

REPORT ON MACHINERY.

Port of **SUNDERLAND.**

SAT. 3 OCT 1896

No. in Survey held at **SUNDERLAND.**
Reg. Book.

Date, first Survey **16 March 96** Last Survey **1st Oct 1896.**
(Number of Visits **25.**)

on the **S. S. "Harborne"**

Gross Tons **1278**
Net Tons **785**
When built **1896**

Master **A. Himsley** Built at **Sunderland** By whom built **S. P. Austin & Son**

Engines made at **SUNDERLAND.** By whom made **John Dickinson & Sons** when made **1896**

Boilers made at **SUNDERLAND.** By whom made **John Dickinson & Sons** when made **1896.**

Registered Horse Power **120** Owners **J & C Harrison** Port belonging to **London**

Nom. Horse Power as per Section 28 **147** Is Electric Light fitted **No**

ENGINES, &c.—Description of Engines **Triple compound** No. of Cylinders **Three** No. of Cranks **3 3/4"**

Diameter of Cylinders **18 1/2" 30" 49"** Length of Stroke **33"** Revolutions per minute **40** Diameter of Screw shaft **8 3/4"**

Diameter of Tunnel shaft **8 1/2"** Diameter of Crank shaft journals **9"** Diameter of Crank pin **9"** Size of Crank webs **patent**

Diameter of screw **12 1/2"** Pitch of screw **15 1/2"** No. of blades **4** State whether moveable **no** Total surface **51 sq ft**

No. of Feed pumps **2** Diameter of ditto **2 3/4"** Stroke **16 1/2"** Can one be overhauled while the other is at work **yes**

No. of Bilge pumps **2** Diameter of ditto **3 1/2"** Stroke **16 1/2"** Can one be overhauled while the other is at work **yes**

No. of Donkey Engines **2** Sizes of Pumps **5 1/4" x 3 1/2" x 5"** No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room **Centre 2 1/4" Wings 2"** In Holds, &c. **Fore & after holds 2 of 2", after**

Well **3" Tanks centre 4"**

No. of bilge injections **1** size **4"** Connected to condenser, or to circulating pump **C. P.** Is a separate donkey suction fitted in Engine room & size **yes 4"**

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 vessel** 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 **2,350 sq ft** Is forced draft fitted **no**

No. and Description of Boilers **One Single Ended** Working Pressure **160** Tested by hydraulic pressure to **320**

Date of test **6. 6. 96** Can each boiler be worked separately **yes** Area of fire grate in each boiler **68 3/4 sq ft** No. and Description of safety valves to

each boiler **2 direct spring** Area of each valve **9.62 sq ft** Pressure to which they are adjusted **160 lbs** Are they fitted

with easing gear **yes** Smallest distance between boilers or uptakes and bunkers or woodwork **18"** Mean diameter of boilers **15 1/2"**

Length **11' 8"** Material of shell plates **S** Thickness **1 1/2"** Description of riveting: circum. seams **D. R. L.** long. seams **S. R. D. B. S.**

Diameter of rivet holes in long. seams **1 1/16"** Pitch of rivets **8 1/16"** Length of plates or width of butt straps **19 1/4"**

Per centages of strength of longitudinal joint **91.8** Working pressure of shell by rules **160 lbs** Size of manhole in shell **16 x 12**

Size of compensating ring **8 5/8 x 1 3/32** No. and Description of Furnaces in each boiler **4 plain** Material **S** Outside diameter **3' 3"**

Length of plain part **4' 0"** Thickness of plates **23/32** Description of longitudinal joint **welded** No. of strengthening rings **none**

Working pressure of furnace by the rules **162 lbs** Combustion chamber plates: Material **S** Thickness: Sides **5/8"** Back **5/8"** Top **5/8"** Bottom **7/8"**

Pitch of stays to ditto: Sides **8 1/2"** Back **9 1/8"** Top **9"** If stays are fitted with nuts or riveted heads **nuts** Working pressure by rules **162 lbs**

Material of stays **S** Diameter at smallest part **1 1/4"** Area supported by each stay **83 sq ft** Working pressure by rules **140 lbs** End plates in steam space:

Material **S** Thickness **1 1/16"** Pitch of stays **18 x 16** How are stays secured **nuts** Working pressure by rules **165 lbs** Material of stays **S**

