

REPORT ON MACHINERY.

Port of *Glasgow.*Received at London Office *MON 4 APR 1898*No. in Survey held at *Glasgow.*
Reg. Book.Date, first Survey *4th August 1897* Last Survey *18th March 1898*
(Number of Visits *50*)*848* on the *Screw Steamer Arizona.*Gross *5305*
Tons Net *3356*
When built *1849.*Master *J. Panton* Built at *Glasgow* By whom built *J. Elder & Co.*Engines made at *Glasgow* By whom made *Fairfield & Sons & Co. Ltd.* when made *1898.*Boilers made at *"* By whom made *"* when made *1898.*Registered Horse Power Owners *Genl. S. S. C. Ltd.* Port belonging to *London.*Nom. Horse Power as per Section 28 *835.*Is Electric Light fitted *Yes.*

ENGINES, &c.—Description of Engines *Triple Expansion* No. of Cylinders *Three* No. of Cranks *Three*

Diameter of Cylinders *34 1/2 - 56 - 92* Length of Stroke *66"* Revolutions per minute *65* Diameter of Screw shaft as per rule *14.4*
as fitted *21"*

Diameter of Tunnel shaft as fitted *20"* Diameter of Crank shaft journals *22 1/2"* Diameter of Crank pin *22 1/2"* Size of Crank webs *original.*

Diameter of screw *21.6"* Pitch of screw *26.0"* No. of blades *4* State whether moveable *Yes* Total surface *123 sq. ft.*

No. of Feed pumps *2* Diameter of ditto *4"* Stroke *34"* Can one be overhauled while the other is at work *Yes.*

No. of Bilge pumps *2* Diameter of ditto *4"* Stroke *34"* Can one be overhauled while the other is at work *Yes.*

No. of Donkey Engines *2* Sizes of Pumps *2 1/2" & 4"* No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room *4 strokes: 1 1/2" dia. 1 1/2" dia. 1 1/2" dia. 1 1/2" dia.* In Holds, &c. *4 1/2" Hold: 1 1/2" dia. 4 1/2" Hold: 1 1/2" dia. 4 1/2" Hold: 1 1/2" dia. Tunnel: 1 1/2" dia.*

No. of bilge injections *2* sizes *10"* Connected to condenser, or to circulating pump *Yes* Is a separate donkey suction fitted in Engine room & size *Yes: 5"*

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*

What pipes are carried through the bunkers *Hold suction.* How are they protected *Under ceiling.*

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 *28 Oct. 97.* Is the screw shaft tunnel watertight *Yes.*

Is it fitted with a watertight door *Yes.* worked from *Top platform.*

BOILERS, &c.—(Letter for record *See 29-32 tons*) Total Heating Surface of Boilers *14548 sq. ft.* Is forced draft fitted *No.*

No. and Description of Boilers *all three Cyl. & Multi: 3: 10 1/2" dia. & 2 1/2" dia.* Working Pressure *180 lbs* Tested by hydraulic pressure to *360 lbs.*

Date of test *26/11/97* Can each boiler be worked separately *Yes.* Area of fire grate in each boiler *114 sq. ft.* No. and Description of safety valves to each boiler *3: Direct Spring.* Area of each valve *11.49 sq. in.* Pressure to which they are adjusted *184 lbs.* Are they fitted with easing gear *Yes.* Smallest distance between boilers or uptakes and bunkers or woodwork *about 8 feet* Mean diameter of boilers *13.6"*

Length *14.3"* Material of shell plates *Steel* Thickness *1 1/8"* Description of riveting: circum. seams *Lap Double & Triple* longitudinal seams *Double & Triple*

Diameter of rivet holes in long. seams *1 1/4"* Pitch of rivets *8 1/2"* Width of butt straps *14"*

Per centages of strength of longitudinal joint: rivets *85%* Working pressure of shell by rules *200 lbs.* Size of manhole in shell *16" x 12"*

Size of compensating ring *plan stamped* No. and Description of Furnaces in each boiler *6: Corrugated* Material *Steel* Outside diameter *41 1/2"*

Length *4.0"* Thickness of plates *1 1/2"* Description of longitudinal joint *Welded.* No. of strengthening rings *✓*

Working pressure of furnace by the rules *194 lbs.* Combustion chamber plates: Material *Steel* Thickness: Sides *3/8"* Back *3/8"* Top *3/8"* Bottom *3/4"*

Pitch of stays to ditto: Sides *4 1/2" x 4"* Back *4 1/2" x 4"* Top *4 1/2" x 4"* If stays are fitted with nuts or riveted heads *None* Working pressure by rules *195 lbs.*

