

REC'D. 27th April 1903

No. 786^a

REPORT ON MACHINERY.

Port of Sau Francisco

FEB. 8 MAY 1903

Survey held at Sau Francisco Date, first Survey August 1901 Last Survey Feb. 25 1903Name American S.S. "Arizona" (Same as Alagon) Tons { Gross 8671.67
Net 5621.29Built at Sau Francisco By whom built Union Iron Works When built 1903-2at Sau Francisco By whom made Union Iron Works when made 1902at Sau Francisco By whom made Union Iron Works when made 1902Horse Power 504 Owners American-Hawaiian S.S. Co. Port belonging to New YorkPower as per Section 28 504 Is Refrigerating Machinery fitted Yes (ships use only) Is Electric Light fitted Yes

&c.—Description of Engines Quad. Ex. Twin Screw No. of Cylinders 8 No. of Cranks 8
 Diameters 21 1/2, 28, 38, 60 Length of Stroke 36" Revs. per minute 100 Dia. of Screw shaft as per rule 11.14 all shafts and rule
 as per rule 10.08" Dia. of Crank shaft journals as per rule 10.6 old rule as fitted 12 Lgth. of stern bush 14 1/2
 as fitted 10.5" Dia. of Crank pin 10.75" Size of Crank webs 8"x13" Dia. of thrust shaft under
 Dia. of screw 13' 9" Pitch of screw 13' 3" No. of blades 8 State whether moveable Yes Total surface 140 ^{sq ft}

Pumps 2 Duplex Diameter of ditto 5" Stroke 12" Can one be overhauled while the other is at work Yes
 Pumps 2 Diameter of ditto 5" Stroke 15" Can one be overhauled while the other is at work Yes

Engines 2 Sizes of Pumps 7 1/2" Steam, 4 1/2" Water x 10" No. and size of Suctions connected to both Bilge and Donkey pumps
 from 4 - 3 1/2" Suctions In Holds, &c. 2 - 6" 11 - 5" - 19 - 3 1/2"
4 - 3" Suctions.

Suctions 2 sizes 10" Connected to condenser, or to circulating pump Yes Is a separate donkey suction fitted in Engine room & size Yes 2-3"
 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

Connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Valves on Stools
 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

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
 carried through the bunkers Air, Sounding & Bilge How are they protected wood casing

cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times Yes
 suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges Yes

Iron tube, propeller, screw shaft, and all connections examined in dry dock Feb. 12-03 Is the screw shaft tunnel watertight Yes
 Is a watertight door Yes worked from Upper Deck

&c.— (Letter for record) Total Heating Surface of Boilers 6120 ^{sq ft} Is forced draft fitted Yes

Description of Boilers 3 - S. E. Scotch Marine Working Pressure 213 Tested by hydraulic pressure to 430
Can each boiler be worked separately Yes Area of fire grate in each boiler 54 ^{sq ft} No. and Description of safety valves to
Spring loaded Area of each valve 9.6 ^{sq in} Pressure to which they are adjusted 218 lb Are they fitted with easing gear Yes

Space between boilers or uptakes and bunkers or woodwork 2' 3" Mean dia. of boilers 14' 4 1/2" Length 10' 4" Material of shell plates Steel
Range of tensile strength 28 tons Are they welded or flanged welded at ends Descrip. of riveting: cir. seams D.R. lap. long. seams treble

Rivet holes in long. seams 1 3/8" Pitch of rivets 8 5/8" Lap of plates or width of butt straps 19 7/8"
 of strength of longitudinal joint rivets 85.36 Working pressure of shell by rules 225.13 Size of manhole 12"x16" back h'd
 plate 84.06

Gasating ring ✓ No. and Description of Furnaces in each boiler 4 Morrison Cor. Material Steel Outside diameter 38 1/8"
 in part top ✓ Thickness of plates crown 9/16" Description of longitudinal joint No. of strengthening rings
 bottom ✓

Pressure of furnace by the rules 231 Combustion chamber plates: Material Steel Thickness: Sides 5/8" Back 5/8" Top 5/8" Bottom 7/8"
 as to ditto: Sides 7 1/2"x7 1/2" Back 7 1/2"x7 1/2" Top 7 1/2"x7 3/8" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 240

