

REPORT ON MACHINERY.

No. 13871.

Port of Greenock.1st Sheet.Received at London Office
JUL 29 MAR 1904No. in Survey held at Greenock.
Reg. Book.Date, first Survey 4th May 1903. Last Survey 21st March 1904.on the Screw Steamer "Highland Watch".(Number of Visits 95)

Master

Built at Port Glasgow.

By whom built

Russell & Co.

Tons

Gross

Net

When built 1904Engines made at Greenock

By whom made

Rankin & Blackmore.when made 1904Boilers made at Greenock

By whom made

Rankin & Blackmore.when made 1904

Registered Horse Power

Owners

Port belonging to LiverpoolNom. Horse Power as per Section 28 640.Is Refrigerating Machinery fitted Yes.Is Electric Light fitted Yes.

ENGINES, &c.—Description of Engines

Triplic ExpansionNo. of Cylinders ThreeNo. of Cranks ThreeDia. of Cylinders 28"-44"-78". Length of Stroke 54". Revs. per minute 66.

Dia. of Screw shaft

as per rule 16"

Material of

IronIs 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 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

Length of stern bush 5'6 1/2".

Dia. of Tunnel shaft

as per rule 14 1/8"as fitted 14 1/8"

Dia. of Crank shaft journals

as per rule 15 1/8"as fitted 15 1/8"

Dia. of Crank pin

15 3/4"

Size of Crank webs

10 1/2" x 2 1/2"

Dia. of thrust shaft under

collars 15 1/4"

Dia. of screw

18 1/2"

Pitch of screw

19'0"

No. of Feed pumps

2

Diameter of ditto

6 1/2"

Stroke

10"Can one be overhauled while the other is at work Yes.

No. of Bilge pumps

2

Diameter of ditto

4 1/2"

Stroke

11"Can one be overhauled while the other is at work Yes.

No. of Donkey Engines

2

SIZES OF PUMPS

6 1/2" x 6"

No. and size of Suctions connected to both Bilge and Donkey pumps

9 x 1 1/2" x 10"

In Engine Room

Three: 3 1/2" dia.

In Holds, &c.

H^o 1 Hold: 2-3 1/2" dia.H^o 2 Hold: 2-3 1/2" dia.Tunnel Well: 1-2 1/2" dia.

No. of bilge injections

1sizes 6 1/4"

Connected to condenser, or to circulating pump

C. P.

Is a separate donkey suction fitted in Engine room & size

Yes: 3 1/2"

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

—

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

—

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

Hold Suctions

How are they protected

By 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

See Vessel

Is the screw shaft tunnel watertight

Yes.

Is it fitted with a watertight door

Yes.

worked from

Upper platform in Engine Room.

BOILERS, &c.—

(Letter for record \$.)

Total Heating Surface of Boilers

4830 sq. ft.

Is forced draft fitted

Yes.

No. and Description of Boilers

3 Main Boilers: Cylindrical, Built Working Pressure 200 lbs.

Tested by hydraulic pressure to

400 lbs.

Particulars of Main Boilers.

Date of test 22/1/04

Can each boiler be worked separately

Yes.

Area of fire grate in each boiler

56 sq. ft.

No. and Description of safety valves to

each boiler

2: Direct Spring

Area of each valve

9.62 sq. in.

Pressure to which they are adjusted

200 lbs.

Are they fitted with easing gear

Yes.

Smallest distance between boilers or uptakes and bunkers or woodwork

About 24"

Mean dia. of boilers

15'0"

Length

12'0"

Material of shell plates

Steel

Thickness

1 1/2"

Range of tensile strength

29-32,500

Are they welded or flanged

No.

Descrip. of riveting: cir. seams

Ends: small

Diameter of rivet holes in long. seams

1 1/2"

Pitch of rivets

9 1/4"

Lap of plates or

width of butt straps

2 1 1/2"

Per centages of strength of longitudinal joint

rivets 91.5%plate 84.4%

Working pressure of shell by rules

228 lbs.

Size of manhole in shell

16" x 12"

Size of compensating ring

33" x 24" x 1 1/2"

No. and Description of Furnaces in each boiler

3: Dightons

Material

Steel

Outside diameter

48 1/4"

Length of plain part

top 4'10"

Thickness of plates

crown 1 1/2"

Description of longitudinal joint

Weld

No. of strengthening rings

None

Working pressure of furnace by the rules

222 lbs.

