

# REPORT ON MACHINERY.

Port of Copenhagen

Received at London Office 11 JUN 1902

No. in Survey held at Copenhagen Date, first Survey 6<sup>th</sup> June 1901. Last Survey 10<sup>th</sup> June 1902.  
Reg. Book. (Number of Visits 39)

in Splun. on the Steel S.S. "Anamba" (Yard 55). Tons { Gross 1815.52  
Net 1158.45

Master J. Cortsen. Built at Hellerup. By whom built Hellerup Skibsvarft & Maskinfabrik. When built 1902.

Engines made at Copenhagen By whom made Dansk Maskinfabrik, Helsingør, Høben & Skibsværft. When made 1902.

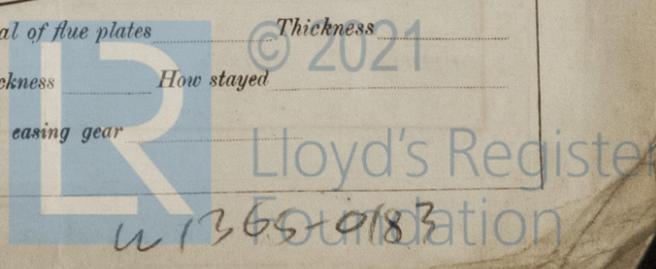
Boilers made at Copenhagen By whom made Hjølshavn Skibsværft & Skibsværft. When made 1902.

Registered Horse Power 115 - 833 IHP. Owners Atthieskabet Det Internationale Kompagni. Port belonging to Copenhagen.

Nom. Horse Power as per Section 28 161 Is Refrigerating Machinery fitted No. Is Electric Light fitted Yes.

**ENGINES, &c.**—Description of Engines Inverted triple expansion, surface condensing. No. of Cylinders 3 No. of Cranks 3  
 Dia. of Cylinders 18", 29" & 48" Length of Stroke 33" Revs. per minute about 80 Dia. of Screw shaft as per rule 10 3/32"  
 Dia. of Tunnel shaft as per rule 8 7/8" Dia. of Crank shaft journals as per rule 9 1/4" Dia. of Crank pin 9 1/2" Size of Crank webs 1/4" x 6 1/4" Dia. of thrust shaft under  
 collars 9 1/4" Dia. of screw 13' 6" Pitch of screw 12' 2" No. of blades 4 State whether moceable no Total surface 580'  
 No. of Feed pumps 2 Diameter of ditto 3" Stroke 22 1/2" Can one be overhauled while the other is at work Yes One 2 Fans Evaporator  
 No. of Bilge pumps 2 Diameter of ditto 3" Stroke 22 1/2" Can one be overhauled while the other is at work Yes  
 No. of Donkey Engines 3 off double Worthington Sizes of Pumps 6" steam cyl. 8 1/2" water cyl. 6" strokes No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room 3 off 2 1/2" each. In dry tank under Boilers one off 2 1/2" In Holds, &c. In Forehold 2 off 2 1/2". In Afterhold 2 off 2 1/2". In  
 Forewell 1 off 3". Suctions: Main pipe 6". In DB tanks 4" each. From FPT 2 1/2". From APT 3".  
 No. of bilge injections one size 4" Connected to condenser, or to circulating pump to circulating pump. Is a separate donkey suction fitted in Engine room & size 1 off 2 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 has none  
 Are all connections with the sea direct on the skin of the ship Yes, except suction for sanitary Are they Valves or Cocks 3 injection valves & 1 blow off cock  
 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 Suctions from FPT & Forehold How are they protected By strong 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 while building Is the screw shaft tunnel watertight Yes  
 Is it fitted with a watertight door Yes worked from Upperdeck.

**BOILERS, &c.**— (Letter for record (S)) Total Heating Surface of Boilers 2820 <sup>sq feet</sup> Is forced draft fitted no  
 No. and Description of Boilers 2 off, single ended horizontal return tubular Working Pressure 165 lbs Tested by hydraulic pressure to 330 lbs.  
 Date of test 9/4.02. Can each boiler be worked separately Yes Area of fire grate in each boiler 32.5 <sup>sq feet</sup> No. and Description of safety valves to  
 each boiler 2 spring loaded (Adams patent) Area of each valve 12.5664 <sup>sq in</sup> Pressure to which they are adjusted 165 lbs Are they fitted with easing gear Yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 12" Mean dia. of boilers 12' 0" Length 10' 6" Material of shell plates SB Steel.  
 Thickness 1" Range of tensile strength 27-32 T Are they welded or flanged no Descrip. of riveting: cir. seams lap joint long. seams dbl. butt straps  
 Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 7 1/2" lap of plates or width of butt straps 16"  
 Percentages of strength of longitudinal joint rivets 87.15% Working pressure of shell by rules 175.2 lbs Size of manhole in shell 12" x 16"  
 Size of compensating ring flanged ring 32" x 37" x 1" No. and Description of Furnaces in each boiler 2 off, Dighton patent Material SB Steel Outside diameter 3' 7 1/4"  
 Length of plain part top 1' 3 1/4" Thickness of plates bottom 1/2" Description of longitudinal joint welded No. of strengthening rings 1  
 Working pressure of furnace by the rules 174.66 lbs Combustion chamber plates: Material SB Steel Thickness: Sides 9/16" Back 1 1/32" Top 5/8" Bottom 9/16"  
 Length of stays to ditto: Sides 7 3/4" x 7" Back 6 3/4" x 7 1/2" Top 9 1/2" x 7" If stays are fitted with nuts or riveted heads fits in comb. chamber, riveted Working pressure by rules 169.94 lbs.  
 Material of stays Steel Diameter at smallest part 1.384" Area supported by each stay 66.5 <sup>sq in</sup> Working pressure by rules 180.45 lbs End plates in steam space:  
 Material SB Steel Thickness 1" Pitch of stays 19" x 16" How are stays secured all nuts riveted Working pressure by rules 165.96 lbs Material of stays Steel  
 Diameter at smallest part 2.634" Area supported by each stay 304 <sup>sq in</sup> Working pressure by rules 177.23 lbs Material of Front plates at bottom SB Steel  
 Thickness 3/4" Material of Lower back plate SB Steel Thickness 3/4" Greatest pitch of stays 15" Working pressure of plate by rules 178.3 lbs.  
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates SB Steel Thickness: Front 3/4" Back 3/4" Mean pitch of stays 12 1/4"  
 Length across wide water spaces 15" Working pressures by rules 169.4 lbs Girders to Chamber tops: Material Steel Depth and  
 thickness of girder at centre 7 1/2" x 3 1/4" x 2 Length as per rule 26" Distance apart 9 1/2" Number and pitch of Stays in each 2 off 7 pitch.  
 Working pressure by rules 178 lbs Superheater or Steam chest; how connected to boiler has none 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



