers made at Hartlepool By whom made Messrs. J. Richardson & Sons when made 1892
 Registered Horse Power 500 Owners British & Colonial Steam Nav. Co. Port belonging to London
 m. Horse Power as per Section 28 282

GINES, &c.— Description of Engines Inverted, Triple Expansion, 3 Banks No. of Cylinders 3
 Diameter of Cylinders 24, 38, 64 Length of Stroke 42 Revolutions per minute 60 Diameter of Screw shaft as per rule 11.24
 Diameter of Tunnel shaft as fitted 11.4 Diameter of Crank shaft journals 11.4 Diameter of Crank pin 12 Size of Crank webs 14 1/2 x 7 1/2
 Diameter of screw 16.0 Pitch of screw 16.0 No. of blades 11 State whether moveable yes Total surface 72.4 sq. ft.
 of Feed pumps 2 Diameter of ditto 2 3/4 Stroke 27 Can one be overhauled while the other is at work yes
 of Bilge pumps 2 Diameter of ditto 3 3/4 Stroke 27 Can one be overhauled while the other is at work yes
 of Donkey Engines 2 Sizes of Pumps (18 x 4 1/2) (3 1/2 x 7) No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room Five, Two 4 1/2" dia. Three 2 1/2" dia In Holds, &c. Seven, Two 2 1/2" dia For hold, Two 2" dia. main hold, Two 2 1/2" dia. After hold, One 2 1/2" dia after well.
 of bilge injections One sizes 4 1/2" dia Connected to condenser, or to circulating pump connected to a separate donkey suction fitted in Engine room & size 4 1/2" dia
 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 yes
 all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks both
 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
 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
 pipes are carried through the bunkers none How are they protected
 all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times
 the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges
 were stern tube, propeller, screw shaft, and all connections examined in dry dock examined Is the screw shaft tunnel watertight yes
 fitted with a watertight door yes worked from Top platform in Engine Room

ERS, &c.— (Letter for record (S)) Total Heating Surface of Boilers 4495 sq. ft.
 and Description of Boilers Two, Cylindrical built Single Ended Working Pressure 160 lb. Tested by hydraulic pressure to 320 lb.
 of test 11.3.92 Can each boiler be worked separately yes Area of fire grate in each boiler 69 sq. ft. No. and Description of safety valves to
 boiler Two, Spring Area of each valve 8.29 sq. in. Pressure to which they are adjusted 165 lb. Are they fitted
 with gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 20" Mean diameter of boilers 15.6"
11.0" Material of shell plates steel Thickness 1 3/8" Description of riveting: circum. seams Double lap long. seams Double butt straps
 of rivet holes in long. seams 1 1/2" Pitch of rivets 1 row 8 3/4", 2 rows 4 3/8" Lap of plates or width of butt straps 11"
 stages of strength of longitudinal joint rivets 87.6 Working pressure of shell by rules 162 lb. Size of manhole in shell none
 compensating ring plate 84.6 No. and Description of Furnaces in each boiler 3 horizontal plates Material steel Outside diameter 48"
 of plain part top 3" Thickness of plates crown 5/8" Description of longitudinal joint welded No. of strengthening rings none
bottom 7" Working pressure of furnace by the rules 166 lb. Combustion chamber plates: Material steel Thickness: Sides 19/32" Back 19/32" Top 19/32" Bottom 18/32"
 stays to ditto: Sides 8 5/8" x 8 1/2" Back 8 5/8" x 8 1/2" Top 8 5/8" x 8 1/2" stays are fitted with nuts or riveted heads nuts Working pressure by rules 163 lb.
 of stays steel Diameter at smallest part 1 3/8" Area supported by each stay 73.2 sq. in. Working pressure by rules 162 lb. End plates in steam space:
Steel Thickness 1 1/8" Pitch of stays 18 1/4" x 16 1/2" How are stays secured double nut & washers Working pressure by rules 160 lb. Material of stays Steel
 at smallest part 2 5/8" Area supported by each stay 301 sq. in. Working pressure by rules 161 lb. Material of Front plates at bottom Steel
13/16" Material of Lower back plate Steel Thickness 3/2" Greatest pitch of stays 12 1/4" Working pressure of plate by rules 164 lb.
 of tubes 3 3/8" Pitch of tubes 4 3/4" x 4 5/8" Material of tube plates steel Thickness: Front 15/16" Back 11/16" Mean pitch of stays 9 1/2" x 9 1/4"
 cross wide water spaces 14 1/4" Working pressures by rules 166 lb. Girders to Chamber tops: Material steel Depth and
 of girder at centre 9 1/4" Length as per rule 35" Distance apart 8 1/2" Number and pitch of Stays in each Three, 8 1/4"
 pressure by rules 186 lb. Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked
 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
 with rings — Distance between rings — Working pressure by rules — End plates: Thickness — How stayed
 pressure of end plates — Area of safety valves to superheater — Are they fitted with easing gear

