

REPORT ON MACHINERY.

Port of *Leith*

WED. 25 JUN 1902

Received at London Office

No. in Survey held at

*Leith*Date, first Survey *Apr 23/01*Last Survey *June 21/02* 1902

Book.

(Number of Visits *34*)

on the

S. S. Surf

Tons

Gross *498.70*Net *215.76*Master *R. Patterson*

Built at

Leith

By whom built

*Messrs Hawthorn & Co Ltd*When built *1902*

Machinery made at

Leith

By whom made

*Messrs Hawthorn & Co Ltd*when made *1902*

Boilers made at

Leith

By whom made

*Messrs Hawthorn & Co Ltd*when made *1902*

Registered Horse Power

123.5 HP

Owners

Francis & Lambert Esq

Port belonging to

Horse Power as per Section 28

123.5 HP

Is Refrigerating Machinery fitted

No

Is Electric Light fitted

Yes

MACHINES, &c.—Description of Engines

Triple Surf Condensing

No. of Cylinders

3

No. of Cranks

3

Diameter of Cylinders

16" - 26" - 42"

Length of Stroke

27"

Revs. per minute

120

Dia. of Screw shaft

8 1/2"

Lgth. of stern bush

2-10 1/2"

Diameter of Tunnel shaft

7 3/4"

Dia. of Crank shaft journals

8 1/2"

Dia. of Crank pin

8 1/2"

Size of Crank webs

6" thick

Dia. of thrust shaft under

9 1/4"

Diameter of screw

9-10"

Pitch of screw

13-3"

No. of blades

4

State whether moveable

No

Total surface

29.5 sq ft

No. of Feed pumps

2

Diameter of ditto

3"

Stroke

14"

Can one be overhauled while the other is at work

Yes

No. of Bilge pumps

2

Diameter of ditto

3 1/2"

Stroke

14"

Can one be overhauled while the other is at work

Yes

No. of Donkey Engines

Two

Sizes of Pumps

6" x 4" x 6" and 3 1/2" x 2" x 4"

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

Engine Room

1 direct from donkey 2 1/2" from donkey for engine 2 1/2"

In Holds, &c.

1-2 1/2" in stokehold 1-2 1/2" aft 1-2 1/2"

Main hold

1-2 1/2" in fore hold

No. of bilge injections

1

sizes

5"

Connected to condenser, or to circulating pump

As pump is a separate donkey suction fitted in Engine room & size 2 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

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

below

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

How are pipes carried through the bunkers

Ward air & windlass pipes

How are they protected

wood casing

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

Were stern tube, propeller, screw shaft, and all connections examined in dry dock

When fitting

Is the screw shaft tunnel watertight

Yes

Is it fitted with a watertight door

Yes

worked from

upper grating

BOILERS, &c.—

(Letter for record *S*)

Total Heating Surface of Boilers

2238 sq ft

Is forced draft fitted

No

No. and Description of Boilers

2 Multitubular Cylindrical

Working Pressure

180 lbs

Tested by hydraulic pressure to

360 lbs

Date of test

19/3/02

Can each boiler be worked separately

Yes

Area of fire grate in each boiler

40 sq ft

No. and Description of safety valves to

No. of boiler

2 Spring loaded

Area of each valve

49 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

8 1/2"

Mean dia. of boilers

11' 9 1/2"

Length

9'-0"

Material of shell plates

Steel

Thickness of shell plates

1/2"

Range of tensile strength

27/32

Are they welded or flanged

No

Descrip. of riveting: cir. seams

DR Lap

long. seams

TR DBS

Diameter of rivet holes in long. seams

1/32"

Pitch of rivets

67/8"

Lap of plates or width of butt straps

1'-3 1/8"

Percentages of strength of longitudinal joint

87.5%

plate

85.6%

Working pressure of shell by rules

184 lbs

Size of manhole in shell

16" x 12"

No. of compensating ring

One

No. and Description of Furnaces in each boiler

2

Material

Steel

Outside diameter

3'-6"

Length of plain part

17/32

Thickness of plates

17/32

Description of longitudinal joint

welded

No. of strengthening rings

—

Working pressure of furnace by the rules

194.8 lbs

Combustion chamber plates: Material

Steel

Thickness: Sides

5/8"

Back

5/8"

Top

5/8"

