

# REPORT ON MACHINERY.

MON. JUL 14 1901

Port of Sunderland

Received at London Office 10

No. in Survey held at Sunderland Date, first Survey 19<sup>th</sup> Nov 00 Last Survey 30<sup>th</sup> Sept 1901

Reg. Book. on the Screw Steamer "Edith" (Number of Visits 47)

Master Patterson Built at Sunderland By whom built S. P. Austin & Son When built 1901

Engines made at Sunderland By whom made North Eastern Marine Eng'g Co<sup>rs</sup> when made 1901

Boilers made at Sunderland By whom made N. Eastern Marine Eng'g Co<sup>rs</sup> when made 1901

Registered Horse Power \_\_\_\_\_ Owners Hambert Bros Port belonging to London

Nom. Horse Power as per Section 28 270 Is Refrigerating Machinery fitted No Is Electric Light fitted No

**ENGINES, &c.**—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 23-38.62 Length of Stroke 42 Revs. per minute 70 Dia. of Screw shaft 11 3/4 Lgth. of stern bush 54"

Dia. of Tunnel shaft 11 1/2 Dia. of Crank shaft journals 11 5/8 Dia. of Crank pin 11 5/8 Size of Crank webs 17 1/2 x 7 1/4 Dia. of thrust shaft under collars 12" Dia. of screw 15-6" Pitch of screw 15-6" No. of blades 4 State whether moveable No Total surface 74 sq ft

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 4" Stroke 24" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 2 Sizes of Pumps 7x9x9 & 6x4x6 No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room one 3 1/2 - three 3" dia In Holds, &c. Two 3" dia each hold

No. of bilge injections 1 sizes 5" Connected to condenser or to circulating pump C-P 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 Yes

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 Yes

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 keel Is the screw shaft tunnel watertight Yes

Is it fitted with a watertight door Yes worked from Top Platform

**BOILERS, &c.**— (Letter for record S) Total Heating Surface of Boilers 4360 sq ft Is forced draft fitted No

No. and Description of Boilers 2, S.E. G.L. Multitubular Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbs

Date of test 6-5-01 Can each boiler be worked separately Yes Area of fire grate in each boiler 55.68 sq ft No. and Description of safety valves to each boiler two direct Spring Area of each valve 5.93 sq in Pressure to which they are adjusted 165 lbs Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 17" Mean dia. of boilers 14-7 3/4" Length 10-6" Material of shell plates Steel

Thickness 1 1/2" Range of tensile strength 29-32 Are they welded or flanged No Descrip. of riveting: cir. seams S & A. Riv long. seams In A & B & C

Diameter of rivet holes in long. seams 1 3/32" Pitch of rivets 7 13/16" Top of plates or width of butt straps 16 1/2"

Per centages of strength of longitudinal joint rivets 86.78% Working pressure of shell by rules 160 lbs Size of manhole in shell 16" x 12"

Size of compensating ring Flanged No. and Description of Furnaces in each boiler 3 plain Material Steel Outside diameter 3'-6"

Length of plain part top 6-4" bottom 6-10 3/8" Thickness of plates crown 3/4" Description of longitudinal joint weld No. of strengthening rings none

Working pressure of furnace by the rules 169 lbs Combustion chamber plates: Material Steel Thickness: Sides 3/32" Back 1/16" Top 3/32" Bottom 1"

Pitch of stays to ditto: Sides 9 1/2" x 9 1/2" Back 10 1/4" x 9 5/8" Top 9 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 164 lbs

Material of stays Steel Diameter at smallest part 1.79 Area supported by each stay 98.65 Working pressure by rules 163 lbs End plates in steam space: Material Steel Thickness 1 3/32" Pitch of stays 21" x 20 1/2" How are stays secured S. H. & W Working pressure by rules 168 lbs Material of stays Steel

Diameter at smallest part 2.24 Area supported by each stay 430.5 Working pressure by rules 163 Material of Front plates at bottom Steel

Thickness 3/4" Material of Lower back plate Steel Thickness 3/32" Greatest pitch of stays 18" x 9 9/8" Working pressure of plate by rules 164 lbs

