

REPORT ON MACHINERY.

328
 Port of *Glasgow*
 Survey held at *Glasgow & Leith* Date, first Survey *14th April 1890* Last Survey *2nd Feb. 1891*
 (Number of Visits *34*)
 on the *Screw Steamer Dunbeth*
 er *D. Sharp* Built at *Stockton* By whom built *Craig Taylor & Co.*
 nes made at *Glasgow* By whom made *Dunsmuir & Jackson* when made *1890*
 rs made at *Do* By whom made *Do* when made *1890*
 uted Horse Power *206.205* Owners *Macbeth & Gray* Port belonging to *Glasgow*

INES, &c.—
 iption of Engines *Inverted Direct Acting Triple Expansion* No. of Cylinders *Three*
 of Cylinders *22, 34, 56* Length of Stroke *39* Rev. per minute *80* Point of Cut off, High Pressure *$\frac{3}{4}$* Low Pressure *$\frac{3}{4}$*
 eter of Screw shaft *10 $\frac{1}{2}$* Diam. of Tunnel shaft *10 $\frac{1}{4}$* Diam. of Crank shaft journals *10 $\frac{1}{2}$* Diam. of Crank pin *10 $\frac{1}{2}$* size of Crank webs *7 $\frac{1}{4}$ x 13*
 eter of screw *14-0* Pitch of screw *18-6* No. of blades *Four* state whether moveable *Solid* total surface *63 sq. ft.*
 of Feed pumps *Two* diameter of ditto *3 $\frac{1}{4}$* Stroke *18* Can one be overhauled while the other is at work *yes*
 of Bilge pumps *Two* diameter of ditto *3 $\frac{1}{4}$* Stroke *18* Can one be overhauled while the other is at work *yes*
 re do they pump from *Fore & after hold. Tanks in engine room. One pump from sea.*
 of Donkey Engines *Two* Size of Pumps *Feed. 5 cwt. 3 $\frac{1}{2}$ pump + 8 stroke Ballast 7 $\frac{1}{2}$ x 8 x 10* Where do they pump from *Donkey from engine room*
on sea, water & holds. Ballast from sea & tanks.
 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*
 of bilge injections *One* and sizes *3 dia* Are they connected to condenser, or to circulating pump *Circulating pump*
 are the pumps worked *By levers from crosshead of Intermediate engine*
 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 accessible at all times *yes*
 the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges *yes*
 were stern tube, propeller, screw shaft, and all connections examined in dry dock *new vessel, before launching.*
 e screw shaft tunnel watertight *yes* and fitted with a sluice door *yes* worked from *Top platform.*

