

# REPORT ON MACHINERY.

Received at London Office

SAT. 15 FEB 1908

Date of writing Report 12 Febr. 1908 When handed in at Local Office 19 Port of Copenhagen  
 No. in Survey held at Copenhagen Date, First Survey 25<sup>th</sup> July 07 Last Survey 15<sup>th</sup> January 1908.  
 Reg. Book. 29 on the Steel Se. Sr. Washington (Yard No. 261) (Number of Visits 881)  
 Master N. Nielsen Built at Copenhagen By whom built A. S. Burmeister & Wain Maskin & Skibbyggeri When built 1908.  
 Engines made at Copenhagen By whom made A. S. Burmeister & Wain Maskin & Skibbyggeri when made 1908.  
 Boilers made at Copenhagen By whom made A. S. Burmeister & Wain Maskin & Skibbyggeri when made 1908.  
 Registered Horse Power 116 Owners A. S. H. Kirschner (H. Kirschner, Mgr.) Port belonging to Copenhagen.  
 Nom. Horse Power as per Section 28 116 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted no.

**ENGINES, &c.**—Description of Engines Inverted triple expansion No. of Cylinders 3 No. of Cranks 3  
 Dia. of Cylinders 16"-26"-45" Length of Stroke 30 Revs. per minute 85 Dia. of Screw shaft as per rule 9 7/8 Material of Steel  
 as fitted 9 3/4 screw shaft  
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube no. Is the after end of the liner made water tight  
 in the propeller boss ✓ 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 ✓ If two  
 liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 3'-4"  
 Dia. of Tunnel shaft as per rule 8.06 Dia. of Crank shaft journals as per rule 8.463  
 as fitted 8 1/8 as fitted 8 3/4 Dia. of Crank pin 8 3/4 Size of Crank webs 6 1/2" x 11 1/2" Dia. of thrust shaft under  
 collars 8 3/4 Dia. of screw 11'-6" Pitch of Screw 13'-8" No. of Blades 4 State whether moveable no. Total surface 41 sq. ft.  
 No. of Feed pumps 2 Diameter of ditto 3" Stroke 15" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 Diameter of ditto 3" Stroke 15" Can one be overhauled while the other is at work yes  
 No. of Donkey Engines 1 feed donkey Sizes of Pumps 4 x 2 3/4 x 4 Duplex No. and size of Suctions connected to both Bilge and Donkey pumps  
1 Ballast donkey 6 1/2 x 5 1/2 x 6" Duplex  
 In Engine Room 2 off 2" diam. Bilge pump & Ballast donkey In Holds, &c. For hold 2 off 2" diam. Tunnel 1 off 2 1/2" diam.  
after hold 2 off 2" diam. Bilge & Ballast donkey.  
 No. of Bilge Injections 1 sizes 4 1/2 Connected to condenser, or to circulating pump no. Is a separate Donkey Suction fitted in Engine room & size 1 off 4" diam. Ballast donkey  
 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 sluices  
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks All valves except boiler blow off 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 none How are they protected ✓  
 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 11<sup>th</sup> Decbr. of Stern Tube 22/11 Screw shaft and Propeller 9/12 & 11/12  
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from upper platform in engine room

**BOILERS, &c.**—(Letter for record S.) Manufacturers of Steel William Beardmore & Co. The Leeds Forge Co Ltd. The rivet bolts nut Co Ltd.  
 Total Heating Surface of Boilers 1720 sq. ft. Is Forced Draft fitted no. No. and Description of Boilers 2 cylindrical single ended.  
 Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 18<sup>th</sup> Oct. 07 No. of Certificate 285 & 286  
 Can each boiler be worked separately yes Area of fire grate in each boiler 22.67 sq. ft. No. and Description of Safety Valves to  
 each boiler 2 spring loaded Area of each valve 4.9 sq. in. 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 12" Mean dia. of boilers 10'-1 7/8" Length 9'-9" Material of shell plates Steel  
 Thickness 7/8" Range of tensile strength 28-32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams double  
 long. seams treble Diameter of rivet holes in long. seams 15/16" Pitch of rivets 6 7/8" Lap of plates or width of butt straps 14 1/16"  
 Per centages of strength of longitudinal joint 85.3 Working pressure of shell by rules 184 lbs. Size of manhole in shell 16" x 12"  
 plate 86.36  
 Size of compensating ring 33" x 28" No. and Description of Furnaces in each boiler 2 Morrisous Material Steel Outside diameter 3'-2"  
 Length of plain part top 7/16" bottom 1/32" Thickness of plates 7/16" x 1/32" Description of longitudinal joint welded No. of strengthening rings ✓  
 Working pressure of furnace by the rules 182 lbs. Combustion chamber plates: Material Steel Thickness: Sides 7/16" x 1/32" Back 5/8" Top 7/16" x 1/32" Bottom 3/4"  
 Pitch of stays to ditto: Sides 8 1/2 x 7 1/2 Back 8 x 7 Top 8 1/2 x 7 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 190 lbs.  
 Material of stays Steel Diameter at smallest part 1.384 Area supported by each stay 63.75 Working pressure by rules 188 lbs. End plates in steam space:  
 Material Steel Thickness 15/16" Pitch of stays 15" x 15" How are stays secured double nuts Working pressure by rules 185 lbs. Material of stays Steel  
 Diameter at smallest part 2.634 Area supported by each stay 225 sq. in. Working pressure by rules 218 lbs. Material of Front plates at bottom Steel  
 Thickness 15/16" Material of Lower back plate Steel Thickness 13/16" Greatest pitch of stays 13" x 7" Working pressure of plate by rules 210 lbs.  
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates Steel Thickness: Front 15/16" Back 13/16" x 1/32" Mean pitch of stays 9" x 13 1/2"  
 Pitch across wide water spaces 14" Working pressures by rules 184 lbs. Girders to Chamber tops: Material Steel Depth and  
 thickness of girder at centre 6 3/4" x 2 3/4" Length as per rule 27" Distance apart 7 1/2" Number and pitch of stays in each 2 off 8 1/2"  
 Working pressure by rules 180.5 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 Diameter of flue Material of flue plates Thickness  
 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