Material of stays *Steel* Diameter at smallest part *1 1/4"* Area supported by each stay *54 1/2"* Working pressure by rules *181 lbs.* End plates in steam space: Material *Steel* Thickness *1 1/8"* Pitch of stays *4 1/2" x 4"* How are stays secured *Double nut* Working pressure by rules *240 lbs.* Material of stays *Steel*

Diameter at smallest part *2.4"* Area supported by each stay *207"* Working pressure by rules *210 lbs.* Material of Front plates at bottom *Steel*

Thickness *3/4"* Material of Lower back plate *"* Thickness *"* Greatest pitch of stays *"* Working pressure of plate by rules *"*

Diameter of tubes *3 1/4"* Pitch of tubes *4 1/2" x 4 1/2"* Material of tube plates *Steel* Thickness: Front *3/4"* Back *3/4"* Mean pitch of stays *9.0"*

Pitch across wide water spaces *14 1/2"* Working pressures by rules *210 lbs.* Girders to Chamber tops: Material *Steel* Depth and thickness of girder at centre *"* Length as per rule *"* Distance apart *4.5"* Pitch of Stays in each *4 1/2" x 4 1/2"*

Working pressure by rules *195 lbs.* Superheater or Steam chest: *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—

Description

None fitted.

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 _____

Diameter of donkey boiler _____ Length _____ Material of shell plates _____ Thickness _____

Description of riveting long. seams _____ Diameter 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:— Crank pin braces, 3 Slide Spindles. Spare Length Tunnel shaft, H.P. piston valve Rings. Packing Rings for each piston, Air pump Bucket & Rod. Eccentric strap liners. Main Bearing Bolts. Coupling Bolts, cross head crank pin Bolts, 100 lb. engine tubes. The foregoing is a correct description, _____ Roller tubes etc. etc.

Manufacturer.

THE FAIRFELD SHIPBUILDING AND ENGINEERING CO., LIMITED.

MANAGER.

Dates of Survey _____ During progress of work in shops _____ 1897:— Aug. 4. 5. 17. 19. 26. Sept. 3. 10. 15. 16. 28. 30. Oct. 6. 8. 11. 14. 20. 22. 27. 28. 29. Nov. 8. 17. 19. 24. 26. Dec. 1. 3. 8. 9. 16. 23. 28. 1898:— Jan. 11. 17. 18. 25. 27. Feb. 2. 3. 7. 9. 10. 14. 18. 24. Mar. 1. 9. 21. 28.

During erection on board vessel _____

Total No. of visits _____ 50.

General Remarks (State quality of workmanship, opinions as to class, &c. The Boilers have been built under special Survey and the materials and workmanship are good. Engines:— New Cylinders & pistons with all necessary valves have now been fitted. The tubes of both condensers have been drawn & cleaned. All pumps and sea connections have been overhauled & examined. Several old sea cocks have been taken off the ship's side & new bolts fitted where required. On reamining the crank shaft, one portion of the body was found defective, this has been renewed. The new length of Tunnel shaft has been fitted; the other lengths of shafting were found in good condition. New dipium bitas has been fitted in the Stern Bush. The propeller shaft and propeller are in good condition.

In completion of the alterations the Engines were examined on trial under full steam and worked satisfactorily.

The machinery of this vessel is now in good and efficient condition and eligible in my opinion to have the notation

✠ N.B. & Lm.C. 3,98. marked in the Society's Register Book.

Note: A small Repuprating machine is fitted on board.

It is submitted that this vessel is eligible for THE RECORD.

Lm.C. 3,98 + N.B. 3,98 The Light

7/4 98

The amount of Entry Fee. £ _____ When applied for, _____

Special £ 30: 17: 6 2. 4. 98

Donkey Boiler Fee £ _____

Travelling Expenses (if any) £ _____

Committee's Minute

Assigned

TUES. 5 APR 1898

Lm.C. 3,98

+ N.B. 3,98. 7/4 98
Elect. Light

REPORT ON MACHINERY.

MON 4 APR 1898

Port of *Glasgow*

Received at London Office 18

No. in Survey held at
Reg. Book.*Glasgow*Date, first Survey *4. August 1897* Last Survey *28. March 1898*(Number of Visits *50*)

on the

Screw Steamer Arizona continued.Tons { Gross
Net

Master

Built at

By whom built

When built

Engines made at

By whom made

when made

Boilers made at

By whom made

when made

Registered Horse Power

Owners

Port belonging to

Nom. Horse Power as per Section 28

Is Electric Light fitted

ENGINES, &c.—Description of Engines

No. of Cylinders

No. of Cranks

Diameter of Cylinders

Length of Stroke

Revolutions per minute

Diameter of Screw shaft as per rule
as fittedDiameter of Tunnel shaft as per rule
as fitted

Diameter of Crank shaft journals

Diameter of Crank pin

Size of Crank webs

Diameter of screw

Pitch of screw

No. of blades

State whether moveable

Total surface

No. of Feed pumps

Diameter of ditto

Stroke

Can one be overhauled while the other is at work

No. of Bilge pumps

Diameter of ditto

Stroke

Can one be overhauled while the other is at work

No. of Donkey Engines

Sizes of Pumps

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

In Engine Room

In Holds, &c.