ELERS, &c.—
 of Boilers *Two* Description *Cylindrical - Multi* Material *Steel* Letter (for record) *S*
 king Pressure *160 lbs.* Tested by hydraulic pressure to *320 lbs.* Date of test *8th & 13th December 1890.*
 of superheating apparatus or steam chest *None*
 each boiler be worked separately *yes* Can the superheater be shut off and the boiler worked separately *✓*
 he of square feet of fire grate surface in each boiler *57* Description of safety valves *Direct springs* No. to each boiler *Two*
 of each valve *7 cwt.* Are they fitted with easing gear *yes* No. of safety valves to superheater *✓* area of each valve *—*
 they fitted with easing gear *✓* Smallest distance between boilers and bunkers or woodwork *10* Diameter of boilers *13-3*
 th of boilers *10-9* description of riveting of shell long. seams *Butt. Three rows circum. seams Lap. double* Thickness of shell plates *1 $\frac{5}{32}$*
 eter of rivet holes *1 $\frac{5}{32}$* whether punched or drilled *Drilled* pitch of rivets *7 $\frac{3}{4}$ x 3 $\frac{1}{8}$* Lap of plating *17 $\frac{1}{4}$ x 16*
 centage of strength of longitudinal joint *85.2* working pressure of shell by rules *164 lbs.* size of manholes in shell *16 x 12*
 of compensating rings *McNeil* No. of Furnaces in each boiler *Three* Description of Furnaces *Purvis' patent ribbed*
 ide diameter *39* length *7-6* tubes thickness of plates *$\frac{17}{32}$* description of joint *Weld* if rings are fitted *yes*
 atest length between rings *9* working pressure of furnace by the rules *166 lbs.* combustion chamber plating, thickness, sides *$\frac{9}{16}$* back *$\frac{9}{16}$* top *$\frac{9}{16}$*
 n of stays to ditto, sides *7 $\frac{3}{4}$ x 7 $\frac{3}{4}$* back *7 $\frac{3}{4}$ x 7 $\frac{3}{4}$* top *7 $\frac{1}{16}$ x 7 $\frac{1}{16}$* If stays are fitted with nuts or riveted heads *Nuts* working pressure of plating by
 rules *162 lbs.* Diameter of stays at smallest part *1 $\frac{3}{8}$ screws* working pressure of ditto by rules *162 lbs.* end plates in steam space, thickness *$\frac{13}{16}$ with $\frac{13}{16}$ doubling*
 h of stays to ditto *18 x 18* how stays are secured *Nuts* working pressure by rules *166 lbs.* diameter of stays at
 smallest part *3* screws working pressure by rules *175 lbs.* Front plates at bottom, thickness *$\frac{3}{4}$* Back plates, thickness *$\frac{1}{16}$*
 atest pitch of stays *12 x 7 $\frac{3}{4}$* working pressure by rules *✓* Diameter of tubes *3 $\frac{1}{2}$* pitch of tubes *44* thickness of tube
 doubling plate *$\frac{13}{16}$* back *$\frac{25}{32}$* how stayed *Tubes* pitch of stays *14 $\frac{1}{2}$ x 9 $\frac{1}{2}$* width of water spaces *5 to 7 $\frac{1}{2}$*
 meter of Superheater or Steam chest *None* length *✓* thickness of plates *✓* description of longitudinal joint *✓* diam. of rivet holes *✓*
 h of rivets *✓* working pressure of shell by rules *✓* diameter of flue *✓* thickness of plates *✓* If stiffened with rings *✓*
 ance 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 *Vertical Four cross tubes.*
 Made at *Motherwell* by whom made *J. Marshall & Co* when made *1890* where fixed *Stokehold*
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *2591* description of safety
 valves *Direct spring* No. of safety valves *Two* area of each *3 1/4 sq in* if fitted with easing gear *yes* if steam from main boilers can
 enter the donkey boiler *No* diameter of donkey boiler *6-6* length *14-6* description of riveting *Lap-double*
 Thickness of shell plates *7/16* diameter of rivet holes *7/8* whether punched or drilled *Drilled* pitch of rivets *3 3/16* lap of plating *4-4*
 per centage of strength of joint *72.5* thickness of crown plates *9/16* stayed by *Plate dished and six stays 1 7/8*
 Diameter of furnace, top *5-6* bottom *5-4* length of furnace *5-6* thickness of plates *9/16* description of joint *Lap*
 Thickness of furnace crown plates *9/16* stayed by *Plate dished to 5 ft and six stays 1 5/8* working pressure of shell by rules *87 lbs*
 Working pressure of furnace by rules *80 lbs* diameter of uptake *15* thickness of plates *7/16* thickness of water tubes *3/8*

SPARE GEAR. State the articles supplied:— *Connecting rod top & bottom end bolts & nuts - Two main
 bearings bolts - One set of coupling bolts - Feed & bilge pump valves - The propeller -
 10 condenser & 10 boiler tubes - Fire bars - Corroset bolts & nuts -*

The foregoing is a correct description,
Deussen & Jackson Manufacturer.

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

*These engines & boilers have been constructed
 under special survey - they are of good material & workmanship
 and in accordance with the requirements of the Rules throughout -
 they have been forwarded to Leith to be fitted on board the vessel -
 Appended hereto is the approved tracing of main boiler also two Reports on forgings.*

*The above machinery has been fitted on board at Leith, main & donkey
 boiler safety valves adjusted under steam & blow at 160 & 80 lbs respectively
 is now in good working order & shippable, in my opinion, the classed
 machine + L.M.C. 291.*

W. J. Darling
Leith 2nd Feb: 91.

*It is submitted that this vessel is
 eligible to have + L.M.C. 291
 recorded - W.A.
 10. 2. 91*

The amount of Entry Fee *£ 2 : - : -* received by me,
 Special *£ 20 : 4 : -*
 Donkey Boiler Fee *£ 10 : 2 : -*
 Certificate (if required) *£ - : - : -* 5/2/1891
 (To be sent as per margin.)
 (Travelling Expenses, if any, £)

Committee's Minute

FRI. 13 FEB 1891

+ L.M.C. 291

Walter S. Robson.
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.