

REPORT ON BOILERS.

No. 11757

25 AUG 1945

Received at London Office

Date of writing Report 2nd August 1945 When handed in at Local Office 10 Port of Copenhagen

No. in Survey held at Copenhagen & Odense Date, First Survey 7th October 1939 Last Survey 4th July 1945

Reg. Book. 10043.07 (Number of Visits 30) Tons 6096.87

on the Steel Single Screw Motor Tanker CAROLINE MÆRSK

Master By whom built Odense Skibskonstruktørværk Yard No. 83 When built -

Engines made at Copenhagen By whom made Mastin - og Skibsbjggeri Engine No. 3131 When made 1940

Boilers made at Copenhagen By whom made Mastin - og Skibsbjggeri Boiler No. 1971 When made 1940

Nominal Horse Power 653 Owners Dampskibsselskabet "Scandinavia" Port belonging to Fredericia

MULTITUBULAR BOILERS - MAIN, AUXILIARY, OR DONKEY.

PLATES: Kilbuck Marine Steel & Ironworks Co. STAYS: Coburn & Burneister & Wain.Manufacturers of Steel FURNACES & TUBES Mannesmannröhrenwerke, Remscheid RIVETS: Hinge B. Letter for Record 5Total Heating Surface of Boilers OIL FIRED: $2 \times 150.24^2 = 300.44^2$ EXHAUST FIRED: $2 \times 58.3 = 116.6^2$ Is forced draught fitted yes Coal or Oil fired oil firedNo. and Description of Boilers 2 off return multitubular Working Pressure 180 lbs/sq inTested by hydraulic pressure to 320 lbs/sq in Date of test 24.5.1940 No. of Certificate 659 Can each boiler be worked separately yesArea of Firegrate in each Boiler No. and Description of safety valves to each boiler 2 off directly spring loadedArea of each set of valves per boiler per Rule $9270 \frac{1}{2}^2$ as fitted $9900 \frac{1}{2}^2$ Pressure to which they are adjusted 180 lbs/sq in Are they fitted with easing gear yesIn case of donkey boilers, state whether steam from main boilers can enter the donkey boiler No main boiler fittedSmallest distance between boilers or uptakes and bunkers 620 $\frac{1}{2}$ Is oil fuel carried in the double bottom under boilers yesSmallest distance between shell of boiler and tank top plating at aft end of engine room Is the bottom of the boiler insulated yesLargest internal dia. of boilers 3850 $\frac{1}{2}$ Length 3180 $\frac{1}{2}$ Shell plates: Material Armstrong's Steel Tensile strength 45.75 kg/mm²Thickness 26 $\frac{1}{2}$ Are the shell plates welded or flanged No Description of riveting: circ. seams lap joint, doublelong. seams double butt strap Diameter of rivet holes in circ. seams $29 \frac{1}{2}$ Pitch of rivets 88.24 $\frac{1}{2}$ Percentage of strength of circ. end seams plate 67% rivets 47% Percentage of strength of circ. intermediate seam plate 85.3% rivets 95.5%Percentage of strength of longitudinal joint combined 89.6% Working pressure of shell by Rules 183 lbs/sq inThickness of butt straps outer $26 \frac{1}{2}$ inner $26 \frac{1}{2}$ No. and Description of Furnaces in each Boiler 2 off Brighton's SectionMaterial Armstrong's Steel Tensile strength 41-47 kg/mm² Smallest outside diameter 940 $\frac{1}{2}$ Length of plain part top $13 \frac{1}{2}$ bottom $13 \frac{1}{2}$ Description of longitudinal joint -Dimensions of stiffening rings on furnace or c.c. bottom - Working pressure of furnace by Rules 200 lbs/sq inEnd plates in steam space: Material Armstrong's Steel Tensile strength 41-47 kg/mm² Thickness 27 $\frac{1}{2}$ Pitch of stays $350 \frac{1}{2} \times 490 \frac{1}{2}$ How are stays secured Screwed in both plates, nut in outside Working pressure by Rules 180 lbs/sq inTube plates: Material Armstrong's Steel Tensile strength 41-47 kg/mm² Thickness 19 $\frac{1}{2}$ Mean pitch of stay tubes in nests 228 $\frac{1}{2}$ Pitch across wide water spaces 355 $\frac{1}{2}$ Working pressure front 181 lbs/sq in back 248 lbs/sq in Girders to combustion chamber tops: Material Armstrong's Steel Tensile strength 44-50 kg/mm² Depth and thickness of girderat centre $160 \frac{1}{2} \times 2 \times 19 \frac{1}{2}$ Length as per Rule 672 $\frac{1}{2}$ Distance apart 225 $\frac{1}{2}$ No. and pitch of staysin each 2 off $224 \frac{1}{2}$ Working pressure by Rules 192 lbs/sq in Combustion chamber plates: Material Armstrong's SteelTensile strength 41-47 kg/mm² Thickness: Sides 17 $\frac{1}{2}$ Back 16 $\frac{1}{2}$ Top 17 $\frac{1}{2}$ Bottom 19 $\frac{1}{2}$ Pitch of stays to ditto: Sides $240 \frac{1}{2} \times 215 \frac{1}{2}$ Back $204 \frac{1}{2} \times 188 \frac{1}{2}$ Top $225 \frac{1}{2} \times 224 \frac{1}{2}$ Are stays fitted with nuts or riveted over nut insideWorking pressure by Rules 195 lbs/sq in Front plate at bottom: Material Armstrong's Steel Tensile strength 41-47 kg/mm²Thickness 24 $\frac{1}{2}$ Lower back plate: Material Armstrong's Steel Tensile strength 41-47 kg/mm² Thickness 24 $\frac{1}{2}$ Pitch of stays at wide water space $0.492 \frac{1}{2}$ Are stays fitted with nuts or riveted over nut inside & outsideWorking Pressure 228 lbs/sq in Main stays: Material Armstrong's Steel Tensile strength 44-50 kg/mm²Diameter At body of stay, $2 \frac{3}{4}$ or $2 \frac{1}{2}$ No. of threads per inch 11 Area supported by each stay 172 000 $\frac{1}{2}^2$ Working pressure by Rules 208 lbs/sq in Screw stays: Material Armstrong's Steel Tensile strength 41-47 kg/mm²Diameter At turned off part, $1 \frac{1}{2}$ or $1 \frac{7}{8}$ No. of threads per inch 11 Area supported by each stay 44 000 $\frac{1}{2}^2$

