

REPORT ON MACHINERY.

Port of Hamburg

MUN. 7 MAR 1904

No. in Survey held at Kiel Date, first Survey 28.1.03 Last Survey 28.1.04 1904

Reg. Book 14 on the Steel S.S. "Östergötland" (Number of Visits 16)

Master C. Anderson Built at Kiel By whom built Hovaldtswerke Tons Gross 1096
Net 673

Engines made at Kiel By whom made Hovaldtswerke when made 1904

Boilers made at Kiel By whom made Hovaldtswerke when made 1904

Registered Horse Power 117 Owners Rederi Aktieb. Östergötland (Erikson Port belonging to Norrköping & Hornö)

Nom. Horse Power as per Section 28 117 Is Refrigerating Machinery fitted No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 16 3/4", 27 1/2", 43 1/2" Length of Stroke 24 7/8" Revs. per minute 115 Dia. of Screw shaft 8 1/2" Lgth. of stern bush 35 1/2"

Dia. of Tunnel shaft 7 7/8" Dia. of Crank shaft journals 8 1/2" Dia. of Crank pin 8 1/2" Size of Crank webs 5 1/2" x 1 1/2" Dia. of thrust shaft under collars 8 1/2" Dia. of screw 1 1/2" Pitch of screw 11 1/2" No. of blades 4 State whether moveable Solid Total surface 29.6 sq. ft.

No. of Feed pumps 2 Diameter of ditto 3" Stroke 14 1/2" Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 3" Stroke 14 1/2" Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 duplex Sizes of Pumps 6 x 7 1/2 x 6" - 5 1/2 x 3 1/2 x 5" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 4 - 3 off 2 3/4" - 1 off 3" In Tunnel 2 1/4" In Holds, &c. 4 off 2 3/4" - 1 after peak 2 1/4" - 2 off Boiler - Tank 1 5/8" - 12 from Tanks 3 1/2", 2 1/4", 2 3/4"

No. of bilge injections 1 sizes 5" Connected to condenser or to circulating pump yes Is a separate donkey suction fitted in Engine room & size yes - 3"

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 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 2 suction from fore hold How are they protected in 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 on Hook Is the screw shaft tunnel watertight yes

Is it fitted with a watertight door yes worked from byld. platform.

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 1785 sq. ft. Is forced draft fitted no

No. and Description of Boilers 2 single end cyl. multitubular Working Pressure 178 lbs Tested by hydraulic pressure to 356 lbs

Date of test 23.12.03 Can each boiler be worked separately yes Area of fire grate in each boiler 32 sq. ft. No. and Description of safety valves to each boiler 2 Spring loaded Area of each valve 8 sq. in. Pressure to which they are adjusted 183 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 10" Mean dia. of boilers 9 3/4" Length 9 1/4" Material of shell plates Steel

Thickness 9" Range of tensile strength 28-28.6 Are they welded or flanged flang Descrip. of riveting: cir. seams lap. dbl riv. long. seams dbl. Sp. Trip. riv.

Diameter of rivet holes in long. seams 9 3/8" Pitch of rivets 6 1/2" Lap of plates or width of butt straps 9 1/2" x 16 1/2" x 7"

Percentages of strength of longitudinal joint rivets 93.7% Working pressure of shell by rules 190.9 lbs Size of manhole in shell 15 1/2" x 11 1/2"

Size of compensating ring 8 1/2" x 9" No. and Description of Furnaces in each boiler 2 Morrison Material Steel Outside diameter 35 1/2"

Length of plain part top 8" Thickness of plates crown 5" Description of longitudinal joint welded No. of strengthening rings none

Working pressure of furnace by the rules 2128 lbs Combustion chamber plates: Material Steel Thickness: Sides 60" Back 58" Top 62" Bottom 60"

Each of stays to ditto: Sides 7 1/2" x 7 1/2" Back 7 3/8" x 7 3/8" Top 7 1/4" x 7 1/4" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 231 lbs

Material of stays Steel Diameter at smallest part 1 1/2" Area supported by each stay 53 sq. in. Working pressure by rules 185 1/2 lbs End plates in steam space: Material Steel Thickness 8 1/2" Pitch of stays 13 1/4" x 13 1/4" How are stays secured wash. dbl. nuts Working pressure by rules 182 1/2 lbs Material of stays Steel

Diameter at smallest part 2 3/8" Area supported by each stay 185 sq. in. Working pressure by rules 227 lbs Material of Front plates at bottom Steel