**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 Safety \_\_\_\_\_

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 \_\_\_\_\_ Plates \_\_\_\_\_

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:— 6 Bolts for shaft coupling, 2 bolts for cross-head brasses, 2 bolts <sup>& nuts</sup> for connecting rod-brasses, 2 bolts <sup>& nuts</sup> for main bearing-brasses, 2 valves for feed pump, 2 valves for bilge pump, 2 springs for boiler safety valves. A quantity of assorted bolts & nuts; Iron of various sizes.

The foregoing is a correct description.

*L. M. C.*  
Manufacturer.

Dates of Survey while building	During progress of work in shops - -	25/7	9/8	20/8	22/8	3/9	7/9	10/9	18/9	24/9	26/9	7/10	11/10	15/10	16/10	18/10	11/11	22/11	27/11	9/12	
	During erection on board vessel - -	11/12	13/12	16/12	18/12	21/12	24/12	30/12	31/12	7/1	8/1	9/1	13/1	14/1	15/1						
	Total No. of visits	33.																			

Is the approved plan of main boiler forwarded herewith yes

Dates of Examination of principal parts—Cylinders <sup>3/9 tested</sup> 11/11 Slides 7/9 Covers 7/9 Pistons 24/9 Rods 7/10

Connecting rods 7/10 Crank shaft 7/10 Thrust shaft 7/10 Tunnel shafts 7/10 Screw shaft 7/10 Propeller 3/12

Stern tube 16/10 Steam pipes tested 31<sup>st</sup> Decbr. Engine and boiler seatings 13/12 Engines holding down bolts 7/1

Completion of pumping arrangements 24/12 Boilers fixed 30/12 Engines tried under steam 15/11

Main boiler safety valves adjusted 14/1 Thickness of adjusting washers Std 7/16 for 1/2 + 1/32" aft Port 1/2 for 3/8 + 1/32" aft R. N<sup>o</sup> 875

Material of Crank shaft S. M. Steel Identification Mark on Do. 10-57-A.T.P. Material of Thrust shaft S. M. Steel Identification Mark on Do. 10-57-A.T.P. R. N<sup>o</sup> 876

Material of Tunnel shafts S. M. Steel Identification Marks on Do. 10-57-A.T.P. Material of Screw shafts S. M. Steel Identification Marks on Do. 10-57-A.T.P. R. N<sup>o</sup> 880

Material of Steam Pipes Steel Test pressure 360 lbs.

General Remarks (State quality of workmanship, opinions as to class, &c. In accordance with the rules ) for special survey we have examined the material and workmanship from the commencement until the final trial under steam and found it good in every respect. All the forgings are of Siemens Martin Steel and have been found good. All the castings are sound and good, the bearings of proper dimensions and sound material. The boiler material has been tested as per rules as per test notes received and satisfactory hot & cold test of the material has been carried out by us. The dimensions are as specified and in accordance with the rules and the approved plan. On the trial trip the engines & boilers worked satisfactorily.

It is submitted that this vessel is eligible for THE RECORD. L.M.C. 1.08.

*H.C.* 17.2.08.

The amount of Entry Fee..	£ 2	:	"	:	When applied for,
Special .. .. .	£ 17	:	8	:	12-2 1908
Donkey Boiler Fee .. .	£	:		:	When received,
Travelling Expenses (if any) £		:		:	1912/08

*L.M.C.*  
17.2.08.  
*Rome*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute \_\_\_\_\_  
Assigned \_\_\_\_\_  
+ L.M.C. 1.08.

1UES.18 FEB 1908

MACHINERY TIFIGATE WRITTER.



Surveyor's Office, Copenhagen.

Certificate (if returned, to be sent to the Secretary of the Committee's Minutes.)