

# REPORT ON MACHINERY.

Port of Glasgow

Received at London Office MAR 31 1903

No. in Survey held at Glasgow  
Reg. Book.

Date, first Survey 29 Oct 02 Last Survey 28 Mar 03

(Number of Visits 20)

on the "TWIN S.S. VIGILANT."

Tons { Gross 344.48  
Net 133.03

Master W. Davies Built at Port Glasgow By whom built Murdoch & Murray

When built 1903

Engines made at Glasgow By whom made D. Rowan & Co.

when made 1903

Boilers made at Glasgow By whom made D. Rowan & Co.

when made 1903

Registered Horse Power ✓

Owners Mersey Dock Harbour Trust Port belonging to Liverpool

Nom. Horse Power as per Section 28 96

Is Refrigerating Machinery fitted No.

Is Electric Light fitted No.

**ENGINES, &c.**—Description of Engines Twin screw, triple expansion No. of Cylinders 2 sets 3 No. of Cranks 3

Dia. of Cylinders 10 1/2", 14 1/2", 28" Length of Stroke 21" Revs. per minute 120 Dia. of Screw shaft as per rule 5.79 Lgth. of stern bush 2.11"

Dia. of Tunnel shaft as per rule 5.42 Dia. of Crank shaft journals as per rule 5.69 Dia. of Crank pin 6 1/4" Size of Crank webs 4 th Dia. of thrust shaft under collars 6 1/4" Dia. of screw 6" 6" Pitch of screw 11" 6" No. of blades 3 State whether moveable no Total surface 18.3 sq ft.

No. of Feed pumps 1 Diameter of ditto 2" Stroke 11" Can one be overhauled while the other is at work ✓

No. of Bilge pumps 1 Diameter of ditto 2" Stroke 11" Can one be overhauled while the other is at work ✓

No. of Donkey Engines 1 Sizes of Pumps 8 1/2" x 5" x 5" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room One 2" dia. forward & after holds, one 2" dia. in tunnel well. In Holds, &c. One 2" dia. in each

No. of bilge injections 1 sizes 3" Connected to condenser, or to circulating pump pump Is a separate donkey suction fitted in Engine room & size yes 2"

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 none

Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks valves & cocks

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 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 before launch Is the screw shaft tunnel watertight yes

Is it fitted with a watertight door yes worked from top platform

**BOILERS, &c.**— (Letter for record 15) Total Heating Surface of Boilers 1737 sq ft. Is forced draft fitted no

No. and Description of Boilers one single ended Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs

Date of test 16/2/03 Can each boiler be worked separately ✓ Area of fire grate in each boiler 47.5 sq ft. No. and Description of safety valves to each boiler 2 patent spring Area of each valve 4.91 sq in. Pressure to which they are adjusted 185 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 13" Mean dia. of boilers 13.6" Length 10.6" Material of shell plates steel

Thickness 1 1/4" Range of tensile strength 28-37 Are they welded or flanged no Descrip. of riveting: cir. seams double long. seams treble

Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 9 1/8" Lap of plates or width of butt straps 1" 7/16"

Per centages of strength of longitudinal joint rivets 97.8 Working pressure of shell by rules 206 lbs Size of manhole in shell 16" x 12"

Size of compensating ring 30 3/4" x 26 3/4" x 1 1/4" No. and Description of Furnaces in each boiler 3 Morrison Material steel Outside diameter 3" 5"

Length of plain part top Thickness of plates bottom 1 1/2" Description of longitudinal joint welded No. of strengthening rings ✓

Working pressure of furnace by the rules 184 lbs Combustion chamber plates: Material steel Thickness: Sides 1 1/2" Back 5/8" Top 1 1/2" Bottom 7/8"

Pitch of stays to ditto: Sides 8" x 7 1/2" Back 7" x 8 3/8" Top 8" x 7 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 200 lbs

Material of stays steel Area at smallest part 1.48 sq in. Area supported by each stay 60 sq in. Working pressure by rules 197 lbs End plates in steam space:

Material steel Thickness 1 3/32" Pitch of stays 16" x 15" How are stays secured nuts Working pressure by rules 248 lbs Material of stays steel

