

# REPORT ON MACHINERY.

3790

TUES 21 OCT 1890

No. 3790

Port of Belfast.

Received at London Office

13

No. in Survey held at Belfast

Date, first Survey 12<sup>th</sup> July.

Last Survey 18<sup>th</sup> Oct. 1890.

Reg. Book.

(Number of Visits 28)

8<sup>th</sup> Sep. on the Screw Steamer "Mississippi"

Tons Gross 3471

Master H. Murrell

Built at Belfast

By whom built Harland & Wolff

Net 2388

When built 1890

Engines made at Belfast.

By whom made

Harland & Wolff

when made 1890.

Boilers made at Belfast.

By whom made

Harland & Wolff

when made 1890.

Registered Horse Power 275

Owners

The Mississippi Steamship Co. Lloyd's S. Williams Man. Owners.

Port belonging to London

Engines, &c.—

Description of Engines

Tri-Compound

3 Cranks S.I.S.C.

No. of Cylinders

Three

Diam. of Cylinders 25 $\frac{1}{2}$  22 40

Length of Stroke 51

Rev. per minute 65

Point of Cut off, High Pressure .65

Low Pressure .6

Diameter of Screw shaft 14 $\frac{1}{2}$

Diam. of Tunnel shaft 14

Diam. of Crank shaft journals 14 $\frac{1}{2}$

Diam. of Crank pin 14 $\frac{1}{2}$

size of Crank webs 19 $\frac{1}{2}$  x 10 $\frac{1}{2}$

Diameter of screw 17-6

Pitch of screw 20-0

No. of blades 4

state whether moveable Yes

total surface 81 sq. ft.

No. of Feed pumps 2

diameter of ditto 3 $\frac{1}{2}$

Stroke 32

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

No. of Bilge pumps 2

diameter of ditto 4

Stroke 32

Can one be overhauled while the other is at work Yes

Where do they pump from

Bilge from all holds, E.A.B. Space 40 feet & Tunnel. Fed from hotwell

No. of Donkey Engines Five

Size of Pumps

1 8" cyl. 6" stroke, 18" lift, 2 3" cyl. 6" stroke, 18" lift, 2 3" cyl. 6" stroke, 18" lift, 2 3" cyl. 6" stroke, 18" lift.

Where do they pump from Sea, ballast and

fresh water tanks, hotwell, all holds, E.A.B. space, peaks, tunnel, evaporator & boilers.

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 5 $\frac{1}{2}$

Are they connected to condenser, or to circulating pump Yes.

How are the pumps worked

By links and levers from Centre Engine Crosshead. Separate

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.

air pump carried above with Swan neck.

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 they protected

That 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 28<sup>th</sup> August-90, before launching.

Is the screw shaft tunnel watertight Yes

and fitted with a sluice door Yes

worked from Upper deck.

BOILERS, &c.—

No. of Boilers Two

Description

Water ended Multi Air.

Material

Steel

Letter (for record)

Working Pressure 180 lbs.

Tested by hydraulic pressure to

360 lbs.

Date of test

3<sup>rd</sup> September 1890

Description of superheating apparatus or steam chest

None fitted.

Cert. 231.

Can each boiler be worked separately Yes

Can the superheater be shut off and the boiler worked separately

Yes.

No. of square feet of fire grate surface in each boiler 96

Description of safety valves

b. Cockburn's

No. to each boiler

Two

Area of each valve 11.04 sq. in.

Are they fitted with easing gear Yes

No. of safety valves to superheater

area of each valve

Yes.

Are they fitted with easing gear

Smallest distance between boilers and bunkers or woodwork

28 inches

Diameter of boilers

13-0"

Length of boilers 17-6"

Description of riveting of shell long. seams

bble butt straps circum. seams

Double bble

Diameter of rivet holes 1 $\frac{1}{2}$ "

whether punched or drilled drilled

pitch of rivets

8 $\frac{1}{2}$ "

Percentage of strength of longitudinal joint 84.6

working pressure of shell by rules

181 lbs.

size of manholes in shell 16" x 12"

Size of compensating rings M. Neil, pt. ring

No. of Furnaces in each boiler

Six

Description of Furnaces

Purves pt. ribbed

Outside diameter 38"

length

7-0"

thickness of plates

5"

Description of joint

welded

Greatest length between rings 9"

working pressure of furnace by the rules

210 lbs.

combustion chamber plating, thickness, sides 19" back 32" top 5"

Pitch of stays to ditto, sides 7 $\frac{3}{4}$ "

back

top 8 $\frac{1}{4}$ "

If stays are fitted with nuts or riveted heads

nutted in C.C.

working pressure of plating by rules 181 lbs.

Diameter of stays at smallest part 1 $\frac{1}{2}$ "

working pressure of ditto by rules

188 lbs.

end plates in steam space, thickness 1 $\frac{1}{2}$ "

Pitch of stays to ditto 19 $\frac{1}{2}$  x 16 $\frac{1}{2}$ "

how stays are secured

bouble washers & nuts, washers 14" x 1 $\frac{1}{2}$ "

working pressure by rules 204 lbs. with 240" diameter of stays at

smallest part 3"

working pressure by rules

198 lbs.

