

# REPORT ON MACHINERY.

40

Port of *Kobe*

Received at London Office

V.L.R. 10 JUN 1891

No. *40*

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

Date, first Survey *20/5/90* Last Survey *8/12* 1890

(Number of Visits *53*)

*48* on the *British Steamer Zambesi*

Tons *2455*

Master *Parsons* Built at *Glasgow* By whom built *Barclay Curle & Co.* When built *1873*

Engines made at *Glasgow* By whom made " " when made "

Boilers made at *Kiogo* By whom made *Kawasaki Engineering Co.* when made *1890*

Registered Horse Power *300* Owners *Frank Lupton & Co. Hong Kong* Port belonging to *Kiogo*

*Shanghai*

## ENGINES, &c.—

Description of Engines *Int. dir. acting compound surface condensing*  
Diameter of Cylinders *36" x 72"* Length of Stroke *48"* No. of Rev. per minute *60* Point of Cut off, High Pressure *1/2* Low Pressure *5/8*  
Diameter of Screw shaft *13 3/4"* Diam. of Tunnel shaft *12 3/4"* Diam. of Crank shaft journals *14 1/2"* Diam. of Crank pin *14 1/2"* size of Crank webs *H.P. 16 x 9" L.P. 16 x 11"*  
Diameter of screw *16 1/2"* Pitch of screw *20 1/2"* No. of blades *4* state whether moveable *No* total surface *74.5 sq. ft.*  
No. of Feed pumps *2* diameter of ditto *5 1/4"* Stroke *2 1/4"* Can one be overhauled while the other is at work *Yes*  
No. of Bilge pumps *3* diameter of ditto *2 7/8"* Stroke *2 7/8"* Can one be overhauled while the other is at work *Yes*  
Where do they pump from *all holds, stokehold, engine room, and small pump from sea*  
No. of Donkey Engines *one* Size of Pumps *6 1/2"* Where do they pump from *all bilges throughout ship, same as bilge pumps, and from sea to deck, boilers and condenser.*  
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 *6 5/8"* Are they connected to condenser, or to circulating pump *circulating pump.*  
How are the pumps worked *air, direct feed & bilge off lines, both engines, small bilge feed of shaft.*  
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 *Spigot*  
What pipes are carried through the bunkers *bilge pump to holds* How are they protected *brass casings.*  
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 stern tube, propeller, screw shaft, and all connections examined in dry dock *2/91*  
Is the screw shaft tunnel watertight *Yes* and fitted with a sluice door *Yes* worked from *height of main deck.*

## BOILERS, &c.—

Number of Boilers *Two* Description *Cyl. Mult. dbl. ended* Whether Steel or Iron *Steel throughout*  
Working Pressure *85* Tested by hydraulic pressure to *170* Date of test *10/12/90*  
Description of superheating apparatus or steam chest *None*  
Can each boiler be worked separately *Yes* Can the superheater be shut off and the boiler worked separately  
No. of square feet of fire grate surface in each boiler *77* Description of safety valves *Spring loaded* No. to each boiler *Two*  
Area of each valve *16 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 *1 1/3"* Diameter of boilers *13 1/2"*  
Length of boilers *16 1/2"* description of riveting of shell long. seams *butt double* circum. seams *lap double* Thickness of shell plates *3/4"*  
Diameter of rivet holes *31/32"* whether punched or drilled *drilled* pitch of rivets *2 1/2" x 5" - 4"* Lap of plating *5"*  
Percentage of strength of longitudinal joint *80* working pressure of shell by rules *96* size of manholes in shell *16 x 12"*  
Size of compensating rings *3/4" doubling* No. of Furnaces in each boiler *Four*  
Outside diameter *3 7/16"* length, top *6 5/4"* bottom — thickness of plates *17/32"* description of joint *butted* if rings are fitted *No.*  
Greatest length between rings — working pressure of furnace by the rules *90* combustion chamber plating, thickness, sides *9/16"* back — top *9/16"*  
Pitch of stays to ditto, sides *9 1/4" x 10 1/2"* back — top *9 1/4" x 10 3/4"* If stays are fitted with nuts or riveted heads *Nuts* working pressure of plating by rules *90* Diameter of stays at smallest part *1 1/4"* working pressure of ditto by rules *100 lb* end plates in steam space, thickness *3/4"* riveted washers *1 1/4" x 1"*  
Pitch of stays to ditto *1 1/4" x 7 1/2"* how stays are secured *double nut* working pressure by rules *90* diameter of stays at smallest part *2 1/4"* working pressure by rules *90 lb* Front plates at bottom, thickness *11/16"* Back plates, thickness —  
Greatest pitch of stays — working pressure by rules — Diameter of tubes *3 1/2"* pitch of tubes *5"* thickness of tube plates, front *11/16"* back *5/8"* how stayed *tubes* pitch of stays *10"* width of water spaces *6"*  
Diameter of Superheater or Steam chest *None* 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 *Cyl. Mult. single ended. 17' tall*Made at *Wigan*by whom made *G. & H. Main (Lancs) Engine Works*when made *1890* where fixed *1891*Working pressure *85*tested by hydraulic pressure to *170*

No. of Certificate

fire grate area *13.25*

description of safety

valves *Spring loaded*No. of safety valves *Two*area of each *3 1/4"*if fitted with easing gear *Yes*

if steam from main boilers can

enter the donkey boiler *Yes*diameter of donkey boiler *6' 6"*length *8' 0"*description of riveting *butt double*Thickness of shell plates *7/16"*diameter of rivet holes *25/32"*whether punched or drilled *drilled*pitch of rivets *2 1/2" x 2 1/2"*lap of plating *3 1/4" x 3"*per centage of strength of joint *70*

thickness of crown plates

stayed by

Diameter of furnace, *3' 0"*

bottom

length of furnace *5' 7"*thickness of plates *7/16"*description of joint *lap, all riveted*

Thickness of furnace crown plates

stayed by

working pressure of shell by rules *90*Working pressure of furnace by rules *97*

diameter of uptake

thickness of plates

thickness of water tubes

SPARE GEAR. State the articles supplied:—

The foregoing is a correct description,

Manufacturer.

## General Remarks

(State quality of workmanship, opinions as to class, &amp;c.)

*The material for these boilers*

*is of the Salzell double crown brand made by E. Colville & Sons of Motherwell, N.B. It was also tested, and on examining the certificates I found that the tests were quite satisfactory, the strength and ductility being well within the requirements of the Rules.*

*J. S. Ellerton*

*Noted*  
*M.A.*  
*8-12-91*

The amount of Entry Fee .. £ : : received by me,

Special .. £ : :

Donkey Boiler Fee .. £ : :

Certificate (if required) .. £ : :

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To be sent as per margin.

(Travelling Expenses, if any, £ )

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

Committee's Minute

FRI 11 DEC 1891

TUES. 30 JUN 1891