No. of bilge injections

sizes

Connected to condenser, or to circulating pump

Is a separate donkey suction fitted in Engine room & size

Are all the bilge suction pipes fitted with roses

Are the roses in Engine room always accessible

Are the sluices on Engine room bulkheads always accessible

Are all connections with the sea direct on the skin of the ship

Are they Valves or Cocks

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates

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

Are the blow off cocks fitted with a spigot and brass covering plate

What pipes are carried through the bunkers

How are they protected

Are all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times

Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges

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

Is the screw shaft tunnel watertight

Is it fitted with a watertight door

worked from

Particulars of Superheated Boilers.

BOILERS, &c.—

(Letter for record *B.*)

Total Heating Surface of Boilers

Is forced draft fitted *no.*

No. and Description of Boilers

Working Pressure *180 lbs* Tested by hydraulic pressure to *360 lbs*Date of test *26/11/97*. Can each boiler be worked separately *Yes*. Area of fire grate in each boiler *58 1/2* sq. ft.each boiler *2: Direct Spring*. Area of each valve *5.94* sq. ft. Pressure to which they are adjusted *184 lbs*. Are they fittedwith easing gear *Yes*. Smallest distance between boilers or uptakes and bunkers or woodwork *about 12"*. Mean diameter of boilers *13.6"*Length *9' 8"*. Material of shell plates *Steel*. Thickness *1 1/8"*. Description of riveting: circum. seams *Lap. 2 1/2 diam* long. seams *Butt shape*Diameter of rivet holes in long. seams *1 1/4"*. Pitch of rivets *8 5/8"*. Lap of plates *14"* width of butt straps *14"*Per centages of strength of longitudinal joint *95* Working pressure of shell by rules *203 lbs* Size of manhole in shell *16 1/2 x 12"*Size of compensating ring *flange* No. and Description of Furnaces in each boiler *3: Corrugated* Material *Steel* Outside diameter *41 1/2"*Length of plain part *3 7/8"* Thickness of plates *3 1/2"* Description of longitudinal joint *Welded*. No. of strengthening rings *✓*Working pressure of furnace by the rules *197 lbs* Combustion chamber plates: Material *Steel* Thickness: Sides *9/16"* Back *7/16"* Top *7/16"* Bottom *3/4"*Pitch of stays to ditto: Sides *7 1/2 x 7"* Back *7 1/2 x 7 1/4"* Top *7 1/2 x 7 1/4"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *195 lbs*Material of stays *Steel* Diameter at smallest part *1 1/4"* Area supported by each stay *54 1/2* sq. ft. Working pressure by rules *181 lbs*. End plates in steam space:Material *Steel* Thickness *1 1/8"* Pitch of stays *14 1/2 x 14 1/2"* How are stays secured *With nuts* Working pressure by rules *240 lbs* Material of stays *Steel*Diameter at smallest part *2 1/4"* Area supported by each stay *207* sq. ft. Working pressure by rules *213 lbs* Material of Front plates at bottom *Steel*Thickness *3/4"* Material of Lower back plate *Steel* Thickness *5/8"* Greatest pitch of stays *11 1/2"* Working pressure of plate by rules *220 lbs*Diameter of tubes *3 1/4"* Pitch of tubes *4 3/8 x 4 3/8"* Material of tube plates *Steel* Thickness: Front *3/4"* Back *3/4"* Mean pitch of stays *9.8"*Pitch across wide water spaces *14 1/2"* Working pressures by rules *216 lbs*. Girders to Chamber tops: Material *Iron* Depth andthickness of girder at centre *7 3/8 x 14"* Length as per rule *25 1/2"* Distance apart *4 1/4"* Number and pitch of Stays in each *2: 7 1/2"*Working pressure by rules *220 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

15942-6

DONKEY BOILER— 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 _____ Diameter of donkey boiler _____ Length _____ Material of shell plates _____ Thickness _____
Description of riveting long. seams _____ Diameter 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:—

The foregoing is a correct description,

Manufacturer.

THE FAIRFIELD SHIPBUILDING

AND ENGINEERING CO., LIMITED.

Alb. Lucci MANAGER

Dates of Survey while building
During progress of work in shops - -
During erection on board vessel - -
Total No. of visits

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

Certificate (if required) to be sent to

The amount of Entry Fee.. £ : : When applied for, _____
Special £ : : _____
Donkey Boiler Fee £ : : _____
Travelling Expenses (if any) £ : : _____

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

Committee's Minute

TUES. 5 APR 1898

Assigned