Stays Steel Diameter at smallest part 1.495 Area supported by each stay 56.25 ^{sq in} Working pressure by rules 249.6 End plates in steam space:
Steel Thickness 1 5/32" Pitch of stays 14 3/4" How are stays secured Nuts Working pressure by rules 275.3 Material of stays Steel

Smallest part 2629 Area supported by each stay 217.56 Working pressure by rules 270 Material of Front plates at bottom Steel
8" Material of Lower back plate Steel Thickness 3/4" + 1/2" Greatest pitch of stays 14 1/2" Working pressure of plate by rules 213

Tubes 2 1/4" Pitch of tubes 3 1/2" Material of tube plates Steel Thickness: Front 7/8" Back 1 1/16" Mean pitch of stays 7"
 as wide water spaces 7' 8 1/2" Working pressures by rules 337 Girders to Chamber tops: Material Steel Depth and

girder at centre 10"x3 1/4" Length as per rule 34" Distance apart 7 3/8" Number and pitch of Stays in each 3 - 7 1/2"
 Pressure by rules 223 Superheater or Steam chest; how connected to boiler — Can the superheater be shut off and the boiler worked

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

With rings — Distance between rings — Working pressure by rules — End plates: Thickness — How stayed —
 Pressure of end plates — Area of safety valves to superheater — Are they fitted with easing gear —

* Certified dimensions will be furnished
 as soon as received from San Francisco
 J. H. M.

DONKEY BOILER— No. *2* Description *Single End Scotch Marine*
 Made at *San Francisco* By whom made *Union Iron Works* When made *1902* Where fixed *Upper Deck*
 Working pressure *90* tested by hydraulic pressure to *180* No. of Certificate *25.5* Description of safety valves *Spring loaded*
 No. of safety valves *1* Area of each *12.56* Pressure to which they are adjusted *90 lbs.* If fitted with easing gear *yes* If steam from main boilers can
 enter the donkey boiler *No.* Dia. of donkey boiler *10'0"* Length *9'6"* Material of shell plates *Steel* Thickness *9/16"* Range of tensile
 strength *28 tons* Descrip. of riveting long. seams *treble riv. lap* Dia. of rivet holes *15/16"* Whether punched or drilled *drilled* Pitch of rivets *4 3/4"*
 Lap of plating *7 1/4"* Per centage of strength of joint *87.8* Thickness of shell crown plates *—* Radius of do. *—* No. of Stays to do. *—*
 Dia. of stays. *—* Diameter of furnace Top *—* Bottom *—* Length of furnace *6'5 1/2"* Thickness of furnace plates *7/16"* Description of
 joint *—* Thickness of furnace crown plates *—* Stays by *Morison Cor. Furnaces* Working pressure of shell by rules *91.7*
 Working pressure of furnace by rules *157 lbs.* Diameter of uptake *—* Thickness of uptake plates *—* Thickness of water tubes *—*

SPARE GEAR. State the articles supplied:— *List attached.*

The foregoing is a correct description,

J. J. Corb Manufacturer.

Dates { During progress of work in shops— *June 1901 to August 1902.*
 of Survey { During erection on board vessel— *Sept. 1902 to February 1903.*
 while building { Total No. of visits *35 visits.*

Is the approved plan of main boiler forwarded herewith
forwarded with Report No. 692.
 " " " donkey " " "

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 *No.*
 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 and
 non-corrosive *✓* If two liners are fitted, is the shaft lapped or protected between the liners *lapped at ends of liners.*

These Engines and Boilers have been specially surveyed during construction. The Material and Workmanship are of good quality and the Machinery has been fitted on board in a good and efficient manner. The whole has been tried under steam and everything found to work in a satisfactory manner. In my opinion the Machinery is eligible for the notation + L.M.C. 2-03

It is submitted that
 this vessel is eligible for
 THE RECORD — L M C 2:03 Else Light F.D.

J.S.
11.5.03

The amount of Entry Fee.. £ *3* : — : When applied for,
 Special £ *45* : — : *Feb. 28. 1903*
 Donkey Boiler Fee £ : : :
 Travelling Expenses (if any) £ : : : *Mar. 13. 1903*
M.H.

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

Committee's Minute

Assigned

FRI. 15 MAY 1903

+ L M C 2.03

Else Light

F.D. MACHINERY CERTIFICATE
 WRITTEN.



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