

# REPORT ON MACHINERY.

Port of Hamburg

Received at London Office WED. 3 SEP 1902

No. in Survey held at Hamburg Date, first Survey 4/11.01 Last Survey 30.8.02 1902

Reg. Book. 119 on the Steel S.S. Prins der Nederlanden (Number of Visits 43)

Master M. v. der Aal Built at Hamburg By whom built Blohm & Voß Tons { Gross 1954 Net 1207 When built 1902

Engines made at Hamburg By whom made Blohm & Voß when made 1902

Boilers made at Hamburg By whom made Blohm & Voß when made 1902

Registered Horse Power 267 Owners Koninkl. West-Indische Handel Port belonging to Amsterdam

Dom. Horse Power as per Section 28 267 Is Refrigerating Machinery fitted No Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Triple expansion, sea cond. No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 22" 37" 59" Length of Stroke 39" Revs. per minute 75 Dia. of Screw shaft 12" as per rule 12" Lgth. of stern bush 78.6"

Dia. of Tunnel shaft 11.7" as per rule 11.7" Dia. of Crank shaft journals 11.7" as per rule 11.7" Dia. of Crank pin 11.7" Size of Crank webs 2.5 x 7.5" Dia. of thrust shaft under

blades 11.7" Dia. of screw 14.6" Pitch of screw 17.4 No. of blades 4 State whether moveable yes Total surface 60.9 sq. ft.

No. of Feed pumps 2 Diameter of ditto 3" Stroke 25.5" Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 3" Stroke 25.5" Can one be overhauled while the other is at work yes

No. of Donkey Engines 4 Sizes of Pumps see other side No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room 6-3-3", 2-3.5-8, 1-6" (1-3" in length) Holds, &c. 6-3" each Tanks 10 suction (6-3", 3-3.5" x 1-4"

No. of bilge injections 1 sizes 6" Connected to condenser, or to ballast circulating pump no Is a separate donkey suction fitted in Engine room & size yes 3.5"

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 no

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 yes

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 Tank & forward suction How are they protected wooden boxes

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 6.8.02 Is the screw shaft tunnel watertight yes

Is it fitted with a watertight door yes worked from cylinder platform

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 4605.9 sq. ft. Is forced draft fitted No

No. and Description of Boilers 2 single ended cyl. multitub. Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs.

Date of test 25/7.02 Can each boiler be worked separately yes Area of fire grate in each boiler 67.54 sq. ft. No. and Description of safety valves to

each boiler 2 spring loaded Area of each valve 7.94 sq. ft. Pressure to which they are adjusted 180 lbs. Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 10" Mean dia. of boilers 15.71" Length 11.618" Material of shell plates Steel

Thickness 1.37" Range of tensile strength 27/30.5 Are they welded or flanged flanged Descrip. of riveting: cir. seams sp. treble riv. long. seams dbl. stagger riv.

Diameter of rivet holes in long. seams 1.4" Pitch of rivets 5.59" Lap of plates or width of butt straps 25.98"

Percentages of strength of longitudinal joint rivets 90.95% Working pressure of shell by rules 211 lbs. Size of manhole in shell 15.4" x 11.8"

Material of compensating ring flanged No. and Description of Furnaces in each boiler 3 Morrison's Material Steel Outside diameter 47.24"

Length of plain part top 7.2" Thickness of plates crown .64" Description of longitudinal joint welded No. of strengthening rings —

Working pressure of furnace by the rules 222.2 Combustion chamber plates: Material Steel Thickness: Sides .59" Back .59" Top .59" Bottom .98"

Pitch of stays to ditto: Sides 7 x 6.69" Back 7 x 6.69" Top 7.28 x 7" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 266.2 lbs.

Material of stays Steel Diameter at smallest part 1.5" Area supported by each stay 57 sq. in. Working pressure by rules 276 lbs. End plates in steam space:

Material Steel Thickness .98" Pitch of stays 14.5 x 14.5" How are stays secured with shells Working pressure by rules 268.2 lbs. Material of stays Steel

Diameter at smallest part 2.75" Area supported by each stay 210.4 sq. in. Working pressure by rules 224 lbs. Material of Front plates at bottom Steel

Thickness .94" Material of Lower back plate Steel Thickness .98" Greatest pitch of stays 12.59" Working pressure of plate by rules 222 lbs.

Diameter of tubes 3.26" Pitch of tubes 4.33" Material of tube plates Steel Thickness: Front .98" Back .86" Mean pitch of stays 8.66"

Pitch across wide water spaces 14.17" Working pressures by rules 204.8 lbs. Girders to Chamber tops: Material Steel Depth and

Thickness of girder at centre 8.66 x 11.57" Length as per rule 29.138" Distance apart 7.28" Number and pitch of Stays in each 3-7"

Working pressure by rules 227 lbs. Superheater or Steam chest; how connected to boiler — Can the superheater be shut off and the boiler worked

separately — Diameter — Length — Thickness of shell plates — Material — Description of longitudinal joint — Diam. of rivets

Material — Pitch of rivets — Working pressure of shell by rules — Diameter of flue — Material of flue plates — Thickness —