Diameter at smallest part **2.6** Area supported by each stay **288** Working pressure by rules **144 lbs** Material of Front plates at bottom **S**

Thickness **3/4"** Material of Lower back plate **S** Thickness **1 1/16"** Greatest pitch of stays **12 5/8"** Working pressure of plate by rules **160 lbs**

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

Pitch across wide water spaces **13 1/4"** Working pressures by rules **160 lbs** Girders to Chamber tops: Material **S** Depth and

thickness of girder at centre **8 x 1 x 2** Length as per rule **32 1/2"** Distance apart **9"** Number and pitch of Stays in each **3 stays 8 1/2"**

Working pressure by rules **180 lbs** Superheater or Steam chest; how connected to boiler **none** Can the superheater be shut off and the boiler worked

separately **yes** Diameter **yes** Length **yes** Thickness of shell plates **yes** Material **yes** Description of longitudinal joint **yes** Diam. of rivet

holes **yes** Pitch of rivets **yes** Working pressure of shell by rules **yes** Diameter of flue **yes** Material of flue plates **yes** Thickness **yes**

If stiffened with rings **yes** Distance between rings **yes** Working pressure by rules **yes** End plates: Thickness **yes** How stayed **yes**

Working pressure of end plates **yes** Area of safety valves to superheater **yes** Are they fitted with easing gear **yes**

SLD1004-0005

DONKEY BOILER— Description *Vertical, Tyne patent*
 Made at *Gateshead* By whom made *Clarke, Chapman & Co* When made *14.8.96* Where fixed *in stoke*
 Working pressure *90 lbs* tested by hydraulic pressure to *180 lbs* No. of Certificate *4888* Fire grate area *23 sq ft* Description of safety valves *Direct*
 No. of safety valves *2* Area of each *5.9* Pressure to which they are adjusted *90 lbs* If fitted with easing gear *yes* If steam from main boilers
 enter the donkey boiler *no* Diameter of donkey boiler *6' 0"* Length *13' 9"* Material of shell plates *S* Thickness *3/16*
 Description of riveting long. seams *S. R. L.* Diameter of rivet holes *3/8* Whether punched or drilled *drilled* Pitch of rivets *3"*
 Lap of plating *4 1/4* Per centage of strength of joint Rivets *43* Thickness of shell crown plates *9/16* Radius of do. *5 ft.* No. of Stays to do. *2*
 Dia. of stays *1 1/4* Diameter of furnace Top *2' 5 1/4"* Bottom *5' 2"* Length of furnace *2' 4"* Thickness of furnace plates *9/16* Descripti
 joint *S. R. L.* Thickness of furnace crown plates *9/16* Stayed by *tubes* Working pressure of shell by rules *94 lb*
 Working pressure of furnace by rules *✓* Diameter of uptake *16 1/2* Thickness of uptake plates *3/16* Thickness of water tubes *3/8*

SPARE GEAR. State the articles supplied:— *Top and bottom end connecting rod bolts, and nuts. Two main bearing bolts and nuts. One set of coupling bolts. Feed & bilge pump valves.*

The foregoing is a correct description,
 per pro. **JOHN DICKINSON & SONS, LIMITED** Manufacturer.

Dates of Survey while building
 During progress of work in shops— *1896 March 16 24 April 28 May 1 15 20 21 22 June 6 9 12 26 August 31*
 During erection on board vessel— *489 10 15 18 21 23 24 25 28 Oct 1.*
 Total No. of visits *25*

General Remarks (State quality of workmanship, opinions as to class, &c. *Machinery of this vessel has been constructed under Special Survey. Material & workmanship being good and efficient, the engines when tried under steam worked satisfactorily. The pumps and watertight doors in good working order. The main steam pipes have been tested by hydraulic pressure to 320 lbs.*

In my opinion the machinery of this vessel is eligible for the notification in the Register Book of L. M. C. 10. 96.

It is submitted that
 this vessel is eligible for
THE RECORD + *L. M. C. 10. 96.*

J. S.
3.10.96

The amount of Entry Fee.. £ 2 : : : When applied for.
 Special £ 2 2 : : : *10.10.96*
 Donkey Boiler Fee £ - : - : : *When received.*
 Travelling Expenses (if any) £ - : - : : *5.10.96*

Committee's Minute

Assigned

MACHINERY CERTIFICATE
TUES. 6 OCT 1896

+ L M C 10. 96

Paul Salmon
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



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 Foundation