

REPORT ON MACHINERY.

No.

No. in Survey held at *Glasgow & Grangemouth* Date, first Survey *2nd April* Last Survey *25th Novr 1884*

Reg. Book.

on the *Screw Steamer "Kuma."*

(Number of Visits *20*)

Tons

Master

Built at *Grangemouth*

By whom built *Dobson & Charles*

When built *1884*

Engines made at

Glasgow

By whom made

Hutson & Corbett

when made *1884*

Boilers made at

do

By whom made

do

when made *1884*

Registered Horse Power *62*

Owners

Port belonging to

ENGINES, &c.—

Description of Engines *Compound Inverted Direct Acting*
 Diameter of Cylinders *20" & 38"* Length of Stroke *30"* No. of Rev. per minute *90* Point of Cut off, High Pressure *$\frac{1}{2}$* Low Pressure *Var*
 Diameter of Screw shaft *7"* Diam. of Tunnel shaft *$6\frac{3}{4}"$* Diam. of Crank shaft journals *7"* Diam. of Crank pin *7"* size of Crank webs *$4\frac{1}{2}" \times 8\frac{1}{2}"$*
 Diameter of screw *9'-0"* Pitch of screw *12'-6"* No. of blades *4* state whether moveable *Sol* total surface *29 sq. ft.*
 No. of Feed pumps *One* diameter of ditto *$3\frac{1}{2}"$* Stroke *16"* Can one be overhauled while the other is at work *—*
 No. of Bilge pumps *One* diameter of ditto *$3\frac{1}{2}"$* Stroke *16"* Can one be overhauled while the other is at work *—*
 Where do they pump from *All compartments*
 No. of Donkey Engines *One* Size of Pumps *7" C x 10" S x 4" dia* Where do they pump from *Sea, tanks, bilges and hold.*

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 *3"* Are they connected to condenser, or to circulating pump *Circulating pump.*
 How are the pumps worked *by levers*
 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 *—*

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 *on stocks before launching*
 Is the screw shaft tunnel watertight *yes* and fitted with a sluice door *yes* worked from *upper platform*

BOILERS, &c.—

Number of Boilers *One* Description *Multitubular* Whether Steel or Iron *Steel*
 Working Pressure *80 lbs.* Tested by hydraulic pressure to *160 lbs.* Date of test *11th August 1884*
 Description of superheating apparatus or steam chest *Horizontal steam dome*
 Can each boiler be worked separately *—* Can the superheater be shut off and the boiler worked separately *—*
 No. of square feet of fire grate surface in each boiler *35* Description of safety valves *Direct Spring* No. to each boiler *two*
 Area of each valve *9'-6"* 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 on *woodwork* *9"* Diameter of boilers *11'-0"*
 Length of boilers *10'-0"* description of riveting of shell long. seams *treb lap* circum. seams *double lap* Thickness of shell plates *$\frac{21}{32}$*
 Diameter of rivet holes *$\frac{15}{16}"$* whether punched or drilled *drilled* pitch of rivets *$3\frac{1}{2}"$* Lap of plating *7'*
 Per centage of strength of longitudinal joint *72* working pressure of shell by rules *85 lbs.* size of manholes in shell *12" x 15"*
 Size of compensating rings *$6\frac{3}{4}$ ring $\frac{5}{8}"$ thick.* No. of Furnaces in each boiler *two*
 Outside diameter *3'-7"* length, top *7'-0"* bottom *9'-6"* thickness of plates *$\frac{1}{2}"$ full* description of joint *double butt* if rings are fitted *12 lbs*
 Greatest length between rings *6'-0"* working pressure of furnace by the rules *97* combustion chamber plating, thickness, sides *$\frac{1}{2}"$* back *$\frac{1}{2}"$* top *$\frac{1}{2}"$*
 Pitch of stays to ditto, sides *$9\frac{1}{4}" \times 9\frac{1}{4}"$ back $9\frac{1}{4}" \times 9\frac{1}{4}"$ top $10" \times 10"$ If stays are fitted with nuts or riveted heads *nuts* working pressure of plating by rules *90 lbs.* Diameter of stays at smallest part *1.26"* working pressure of ditto by rules *94 lbs.* end plates in steam space, thickness *$\frac{1}{16}"$*
 Pitch of stays to ditto *$14\frac{1}{2}" \times 14\frac{1}{2}"$* how stays are secured *d. nuts* working pressure by rules *80 lbs.* diameter of stays at smallest part *2 $\frac{1}{2}"$* working pressure by rules *140 lbs.* Front plates at bottom, thickness *$\frac{9}{16}"$* Back plates, thickness *$\frac{9}{16}"$*
 Greatest pitch of stays *—* working pressure by rules *—* Diameter of tubes *$3\frac{1}{2}"$* pitch of tubes *$4\frac{3}{4}"$* thickness of tube plates, front *$\frac{1}{16}"$* back *$\frac{5}{8}"$* how stayed *stayed* pitch of stays *$9\frac{1}{2}" \times 14\frac{1}{2}"$* width of water spaces *$\frac{1}{2}"$*
 Diameter of Superheater or Steam chest *2'-6"* length *5'-0"* thickness of plates *$\frac{1}{16}"$* description of longitudinal joint *single lap* diam. of rivet holes *$\frac{7}{8}"$*
 Pitch of rivets *$2\frac{1}{2}"$* 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 *$\frac{1}{16}"$* how stayed *One rod stay*
 "diameter *—* Superheater or steam chest; how connected to boiler *Welded throat $\frac{9}{16}"$ thick**