Thickness 8 1/2" Material of Lower back plate Steel Thickness 8 3/8" Greatest pitch of stays 1 7/8" sq. in. Working pressure of plate by rules 185 1/2 lbs

Diameter of tubes 3 1/2" Pitch of tubes 4 5/8" x 4 5/8" Material of tube plates Steel Thickness: Front 8 1/2" Back 8" Mean pitch of stays 9" x 9"

Each across wide water spaces 9" Working pressures by rules 338 1/2 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 6" x 6" Length as per rule 21 1/2" Distance apart 7 1/2" Number and pitch of Stays in each 2 - 7 1/2" x 6 1/2"

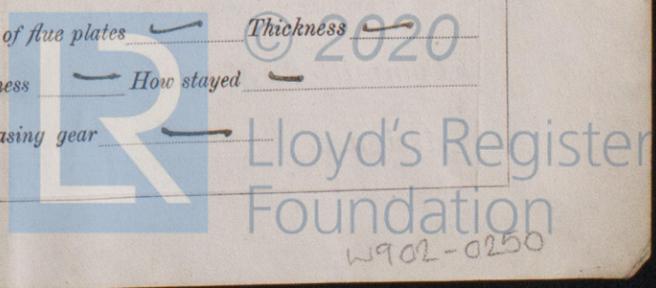
Working pressure by rules 180 lbs Superheater or Steam chest; how connected to boiler lap. dbl. riv. Can the superheater be shut off and the boiler worked separately no

Diameter 35 1/2" Length 39" Thickness of shell plates 5" Material Steel Description of longitudinal joint lap. dbl. riv. Diam. of rivet

8 1/2" Pitch of rivets 2 5/8" Working pressure of shell by rules 217 1/2 lbs Diameter of flue — Material of flue plates — Thickness —

Are they fitted 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 _____

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 set connecting rod depend bolts & nuts, 1 set connecting rod bottom end bolts & nuts, 1 set bolts & nuts for main bearings, 1 set coupling bolts & nuts, 1 set valves for feed and bilge pumps, 1 piston spring (Connobottom), 1 slide valve rod, 1 expansion screw, 1 air pump rod, 1 circulating pump rod, 1 spring for safety valves of boiler, 1 set valves for air pump, 1 set valves for circulating pump, 2 link brasses, 1 link block, 40 tubes for condenser with nuts, 10 tubes for Boilers, a quantity of assorted bolts and nuts, Iron of various sizes.*

The foregoing is a correct description,

HOWALDTSWERKE

Manufacturer.

Dates of Survey while building

During progress of work in shops - -	28/1, 20/2, 5/3, 11/3, 11/3, 15/3, 25/3, 4/4, 23/4, 30/4-03, 4/5, 21/5-04
During erection on board vessel - -	1/2, 22/2, 27/2, 2/3-04
Total No. of visits	16

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

Is the approved plan of donkey boiler forwarded herewith *yes*

General Remarks (State quality of workmanship, opinions as to class, &c. *Material and workmanship of these Engines and Boilers are of very good description, the outfit is ample, the whole has been constructed under Special Survey.*

Material of screw shaft *Steel* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *no liner fitted*

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

On the 2nd March I adjusted the Safety valves of the Main Boilers to 183 lbs. and subsequently attended a satisfactory trial trip.

The copies of the invoices of the Steel Boiler Materials, signed by the selling officers, are in my hands. Fitting Certificates of the Shafting will be found attached.

The approved plan of the Main Boilers and of bilge pipes sections will be found forwarded herewith.

*The Machinery of this vessel being in my opinion in efficient condition and eligible for a vessel entered in the Society's Register Book, I beg to recommend, that she be classed and that **L.M.C. 3.04** be recorded.*

It is submitted that this vessel is eligible for THE RECORD **L.M.C. 3.04**

The amount of Entry Fee. . . £ 2: 00 When applied for, 2/3 1904

Special £ 17: 11: 00

Donkey Boiler Fee £ : : When received, 2/3 1904

Travelling Expenses (if any) £ 9: 7: 00

J.S. 12.3.04
M.S. 11.3.04
M. Percival
Engineer-Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute TUES. 15 MAR 1904

Assigned *+ L.M.C. 3.04*

MACHINERY CERTIFICATE WRITTEN.



Certificate (if required) to be sent to Hamburg Office.

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