

REPORT ON MACHINERY.

No. 1473

No. in Survey held at Hamburg

Reg. Book.

on the S. S. SolingenDate, first Survey February 18th Last Survey October 19th 1889(Number of Visits 41)Master Trulsen Built at Hamburg By whom built Reiherting Schiffswerft When built 1889Engines made at Hamburg By whom made Reiherting Schiffen. & Maschinenfabrik when made 1889Boilers made at do By whom made do when made 1889Registered Horse Power 300 Owners Deutsch-Australische Dampfschiff. Ges. Port belonging to Hamburg

ENGINES, &c.—

(Triple expansion)

Description of Engines Triple expansion surface condensing, inverted, direct acting on three cranks.

Diameter of Cylinders 23 $\frac{1}{2}$ x 31 $\frac{1}{2}$ x 60 Length of Stroke 42 No. of Rev. per minute 40 Point of Cut off, High Pressure 6 Low Pressure 6

Diameter of Screw shaft 11 $\frac{1}{4}$ Diam. of Tunnel shaft 4 $\frac{1}{2}$ Diam. of Crank shaft journals 11 $\frac{1}{4}$ Diam. of Crank pin 11 $\frac{1}{4}$ size of Crank webs 8 $\frac{1}{2}$ x 24 (built Steel)

Diameter of screw 15 $\frac{1}{2}$ Pitch of screw 17 $\frac{1}{2}$ No. of blades 4 state whether moveable no total surface 65 sq. ft.

No. of Feed pumps 2 diameter of ditto 3 $\frac{1}{2}$ Stroke 21 Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 diameter of ditto 4 Stroke 31 Can one be overhauled while the other is at work yes

Where do they pump from all bilges, holds, tanks, tunnel & sea, deliver overboard and on deck.

No. of Donkey Engines 2 Size of Pumps a. 3 dia. 4" diam. 6" str. b. 1" dia. 4" diam. 6" str. Where do they pump from a. from sea, bilges, tanks, tunnel & hold, deliver overboard, into boilers, on deck & through condenser; b. from all bilges, holds, tanks & sea, deliver overboard and into tanks.

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

How are the pumps worked from crosshead on intermediate engine by links and levers.

Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks Valves and Cocks.

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 above.

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 fore hold suction through space How are they protected by wooden boxes.

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 October 16th 1889.

Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from Cylinder platform.

BOILERS, &c.—

Number of Boilers 2 Description Cylindrical multitubular Whether Steel or Iron Steel (S)

Working Pressure 165 lbs. Tested by hydraulic pressure to 330 lbs. Date of test August 8th 1889.

Description of superheating apparatus or steam chest none.

Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately no

No. of square feet of fire grate surface in each boiler 61.75 sq. ft. Description of safety valves Spring No. to each boiler 2

Area of each valve 7.5 sq. in. Are they fitted with easing gear yes No. of safety valves to superheater — area of each valve —

Are they fitted with easing gear — Smallest distance between boilers and bunkers or woodwork 2 $\frac{1}{2}$ ft. to bunkers. Diameter of boilers 14 $\frac{1}{2}$

Length of boilers 10 $\frac{1}{2}$ description of riveting of shell long. seams alt. butt str. butt str. circum. seams lap triple riveted Thickness of shell plates 1 $\frac{3}{8}$

Diameter of rivet holes 1 $\frac{1}{4}$ whether punched or drilled drilled pitch of rivets 4 $\frac{1}{16}$ Lap of plating 8 $\frac{1}{2}$

Percentage of strength of longitudinal joint 76% working pressure of shell by rules 211 lbs. size of manholes in shell 13 $\frac{1}{2}$ x 16

Size of compensating rings 7 $\frac{1}{2}$ x 1 $\frac{1}{2}$ plate No. of Furnaces in each boiler 3 corrugated

Outside diameter 41 $\frac{1}{2}$ length, top 7 $\frac{1}{2}$ bottom 9 $\frac{1}{2}$ thickness of plates 9 $\frac{1}{16}$ description of joint welded if rings are fitted no

Greatest length between rings — working pressure of furnace by the rules 169 lbs. combustion chamber plating, thickness, sides 9 $\frac{1}{16}$ back 7 $\frac{1}{8}$ top 9 $\frac{1}{16}$

Pitch of stays to ditto, sides 7 $\frac{3}{4}$ back 7 $\frac{3}{4}$ top 10 If stays are fitted with nuts or riveted heads with nuts working pressure of plating by rules 176 lbs. Diameter of stays at smallest part 1 $\frac{1}{4}$ working pressure of ditto by rules 185 lbs. end plates in steam space, thickness 1 $\frac{1}{2}$

Pitch of stays to ditto 16 how stays are secured with double nuts working pressure by rules 202 lbs. diameter of stays at smallest part 2 $\frac{1}{4}$ working pressure by rules 166 lbs. Front plates at bottom, thickness 13 $\frac{1}{16}$ Back plates, thickness 13 $\frac{1}{16}$

