

REPORT ON MACHINERY.

No. 5306

(Received in London Office)

No. in Survey held at Glasgow
Reg. Book.

Date, first Survey August 1880 Last Survey July 15th 1881

Tons 3405
3380

on the Screw Steamer "Guthrie Castle"

Master M. P. Webster Built at Glasgow When built 1881

Engines made at Glasgow By whom made John Elder & Co. when made 1881

Boilers made at " By whom made " " " when made 1881

Registered Horse Power 500 Owners J. Currie & Co. Port belonging to London

ENGINES, &c.—

Description of Engines Compound Inverted Direct Acting
Diameter of Cylinders 51" & 88" Length of Stroke 54" No. of Rev. per minute 40 Point of Cut off, High Pressure .6 Low Pressure —
Diameter of Screw shaft 14 3/4" Diameter of Tunnel shaft 16" Diameter of Crank shaft journals 14 3/4" Diameter of Crank pin 18" size of Crank webs 11 1/2" x 19 1/2"
Diameter of screw 19 1/2" Pitch of screw 25 No. of blades four state whether moveable moveable total surface 94 ft.
No. of Feed pumps two diameter of ditto 6" Stroke 25" Can one be overhauled while the other is at work Yes
No. of Bilge pumps two diameter of ditto 6" Stroke 25" Can one be overhauled while the other is at work Yes
Where do they pump from All the Compartments
No. of Donkey Engines One Size of Pumps 12 cwt 6" x 12" Where do they pump from From Sea Pige & Hotwell

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
No. of bilge injections One and sizes 15" Are they connected to condenser, or to circulating pump To Circulating
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 Near to the load line
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 Main Steam pipes How are they protected By Iron 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 were stern tube, propeller, screw shaft, and all connections examined in dry dock Feb. 4th 1881
Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from From Upper platform

BOILERS, &c.—

Number of Boilers Two Description Round Horizontal Double ended
Working Pressure 45 lbs Tested by hydraulic pressure to 150 lbs Date of test 17.12.80
Description of superheating apparatus or steam chest Annular with single line
Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately Yes
No. of square feet of fire grate surface in each boiler 162 sq ft Description of safety valves Direct Spring (Cookburns)
No. to each boiler Three area of each valve 25.9" Are they fitted with easing gear Yes
No. of safety valves to superheater One area of each valve 4" are they fitted with easing gear Yes
Smallest distance between boilers and bunkers or woodwork 12"
Diameter of boilers 16' 0" Length of boilers 14 1/2" description of riveting of shell long. seams Double riveted circum. seams Double
Thickness of shell plates 1 1/2" diameter of rivet holes 1 1/8" whether punched or drilled Drilled pitch of rivets 6"
Lap of plating Straps 16" x 1 1/2" per centage of strength of longitudinal joint 80% working pressure of shell by rules 92 lbs
Size of manholes in shell Manholes in ends size of compensating rings Forged rings
No. of Furnaces in each boiler Six outside diameter 4' 3" length, top 6' 9" bottom (Through Lunnans)
Thickness of plates 19/32" description of joint Corrugated if rings are fitted — greatest length between rings
Working pressure of furnace by the rules Corrugated
Combustion chamber plating, thickness, sides 8/16" back 8/16" top 8/16"
Pitch of stays to ditto sides 8" x 8" back 8" x 8" top 9 1/4" x 8"
If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 120 lbs
Diameter of stays at smallest part 1 1/4" working pressure of ditto by rules 93 lbs
End plates in steam space, thickness 13/16" pitch of stays to ditto 16 1/2" x 14 1/4" how stays are secured By double nuts
Working pressure by rules 84 lbs taking diameter of stays at smallest part 2 1/8" working pressure by rules 84 lbs
Front plates at bottom, thickness 10/16" Back plates, thickness — greatest pitch of stays working pressure by rules
Foundation

Diameter of tubes $3\frac{1}{2}$ " pitch of tubes $4\frac{1}{2}$ " thickness of tube plates, front $\frac{1}{16}$ " back $\frac{1}{16}$ "
How stayed *By Tubes* pitch of stays $13\frac{1}{2} \times 13\frac{1}{2}$ " width of water spaces *about 6"*
Diameter of Superheater or Steam chest $11\frac{1}{2}$ " length $10\frac{1}{2}$ " 5306. *yes*
Thickness of plates $\frac{1}{16}$ " description of longitudinal joint *Double* diameter of rivet holes $1\frac{1}{8}$ " pitch of rivets 5
Working pressure of shell by rules 90 lbs Diameter of flue $8\frac{1}{2}$ " thickness of plates $\frac{1}{16}$ "
If stiffened with rings *yes* distance between rings *4 rings + diaphragm plates* Working pressure by rules 100 lbs
End plates of superheater, or steam chest; thickness $\frac{1}{16}$ " How stayed *Connected to Shell no stays*
Superheater or steam chest; how connected to boiler *By Copper pipes*
DONKEY BOILER— Description *Round Horizontal Multitubular*
Made at *Glasgow* By whom made *John Elder & Co* when made *1880-1*
Where fixed *On Upper Deck* working pressure 40 lbs Tested by hydraulic pressure to 140 lbs No. of Certificate *1014*
Fire grate area 22.5 " Description of safety valves *Direct Spring* No. of safety valves *Two* area of each 4 "
If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *Two Stop Valves are fitted*
Diameter of donkey boiler $4\frac{1}{2}$ " length $4\frac{1}{2}$ " description of riveting *Double*
thickness of shell plates $\frac{1}{16}$ " diameter of rivet holes $\frac{1}{16}$ " whether punched or drilled *punched + rimmed*
pitch of rivets $3\frac{1}{8}$ " lap of plating $6\frac{1}{2}$ " per centage of strength of joint 44%
thickness of crown plates *—* stayed by *—*
Diameter of furnaces *top* $2\frac{1}{2}$ " *bottom* *—* length of furnace $5\frac{1}{2}$ "
thickness of plates $\frac{1}{16}$ " description of joint *double stripped*
thickness of furnace crown plates $\frac{1}{16}$ " + $\frac{1}{16}$ " *bottom* stayed by *—*
Working pressure of shell by rules 43 lbs working pressure of furnace by rules 98 lbs
diameter of uptake *—* thickness of plates *—* thickness of water tubes *—*

The foregoing is a correct description,

John Elder & Co Manufacturer.
P. A. D. 1881

General Remarks (State quality of workmanship, opinions as to class, &c. *The Engines + Boilers are of good workmanship and now in good order + safe working condition and eligible in my opinion to be noted in the Register Book + Lloyd's M.C. 2.81*

Submitted that the machinery of this vessel is described in Lloyd's 2.81
MP 17.2.81

The amount of Entry Fee $\pounds 3 : 0 : 0$ received by me,

Special $\pounds 45 : 0 : 0$

Certificate (if required) $\pounds - : - : -$ 11th Feb 1881

To be sent as per margin.

(Travelling Expenses, if any, $\pounds 2-2-0$)

Committee's Minute

Friday, February 11th 1881

+ Lloyd's M.C.

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

Clyde District

Lloyd's Register
Foundation