Area at smallest part 5.26 sq in. Area supported by each stay 240 sq in. Working pressure by rules 219 lbs Material of Front plates at bottom steel

Thickness 1 3/16" Material of Lower back plate steel Thickness 1 3/16" Greatest pitch of stays 13 1/2" x 8 3/16" Working pressure of plate by rules 182 lbs

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 3/8" Material of tube plates steel Thickness: Front 3 1/32" Back 2 1/32" Mean pitch of stays 8 7/8"

Pitch across wide water spaces 14 1/4" Working pressures by rules 280 lbs Girders to Chamber tops: Material steel Depth and thickness of girder at centre 8" x 2-1" Length as per rule 30 7/8" Distance apart 8" Number and pitch of Stays in each 3 - 4 1/2"

Working pressure by rules 222 lbs Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked separately ✓

Diameter ✓ Length ✓ Thickness of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diam. of rivet holes ✓ Pitch of rivets ✓ Working pressure of shell by rules ✓ Diameter of flue ✓ Material of flue plates ✓ Thickness ✓

If stiffened with rings ✓ Distance between rings ✓ Working pressure by rules ✓ End plates: Thickness ✓ How stayed ✓

Working pressure of end plates ✓ Area of safety valves to superheater ✓ Are they fitted with easing gear ✓



DONKEY BOILER— No. *None* Description

Made at  By whom made  When made  Where fixed   
Working pressure  tested by hydraulic pressure to  No. of Certificate  Fire grate area  Description of safety valves   
No. of safety valves  Area of each  Pressure to which they are adjusted  If fitted with easing gear  If steam from main boilers can enter the donkey boiler   
Dia. of donkey boiler  Length  Material of shell plates  Thickness  Range of tensile strength   
Descrip. of riveting long. seams  Dia. of rivet holes  Whether punched or drilled  Pitch of rivets   
Lap of plating  Per centage of strength of joint  Rivets  Thickness of shell crown plates  Radius of do.  No. of Stays to do.   
Dia. of stays.  Diameter of furnace Top  Bottom  Length of furnace  Thickness of furnace plates  Description of joint   
Thickness of furnace crown plates  Stayed by  Working pressure of shell by rules   
Working pressure of furnace by rules  Diameter of uptake  Thickness of uptake plates  Thickness of water tubes

SPARE GEAR. State the articles supplied:— *One set of top & one set of bottom end connecting rod bolts, one set of main bearing bolts, one set of coupling bolts, & one set of feed & bilge pump valves. etc. one propeller.*

The foregoing is a correct description,  
YOURS FAITHFULLY,  
For DAVID ROWAN & CO. Manufacturer.

Dates of Survey while building <sup>W/ Hrs ant-</sup> During progress of work in shops - - 1902: Oct. 29. Nov. 7. 11. 13. 18. 20. 25. 29. Dec. 3. 10. 11. Jan. 8. 14. 19. 27. 29. Feb. 16. 19. Mar. 4. 21.  
During erection on board vessel - -  
Total No. of visits 20. Is the approved plan of main boiler forwarded herewith *yes*  
" " " donkey " " "

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

Material of screw shaft *iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *yes*.  
Is the after end of the liner made water tight in the propeller boss *yes* If the liner is in more than one length are the joints burned   
If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive  If two liners are fitted, is the shaft lapped or protected between the liners

*The machinery of this vessel has been constructed under Special Survey, the material & workmanship are of good quality, it has been securely fastened on board tried under steam & found to be satisfactory.*

*In my opinion, it is eligible to be classed in the Register Book with the record of + L.M.C. 3.03.*

Certificate (if required) to be sent to Glasgow

It is submitted that this vessel is eligible for THE RECORD - L.M.C. 3.03

The amount of Entry Fee... £ 1 : 8 :  
Special ... .. £ 14 : 8 :  
Donkey Boiler Fee ... .. £ : :  
Travelling Expenses (if any) £ : :  
When applied for, 27/3/03  
When received, 30/3/03

*J.W. Dimmock*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
2.4.03

Committee's Minute *Glasgow, 30 MAR 1903*  
Assigned *+ d.M.C. 3.03.*

