

16602. Iron Rev 17/7/76

Port Glasgow June 29<sup>th</sup> 1876

Details of Main Boilers of the Steam Ship

"Balachava" 221 tons

Diameter 9' 8" Length 9' 3"

Thickness of shell plates  $\frac{12}{16}$ "

Description of riveting of longitudinal joints *double riveted* of circumferential joints *single riveted*

Pitch of rivets ditto  $3\frac{3}{4}$ " ditto 3"

Diameter of rivets ditto 1" ditto 1"

Lap of plating ditto *Double butt straps 11 $\frac{1}{2}$ " x  $\frac{9}{16}$ "* ditto  $3\frac{1}{4}$ "

Size of manholes in circular shell 16" x 12"

How compensated for *By flat ring 4" x  $\frac{10}{16}$ "*

Number of furnaces in boiler

Diameter of furnaces 2' 11" Length of furnaces 6' 0"

Thickness of furnace plates  $\frac{9}{16}$ "

Description of joint of furnaces *Fitted with double butt straps*

Whether strengthened with rings *No rings* Greatest length between rings

Thickness of combustion chamber plating  $\frac{7}{16}$ "

Diameter of screw stays to ditto  $1\frac{1}{4}$ " pitch of stays  $8\frac{3}{4}$ " x  $7\frac{3}{4}$ " *fitted with nuts*

End plates, thickness  $\frac{10}{16}$ "

Diameter of longitudinal stays to end plates 2" pitch of ditto  $14\frac{1}{2}$ " x  $14\frac{1}{2}$ "

How stays are secured *By double nuts*

Diameter of tubes  $3\frac{1}{2}$ " pitch of tubes  $4\frac{1}{2}$ "

Thickness of tube plates  $\frac{10}{16}$ "

Stayed by *Suber. screwed & fitted with double nuts* pitch of stays 9" x  $15\frac{1}{2}$ "

Description of steam receiver *Same*

Diameter of ditto 3' 3" height length of ditto 4' 6"

Thickness of plating of ditto  $\frac{7}{16}$ " ends  $\frac{9}{16}$ "

Ends, how stayed *Three stays 2" dia. secured with double nuts, also flat*

*ring round steam aperture in boiler shell*

*Donkey Boiler 4' 0" dia x high plating*

James Morrison

Engineer Surveyor to Lloyd's Register of Shipping.  
F.T.O.



Formulae for Shell  $\frac{51520 \times 1.5 \times .82\%}{102.5 \times 6.5} = 65 \text{ lbs}$  <sup>53% of rivets in single shear</sup> <sub>73% plate</sub>

Formula for flat plates  $\frac{100 \times 49}{64} = 76 \text{ lbs}$

Formula for Stues  $\frac{89600 \times .25}{6.45 \times 35} = 94 \text{ lbs}$

Longitudinal Stays 2" dia.  $14\frac{1}{2}'' \times 14\frac{1}{2}''$  pitch = 4357 lbs

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