**DONKEY BOILER**— No. Description *Has 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

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 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:— 1 Propeller, 1 Propellershaft, 1 Sidevalve spindle, 1 set of Piston rings for each Piston, 1 Air & 1 Circulating pump rod, 1 Guideshal, 1 Eccentric strap with bolts complete, 1 set pump links with brasses, 1 set connecting rod bottom end brasses, 2 connecting rod bottom end bolts & 2 ditto top end bolts, 2 main bearing bolts, 1 set of coupling bolts, 12 studs & nuts for Cylinder covers, 6 screws with brass nuts for pistons, 1 set valves for feed, bilge, air & circulating pumps, 4 feed checkvalves for main boilers, 1 safety valve spring for each safety valve on engines, 2 springs for main boiler safety valves, 25 condensertubes & 50 screw ferrules, 70 Boilertubes, 1 set of firebars, 36 water gauge glasses, A quantity of assorted bolts & nuts, iron of various sizes.

The foregoing is a correct description,

Manufacturer.

AKTIESELSKABET  
DANSK MASKINFABRIK, KABELSMEDIE, STØBERI & SKIBSBYGBERI.

*[Signature]*

Dates of Survey while building

During progress of work in shops— *Lundry dates from 19<sup>th</sup> July 1901 on boiler, material, in machinework & onboard when lining*

During erection on board vessel— *exp the shafts, fitting sea-cocks, pumps, pipes &c. until completion on the 10<sup>th</sup> June 1902.*

Total No. of visits *39.*

Is the approved plan of main boiler forwarded herewith *Yes*

“ “ “ donkey “ “ “ *Yes*

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

Material of screw shaft *Samuel Martin 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 *Yes*

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 liners are fitted, is the shaft lapped or protected between the liners *Yes*

*I have examined the material & workmanship from the commencement until the final test under steam and found it good in every respect. The intermediate & propellershafts are forged by Haueil & Lueg, Düsseldorf, the thrustshaft, crankshaft pieces & connecting rods are forged by The Phoenix Company at Exchweiler, and the material is Samuel Martin Steel tested as required by the rules as per testnotes received; and I have examined the same rough turned & finished and found them sound as far as can be seen; small forgings have also been made of steel and found to be sound & good. The bearings of good material & dimensions. Castings good. The sea connections fastened to plating of the vessel as per rules. The boiler material is steel, plates from David Colville & Sons, Motherwell; The Steel Company of Scotland Glasgow & Schultzy Knautt, Cassel; Bars for stays from David Colville & Sons, Motherwell & The Steel Company of Scotland, Glasgow; rivets from The Rivet, Bolt & Nut Co., Coathbridge; all tested as required by the rules as per testnotes received, and I have besides tested it hot & cold and found it of good quality. The workmanship is good, scantlings as specified and in accordance with the approved plans. The main steam pipes tested as required by the rules and found good. The boilers have been tested by hydraulic pressure, and I found by gauges no alterations in the form and the boilers were tight and good. The safety valves were set to their working pressure and adjusted under steam. On the trial trip the engines worked well.*

Recommend the vessel's machinery to have record of **LMC-602** and a corresponding certificate

The amount of Entry Fee.. £ 2 : 0 : 0 When applied for,

Special .. £ 24 : 3 : 0 16/6 .. 1902

Electric light installation Donkey Boiler Fee .. £ 4 : 0 : 0 When received,

Travelling Expenses (if any) £ 2 : 12 : 6 .. 1902

*[Signature]*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute TUES. 24 JUN 1902

Assigned

*[Signature]*

MACHINERY CERTIFICATE  
WRITTEN.



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Lloyd's Register  
Foundation

Certificate (if required) to be sent to Surveyor's Office, Copenhagen.

The Surveyors are requested not to write on or below the space for Committee's Minute.