Greatest pitch of stays 8 $\frac{1}{4}$ working pressure by rules 298 lbs. Diameter of tubes 3 $\frac{1}{4}$ pitch of tubes 4 $\frac{1}{16}$ thickness of tube plates, front 13 $\frac{1}{16}$ back 13 $\frac{1}{16}$ how stayed stay tubes pitch of stays 8 $\frac{1}{8}$ x 8 $\frac{1}{8}$ width of water spaces 6

Diameter of Superheater or Steam chest — length — thickness of plates — description of longitudinal joint — diam. of rivet holes —

Pitch of rivets — working pressure of shell by rules — diameter of flue — thickness of plates — If stiffened with rings —

Distance between rings — working pressure by rules — end plates of superheater, or steam chest; thickness — how stayed —

Superheater or steam chest; how connected to boiler —

HAM117-0261

DONKEY BOILER

Steel
 Description *Cylindrical, multi-tubular, horizontal, furnace, conid. chimib. built in bricks.*
 Made at *Hamburg* by whom made *Reichstey Schiffswart & Wp.* when made *1889* where fixed on *Main Deck*
 Working pressure *85 lbs.* tested by hydraulic pressure to *170 lbs.* No. of Certificate *April 12th 1889* fire grate area *13.85 sq. ft.* description of safety
 valves *Spring* No. of safety valves *2* area of each *2 sq. in.* if fitted with easing gear *yes* if steam from main boilers can
 enter the donkey boiler *no* diameter of donkey boiler *4' 1"* length *6' 9"* description of riveting *lap double riveted*
 Thickness of shell plates *1/2"* diameter of rivet holes *7/8"* whether punched or drilled *drilled* pitch of rivets *3 1/2"* lap of plating *5 1/2"*
 per centage of strength of joint *63%* thickness of ~~end~~ *end* plates *1/16"* stayed by *long stays 2 1/2" thread, 11 1/2" x 16" pitch*
 Diameter of furnace, top *36"* bottom *—* length of furnace *6' 9"* thickness of plates *1/32"* description of joint *lap single riveted*
 Thickness of ~~furnace~~ *dome* crown plates *1/16"* stayed by *dished* working pressure of shell by rules *80 lbs.*
 Working pressure of furnace by rules *104 lbs.* diameter of ~~uptake~~ *dome* *9' 6"* thickness of plates *3/8"* thickness of water tubes *3 1/2"*

SPARE GEAR. State the articles supplied:— *1 propeller, 1 propeller shaft, 3 slide rods, 1 link block, 1 pair*
brass connect. rod top & bottom end each, 1 air pp. rod, 1 circ. pp. rod, 2 bolts for main bearings,
connect. rod top & bottom ends each, 1 set air & circut. pp. valves each, 2 valves feed pumps,
2 1/2" bilge pumps, 2 1/2" closet pump, 1 set coupling bolts, 12 piston bolts, 12 condenser tubes, 100
screw glands, 1 spring Main Safety valves, 1 spring for Glynd.
 The foregoing is a correct description, *& feed escape valves each, 18 tubes Main Boilers, 6 1/2" Donkey*
 Manufacturer. *Boiler, 5 set fire bars Main Boilers, 1 1/2" Donkey Mr. Boilers*
slide, nuts, rivets, 1 iron bars and plate assorted.

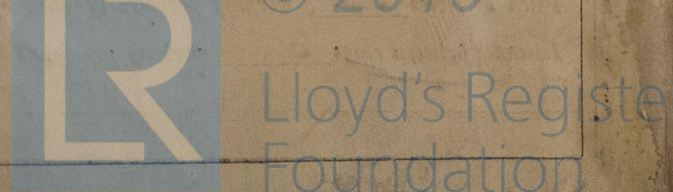
General Remarks (State quality of workmanship, opinions as to class, &c. *Material and Workmanship*)
of these Engines and Boilers are first Class, the outfit is
ample and substantial. I attended a very successful trial
trip when the Engines worked very smooth and with 70 revolu-
tions indicated 12 1/2 H.P.
The copies of invoices for the Steel Boiler plates, signed by
the testing officers are in my hands.
The Certificate of Forgings having regard to the shafting are
returned herewith. The 43" Length spare crank shaft has not
been delivered to the owners.
I saw the Safety valves of Main and Donkey Boilers correctly
adjusted to 165 and 85 lbs. respectively.
The heating surface of Main Boilers for calculating the nomi-
nal horsepower is 4176 sq. ft., paying horsepower 256.
I beg to recommend that this vessel be classed in
*the Register Book and that * L.M.C 10.89 be entered.*

It is submitted that this vessel is
eligible to have + L.M.C. 10.89
recorded. W.D.
24-10-89

The amount of Entry Fee . £ 3: 0: 0 received by me,
 Special £ 32: 16: 0
 Donkey Boiler Fee £ 2: 2: 0 } *W.D.*
 Certificate (if required) £ : 5: 0 24/10 1889
 To be sent as per margin.

(Travelling Expenses, if any, £)
 Committee's Minute *TUES 29 OCT 1889*
+ L.M.C 10/89

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



Certificate to Hamburg Surveyors.

Machinery Certificate
Articles