

REPORT ON MACHINERY.

15731

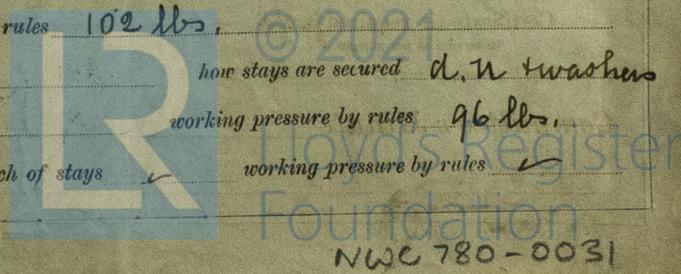
No. 659 (Received in London Office 27/12/81)
 Survey held at Newcastle Date, first Survey 4th March Last Survey 15th Dec^r 1881
 on the Screw Steamer "Principia" Tons 2749
 Master H. Kennish Built at Newcastle When built 1881
 Engines made at Newcastle By whom made Palmers & Co when made 1881
 Boilers made at Do By whom made Do when made 1881
 Registered Horse Power 300 Owners Newton & Co Port belonging to London

ENGINES, &c.—
 Description of Engines Inverted Compound surface condensing
 Diameter of Cylinders 38" & 70" Length of Stroke 48" No. of Rev. per minute 54 Point of Cut off, High Pressure 30" Low Pressure 24"
 Diameter of Screw shaft 14" Diameter of Tunnel shaft 13 1/2" Diameter of Crank shaft journals 14" Diameter of Crank pin 14" size of Crank webs 9 1/4" x 16 3/4"
 Diameter of screw 17" 6 Pitch of screw 20" 6 No. of blades 4 state whether moveable solid total surface 78 sq. ft.
 No. of Feed pumps 2 diameter of ditto 4 1/2" Stroke 2 1/4" Can one be overhauled while the other is at work yes
 No. of Bilge pumps 2 diameter of ditto 4 1/2" Stroke 2 1/4" Can one be overhauled while the other is at work yes
 Where do they pump from fore holds, engine space, tunnel well, tanks and sea
 No. of Donkey Engines two Size of Pumps 8 x 12 x 14 x 9 Where do they pump from fore holds, engine space, tunnel well, tanks and sea
 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 1/4" Are they connected to condenser, or to circulating pump circulating
 How are the pumps worked levers over condenser
 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 Nov
 Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from engine room platform

BOILERS, &c.—
 Number of Boilers Two Description Double ended, cylindrical & multitubular
 Working Pressure 80 lbs. Tested by hydraulic pressure to 160 lbs. Date of test 25.6.81 No. of certif^s 622
 Description of superheating apparatus steam chest horizontal dome contracted necks
 Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately ✓
 Area of square feet of fire grate surface in each boiler 77 Description of safety valves spring
 No. of safety valves to each boiler 2 area of each valve 20.6 sq. ins. 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 7"
 Diameter of boilers 12" 6 Length of boilers 18" 0 description of riveting of shell long. seams lap, triple riv. circum. seams lap riveted
 Thickness of shell plates 15 1/16" diameter of rivet holes 1 1/4" whether punched or drilled drilled pitch of rivets 5"
 Thickness of plating 9" percentage of strength of longitudinal joint 70.8 working pressure of shell by rules 84 lbs.
 Diameter of manholes in shell 16 x 12 size of compensating rings man hole through end plate
 No. of Furnaces in each boiler 4 outside diameter 43" length, top 5" 6 bottom 5" 0
 Thickness of plates 1/2" 8 9/16" description of joint double straps if rings are fitted 1/2" ring greatest length between rings 5" 6
 Working pressure of furnace by the rules 94 lbs.
 Thickness of combustion chamber plating, thickness, sides 1/2" back 9 1/16" top 9 1/16"
 No. of stays to ditto ✓ sides 9" back 9" top 21" radius
 Are stays fitted with nuts or riveted heads riveted heads working pressure of plating by rules 80 lbs.
 Diameter of stays at smallest part 1 1/4" working pressure of ditto by rules 102 lbs.
 Thickness of plates in steam space, thickness 13 1/16" pitch of stays to ditto 15 3/4" how stays are secured d. n washers
 Working pressure by rules 102 lbs. diameter of stays at smallest part 2 1/4" working pressure by rules 96 lbs.
 Thickness of plates at bottom, thickness 3 1/4" Back plates, thickness ✓ greatest pitch of stays ✓ working pressure by rules ✓