Front plates at bottom, thickness 1 $\frac{1}{2}$ "

Greatest pitch of stays

working pressure by rules

Diameter of tubes

3 $\frac{1}{4}$ "

pitch of tubes

4 $\frac{1}{2}$ "

Plates, front 2"

back

3"

how stayed

Stay tubes

pitch of stays 9" x 9"

Diameter of Superheater or Steam chest

length

thickness of plates

Description of longitudinal joint

diam. of rivet holes

13 $\frac{1}{2}$  in. Boxen 7 $\frac{1}{2}$  in. 14 $\frac{1}{2}$  in. 7 $\frac{1}{2}$  in.

Pitch of rivets

working pressure of shell by rules

diameter of flue

thickness of plates

If stiffened with rings

Yes.

Distance between rings

working pressure by rules

end plates of superheater, or steam chest; thickness

how stayed

Yes.

Superheater or steam chest; how connected to boiler

Yes.

Yes.

Lloyd's Register Foundation

BEL57-0221



DONKEY BOILER— Description *Cir. Single ended, multitubular, steel with 2 furnaces.*  
Made at *Belfast* by whom made *Harland & Wolff* when made *1890* where fixed *under Bridge on upper deck.*  
Working pressure *90 lbs.* tested by hydraulic pressure to *180 lbs.* No. of Certificate *89* fire grate area *76* description of safety valves *2 Cockburn* No. of safety valves *2* area of each *65 sq. in.* if fitted with easing gear *Yes* if steam from main boilers can enter the donkey boiler *No* diameter of donkey boiler *10'-0"* length *8'-10 1/2"* description of riveting *Butt straps 3 rivets in on pitch*  
Thickness of shell plates *5/8"* diameter of rivet holes *3/8"* whether punched or drilled *drilled* pitch of rivets *4 3/4"* lap of plating *9 1/2" x 3/16"*  
per centage of strength of joint *82* thickness of ~~end~~ plates *5/8"* stayed by *1 1/2" x 2" steel stays 15 1/2" pitch double nuts & washers 14" x 7/8" riveted to the plates.*  
Diameter of furnace, ~~top~~ *36"* bottom *—* length of furnace *6'-0"* thickness of plates *5/8"* description of joint *Butt straps Single riveted.*  
Thickness of ~~furnace~~ *C.C. ends* crown plates *1/2"* stayed by *Screw stays 1 1/2" x 1 1/2" pitch 7 1/4" pitch. Top by girders* working pressure of shell by rules *98*  
Working pressure of furnace by rules *103* diameter of uptake *✓* thickness of plates *✓* thickness of water tubes *✓*

SPARE GEAR. State the articles supplied:— *2 C.I. propeller blades; 2 pairs crank pin brasses. 2 main bearing bolts & nuts; 2 top end & 2 bot. end Cou. rod bolts & nuts; Ramsbottom rings for all pistons; 1 eccentric strap complete; air pump bucket & head valve complete; 6 propeller studs & nuts; 6 coupling bolts; 1 set of feed & bilge pump valves; etc. etc.*

The foregoing is a correct description,

*Harland & Wolff* Manufacturer.

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

The machinery of this steamer has been constructed in accordance with the approved plans for main and auxiliary boilers; the Secretary's letters dated 20th Nov. 1889, the Rules of the Society for First Entry of new machinery, or equal thereto and to the satisfaction of the undersigned.

The steel used in the construction of the boilers has been tested as required by the Rules & the shafting when finished was found free from defect.

The main and auxiliary boilers and main steam pipes have been tested as required by the Rules with water and found free from leakage or weakness.

The boilers were tested under steam and the safety valves adjusted to the working pressures viz 180 lbs. & 90 lbs. respectively on main & auxiliary.

The main & auxiliary engines were tried under steam at full speed and gave entire satisfaction.

An Electric Light installation (Swans incandescent) on the Single Wire System (double in way of compasses) was fitted throughout vessel. Two separate generating machines engines each dynamo giving volts & amperes.

All the material used in the construction of the machinery, and the workmanship throughout are good & satisfactory and I would respectfully recommend that the Notification *+ L.M.C. 10-90* be granted & recorded in the Reg. Book.

Machinery Certificate Written.

The amount of Entry Fee .. £ 3 : 0 : 0 received by me

Special .. £ 38 : 15 : 0

Donkey Boiler Fee .. £ : : :

Certificate (if required) .. £ : : :

To be sent as per margin.

(Travelling Expenses, if any, £ )

Committee's Minute

It is submitted that this vessel is eligible to have + L.M.C. 10-90 recorded

*W.A.*

*22-10-90*

*James Macdonald*

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

*FRI 24 OCT 1890*

*+ Lmb 610190*