

REPORT ON MACHINERY.

TUES. 17 MAR 1891

JULY 17 MAR 1891

8342 Imbro No 364
in Survey held at Hartlepool
Book.
on the Screw Steamer "Avondale"
r Built at Stockton By whom built Messrs. Richardson, Duck & Co.
es made at Hartlepool By whom made Messrs. P. Richardson & Sons when made 1890
rs made at Hartlepool By whom made Messrs. P. Richardson & Sons when made 1890
tered Horse Power 200 Owners Carlisle & Co. Port belonging to London.

INES, &c.—
 Description of Engines *Inverted, Triple Expansion, 3 Cranks* No. of Cylinders *3*
 No. of Cylinders *22½, 37, 61* Length of Stroke *39"* Rev. per minute *65* Point of Cut off, High Pressure. *55%* Low Pressure. *55%*
 Diameter of Screw shaft *11"* Diam. of Tunnel shaft *10¾"* Diam. of Crank shaft journals *11"* Diam. of Crank pin *11"* size of Crank webs *16" x 7½"*
 Diameter of screw *16.9"* Pitch of screw *17.0"* No. of blades *4* state whether moveable *no* total surface *76 sq. ft.*
 No. of Feed pumps *2* diameter of ditto *2¾"* Stroke *25"* Can one be overhauled while the other is at work *yes.*
 No. of Bilge pumps *2* diameter of ditto *3¾"* Stroke *25"* Can one be overhauled while the other is at work *yes.*
 Where do they pump from *Sea, main, & after holds, Engine room, after well, & sea.*
 No. of Donkey Engines *2* Size of Pumps *(8½ x 7) (3½ x 7)* Where do they pump from *(Tanks, sea, & engine room)*
 (yes) *(Sea, hotwell, all bilges, & main boilers)*
 Are all the bilge suction pipes fitted with roses *yes* Are the roses always accessible *yes* Are the sluices on Engine room bulkheads always accessible *Yes*
 No. of bilge injections *2* and sizes *3½" sea* Are they connected to condenser, or to circulating pump *Circulating pump.*
 Are the pumps worked *By levers from the after piston rod crosshead.*
 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*
 How are the pipes carried through the bunkers *none* How are they protected _____
 Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times *Yes.*
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges *yes.*
 Have the stern tube, propeller, screw shaft, and all connections examined in dry dock *New vessel.*
 Is the screw shaft tunnel watertight *✓* and fitted with a sluice door *Yes* worked from *Top platform in Eng. room*

LERS, &c. =
 of Boilers Two Description Cyl. Multitubular Single End Material Steel Letter (for record) S
 Working Pressure 160 lbs. Tested by hydraulic pressure to 320 lbs. Date of test 5th Sept. 1890
 Description of superheating apparatus or steam chest None. Heating surface 3469 sq. ft.
 Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately No superheater
 Area of square feet of fire grate surface in each boiler 49 Description of safety valves Spring No. to each boiler 2
 Area of each valve 7.07 Are they fitted with easing gear Yes. No. of safety valves to superheater — Area of each valve —
 Are they fitted with easing gear — Smallest distance between boilers and bunkers or woodwork 2' 10" Diameter of boilers 13' 9"
 Length of boilers 9' 9" Description of riveting of shell long. seams double butt strap circum. seams double lap Thickness of shell plates 1 1/2
 Diameter of rivet holes 1 3/16" whether punched or drilled drilled pitch of rivets 1 1/2" x 3 15/16" Lap of plating 9 3/4"
 Percentage of strength of longitudinal joint 84.92 Working pressure of shell by rules 163 lbs. size of manholes in shell none
 No. of compensating rings — No. of Furnaces in each boiler 3 Description of Furnaces Corrugated
 Inside diameter 3' 5" length 5' 9" bottom 6' 3" thickness of plates 7/16" description of joint welded if rings are fitted no
 Greatest length between rings — working pressure of furnace by the rules 170 lbs. combustion chamber plating, thickness, sides 5/8" back 5/8" top 5/8"
 Pitch of stays to ditto, sides 8 5/8" x 8 1/2" back 8 1/2" x 8 3/8" top 8 1/2" x 8 1/4" If stays are fitted with nuts or riveted heads nuts working pressure of plating by
 rules 161 lbs. Diameter of stays at smallest part 1 3/8" working pressure of ditto by rules 161 lbs. end plates in steam space, thickness 1 1/4"
 Pitch of stays to ditto 18 1/4" x 16 1/2" how stays are secured double nuts & washers working pressure by rules 168 lbs. diameter of stays at
 smallest part 2 5/8" working pressure by rules 161 lbs. Front plates at bottom, thickness 7/16" Back plates, thickness 5/8"
 Greatest pitch of stays 12" working pressure by rules 163 lbs. Diameter of tubes 3 1/4" pitch of tubes 4 1/2" x 4 3/8" thickness of tube
 plates, front 1" back 13/16" how stayed stay tubes pitch of stays 13 1/2" x 8 3/4" width of water spaces 1 1/4"
 Diameter of Superheater or Steam chest — length — thickness of plates — description of longitudinal joint — diam. of rivet holes —
 Pitch of rivets — working pressure of shell by rules — diameter of flue — thickness of plates — If stiffened with rings —
 Distance between rings — working pressure by rules — end plates of superheater, or steam chest; thickness — how stayed —
 Superheater or steam chest; how connected to boiler —

