

## REPORT ON MACHINERY.

1322

TUES. MAR 20 1900

Port of *Copenhagen*

Received at London Office

18

No. in Survey held at  
Reg. Book.*Copenhagen*Date, first Survey *15<sup>th</sup> March 1899* Last Survey *10<sup>th</sup> March 1900*(Number of Visits *30*)

In Supply on the

*Steel S. S. "Manchuria"*Tons { Gross *5710*  
Net *3708*

Master

*H. Schöning*

Built at

*Copenhagen*

By whom built

*Aktieselskabet Burmeister & Wain  
Hastin-og Skibbyggeri*When built *1900*

Engines made at

*Copenhagen*

By whom made

*Aktieselskabet Burmeister & Wain*

when made

*1900*

Boilers made at

*Copenhagen*

By whom made

*Aktieselskabet Burmeister & Wain*

when made

*1900*

Registered Horse Power

*3200*

Owners

*Russian East Asiatic S. S. Co. Ltd*

Port belonging to

*Riga*

Nom. Horse Power as per Section 28

*591*

Is Electric Light fitted

*Yes*

ENGINES, &c.—Description of Engines *Triple Exp. Surface Condensing* No. of Cylinders *3* No. of Cranks *3*  
 Diameter of Cylinders *29" x 47" x 78"* Length of Stroke *51"* Revolutions per minute *65* Diameter of Screw shaft *as per rule 14 3/4"*  
 Diameter of Tunnel shaft *as fitted 13 3/4"* Diameter of Crank shaft journals *14 1/2"* Diameter of Crank pin *14 1/2"* Size of Crank webs *10 1/4" x 18 3/4"*  
 Diameter of screw *17'-6"* Pitch of screw *20'-0"* No. of blades *4* State whether moveable *Yes* Total surface *99 sq ft*  
 No. of Feed pumps *2* Diameter of ditto *5"* Stroke *24"* Can one be overhauled while the other is at work *Yes*  
 No. of Bilge pumps *2* Diameter of ditto *5"* Stroke *24"* Can one be overhauled while the other is at work *Yes*  
 No. of Donkey Engines *2* Sizes of Pumps *for Ballast 12" x 10" for feeding Boilers 4 1/2" x 7 1/2" x 10"* No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room *3 off 3 1/2"* In Holds, &c. *In each Hold 3 suction 3 1/2"; - In Tunnel one suction 3 1/2" Tank suction main 6" in Holds 4 1/2"-3 1/2"-3" x 2 1/2"*  
 No. of bilge injections *1* sizes *8"* Connected to condenser, or to circulating pump *Yes* Is a separate donkey suction fitted in Engine room & size *1 off 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 & 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 *joined bilge pipes through cross bunker* How are they protected *with strong woodboxes*  
 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 *while building* Is the screw shaft tunnel watertight *Yes*  
 Is it fitted with a watertight door *Yes* worked from *Main deck*

## BOILERS, &amp;c.—

(Letter for record *S*) Total Heating Surface of Boilers *8785.6 sq ft* Is forced draft fitted *Yes Horndens*

No. and Description of Boilers

*4 horizontal cylindrical, ret. tubular*

Working Pressure

*170 lbs.*Tested by hydraulic pressure to *340 lbs*

Date of test

*7/12 & 14/12 99*Can each boiler be worked separately *Yes*

Area of fire grate in each boiler

*44 sq ft*

No. and Description of safety valves to

each boiler

*2 off spring loaded Adams patents*Area of each valve *10.32 sq in*

Pressure to which they are adjusted

*170 lbs*

Are they fitted

with easing gear

*Yes*

Smallest distance between boilers or uptakes and bunkers or woodwork

*12"*Mean diameter of boilers *14'-9"*

Length

*10'-6"*

Material of shell plates

*Steel*

Thickness

*17/32"*

Description of riveting: circum. seams

*double*long. seams *double butt straps*

Diameter of rivet holes in long. seams

*1 3/8"*

Pitch of rivets

*8"*

Lap of plates or width of butt straps

*18 7/8"*

Per centages of strength of longitudinal joint

Size of compensating ring

*30" x 27"*

No. and Description of Furnaces in each boiler

*3 off Morrison patents*

Material

*Steel*

Outside diameter

Length of plain part

*top 6 1/2" bottom 6 1/2"*

Thickness of plates

*1 1/2"*

Description of longitudinal joint

*welded*No. of strengthening rings *✓*

Working pressure of furnace by the rules

*183 lbs*

Combustion chamber plates: Material

*Steel*

Thickness: Sides

*9/16"*

Back

*9/16"*

Top

*5/8"*

Pitch of stays to ditto: Sides

*7 1/4" x 7 1/4"*

Back

*7 1/2" x 7 1/2"*

Top

*7 1/4" x 8"*

If stays are fitted with nuts or riveted heads

*except on shell*

Working pressure by rules

*194 lbs*

End plates in steam space:

Material of stays

*Steel*

Diameter at smallest part

*1.38"*

Area supported by each stay

*56.25 sq in*

Working pressure by rules

*213 lbs*

Material of stays

*Steel*

Thickness

*29/32"*

Pitch of stays

*15 1/2" x 15"*

Diameter at smallest part

*2 1/4"*

Area supported by each stay

*232 sq in*

Working pressure by rules

*171 lbs*

Material of Front plates at bottom

*Steel*

Thickness

*13/16"*

Greatest pitch of stays

*(15 1/4")*

Working pressure of plate by rules

*171 lbs*

Diameter of tubes

*3"*

Pitch of tubes

*4 1/4"*

Material of tube plates

*Steel*

Thickness: Front

*29/32"*

Back

*3/4"*

Mean pitch of stays

*8 1/2"*

Pitch across wide water spaces

*14"*

Working pressures by rules

*171.5 lbs*

Girders to Chamber tops: Material

*Steel*

Depth and

thickness of girder at centre

*8" x 13 1/8" x 2"*

Length as per rule

*29'*

Distance apart

*8"*

Number and pitch of Stays in each

*3 off 7 1/4"*

Working pressure by rules

Working pressure by rules

*195 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 rivet

holes

Pitch of rivets

Working pressure of shell by rules

If stiffened with rings

Distance between rings

Working pressure by rules

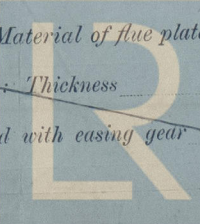
End plates: Thickness

How stayed

Working pressure of end plates

Area of safety valves to superheater

Are they fitted with easing gear



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**DONKEY BOILER—** Description *None*

Made at \_\_\_\_\_ By whom made \_\_\_\_\_ When made \_\_\_\_\_ Where fixed \_\_\_\_\_

Working pressure \_\_\_\_\_ tested by hydraulic pressure to \_\_\_\_\_ No. of Certificate \_\_\_\_\_ Fire grate area \_\_\_\_\_ Description of safety valves \_\_\_\_\_

No. of safety valves \_\_\_\_\_ Area of each \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ If fitted with easing gear \_\_\_\_\_ If steam from main boilers can enter the donkey boiler \_\_\_\_\_

Diameter of donkey boiler \_\_\_\_\_ Length \_\_\_\_\_ Material of shell plates \_\_\_\_\_ Thickness \_\_\_\_\_

Description of riveting long. seams \_\_\_\_\_ Diameter of rivet holes \_\_\_\_\_ Whether punched or drilled \_\_\_\_\_ Pitch of rivets \_\_\_\_\_

Lap of plating \_\_\_\_\_ Per centage of strength of joint \_\_\_\_\_ Rivets \_\_\_\_\_ 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 \_\_\_\_\_

Thickness of furnace crown plates \_\_\_\_\_ Stayed by \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_

Working pressure of furnace by rules \_\_\_\_\_ Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_

**SPARE GEAR.** State the articles supplied:— 4 Propeller blades, 1/3 Crankshaft, 1 set of brasses for Crosshead & 1 set of Brasses for Crosshead & 1 set of ditto for Crankshaft, 1/2 Eccentric straps, 1 pump link, 1 Air pump rod, 6 valves for air pump, 3 Cheek valves for boilers, 1/2 set of Springs for pistons, 1 Spring for each of escape valves, 2 valves & seats for feed pumps, 2 valves for bilge pumps, 1 set Coupling bolts complete for one coupling, 2 bolts complete for main bearings, 2 ditto for Crossheads, 2 ditto for connecting rods, 2 ditto for Eccentric straps, 2 Springs for safety valves, 1/2 set of firebars, 25 Condenser tubes & 200 ferrules for same, 20 Boiler tubes, Assorted plates, bars, bolts, nuts &c.

ACTIESELSKABET

The foregoing is a correct description,

SURMEISTER & WAINSKIN- OG SKIBSBYGGERI.

Manufacturer.

*Ivar Kinnarum*

Dates of Survey while building { During progress of work in shops - Sundry dates from 15<sup>th</sup> March 1899 on Boilers, Material and in the Machinery shop &c - and on board from 18<sup>th</sup> September 1899 on lining up of the Shafts, fitting Seacocks, pumps &c until Completion on 10<sup>th</sup> March 1900. - 30 Visits.

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

I have examined the Material and Workmanship as per Rule for Special Survey from Commencement until the final test under Steam and found it good in every respect. The Engines have 3 Cranks. The Shafts & Connecting rods are forged by Messrs Daniel, Lugg & Püschel, and I have examined them before & after rough turning & when finished, and found them sound and good. Piston rods & smaller forgings are also of Steel and are sound. The Bearings of good Metal & Dimensions and Castings good. The Seacocks are fastened as per Rules. The Boiler material is of Steel from the Glasgow Iron & Steel Co. Ltd. the Marison's plates from the Leeds Forge Company Ltd., is tested as required by the Rules as per test notes received, and I have besides tested it hot & cold, and found same of good quality. The Workmanship is good, the Scantling as specified & in accordance with the approved plans forwarded herewith, are tested by hydraulic pressure and no alterations in form found, and the Boilers tight. The safety valves are adjusted to working pressure under Steam, and the Steamgauge are correct. Engine & Boiler seatings are strong and all well fastened. On the trial trip the Engines worked well and no defects found at the Boilers.

The S/S Manchuria's Machinery is in my opinion now in good efficient & safe working Condition, so I would respectfully submit the Vessel eligible to have the Record of **L.M.C. - 3-1900** in the Register and a corresponding Certificate, & also the notation of F.D.

It is submitted that this vessel is eligible for THE RECORD.

**L.M.C. 3.00. F.D. Elec. Light.**

The amount of Entry Fee... £ 3 - - - - - When applied for, 15/3 1900  
Special ... £ 49 - 11 - - - - -  
Donkey Boiler Fee ... £ - - - - - When received, 15/3 1900  
Travelling Expenses (if any) £ 1 - 1 - - - - -

*Frederick Lub.*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

23 MAR 1900

Assigned

+ L.M.C. 3.00

MACHINERY CERTIFICATE



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