

REPORT ON MACHINERY.

(Received at London Office 19th July 1882)

No. in Survey held at *Middlebro. Hartlepool* Date, first Survey *18 July 1882* Last Survey *3 January 1883*
 Book. *S. J. Cousins Arbit* Tons *1905*
 on the *S. J. Cousins Arbit* Built at *Middlebro* When built *1882*
 Master *A. C. Tharo* By whom made *Richardson* When made *1882*
 Engines made at *Hartlepool* By whom made *Do* when made *Do*
 Milers made at *Do* By whom made *Do* when made *Do*
 Registered Horse Power *170* Owners *E. & C. Arbit* Port belonging to *London*

GINES, &c.—

Description of Engines *Compound Inverted Surface Condensing*
 Diameter of Cylinders *35 & 65* Length of Stroke *36* No. of Rev. per minute *60 & 65* Point of Cut off, High Pressure *1/2 stroke* Low Pressure *1/2 stroke*
 Diameter of Screw shaft *10 3/4* Diameter of Tunnel shaft *10 1/4* Diameter of Crank shaft journals *10 3/4* Diameter of Crank pin *3 3/4* size of Crank webs *6 1/2 x 13 3/8*
 Diameter of screw *15 & 6* Pitch of screw *16 & 6* No. of blades *Four* state whether moveable *Yes* total surface *60.957 feet*
 No. of Feed pumps *Two* diameter of ditto *3 3/4* Stroke *25 1/2* Can one be overhauled while the other is at work *Yes*
 No. of Bilge pumps *Two* diameter of ditto *3 3/4* Stroke *25 1/2* Can one be overhauled while the other is at work *Yes*
 Where do they pump from *Fore hold, engine room & after well*
 No. of Donkey Engines *Two* Size of Pumps *1/2 inch & 9 inch* Where do they pump from *Large donkey from tanks, engine room. Small donkey from sea, fore hold, engine room & after well*
 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 *One* and sizes *4 1/2* Are they connected to condenser, or to circulating pump *Circulating pump*
 How are the pumps worked *By levers connected to crosshead on low pressure piston rod.*
 Are all connections with the sea direct on the skin of the ship *Yes* Are they Valves or Cocks *Stop valves & cocks*
 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 *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*
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock *New*
 Is the screw shaft tunnel watertight *Said to be* and fitted with a sluice door *Yes* worked from *Top platform in engine room*

BOILERS, &c.—

Number of Boilers *Two* Description *Cylindrical Multitubular*
 Working Pressure *80 lbs* Tested by hydraulic pressure to *160 lbs* Date of test *27 10 82* Certificate No. *8244*
 Description of superheating apparatus or steam chest *Vertical dome. Conical ends*
 Can each boiler be worked separately *Yes* Can the superheater be shut off and the boiler worked separately *No Superheater*
 No. of square feet of fire grate surface in each boiler *44* Description of safety valves *Spring made by J. Richardson & Sons*
 No. to each boiler *Two* area of each valve *11.045 sq in* 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 *About 6 between steam dome & bunker casing*
 Diameter of boilers *12 & 9* Length of boilers *10 & 0* description of riveting of shell long. seams *Double strap, double pitch* sum. seams *Double*
 Thickness of shell plates *13/16* diameter of rivet holes *13/16* whether punched or drilled *Drilled in shell* pitch of rivets *5 3/8*
 Lap of plating *Ships 9/8 band* per centage of strength of longitudinal joint *14.9* working pressure of shell by rules *82 1/2*
 Size of manholes in shell *15 x 11* size of compensating rings *Rectangular plate 30 x 2 1/8*
 No. of Furnaces in each boiler *Two* outside diameter *4 & 1* length, top *5 & 10* bottom *5 & 10*
 Thickness of plates *3/8* description of joint *Welded* if rings are fitted *No* greatest length between rings *—*
 Working pressure of furnace by the rules *1000 x (6-2) / 49 = 81.6 lbs*
 Combustion chamber plating, thickness, sides *15/32* back *7/16* top *15/32*
 Pitch of stays to ditto *—* sides *7/12 x 8* back *7 x 7/4* top *9 x 9*
 If stays are fitted with nuts or riveted heads *Back, sides riveted. Spent nuts* working pressure of plating by rules *Sides 88 lbs Back 85 lbs Top 83 lbs*
 Diameter of stays at smallest part *1 1/8 & 1 3/8* working pressure of ditto by rules *Sides 99 lbs Top 110 lbs*
 End plates in steam space, thickness *7/8* pitch of stays to ditto *18 x 18* how stays are secured *Nuts & washers*
 Working pressure by rules *84 1/2 lbs* diameter of stays at smallest part *2 3/8* working pressure by rules *82 lbs*
 Front plates at bottom, thickness *3/4* Back plates, thickness *7/8 x 3/4* greatest pitch of stays *10 x 12* working pressure by rules *85 1/2*
 Stays *1 1/2 inch*

