

REPORT ON MACHINERY.

Port of Dundee

Received at London Office 1 APR 92

No. in Survey held at Dundee
Reg. Book.

Date, first Survey Aug 6th Last Survey March 25th 1892.
(Number of Visits 21)

on the S.S. "Sanda"

Tons } Gross 1154
Net 449

Master D. Boyd Built at Dundee By whom built W.B. Thompson & Co Lim When built 1892.

Engines made at Dundee By whom made W.B. Thompson & Co Lim when made 1892.

Boilers made at Dundee By whom made W.B. Thompson & Co Lim when made 1892.

Registered Horse Power 260 Owners Clyde Shipping Co Port belonging to Glasgow.

Com. Horse Power as per Section 28 258

ENGINES, &c.— Description of Engines Triple expansion - surface condensing No. of Cylinders 3
Diameter of Cylinders 23-38-61 ins Length of Stroke 48 Revolutions per minute _____ Diameter of Screw shaft as per rule 11 5/16
Diameter of Tunnel shaft as per rule 10 3/4 Diameter of Crank shaft journals 12 1/2 Diameter of Crank pin 12 1/2 Size of Crank webs 8 1/2 x 24
Diameter of screw 14'-3" Pitch of screw 21 ft No. of blades 4 State whether moveable yes Total surface 59 sq ft
No. of Feed pumps 2 Diameter of ditto 4" Stroke 30" Can one be overhauled while the other is at work yes
No. of Bilge pumps 2 Diameter of ditto 4" Stroke 30" Can one be overhauled while the other is at work yes
No. of Donkey Engines one Sizes of Pumps 8'-6" x 10' No. and size of Suctions connected to both Bilge and Donkey pumps
In Engine Room 3 of 3 1/2" dia In Holds, &c. Fore hold 1 of 3 1/2" dia Main Hold 2 of 3 1/2" dia
aft hold 2 of 3 1/2" dia
No. of bilge injections 1 sizes 8" Connected to condenser, or to circulating pump circ pumps a separate donkey suction fitted in Engine room & size yes 3"
Are all the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible yes Are the sluices on Engine room bulkheads always accessible yes
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 Tank, bilge & winch steam & exhaust How are they protected wood casings
Are all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times yes
Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges yes
When were stern tube, propeller, screw shaft, and all connections examined in dry dock new vessel Is the screw shaft tunnel watertight yes
Is it fitted with a watertight door yes worked from main deck

BOILERS, &c.— (Letter for record 0) Total Heating Surface of Boilers 3896 sq ft.
No. and Description of Boilers Two - single ended Working Pressure 150 lbs Tested by hydraulic pressure to 300 lbs
Date of test 30/12/91 Can each boiler be worked separately yes Area of fire grate in each boiler 45 sq ft No. and Description of safety valves to
each boiler two - spring loaded Area of each valve 7 sq in Pressure to which they are adjusted 150 lbs Are they fitted
with easing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 18" Mean diameter of boilers 14'-2"
Length 11'-10" Material of shell plates steel Thickness 1 1/4 Description of riveting: circum. seams lap-double long. seams 2 1/2 rows double straps
Diameter of rivet holes in long. seams 1 1/4 Pitch of rivets 7.56 Lap of plates or width of butt straps 17 3/4 butt straps
Percentage of strength of longitudinal joint rivets 93% Working pressure of shell by rules 158 lbs Size of manhole in shell 17" x 13"
plate 83%
Size of compensating ring McClellan's patent No. and Description of Furnaces in each boiler 3 Fox's patent Material steel Outside diameter 40"
Length of plain part top 17/32 Thickness of plates bottom 17/32 Description of longitudinal joint welded No. of strengthening rings Fox's
Working pressure of furnace by the rules 162 lbs Combustion chamber plates: Material steel Thickness: Sides 17/32 Back 17/32 Top 17/32 Bottom 3/4
Pitch of stays to ditto: Sides 7 1/2 Back 7 1/2 + 6 3/8 Top 7 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 154
Material of stays steel Diameter at smallest part 1 5/8 - 1 3/8 Area supported by each stay 56.25 Working pressure by rules 211 End plates in steam space: 1"
Material steel Thickness 1" Pitch of stays 16 1/4 x 15 How are stays secured double nuts Working pressure by rules 183 Material of stays iron
Diameter at smallest part 2 3/32 Area supported by each stay 243 sq in Working pressure by rules 190 Material of Front plates at bottom steel
Thickness 13/16 Material of Lower back plate steel Thickness 7/8 Greatest pitch of stays 13" Working pressure of plate by rules 156
Diameter of tubes 3 1/2 Pitch of tubes 5" x 4 7/8 Material of tube plates steel Thickness: Front 13/16 Back 13/16 Mean pitch of stays 10" x 9 3/4
Pitch across wide water spaces 15" Working pressures by rules 280 lbs. Girders to Chamber tops: Material Iron Depth and
thickness of girder at centre 9 3/4 x 3/4 double Length as per rule 36 Distance apart 7 1/2 Number and pitch of Stays in each 4 - 7 1/2 pitch
Working pressure by rules 150 Superheater or Steam chest; how connected to boiler flanged Can the superheater be shut off and the boiler worked
separately ✓ Diameter 30 Length 47" Thickness of shell plates 7/8 Material steel Description of longitudinal joint welded + double straps Diam. of rivet
holes 1" Pitch of rivets 4" Working pressure of shell by rules 432 Diameter of flue ✓ Material of flue plates ✓ Thickness ✓
If stiffened with rings ✓ Distance between rings ✓ Working pressure by rules ✓ End plates: Thickness 1 3/8 How stayed 4 stays 2 1/2" dia
Working pressure of end plates ✓ Area of safety valves to superheater ✓ Are they fitted with easing gear ✓