Bottom

1 1/16"

Pitch of stays to ditto: Sides

9' x 8 1/4"

Back

9' x 8 1/4"

Top

8 1/4' x 8"

If stays are fitted with nuts or riveted heads

Nuts

Working pressure by rules

182.2 lbs

Material of stays

Steel

Diameter at smallest part

1 7/8"

Area supported by each stay

72.25 sq in

Working pressure by rules

210 lbs

End plates in steam space:

Material of stays

Steel

Thickness

1"

Pitch of stays

16"

How are stays secured

Drub them

Working pressure by rules

185 lbs

Material of Front plates at bottom

Steel

Thickness

1"

Greatest pitch of stays

14"

Working pressure of plate by rules

250 lbs

Diameter of tubes

3 1/4"

Pitch of tubes

4 3/8" x 4 3/8"

Material of tube plates

Steel

Thickness: Front

1 1/32"

Back

1 1/16"

Mean pitch of stays

11"

Pitch across wide water spaces

15"

Working pressures by rules

181.5 lbs

Girders to Chamber tops: Material

Steel

Depth and

—

Thickness of girder at centre

6" x 2"

Length as per rule

2'-2 3/8"

Distance apart

8"

Number and pitch of Stays in each

2 - 8 1/4"

Working pressure by rules

185 lbs

Superheater or Steam chest: how connected to boiler

—

Can the superheater be shut off and the boiler worked

—

Material

—

Description of longitudinal joint

—

Diameter

—

Length

—

Thickness of shell plates

—

Material

—

Diam. of rivet

—

Pitch of rivets

—

Working pressure of shell by rules

—

Diameter of flue

—

Material of flue plates

—

Thickness

—

Stiffened with rings

—

Distance between rings

—

Working pressure by rules

—

End plates: Thickness

DONKEY BOILER— No. *me* Description *Essex patent*
Made at *Bythe* By whom made *Davey Paxman & Co* When made *1901* Where fixed *Stoke Newington*
Working pressure *100 lbs* tested by hydraulic pressure to *200 lbs* No. of Certificate *474* Fire grate area *8.8 sq* Description of safety valves *Spring*
No. of safety valves *2* Area of each *3.97* Pressure to which they are adjusted *100* If fitted with easing gear *Yes* If steam from main boiler
enter the donkey boiler *No* Dia. of donkey boiler *4'-0"* Length *9'-4"* Material of shell plates *Steel* Thickness *7/16"* Range of te
strength *27/32* Descrip. of riveting long. seams *Double Butts* Dia. of rivet holes *3/4"* Whether punched or drilled *drilled* Pitch of rivets *3"*
Lap of plating *8 1/2"* Per centage of strength of joint Rivets *93%* Thickness of shell crown plates *1/2"* Radius of do. *6'-0"* No. of Stays to do. *3*
Dia. of stays *1 1/2"* Diameter of furnace Top *3'-4 1/4"* Bottom *3'-4 1/4"* Length of furnace *2'-0"* Thickness of furnace plates *7/16"* Descripti
joint *Welded* Thickness of furnace crown plates *1/2"* Stayed by *Dished* Working pressure of shell by rules *120*
Working pressure of furnace by rules *135 lbs* Diameter of uptake *12"* Thickness of uptake plates *9/16"* Thickness of water tubes *1"*

SPARE GEAR. State the articles supplied: *2 Main bearing bolts 2 Top end bolts 2 Bottom end bolts 2 bottom*
end braces 1 set air pump valves 1 set air pump valves 100 furnace bars
1 set bilge pump valves 1 set feed pump valves 1 set donkey pump valves
1 set of coupling bolts 1 set piston springs for each piston 1 eccentric strap 12 Cond
tubes & 24 ferrules 6 plain boiler tubes 1 safety
valve spring 1 escape valve spring
The foregoing is a correct description,
HAWTHORN & CO., LIMITED. Manufacturer.
James Hardman