Working pressure by Rules *211 lbs/sq. in.* Are the stays drilled at the outer ends *No* Margin stays: Diameter *At turned off part, 1 3/4 in. Over threads 1 1/4 in.*

No. of threads per inch *11* Area supported by each stay *53000 sq. in.* Working pressure by Rules *221 lbs/sq. in.*

Tubes: Material *German H. Steel* External diameter *63.5 3/4 in.* Thickness *3.75 3/4 in.* No. of threads per inch *11*

Pitch of tubes *90 3/4 x 92 3/4 in.* Working pressure by Rules *230 lbs/sq. in.* Manhole compensation: Size of opening *46 1/2 x 28 3/4 in.*

shell plate *405 3/4 x 505 3/4 in.* Section of compensating ring *flanged* No. of rivets and diameter of rivet holes *46 1/2 x 28 3/4 in.*

Outer row rivet pitch at ends *195 3/4 - 127 3/4 in.* Depth of flange if manhole flanged *88 3/4 in.* Steam Dome: Material *Steel*

Tensile strength *✓* Thickness of shell *✓* Description of longitudinal joint *✓*

Diameter of rivet holes *✓* Pitch of rivets *✓* Percentage of strength of joint *Plate 100 Rivets 100*

Internal diameter *✓* Working pressure by Rules *✓* Thickness of crown *✓* No. and diameter of stays *✓*

Inner radius of crown *✓* Working pressure by Rules *✓*

How connected to shell *✓* Size of doubling plate under dome *✓* Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell *✓*

Type of Superheater *✓* Manufacturers of *✓*

Number of elements *✓* Material of tubes *✓* Internal diameter and thickness of tubes *✓*

Material of headers *✓* Tensile strength *✓* Thickness *✓* Can the superheater be shut off and the boiler be worked separately *✓*

Is a safety valve fitted to every part of the superheater which can be shut off from the boiler *✓*

Area of each safety valve *✓* Are the safety valves fitted with easing gear *✓* Working pressure as per Rules *✓*

Pressure to which the safety valves are adjusted *✓* Hydraulic test pressure *✓*

tubes *✓* castings *✓* and after assembly in place *✓* Are drain cocks or valves fitted to free the superheater from water where necessary *✓*

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with *yes*

The foregoing is a correct description,
 ARNESELSKABET
 BURMEISTER & WAIN'S MASKIN OG SKIBSBYGGERI
 Manufacturers.

Dates of Survey *1939: 7/10 - 31/10 - 6/11 - 23/11 - 1940: 25/1 - 24/2*

During progress of work in shops - - *13/2 - 27/2 - 3/4 - 5/4 - 3/5 - 7/5 - 14/5 - 29/5 - 24/6*

while building *During erection on board vessel - - 1940 6/6 - 18/6 - 3/7 - 30/7 - 5/8 - 2/10 - 25/10*

1944: 24/4 - 5/5 - 24/5 - 10/6 - 21/11

1945: 2/7 - 3/7 - 4/7

Are the approved plans of boiler and superheater forwarded herewith *yes* (If not state date of approval.)

Total No. of visits *30*

Is this Boiler a duplicate of a previous case *yes* If so, state Vessel's name and Report No. *Habine Mask Odense 4088*

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) *These boilers have been constructed and fitted under special survey in accordance with the Rules and the approved plan. The material used has been tested as required by the Rules and the workmanship is good.*

Recommend the vessel to have notation of 20B 180 lbs.

Survey Fee ... *4658.80* When applied for, *29/8* 19 *41*

Travelling Expenses (if any) £ *Noted on Machinery Report* When received, *15/3* 19 *42*

L. Laurén
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 1 MAR 1946

Assigned

See minute or file 211



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