2 DONKEY BOILER— S Description *Vertical, Cylindrical, 3 Cross tubes (Steel)*
 Made at *Stockton* By whom made *Mr. Suden & Co.* When made *31.12.91* Where fired *In stockhold*
 Working pressure *90 lb* tested by hydraulic pressure to *180 lb* No. of Certificate *380* Fire grate area *20 sq ft* Description of safety valves *Direct Spring*
 No. of safety valves *2* Area of each *49* Pressure to which they are adjusted *95 lb* If fitted with easing gear *Yes* If steam from main boilers can
 enter the donkey boiler *No* Diameter of donkey boiler *6' 0"* Length *12' 0"* Material of shell plates *steel* Thickness *7/16"*
 Description of riveting long. seams *double rivet lap* Diameter of rivet holes *1 3/16"* Whether punched or drilled *punched* Pitch of rivets *2 3/4"*
 Lap of plating *4 1/4"* Per centage of strength of joint *70.4* Thickness of shell crown plates *1 1/2"* Radius of do. *5.9"* No. of Stays to do. *7*
 Dia. of stays. *1 3/4"* Diameter of furnace Top *4' 9"* Bottom *5' 4"* Length of furnace *4' 10 1/2"* Thickness of furnace plates *5/8"* Description of
 joints *single rivet lap* Thickness of furnace crown plates *9/16"* Stayed by *7 stays 1 3/4" dia* Working pressure of shell by rules *91 lb*
 Working pressure of furnace by rules *90 lb* Diameter of uptake *13"* Thickness of uptake plates *3/8"* Thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *One propeller, One crank shaft, One screw shaft,
 A set of bolts & nuts for a connecting rod and main bearing.
 1 set Coupling Bolt & nuts, 1 set each, air, circulating, feed & bilge pump
 valves, 2 check valves, 1 set piston springs for each cylinder, 1 eccentric shaft
 Bolt & nuts & iron of various*

The foregoing is a correct description,

Thos Richardson Manufacturer of Engines & Main boilers

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

*Tested the main steam pipes by hydraulic pressure to 320 lbs p
 square inch and found them tight.
 The engines and boilers of this vessel have been constructed
 under Special Survey and of a good quality of workmanship.
 The engines and main boilers have been examined under
 steam, the safety valves adjusted, and found to work well
 and will, in my opinion, be eligible to have **L.M.C. 3.9**
 recorded in the Register of this Society when the following
 work has been done. Bilge suction pipes to be fitted
 in the holds and screw tunnel in accordance with the
 approved plan. Sluice valves to be fitted on the openings in
 bulkhead at the after end of screw tunnel. Screw tunnel
 to be fitted with a sluice door and made water-tight. Don
 boiler to be made secure and examined under steam. Spare gear
 to be supplied in accordance with the Rules. The vessel
 has proceeded to Middlesbrough for completion.*

*The Survey on the Machinery has now been satisfactorily
 Completed.*

Wm. R. Austin

Middlesbrough Feb. 12th April 1892.

*It is submitted that
 this vessel is eligible for
 THE RECORD + L.M.C. 4.9*

Certificate (if required) to be sent to

The amount of Entry Fee...	£ 2 : 0 : 0	When applied for,	
Special	£ 34 : 2 : 0	When received,	
Donkey Boiler Fee	£ :		
Travelling Expenses (if any)	£ :		

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

Committee's Minute

TUES. 26 APR 1892

Assigned

+ L.M.C. 4.92



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 Foundation