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

Pitch across wide water spaces 14" Working pressures by rules 206 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 7 1/4" x 1 1/2" (2) Length as per rule 30" Distance apart 9 1/2" Number and pitch of Stays in each 2 of 9 1/2" pitch

Working pressure by rules 178 lbs Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked separately Yes

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 *Cylindrical Multitubular (two plain Furnaces)*  
 Made at *Sunderland* By whom made *Mac Call & Pollock* When made *26.7.01* Where fixed *Stoke hold*  
 Working pressure *90lb* tested by hydraulic pressure to *180lb* No. of Certificate *1965* Fire grate area *24 7/8* Description of safety valves *direct Spring*  
 No. of safety valves *2* Area of each *4.9* Pressure to which they are adjusted *90lb* 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'-8"* Material of shell plates *Steel* Thickness *11/16* Range of tensile strength *24/35* Descrip. of riveting long. seams *D. Riv lap* Dia. of rivet holes *1 1/8* Whether punched or drilled *D* Pitch of rivets *3 1/2"*  
 Lap of plating *5 1/8"* Per centage of strength of joint *70.5.70* Rivets *70.5.70* Thickness of shell plates *3/16* Radius of do. *pitch* No. of Stays to do. *6*  
 area *5 1/8"* Plates *64.870* Thickness of shell crown plates *3/16* Radius of do. *pitch* No. of Stays to do. *6*  
 Dia. of stays. *3.25* Diameter of furnace *Top 2' 7 3/8 Bottom* Length of furnace *6'-1"* Thickness of furnace plates *1/2* Description of joint *weld* Thickness of furnace crown plates *1/2* Stayed by *1 1/2 stays & nuts in C. Ch* Working pressure of shell by rules *104 lb*  
 Working pressure of furnace by rules *115 lbs* Diameter of uptake *3 1/4* Thickness of uptake plates *F 3/4 B 11/16* Thickness of *stay* tubes *1/4 x 9" pitch*

**SPARE GEAR.** State the articles supplied:— *Two top end bolts and nuts, two bottom end bolts & nuts, set of coupling bolts & nuts, two main bearing bolts & nuts, spare feed & bilge pump valves, assorted iron bolts & nuts, (Spare propeller, check valve, donkey check valve, air & circulating pump valves)*

The foregoing is a correct description,  
 NORTH EASTERN MARINE ENGINEERING CO. LTD. *Manufacturers.*

Dates of Survey while building  
 During progress of work in shops— *1900— Nov. 19. Dec. 27. 1901— Jan. 10. 15. 25. 30. 31. Feb. 5. 12. 19. 23. 27. Mar. 6. 8. 14. 19. 26*  
 During erection on board vessel— *Apr. 1. 16. 18. 24. 30. May. 6. 9. 15. 22. 23. Jun. 3. 12. July. 4. 5. 16. 19. 24. 26. 29. 31. Aug. 2. 14. 20. 22. 30.*  
 Total No. of visits *Sept. 2. 10. 15. 24. 30. 47.*  
 Is the approved plan of main boiler forwarded herewith *yes*  
 retained for duplicate *no*  
 " " " donkey " " " *no*

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

Material of screw shaft *wrot Iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *no*  
 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 *yes*  
 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 *Painted & cement at liners ends—*

*The machinery built under Special Survey, the material and workmanship found good and efficient. The main boilers and steam pipes tested under hydraulic pressure to 320lb and found sound and satisfactory. The Engines tried under steam at their working pressure & found satisfactory. (Machinery built under old rules.) In our opinion this vessel is worthy of the notification. L. M. C. 9. 01 to be made in the Register Book—*

It is submitted that this vessel is eligible for THE RECORD. + LMC 9. 01

*J. L. 14. 10. 01*  
*14. 10. 01*

The amount of Entry Fee. . . . .	£ 2: : :	When applied for, . . . . .	5. 10. 19. 01
Special . . . . .	£ 33. 10: :	When received, . . . . .	10. 10. 19. 01
Donkey Boiler Fee <i>paid</i>	£ 2: 2: :		
Travelling Expenses (if any)	: : :		

*J. H. Fittmore & Leonard & Shalleron*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute  
 Assigned  
 TUES. OCT 15 1901  
 + *L. M. C. 9. 01*



Sunderland

Certificate (if required) to be sent to