Combustion chamber plates: Material

Steel

Thickness: Sides

19 1/2"

Back

19 1/2"

Top

5"

Bottom

4 1/2"

Pitch of stays to ditto: Sides

7 1/8" x 7 1/8"

Back

7 1/8" x 7 1/8"

Top

8" x 8"

If stays are fitted with nuts or riveted heads

Nuts

Working pressure by rules

205 lbs.

Material of stays

Steel

Diameter at smallest part

1 3/8"

Area supported by each stay

59 sq. in.

Working pressure by rules

200 lbs.

End plates in steam space:

Material

Steel

Thickness

1 1/8"

Pitch of stays

15" x 15 3/8"

How are stays secured

Double Nuts

Working pressure by rules

270 lbs.

Material of stays

Steel

Diameter at smallest part

2 5/8"

Area supported by each stay

231 sq. in.

Working pressure by rules

230 lbs.

Material of Front plates at bottom

Steel

Thickness

1 1/8"

Material of Lower back plate

Steel

Thickness

1 1/8"

Greatest pitch of stays

12 1/2"

Working pressure of plate by rules

211 lbs.

Diameter of tubes

2 1/2"

Pitch of tubes

3 1/8" x 3 1/8"

Material of tube plates

Steel

Thickness: Front

13 1/8"

Back

3 1/4"

Mean pitch of stays

7 3/8"

Pitch across wide water spaces

13"

Working pressures by rules

316 lbs.

Girders to Chamber tops: Material

Steel

Depth and

thickness of girder at centre

11" x 1 1/2"

Length as per rule

28'7"

Distance apart

8"

Number and pitch of Stays in each

3: 8"

Working pressure by rules

378 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

—

Lloyd's Register

Foundation

WS93-0207

DONKEY BOILER— No. 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 or
 enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____ Material of shell plates _____ Thickness _____ Range of tensile
 strength _____ Descrip. of riveting long. seams _____ Rivets _____ Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____
 Lap of plating _____ Per centage of strength of joint _____ 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:—*Two propeller blades, 3 Cylinder escape valves & Springs, 12 Shaft Coupling Bolts, 6 Joint
 King Bolts, 12 Boiler tubes, 50 Condenser tubes, 1 set safety valve Spring, 1 Propeller shaft, 1 Main Bearing Bush
 1 Crank pin bush, 1 air pump rod, 1 Circulating pump rod, 1 set each Ramsbottom Rams for H.P. & L.P. pistons
 1 set Stubs & Brass nuts for propeller Boss. Spare gear for Fan Engine. 1 set air pump valves, 1 set Circulating pump
 1 set Ballast pump valves, 1 set main steam check valves
 & spare gear required by the Rules.*
 The foregoing is a correct description,
Pantun Macmurray Manufacturer.

Dates of Survey while building
 During progress of work in shops—
 During erection on board vessel—
 Total No. of visits—
 1903. May 4. 7. 12. 30. June 3. 4. 10. 13. 15. 22. 25. July 14. 16. 17. 21. 23. 24. 28. 31. Aug 4. 7. 11. 17. 19. 21.
 27. 31. Sep 3. 7. 11. 15. 21. 24. Oct 1. 5. 9. 13. 14. 16. 18. 20. 22. 26. 28. Nov 2. 5. 9. 10. 11. 13. 14. 16. 17. 20. 22.
 Dec 1. 4. 9. 11. 15. 16. 18. 23. 28. 29. 1904. Jan 13. 14. 15. 21. 22. 23. 25. 28. Feb 2. 3. 4. 10. 11. 12. 15. 19. 21.
 22. 23. 25. 27. 27. March 1. 2. 4. 9. 15. 16. 17. 21.
 95.
 Is the approved plan of main boiler forwarded herewith *Retained*
 " " " donkey " " " "

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

The Engines and Boilers of this vessel have been built under
 Special Survey and the materials and workmanship are good.
 When completed, the machinery was examined when running full
 power trials in the Firth of Clyde and all was found to work well.
 It is now in good and efficient condition throughout and
 eligible in my opinion to have the record of **+ L.M.C. 3.04.**
 marked in the Society's Register Book.

It is submitted that
 this vessel is eligible for
THE RECORD. — L.M.C. 3.04. **FD ELEC LIGHT**
 Ref Index —

B.A.G.
5.4.04
R.S.
5.4.04

The amount of Entry Fee.. £ 3 : : :
 Special .. £ 52 : : :
 Donkey Boiler Fee .. £ : : :
 Travelling Expenses (if any) £ : : :
 When applied for, 23/3/04
 When received, 26/3/04

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

Committee's Minute Glasgow 28 MAR 1904

Assigned

+ L.M.C. 3.04

MACHINERY CERTIFICATE
 WRITTEN, 6.4.04