Stays — 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**— No. 1 Description *single ended cylindrical multitubular*  
 Made at *Hamburg* By whom made *Blohm & Voß* When made *1902* Where fixed *on main deck*  
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *25772* Fire grate area *21.5 sq ft* Description of safety valves *Spring loaded*  
 No. of safety valves *2* Area of each *5.14 sq ft* Pressure to which they are adjusted *81 lbs* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *No* Dia. of donkey boiler *9.3"* Length *8'* Material of shell plates *Steel* Thickness *.62"* Range of tensile strength *27,300 lbs* Descrip. of riveting long. seams *lap sub riveted* Dia. of rivet holes *.9"* Whether punched or drilled *drilled* Pitch of rivets *3.14"*  
 Lap of plating *5.98"* Per centage of strength of joint Rivets *22.7 lb* Thickness of shell crown plates *.82"* Radius of do. — No. of Stays to do. *6*  
 Dia. of stays. *2.4"* Diameter of furnace Top *33.8"* Bottom — Length of furnace *5.5'* Thickness of furnace plates *.59"* Description of joint *lap* Thickness of furnace crown plates *.55"* Stayed by *Girders* Working pressure of shell by rules *100 lbs*  
 Working pressure of furnace by rules *166 lbs* Diameter of uptake — Thickness of uptake plates — Thickness of water tubes *3"*

**SPARE GEAR.** State the articles supplied:— *33 crankshaft, 1 set piston rings & springs for each piston, 1 eccentric sheave & strap, 1 air pump piston rod, 1 circulating pump piston rod, 1 propeller boss & blades, 1 piston rod with cross head & guide block, 3 valve spindles, 1 pair crank pin brasses, 1 set cross head brasses, 1 set main bearing brasses, 2 top & 2 bottom end bolts, 2 main bearing bolts, 2 links for air pump lever, 4 horse shoes for main block, 1 set air & circulating pump valves & guards, 1 set springs for safety valves, 57 condenser tubes, 104 screw glands, 8 coupling bolts, 57 main boiler tubes, 1 set fuel bars, 2 set check valves for main boilers, 2 sets valves for feed - bridges & donkey pumps, various studs, nuts, bolts, rivets, hex. plate iron &c. - 1 propeller shaft.*

The foregoing is a correct description, *Specification of Pumps*  
 Manufacturer. *2 1/2" diam. del. act. 8.5/8" x 6" stroke - ballast bilges & sea tank, 2 1/2" diam. del. act. 4.5/8" x 6" " - sea bilges, tanks & bilges, 2 1/2" diam. del. act. 4.5/8" x 4.5" " - deck desalting apparatus, 2 1/2" diam. del. act. 2 1/2" x 4.5" " - sea exhaust tank, deck tanks, donkey P.*

Dates of Survey while building  
 During progress of work in shops - *4/11, 13/11, 29/11, 10/12, 14/12, 23/12, 11. 3/1, 8/1, 16/1, 24/1, 4/2, 8/2, 12/2, 21/2, 29/2, 7/3, 14/3, 27/3, 4/4,*  
 During erection on board vessel - *9/4, 17/4, 22/4, 30/4, 6/5, 15/5, 22/5, 24/5, 2/6, 7/6, 10/6, 19/6, 27/6, 27/7, 10/8, 15/8, 22*  
 Total No. of visits *43* Is the approved plan of main boiler forwarded herewith *yes*  
 " " " donkey " " " *yes*

**General Remarks** (State quality of workmanship, opinions as to class, &c. *The quality of materials and workmanship of this Engine and Boilers are of very best description.*

Material of screw shaft *Siemens Steel* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *yes*  
 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 *one length*  
 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 —

*These Engines and Boilers have been constructed under Special Survey; I attended a satisfactory trial trip on the 30th August 1902 when the Machinery gave every satisfaction working up to 85 Revolutions per minute and about 1500 I.P.*

*I adjusted the Safety valves of the Main- and Donkey Boilers to 100 and 80 lbs respectively.*

*The copies of the invoices of the Steel Boiler Materials, signed by the issuing officers, are in my hands; Certificates of Engine Engine Findings will be found attached.*

*Approved plans of Boilers are forwarded herewith.*

*The Machinery of this vessel is in my opinion carried out in accordance with the Society's Rules and eligible to be classed. I therefore recommend, that she be classed, and that ~~L.M.C.~~ **L.M.C. 8.02** be entered in the Register Book against her name.*

*It is submitted that this vessel is eligible for THE RECORD + L.M.C. 8.02 etc. light.*

The amount of Entry Fee..	£ 2 : 0 : 0	When applied for,
Special .. .. .	£ 33 : 6 : 0	30/8 1902
Donkey Boiler Fee .. .	£ 2 : 2 : 0	When received,
Travelling Expenses (if any) £	:	30/8 1902

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

Committee's Minute **FRI, 5 SEP 1902**  
 Assigned *+ L.M.C. 8.02*  
*Elect. light.*  
 MACHINERY CERTIFICATE WRITTEN.



Hamburg Office

Committee (if registered) to be sent to or before the date for Committee's Minute.