DONKEY BOILER— Description *Cylindrical, multitubular, single ended, Steel.*
Made at *Stickton* by whom made *Wiley Bros.* when made *7.10.90* where fixed *In stockhole*
Working pressure *90 lb.* tested by hydraulic pressure to *180 lb.* No. of Certificate *132* fire grate area *25.5* feet description of *see*
valves *Direct Spring* No. of safety valves *Two* area of each *6.49* ^{sq. ins.} if fitted with easing gear *Yes* if steam from main boilers
enter the donkey boiler *40* diameter of donkey boiler *9.0* length *9.0* description of riveting *double riv. butt strap*
Thickness of shell plates *19/32* diameter of rivet holes *13/16* whether punched or drilled *punched* ^{annulet} pitch of rivets *3 3/8* lap of plating *4 1/2*
per centage of strength of joint *76* thickness of ~~cross~~ ^{end} plates *1 1/8* stayed by *1 1/8* stays *13 1/4 x 13* pitch
Diameter of furnace, ^{top} *30 1/8* bottom — length of furnace *5.11* thickness of plates *1 1/8* description of joint *single riv. lap.*
Thickness of ~~furnace crown~~ ^{combustion chamber} plates *1 1/8* stayed by *1 1/8* ~~cross~~ ^{stays} *4 x 7* pitch working pressure of shell by rules *90*
Working pressure of furnace by rules *90 lb.* diameter of ^{uptake} *3 1/2* thickness of ^{back} plates *1 1/8* thickness of water tubes —
as reported by W. P. Aust.

SPARE GEAR. State the articles supplied:— *One fuelpeller, A set of bolts & nuts for a connecting rod & main bearing, 1 set coupling Bolts, 1 set of air, Feed & Relief pump valves, 1 set Piston Springs, Iron and 2 eyes, Bolt & nuts and 2*

The foregoing is a correct description,

J. P. Morris RICHARDSON & SONS Manufacturer of Engines & Main boilers.

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

Main steam pipes tested by hydraulic pressure to 320 lb. per square inch and found 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 in my opinion, be eligible to have ~~L.M.C.~~ *L.M.C. 12.90* recorded in the Register of this Society when the following work has been executed to the satisfaction of a Surveyor of this Society.*
(Donkey boiler to be made secure, fitted with mountings, and examined under steam. Ridge suction pipes, in holds, to be connected to the engine suction. Sluice valves to be made accessible at all times. Screw tunnel to be fitted with sluice door and made water tight. Spare gear to be supplied in accordance with the Rules.
The vessel has proceeded to Stickton for completion.
The tracing of the main boilers is appended.

The above mentioned work has been satisfactorily completed.

Wm. P. Austin

9th March 1891

Surveyor-on-Res.

The amount of Entry Fee ... £ 2 : 0 : 0 received by me, at *APL*
Special ... £ 31 : 11 : 0
Donkey Boiler Fee ... £ : :
Certificate (if required) ... £ : : *13/3/1891*
To be sent as per margin.
(Travelling Expenses, if any, £)

Committee's Minute

161 MAR 20 1891

+ L.M.C. 3/91

It is submitted that this vessel is eligible to have + L.M.C. 3.91 recorded
W. P. Austin
17.3.91

W. P. Austin
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

M.D. 741A/103