

REPORT ON MACHINERY.

No. 96.

(Received in London Office)

No. in Survey held at
Reg. Book.

Zeith

Date, first Survey 22nd March

Last Survey 11th June 1880

176 on the I.S.S. "Kinghorn"

Tons 455.

Master D. Roberts

Built at Kinghorn

When built 1865

Engines made at Glasgow

By whom made Rait & Tindley when made 1873

Boilers made at Zeith

By whom made Humphreys & Co when made 1880

Registered Horse Power 130.

Owners Messrs A. C. Gibson & Co

Port belonging to Zeith

ENGINES, &c.—

Description of Engines Compound 2 Mot Cylinders Surface condensing

Diameter of Cylinders 29 $\frac{1}{2}$ " x 56" Length of Stroke 36" No. of Rev. per minute 69 Point of Cut off, High Pressure — Low Pressure —

Diameter of Screw shaft 11" Diameter of Tunnel shaft 10 $\frac{3}{8}$ " Diameter of Crank shaft journals 11" Diameter of Crank pin 11" size of Crank webs 7 $\frac{1}{2}$ " x 12 $\frac{3}{4}$ "

Diameter of screw 12" x 6" Pitch of screw 19" x 0" No. of blades 4 state whether moveable Solid total surface 46 feet

No. of Feed pumps two diameter of ditto 4 $\frac{3}{8}$ " Stroke 16" Can one be overhauled while the other is at work Yes

No. of Bilge pumps two diameter of ditto 4 $\frac{3}{8}$ " Stroke 16" 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 7 $\frac{1}{2}$ " x 6" x 3 $\frac{3}{4}$ " S. A. pump Where do they pump from sea engine room

bilge. to boilers and on deck

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 2 $\frac{1}{2}$ " Are they connected to condenser, or to circulating pump circulating

How are the pumps worked by levers from pistons crossheads

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 those for engines below those for boilers 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 12. 4. 80 all in good order

Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from cylinder platform

BOILERS, &c.—

Number of Boilers two Description (Steel) Circular Tubular

Working Pressure 75 lbs valves set to 65 lbs Tested by hydraulic pressure to 150 lbs Date of test 26. 5. 79 ✓

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 28.5 Description of safety valves direct spring load

No. to each boiler two area of each valve 14.19 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" 6" from deck

Diameter of boilers 12" 0" Length of boilers 9' 9" description of riveting of shell long. seams double butt S. R. circum. seams lap double riveted

Thickness of shell plates 4 $\frac{5}{16}$ " diameter of rivet holes 1 $\frac{1}{16}$ " whether punched or drilled drilled pitch of rivets 3 $\frac{1}{2}$ "

Lap of plating 4 $\frac{1}{2}$ " x 9" B.S. per centage of strength of longitudinal joint 73 inch 88 working pressure of shell by rules 88 lbs

Size of manholes in shell 16" x 12" size of compensating rings angle irons 3 $\frac{1}{2}$ " x 3" x 9"

No. of Furnaces in each boiler two outside diameter 43" length, top 6' 9" bottom 9' 0" fitted with half angle

Thickness of plates 1 $\frac{1}{2}$ " description of joint double butt S. R. if rings are fitted — greatest length between rings —

Working pressure of furnace by the rules 77 lbs

Combustion chamber plating, thickness, sides 1 $\frac{1}{2}$ " back 1 $\frac{1}{2}$ " top 1 $\frac{1}{2}$ "

Pitch of stays to ditto sides 7 $\frac{1}{2}$ " x 7 $\frac{3}{4}$ " back 6 $\frac{3}{4}$ " x 7 $\frac{3}{4}$ " top 9" x 9"

If stays are fitted with nuts or riveted heads nuts inside Combustion chamber riveted on shell working pressure of plating by rules 107 lbs and 79 lbs

Diameter of stays at smallest part 1 $\frac{5}{16}$ " working pressure of ditto by rules 3461 lbs

