

# REPORT ON MACHINERY.

No. 1559

Port of

*Trieste*

Received at London Office

THUR. DEC 20 1906

No. in Survey held at

*Trieste*

Date, first Survey 19<sup>th</sup> Feb'y 1906

Last Survey 16/12

1906

Reg. Book.

9<sup>th</sup> on the S.S. "VORWÄRTS" (Machinery & Boilers)

(Number of Visits 47)

Gross 5989

Net 3724

When built 1906

Master *R. Colledani*

Built at

*Trieste*

By whom built

*Lloyd Austriaco*

Engines made at

*Trieste*

By whom made

*Lloyd Austriaco*

when made

*1905-6-12*

Boilers made at

*Trieste*

By whom made

*Lloyd Austriaco*

when made

*1906-12*

Registered Horse Power 469

Owners

*Lloyd Austriaco*

Port belonging to

*Trieste*

nom. Horse Power as per Section 28 669

Is Refrigerating Machinery fitted for cargo purposes

*no*

Is Electric Light fitted

*yes*

GINES, &c.—Description of Engines *Triple expansion surface condensing* No. of Cylinders 3 16-25 No. of Cranks 3

Dia. of Cylinders 28" x 4 1/2" x 80 Length of Stroke 54 Revs. per minute 82 Dia. of Screw shaft as per rule 15-82 as fitted 17 1/2 Material of screw shaft *Iron*

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

the propeller boss *yes* If the liner is in more than one length are the joints burned — 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 *yes* If two

are fitted, is the shaft lapped or protected between the liners — Length of stern bush 5'-6 1/4"

Dia. of Tunnel shaft as per rule 14-85 as fitted 15 1/2 Dia. of Crank shaft journals as per rule 15-59 as fitted 16 1/2 Dia. of Crank pin 16 1/2 Size of Crank webs 23 x 8 1/2 Dia. of thrust shaft under

blades 16 1/4 Dia. of screw 19' 3" Pitch of Screw 19'-6" No. of Blades 4 State whether moveable *yes* Total surface 100

No. of Feed pumps 2 Diameter of ditto 4" Stroke 30" Can one be overhauled while the other is at work *yes*

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 30" Can one be overhauled while the other is at work *yes*

No. of Donkey Engines 2 Sizes of Pumps 10" x 10" x 10", 7" x 7" x 8 No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room 2 of 3 1/2" diam. Boiler room 1 of 3 1/2" diam. In Holds, &c. No. 13 of 3 1/2" diam.

No. 1-2, No. 2 hold 1, No. 3-2, No. 4-2, No. 5-2, Tunnel 1

No. of Bilge Injections 1 sizes 14" Connected to condenser, or to circulating pumps Is a separate Donkey Suction fitted in Engine room & size *yes 2-3 1/2"*

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 *none*

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

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*

How are they protected *none*

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*

Dates of examination of completion of fitting of Sea Connections 28/8/06 of Stern Tube 5/9/06 Screw shaft and Propeller 20/9/06

Is the Screw Shaft Tunnel watertight *yes* Is it fitted with a watertight door *yes* worked from *Top of Engine room*

MANUFACTURERS, &c.—(Letter for record *r*) Manufacturers of Steel *Hyde Bridge Steel Co. Ltd.*

Total Heating Surface of Boilers 9624 sq. ft. Is Forced Draft fitted *yes* No. and Description of Boilers *4 single ended multitubular*

Working Pressure 200 lbs per sq. in. Tested by hydraulic pressure to 400 lbs per sq. in. Date of test 4/8/06 & 17/9/06 No. of Certificates 64 & 65

Can each boiler be worked separately *yes* Area of fire grate in each boiler 60 1/2 sq. ft. No. and Description of Safety Valves to

each boiler 2 spring loaded Area of each valve 8-296 Pressure to which they are adjusted 200 lbs per sq. in. Are they fitted with easing gear *yes*

Smallest distance between boilers or uptakes and bunkers or woodwork 1' 9" Mean dia. of boilers 15-3 1/4" Length 11' 3" Material of shell plates *steel*

Thickness 1 3/8" Range of tensile strength 29 to 32 tons Are the shell plates welded or flanged *no* Descrip. of riveting: cir. seams *double riv.*

Long. seams *double riv.* Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 8 3/4" Lap of plates or width of butt straps 20 7/8" x 1 1/2" x 1 1/4" out. in

Percentage of strength of longitudinal joint rivets 91-75 Working pressure of shell by rules 207 lbs Size of manhole in shell 16" x 12"

Size of compensating ring 1 3/4" Dia. No. and Description of Furnaces in each boiler 3 *Brightons* Material *steel* Outside diameter 14'-0 1/4"

Length of plain part top — Thickness of plates crown 5/8" Description of longitudinal joint *welded* No. of strengthening rings *—*

Working pressure of furnace by the rules 208 lbs Combustion chamber plates: Material *steel* Thickness: Sides 2 1/32" Back 5/8" Top 2 1/32" Bottom 3 1/32"

Pitch of stays to ditto: Sides 9" x 8" Back 8" x 8" Top 8 7/8" x 8 1/4" If stays are fitted with nuts or riveted heads *nuts* Working pressure by rules 200 lbs