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Diameter of tubes $3\frac{1}{4}$ pitch of tubes $4\frac{1}{2} \times 4\frac{1}{2}$ thickness of tube plates, front $\frac{1}{16}$ back $\frac{1}{16}$
 How stayed *Stay tubes* pitch of stays $13\frac{1}{2} \times 9$ width of water spaces $\frac{1}{4}$ between tubes
 Diameter of Superheater or Steam chest $3\text{ ft } 0\text{ in}$ length $6\text{ ft } 6\text{ in}$
 Thickness of plates $\frac{1}{16}$ description of longitudinal joint *Lap double butt* diameter of rivet holes $\frac{13}{16}$ pitch of rivets $\frac{29}{16}$
 Working pressure of shell by rules 129 Diameter of flue $\frac{1}{2}$ thickness of plates $\frac{1}{16}$
 If stiffened with rings distance between rings Working pressure by rules
 End plates of superheater, or steam chest; thickness $\frac{1}{2}$ How stayed *Pinical ends*
 Superheater or steam chest; how connected to boiler *Single iron 4x4x5/8 Single pointed flue 1 in 2 1/2 pitch*
DONKEY BOILER— Description *Cylindrical Return tubular*
 Made at *Manchester* By whom made *J. Blake* when made *1882*
 Where fixed *on deck* working pressure *60 lbs* Tested by hydraulic pressure to *120* No. of Certificate *300*
 Fire grate area *14 ft.* Description of safety valves *Direct loaded dead weight* No. of safety valves *One* area of each *8.3 sq*
 If fitted with easing gear *No* If steam from main boilers can enter the donkey boiler *No*
 Diameter of donkey boiler $6\frac{1}{2}$ length $7\text{ ft } 3\text{ in}$ description of riveting *Longitudinal seams. Old flat laps*
 thickness of shell plates $\frac{7}{16}$ diameter of rivet holes $\frac{3}{4}$ whether punched or drilled *punched*
 pitch of rivets $2\frac{1}{2}$ lap of plating $4\frac{1}{4}$ per centage of strength of joint *70%*
 thickness of crown plates stayed by
 Diameter of furnace, top $3\text{ ft } 0\text{ in}$ bottom length of furnace $5\text{ ft } 3\text{ in}$ over tube plate.
 thickness of plates $\frac{3}{8}$ description of joint *Melted* stayed by
 thickness of furnace crown plates $\frac{3}{8}$ Working pressure of shell by rules 58.6 lbs working pressure of furnace by rules 81 lbs
 diameter of uptake thickness of plates thickness of water tubes

The foregoing is a correct description,

J. Richardson & Son
J. P. Mylles

Manufacturer of Engines - Main Boilers only

J. H. M. Graham

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

Material & Workmanship Good
The furnace crown plates, back tube plates & plating
of combustion chamber of main boilers are of steel made
by D. Colville, Motherwell
The Machinery & Boilers are in safe working
Condition & in my opinion eligible for the Notification
** L.M.C. 1.83 in the Register Book*

Submitted this vessel is eligible
to Lloyd's M.C. 1.83
19th Jan 1883

The amount of Entry Fee £ $3\text{ : } 0\text{ : } 0$ received by me,
 Special .. £ $25\text{ : } 10\text{ : } 0$
 Certificate (if required) .. £ $18\text{ : } 1\text{ : } 8\text{ 1/2}$
 To be sent as per margin.
 (Travelling Expenses, if any, £)

Committee's Minute

Friday 19th January, 1883.

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