End plates in steam space, thickness 1 $\frac{1}{2}$ " pitch of stays to ditto 14 $\frac{3}{4}$ " x 14" how stays are secured through ends nuts

Working pressure by rules 78 lbs diameter of stays at smallest part 2 $\frac{1}{8}$ " working pressure by rules 4650 lbs

Front plates at bottom, thickness 1 $\frac{1}{2}$ " Back plates, thickness 1 $\frac{1}{16}$ " greatest pitch of stays 12" x 7 $\frac{3}{4}$ " working pressure by rules 5365 lbs

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Diameter of tubes $3\frac{1}{2}$ " pitch of tubes $4\frac{1}{8} \times 4\frac{1}{8}$ " thickness of tube plates, front $\frac{1}{16}$ " back $\frac{1}{16}$ "
 How stayed *lugs* pitch of stays $9\frac{1}{2} \times 14\frac{7}{8}$ " width of water spaces $1\frac{3}{8}$ "
 Diameter of Superheater or Steam chest *none* length *—*
 Thickness of plates *—* description of longitudinal joint *c* diameter 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 *(Steel furnace) Round vertical 3 cross tubes*
 Made at *Leith* By whom made *Umphreyston & Co* when made *June 1880*
 Where fixed *stokehold* working pressure *50 lbs* Tested by hydraulic pressure to *100 lbs* No. of Certificate *59*
 Fire grate area *9.5 feet* Description of safety valves *one direct load 5* No. of safety valves *two* area of each *3.9*
 If fitted with easing gear *no* If steam from main boilers can enter the donkey boiler *fitted with non return valves*
 Diameter of donkey boiler *4.3* length *9.6* description of riveting *lap single riveted*
 thickness of shell plates *7/16* diameter of rivet holes *3/4"* whether punched or drilled *punched*
 pitch of rivets *2 1/8* lap of plating *2 1/2* per centage of strength of joint *74 rivets 49*
 thickness of crown plates *1/2* stayed by *dished*
 Diameter of furnace, top *3.3* bottom *3.7* length of furnace *5.6*
 thickness of plates *7/16 steel* description of joint *lap single riveted*
 thickness of furnace crown plates *7/16* stayed by *dished*
 Working pressure of shell by rules *62 lbs* working pressure of furnace by rules *72 lbs*
 diameter of uptake *13"* thickness of plates *7/16* thickness of water tubes *3/8"*

The foregoing is a correct description,

Umphreyston & Co. Limited Manufacturer.
Wm Umphreyston MANAGING DIRECTOR.

General Remarks (State quality of workmanship, opinions as to class, &c. *New boilers have been fitted on board of this vessel at this time. agreeable with the plan submitted for the Committee's approval and Secretary's letter relating thereto, dated 24th Augt and 7th Novr 1878 and 4th Feby 1879. and for donkey boiler 26th Novr and 6th Decr 1879. the workmanship on all the boilers is of first class description all the boilers have been tested by both water and steam, and the safety valves set to a working pressure of 65 lbs per square inch, all in accordance with the requirements of the Rules. the Machinery has received a general overhaul. the outside of vessel seen in dry dock. the blow off cocks for boilers have been shifted from bottom of vessel on to turn of bilge and all is now in good working order and in my opinion eligible to be entered into the Register Book with the distinctive Mark + Lloyd's M.C. in red 12.6.80.*

The amount of Entry Fee *£ 9 : 15 : 0* received by me,

Boilers only *3/16* *£ 9 : 15 : 0*

Special *£ 2 : 2 : 0*

Donkey Boiler *£ 2 : 2 : 0*

Certificate (if required) *£ 2 : 2 : 0*

To be sent as per margin.

(Travelling Expenses, if any, £ *6.4.0*)

Committee's Minute *Testing steel plates at Sheffield £7.7.4*

See Letter and Paid as letter from W Paulson 4/6/80

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

Dundee & District

Lloyd's Register Foundation