DONKEY BOILER— Description: *Vertical with cross-tubes (Steel interior)*
 Made at *Glasgow* by whom made *Hutton & Corbett* when made *1884* where fixed *Stokehold*
 Working pressure *50* tested by hydraulic pressure to *100* No. of Certificate *1430* fire grate area *13 ft.* description of safety
 valves *direct spring* No. of safety valves *one* area of each *7* if fitted with easing gear *yes* if steam from main boilers can
 enter the donkey boiler *no* diameter of donkey boiler *4'-9"* length *9'-6"* description of riveting *single lap*
 Thickness of shell plates *3/8"* diameter of rivet holes *3/4"* whether punched or drilled *p.* pitch of rivets *2 1/2"* lap of plating *2 1/2"*
 per centage of strength of joint *64* thickness of crown plates *7/16"* stayed by *6 stays 1 3/4" diameter*
 Diameter of furnace, top *3'-10"* bottom *4'-4"* length of furnace *5'-0"* thickness of plates *3/8"* description of joint *single lap*
 Thickness of furnace crown plates *7/16"* stayed by *as above* working pressure of shell by rules *65 lbs.*
 Working pressure of furnace by rules *50 lbs.* diameter of uptake *14"* thickness of plates *3/8"* thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *Top and bottom end bolts. 2 main bearing bolts. One set coupling bolts. Feed, bridge and donkey valves. Iron plates bolts nuts of various sizes.*

The foregoing is a correct description,

J. Hutton & Corbett Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c. *The above mentioned Engines and Boilers are now completed onboard in a satisfactory manner and the machinery is now in my opinion in a safe and good working condition and eligible to be noted in the Register Book: * L. M. C. 12. 84.*

The shafting has been examined by me while being rough turned and finished at the Engineer's works, and found as far as can be seen in sound condition.

Donkey boiler 11.44 new 1885

The amount of Entry Fee £ *1* : - - - received by me, }
 Special .. £ *9* : *6* : -
 Donkey Boiler Fee .. £ - : - : -
 Certificate (if required) .. £ - : - : - *29/11/1884*
 (To be sent as per margin.)
 (Travelling Expenses, if any, £ *3* : *1* : *6*.)

Committee's Minute *TUESDAY 6 JAN 1885*

John Anderson
 Engineer Surveyor to Lloyd's Register of British & Foreign Ships