Material of stays *steel* Diameter at smallest part 2-03" Area supported by each stay 64 sq. in. Working pressure by rules 238 lbs End plates in steam space:

Material *steel* Thickness 1 1/32" Pitch of stays 16" x 16" How are stays secured *double nuts* Working pressure by rules 200 lbs Material of stays *steel*

Diameter at smallest part 5-36" Area supported by each stay 16" x 16" Working pressure by rules 217 lbs Material of Front plates at bottom *steel*

Thickness 1 7/16" Material of Lower back plate *steel* Thickness 1 5/16" Greatest pitch of stays 13 1/2" Working pressure of plate by rules 200

Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" x 3 23/32" Material of tube plates *steel* Thickness: Front 1 7/16" Back 3/4" Mean pitch of stays 7" x 15/32"

Thickness across wide water spaces 13 1/2" Working pressures by rules 200 lbs Girders to Chamber tops: Material *steel* Depth and

Thickness of girder at centre 9" x 1 3/4" Length as per rule 30 3/4" Distance apart 8 1/4" max Number and pitch of stays in each 2 at 8 7/8"

Working pressure by rules 250 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 rivet

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

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



# VERTICAL DONKEY BOILER— Manufacturers of Steel

No. Description  
 Made at By whom made When made Where fixed  
 Working pressure tested by hydraulic pressure to Date of test No. of Certificate Fire grate area Description of Sa  
 Valves No. of Safety Valves Area of each Pressure to which they are adjusted Date of adjustment  
 If fitted with easing gear If steam from main boilers can enter the donkey boiler Dia. of donkey boiler Length  
 Material of shell plates Thickness Range of tensile strength Descrip. of riveting long. seams  
 Dia. of rivet holes Whether punched or drilled Pitch of rivets Lap of plating Per centage of strength of joint Rivets  
 Working pressure of shell by rules 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  
 Working pressure of furnace by rules Thickness of furnace crown plates Stayed by  
 Diameter of uptake Thickness of uptake plates Thickness of water tubes Dates of survey

## SPARE GEAR. State the articles supplied:—

1 Crank shaft, 9 Coupling bolts, 1 propeller shaft  
 with liner full length, 6 bolts for tunnel shafting, 4 propeller blades + 8 Studs + nuts, 1 pair loper  
 + bottom end brasses piston rod, 50 Condenser tubes, 3 Valve spindles, 1 Eccentric strap, 1 Air pump, bucket  
 150 Fire bars 3 Bearers

The foregoing is a correct description,

*J. M. M. M.* Manufacturer.

Dates of Survey while building  
 During progress of work in shops— 19 Feb, 2 Mar 23/30/12/4/ 3/5, 14/5, 12/6, 21/6, 23/6, 3/7, 10/7, 23/7, 31/7, 2/8, 4/8, 25/8, 29/8  
 During erection on board vessel— 4/9, 17/9, 20/9/06, 21/9, 24/9, 28/9, 2/10, 4/10, 7/10, 9/10, 10/10, 11/10, 12/10, 22/10, 24/10, 31/10  
 Total No. of visits— 47— Is the approved plan of main boiler forwarded herewith Yes

Dates of Examination of principal parts—Cylinders 3/7/06 Slides 10/7/06 Covers 10/7/06 Pistons 10/7/06 Rods 12, 4, 0  
 Connecting rods 12/4/06 Crank shaft 30/3/06 Thrust shaft 30/3/06 Tunnel shafts 3/5/06 Screw shaft 30/3/06 Propeller 20/9/06  
 Stern tube 25/8/06 Steam pipes tested 28/11/06 Engine and boiler seatings 28/9/06 Engines holding down bolts 28/9/06  
 Completion of pumping arrangements 14/11/06 Boilers fixed 28/9/06 Engines tried under steam 3/12/06  
 Main boiler safety valves adjusted 3/12/06 Thickness of adjusting washers 14 16 14 12 14 14 8 8  
 Material of Crank shaft steel Identification Mark on Do. C.H. 16/3 Material of Thrust shaft steel Identification Mark on Do. C.H. 17/6  
 Material of Tunnel shafts steel Identification Marks on Do. C.H. 17/60 17/40 17/40 17/40 17/40 17/40 17/40 17/40  
 Material of Steam Pipes—Steel— Test pressure 600 lbs

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

Workmanship throughout good.

It is submitted that  
 this vessel is eligible for  
 THE RECORD HLM C. 12.06 ED. ELEC. LIGHT.

*Paul*  
 20.12.06  
*R.S.*  
 20.12.06

Note £16 of this fee when  
 received to be credited to Glasgow office

The amount of Entry Fee.. £ 3 : 0 : 0  
 Special .. .. £ 53 : 9 : 0  
 Donkey Boiler Fee .. .. £ 2 : 2 : 0  
 Travelling Expenses (if any) £ 58 : 11 : 0

Committee's Minute

FRI, 21 DEC 1906

Assigned

HLM C 12.06

MACHINERY CERTIFICATE  
 WRITTEN.

*Charles Stewart* *Chas R. Hughes*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

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