DUN119-0332



DONKEY BOILER— Description *Vertical - 6 cross tubes*
 Made at *Dundee* By whom made *W B Thompson & Co Lim* When made *1892* Where fixed *Stokehold*
 Working pressure *80* tested by hydraulic pressure to *160* No. of Certificate *620* Fire grate area *17 0'* Description of safety valves *spring*
 No. of safety valves *2* Area of each *3.9* Pressure to which they are adjusted *80 lbs* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Diameter of donkey boiler *5' 8"* Length *20' 0"* Material of shell plates *steel* Thickness $\frac{1}{2}$ - $\frac{9}{16}$ - $\frac{5}{8}$
 Description of riveting long seams *double riv lap* Diameter of rivet holes $\frac{7}{8}$ Whether punched or drilled *drilled* Pitch of rivets $2\frac{5}{8}$
 Lap of plating $4\frac{1}{2}$ Per centage of strength of joint Rivets $\frac{66.6}{100}$ Thickness of shell crown plates $\frac{13}{16}$ Radius of do. *flat* No. of Stays to do. *7*
 Dia. of stays. $2\frac{1}{2}$ Diameter of furnace Top *3' 10"* Bottom *4' 9"* Length of furnace *12' 9"* Thickness of furnace plates $\frac{9}{16}$ Description of joint *welded at ends double butt straps* Thickness of furnace crown plates $\frac{9}{16}$ Stayed by *7 stays* Working pressure of shell by rules *100 lbs*
 Working pressure of furnace by rules *80 lbs* Diameter of uptake *15"* Thickness of uptake plates $\frac{1}{2}$ Thickness of water tubes $\frac{1}{16}$

SPARE GEAR. State the articles supplied:— *2 Connecting rod top end bolts; 2 connecting rod bottom end bolts - 2 main bearing bolts; 1 set coupling bolts; 1 set feed and bilge pump valves;*

The foregoing is a correct description,
W. B. Thompson & Co Limited Manufacturer.
A. W. Anderson

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

The machinery of this vessel has been built under special survey in accordance with the approved plans.
 The boiler is built of steel (main stays, girder stays & tubes iron). The material has been tested at the steel works by the Society's Surveyors and the test certificates are annexed.
 Safety valves have been set to working pressure - Main boilers 150 lbs. Donkey 80 lbs. Engines seen running under steam with satisfactory result.
 Materials and workmanship are good.

$$\frac{1}{2} \left(\frac{61^2 \times \sqrt{48}}{100} + \frac{3896}{15} \right) = 25.8 \text{ Horse Power.}$$

The machinery is in good and safe working condition and the vessel is eligible in my opinion to be classed in the Register Book with the notification **+ LMC-3-92**

It is submitted that this vessel is eligible for THE RECORD + LMC 3-92
M.A. 1-4-92

The Surveyors are requested not to write on or below the space for Committee's Minute.

Certificate (if required) to be sent to **MACHINERY CERTIFICATE WRITTEN.**
 The amount of Entry Fee... £ 2 : 0 : 0 When applied for,
 Special £ 32 : 18 : 0 March 28. 92.
 Donkey Boiler Fee £ ✓ : : When received, *M.C.*
 Travelling Expenses (if any) £ ✓ : : March 31. 92.

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

Committee's Minute **TUES. 5 APR 1892**
 Assigned **+ LMC 3, 92**