Dates of Survey while building
During progress of work in shops - *Sept 23/01 24/01 25/01 26/01 27/01 28/01 29/01 30/01 1/02 2/02 3/02 4/02 5/02 6/02 7/02 8/02 9/02 10/02 11/02 12/02 13/02 14/02 15/02 16/02 17/02 18/02 19/02 20/02 21/02 22/02 23/02 24/02 25/02 26/02 27/02 28/02 29/02 30/02 1/03 2/03 3/03 4/03 5/03 6/03 7/03 8/03 9/03 10/03 11/03 12/03 13/03 14/03 15/03 16/03 17/03 18/03 19/03 20/03 21/03 22/03 23/03 24/03 25/03 26/03 27/03 28/03 29/03 30/03 31/03 1/04 2/04 3/04 4/04 5/04 6/04 7/04 8/04 9/04 10/04 11/04 12/04 13/04 14/04 15/04 16/04 17/04 18/04 19/04 20/04 21/04 22/04 23/04 24/04 25/04 26/04 27/04 28/04 29/04 30/04 1/05 2/05 3/05 4/05 5/05 6/05 7/05 8/05 9/05 10/05 11/05 12/05 13/05 14/05 15/05 16/05 17/05 18/05 19/05 20/05 21/05 22/05 23/05 24/05 25/05 26/05 27/05 28/05 29/05 30/05 31/05 1/06 2/06 3/06 4/06 5/06 6/06 7/06 8/06 9/06 10/06 11/06 12/06 13/06 14/06 15/06 16/06 17/06 18/06 19/06 20/06 21/06 22/06 23/06 24/06 25/06 26/06 27/06 28/06 29/06 30/06 1/07 2/07 3/07 4/07 5/07 6/07 7/07 8/07 9/07 10/07 11/07 12/07 13/07 14/07 15/07 16/07 17/07 18/07 19/07 20/07 21/07 22/07 23/07 24/07 25/07 26/07 27/07 28/07 29/07 30/07 31/07 1/08 2/08 3/08 4/08 5/08 6/08 7/08 8/08 9/08 10/08 11/08 12/08 13/08 14/08 15/08 16/08 17/08 18/08 19/08 20/08 21/08 22/08 23/08 24/08 25/08 26/08 27/08 28/08 29/08 30/08 31/08 1/09 2/09 3/09 4/09 5/09 6/09 7/09 8/09 9/09 10/09 11/09 12/09 13/09 14/09 15/09 16/09 17/09 18/09 19/09 20/09 21/09 22/09 23/09 24/09 25/09 26/09 27/09 28/09 29/09 30/09 1/10 2/10 3/10 4/10 5/10 6/10 7/10 8/10 9/10 10/10 11/10 12/10 13/10 14/10 15/10 16/10 17/10 18/10 19/10 20/10 21/10 22/10 23/10 24/10 25/10 26/10 27/10 28/10 29/10 30/10 31/10 1/11 2/11 3/11 4/11 5/11 6/11 7/11 8/11 9/11 10/11 11/11 12/11 13/11 14/11 15/11 16/11 17/11 18/11 19/11 20/11 21/11 22/11 23/11 24/11 25/11 26/11 27/11 28/11 29/11 30/11 1/12 2/12 3/12 4/12 5/12 6/12 7/12 8/12 9/12 10/12 11/12 12/12 13/12 14/12 15/12 16/12 17/12 18/12 19/12 20/12 21/12 22/12 23/12 24/12 25/12 26/12 27/12 28/12 29/12 30/12 31/12*
Total No. of visits *37*
Is the approved plan of main boiler forwarded herewith *Yes*
" " " donkey " " " *Yes*

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

Material of screw shaft *Steel* 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 *Yes*
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
non-corrosive *✓* If two liners are fitted, is the shaft lapped or protected between the liners *✓*

The engines & boiler of this vessel have been constructed under special survey & the materials & workmanship are sound & good. The engines have been tried under steam & the boiler safety valves adjusted to the working pressure.
The Machinery of this vessel is now in good & safe working condition & eligible in my opinion to have the notation of + LMC 6.02.
A report on the electric installation will be forwarded when received from the electricians.

It is submitted that this vessel is eligible for THE RECORD - LMC 6.02 Elec. Light

The amount of Entry Fee £ : :
Special £ 18 12 :
Donkey Boiler Fee £ : :
Travelling Expenses (if any) £ : :
When applied for, 23rd June 1902
When received, 27th June 1902

W. L. Thornton & Thomas Field
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute

WED. 25 JUN 1902

Assigned

+ LMC 6.02

MACHINERY CERTIFICATE
WRITTEN 25.6.02



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Foundation