Report made 6/12/81 sent to Gen. 24/12/81

Boiler similar to S.S. Danien spec. Report No. 529



NWC 780-0031

Diameter of tubes $3\frac{1}{4}$ " pitch of tubes $4\frac{1}{2}$ " thickness of tube plates, front $\frac{3}{4}$ " back $\frac{3}{4}$ "
 How stayed *stay tubes* pitch of stays $9"$ width of water spaces $10"$
 Diameter of ~~Superheater~~ Steam chest $4\text{ ft } 6"$ length $6\text{ ft } 0"$
 Thickness of plates $\frac{9}{16}$ " description of longitudinal joint *l. d. rivet* diameter of rivet holes $\frac{7}{8}$ " pitch of rivets $2\frac{1}{8}$ "
 Working pressure of shell by rules 99 lbs. 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 $\frac{3}{4}$ " How stayed $5, 2\frac{3}{8}$ Stays $14\frac{1}{2}$ pitch
 Superheater or steam chest; how connected to boiler *contracted neck 16" diam. $\frac{3}{4}$ " thick*

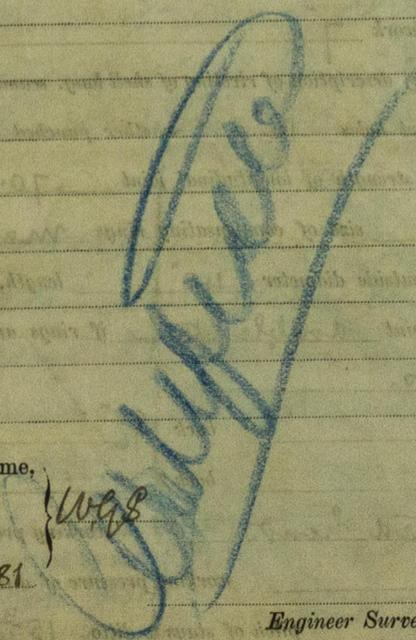
DONKEY BOILER— Description *cylindrical vertical*
 Made at *Newcastle* By whom made *l. l. & gurney* when made *December 1881.*
 Where fixed *stokehole* working pressure 80 lbs. Tested by hydraulic pressure to 160 lbs. No. of Certificate 702
 Fire grate area 225 sq. ft. Description of safety valves *spring* No. of safety valves *two* area of each 75 sq. ins.
 If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no*
 Diameter of donkey boiler $6\text{ ft } 0"$ length $13\text{ ft } 0"$ description of riveting *lap double riveted (l. d.)*
 thickness of shell plates $\frac{17}{32}$ " diameter of rivet holes $\frac{7}{8}$ " whether punched or drilled *punched.*
 pitch of rivets $3\frac{1}{4}$ " lap of plating $4\frac{1}{4}$ " per centage of strength of joint 69.7
 thickness of crown plates $\frac{9}{16}$ " stayed by *6 stays $1\frac{1}{2}$ diameter*
 Diameter of furnace, top $4\text{ ft } 8"$ bottom $5\text{ ft } 4"$ length of furnace $6\text{ ft } 2"$
 thickness of plates $\frac{19}{32}$ " description of joint *lap, single riveted*
 thickness of furnace crown plates $\frac{9}{16}$ " stayed by *6 stays $1\frac{1}{2}$ diameter*
 Working pressure of shell by rules 85 lbs. working pressure of furnace by rules 80 lbs.
 diameter of uptake $15"$ thickness of plates $\frac{3}{8}$ " thickness of water tubes $\frac{3}{8}$ "

The foregoing is a correct description, *Shipbuilding & Iron Works Ltd.*
 Manufacturer. *W. Price*
General Manager

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

The machinery of this vessel has been specially surveyed during construction, the materials and workmanship good and under the vessel eligible in my opinion to have the notification of Lloyd's M. b. 12. 81. Recorded in the Society's Register Book.

It is submitted that the vessel is eligible to have the notification recorded in Lloyd's M. b. 12. 81. Recorded in the Society's Register Book.



The amount of Entry Fee £ 3 : — : — received by me.
 Special Donkey Boiler £ 2 : 2 : —
 Certificate (if required) *gratis* — : — : — *24th Decr 1881*
 (Travelling Expenses, if any, £ —)

Committee's Minute 18
David Furnes
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
W. Shields
 Lloyd's Register Foundation