

REPORT ON MACHINERY.

No. 155

(Received in London Office) 30 JUNE 1882

No. in Survey held at Dundee

Date, first Survey 13/9/81

Last Survey 31 May 1882

Reg. Book.

on the ISS. "Hallard"

1296.2
Tons 834.9

Master J. Hayes Built at Dundee When built June 1882
Engines made at Dundee By whom made Gourlay Bros. & Co. when made 1882
Boilers made at Dundee By whom made Do " " when made 1882
Registered Horse Power 140. Owners General Steam Nav Co Port belonging to London

ENGINES, &c.—

Description of Engines Direct Acting Compound 2nd Lys Surface Condensing
Diameter of Cylinders 30" x 54" Length of Stroke 36 No. of Rev. per minute 75 Point of Cut off, High Pressure 9/16 Low Pressure 9/16
Diameter of Screw shaft 10 1/4" Diameter of Tunnel shaft 9 3/4" Diameter of Crank shaft journals 10 1/4" Diameter of Crank pin 10 1/4" size of Crank webs 7 1/2" x 11 3/4"
Diameter of screw 1 1/4" Pitch of screw 14" 6 No. of blades 4 state whether moveable sol total surface 55.6 feet
No. of Feed pumps two diameter of ditto 3 1/2" Stroke 20" Can one be overhauled while the other is at work yes
No. of Bilge pumps two diameter of ditto 3 1/2" Stroke 20" Can one be overhauled while the other is at work yes
Where do they pump from all compartments
No. of Donkey Engines one Size of Pumps 6" x 7" x 3 1/2" Where do they pump from Sec. Watert. engine room
Bilge - to Boilers and on Deck (one Pulsometer 6" pipe for pumping tanks and all compartments)
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 4 1/2" Are they connected to condenser, or to circulating pump circulating
How are the pumps worked by levers from low pressure piston crosshead
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 before launch 4/5/82
Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from from main deck

BOILERS, &c.—

Number of Boilers two Steel Description Circular Tubular
Working Pressure 75 lbs Tested by hydraulic pressure to 150 lbs Date of test 10/4/82
Description of ~~superheating apparatus~~ or steam chest horizontal drums
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 34 feet Description of safety valves direct Spring load 9 lbs. e.
No. to each boiler two area of each valve 9.63 sq. 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 8"
Diameter of boilers 11" 3 Length of boilers 9" 3 description of riveting of shell long. seams lap tieble R circum. seams lap D.R.
Thickness of shell plates 5" diameter of rivet holes 1" whether punched or drilled drilled pitch of rivets 3 7/8"
Lap of plating 6 7/8" 4 1/2" per centage of strength of longitudinal joint 74% working pressure of shell by rules 78 lbs
Size of manholes in shell 17" x 13" size of compensating rings 4" x 4" x 3 1/2"
No. of Furnaces in each boiler two outside diameter 38 1/2" mean length, top 6" 6 bottom 6" 6
Thickness of plates 15" 3/32 description of joint butt S.R. if rings are fitted no greatest length between rings —
Working pressure of furnace by the rules 75 lbs
Combustion chamber plating, thickness, sides 7/16" back 15" 3/32 top 15" 3/32
Pitch of stays to ditto sides 8 1/2" x 9" back 9 1/2" x 8 1/2" top round
If stays are fitted with nuts or riveted heads nuts both ends working pressure of plating by rules 78 lbs
Diameter of stays at smallest part sides 1 1/2" rest 1 3/4" working pressure of ditto by rules side stays 5062 lbs & 6202 lbs
End plates in steam space, thickness 3" pitch of stays to ditto 17" x 15" how stays are secured thru ends & thru
Working pressure by rules 79 lbs diameter of stays at smallest part 2 3/8" working pressure by rules 4346 lbs
Front plates at bottom, thickness 7/16" Back plates, thickness 7/16" greatest pitch of stays 14" x 9 1/2" working pressure by rules 6713 lbs

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Diameter of tubes $3\frac{1}{2}$ " pitch of tubes $4\frac{3}{4}$ " thickness of tube plates, front $\frac{4}{16}$ " back $\frac{11}{16}$ "
How stayed *tubes ends* pitch of stays $9\frac{1}{2}$ " \times $14\frac{1}{4}$ " width of water spaces $1\frac{1}{2}$ "
Diameter of ~~Superheater~~ Steam chest $3' 3"$ length $8' 0"$
Thickness of plates $\frac{7}{16}$ " description of longitudinal joint *Lap D.R.* diameter of rivet holes $3\frac{1}{4}$ " pitch of rivets $2\frac{1}{2}$ "
Working pressure of shell by rules 163 lb Diameter of flue --- thickness of plates ---
If stiffened with rings --- distance between rings --- Working pressure by rules ---
End plates of ~~superheater~~ steam chest; thickness $\frac{4}{16}$ " How stayed *by 4-14" dia bolts stays this ends ends*
~~Superheater~~ steam chest; how connected to boiler *by malleable necks riveted to shells*

DONKEY BOILER— Description *one Round vertical*
Made at *Dundee* By whom made *Gourlay Bros & Co* when made *June 1882*
Where fixed *Main Deck* working pressure 50 lb Tested by hydraulic pressure to 100 lb No. of Certificate 167
Fire grate area 12.5 feet Description of safety valves *direct S.Z.* No. of safety valves *one* area of each 7 in^2
If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no*
Diameter of donkey boiler $5' 0"$ length $10' 9"$ description of riveting *Lap double riveted*
thickness of shell plates $\frac{7}{16}$ " diameter of rivet holes $3\frac{1}{4}$ " whether punched or drilled *punched*
pitch of rivets $2\frac{3}{8}$ " lap of plating $3\frac{3}{8}$ " \times $2\frac{1}{2}$ " per centage of strength of joint 73%
thickness of crown plates $\frac{1}{2}$ " stayed by *5 gusset stays to top & sides*
Diameter of furnace, top $3' 10\frac{1}{2}"$ bottom $4' 2\frac{1}{2}"$ length of furnace $5' 6"$
thickness of plates $\frac{7}{16}$ " description of joint *Lap single riveted*
thickness of furnace crown plates $\frac{7}{16}$ " stayed by *dished*
Working pressure of shell by rules 80 lb working pressure of furnace by rules 64 lb
diameter of uptake $13\frac{1}{2}"$ thickness of plates $\frac{3}{8}"$ thickness of water tubes $\frac{5}{16}"$

The foregoing is a correct description,
Gourlay Brothers Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c. *The boilers and Machinery*
of this vessel have been built in accordance with the
requirements of the Rules. and to plans of boilers submitted
for the committees approval dated 15/9/81. The material and
workmanship are of the best description. The boilers have
been tested under steam - and the safety valves set to a
working pressure of 75 lbs per square inch - and the machinery
seen at work - and in my opinion all is in good and safe
working order - and eligible to be entered into the
Register Book with the distinctive mark + Lloyd's M.C in red

The amount of Entry Fee $\text{£ } 2 : - : -$ received by me, *One*

Special $\text{£ } 21 : 0 : 0$

Certificate (if required) $\text{£ } - : 2 : 6$ 31st May 1882

To be sent as per margin.

(Travelling Expenses, if any, £)

Committee's Minute

Tuesday, 6th June, 1882.

+ *Lloyd's M.C*

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

Dundee District