

# REPORT ON BOILERS.

No. 23097

MAR 22 1939

Received at London Office

Date of writing Report 16<sup>th</sup> March 1939. When handed in at Local Office

Port of **HAMBURG**

Survey held at **HAMBURG**

Date, First Survey 10<sup>th</sup> Novemb. 38. Last Survey 10<sup>th</sup> March 1939

on the **Prin Seiner BRITANNIA**

(Number of Visits 16) Gross 9977 Tons Net 5801

Built at **HAMBURG** By whom built **Deutsche Werft A.G.** Yard No. 217 When built 1939

Machinery made at **Angsburg** By whom made **Maschinenfabrik Angsburg-Kürnberg** Engine No. 681450/460 When made 1939

Boilers made at **HAMBURG** By whom made **Deutsche Werft A.G.** Boiler No. 762/763 When made 1939

Indicated Horse Power 1170 Owners **The Texas Co (Norway) A/S** Port belonging to **Oslo**

## MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel plates: **Mannesmannröhren-Werke Abt. Heinrich Priesner-Hütte of Luckingen** (Letter for Record **S**)

Total Heating Surface of Boilers each boiler 200 sq. metres Is forced draught fitted **yes** Coal or Oil fired **oil fired**

Description of Boilers **two single ended multitubular donkey boilers** Working Pressure **12 kg/cm<sup>2</sup>**

Tested by hydraulic pressure to **307 lbs** Date of test **23. 12. 38**. No. of Certificate **721, 722**. Can each boiler be worked separately **yes**

Area of Firegrate in each Boiler **-** No. and Description of safety valves to each boiler **two spring loaded safety valves**

Area of each set of valves per boiler { per Rule **9333 mm<sup>2</sup>** as fitted **11349 mm<sup>2</sup>** Pressure to which they are adjusted **12 kg/cm<sup>2</sup>** Are they fitted with easing gear **yes**

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler **-**

Smallest distance between boilers or uptakes and bunkers or woodwork **460 mm** Is oil fuel carried in the **bunkers** double bottom under boilers **yes**

Smallest distance between shell of boiler and tank top plating **460 mm** Is the bottom of the boiler insulated **yes**

Largest internal dia. of boilers **4100 mm** Length **2300 mm** Shell plates: Material **S-M-Steel** Tensile strength **47-53 kg/mm<sup>2</sup>**

Thickness **25.5 mm** Are the shell plates welded or flanged **flanged, double butt** Description of riveting: circ. seams { end **double row zig-zag** inner **-**

circ. seams **treble row, double butt** Diameter of rivet holes in { circ. seams **29 mm** long. seams **29 mm** Pitch of rivets { **92.7 mm** **185 mm**

Percentage of strength of circ. end seams { plate **68.7%** rivets **42.8%** Percentage of strength of circ. intermediate seam { plate **-** rivets **-**

Percentage of strength of longitudinal joint { plate **84.3%** rivets **100.5%** combined **88.75%** Working pressure of shell by Rules **12.03 kg/cm<sup>2</sup>**

Thickness of butt straps { outer **25.5 mm** inner **25.5 mm** No. and Description of Furnaces in each Boiler **three corrugated furnaces (Morison type)**

Material **S-M-Steel** Tensile strength **41-47 kg/mm<sup>2</sup>** Smallest outside diameter **974 mm**

Length of plain part { top **150 mm** bottom **250 mm** Thickness of plates { crown **12 mm** bottom **12 mm** Description of longitudinal joint **water gas lap welded**

Dimensions of stiffening rings on furnace or c.c. bottom **-** Working pressure of furnace by Rules **12.4 kg/cm<sup>2</sup>**

Stays and plates in steam space: Material **S-M-Steel** Tensile strength **41-47 kg/mm<sup>2</sup>** Thickness **24 mm** Pitch of stays **460 x 400 mm**

How are stays secured **washers & strips riveted to shell, nuts inside & outside** Working pressure by Rules **12.3 kg/cm<sup>2</sup>**

End plates: Material { front **S-M-Steel** back **S-M-Steel** Tensile strength { **41-47 kg/mm<sup>2</sup>** Thickness { **24 mm** **22 mm**

Can pitch of stay tubes in nests **208 x 208 mm** Pitch across wide water spaces **360 mm** Working pressure { front **13.5 kg/cm<sup>2</sup>** back **14.16 kg/cm<sup>2</sup>**

Orders to combustion chamber tops: Material **S-M-Steel** Tensile strength **47-53 kg/mm<sup>2</sup>** Depth and thickness of girder

centre **200 mm - 2 x 12 mm** Length as per Rule **709 mm** Distance apart **200 mm** No. and pitch of stays

each two **- 210 mm** Working pressure by Rules **12 kg/cm<sup>2</sup>** Combustion chamber plates: Material **S-M-Steel**

Tensile strength **41-47 kg/mm<sup>2</sup>** Thickness: Sides **16.5 mm** Back **19 mm** Top **16.5 mm** Bottom **24 mm**

Pitch of stays to ditto: Sides **200 x 210 mm** Back **200 x 208 mm** Centre **200 x 208 mm** Top **210 x 200 mm** Are stays fitted with nuts or riveted over **margin stays with nuts**

Working pressure by Rules { sides **15.8 kg/cm<sup>2</sup>** back **14.3 kg/cm<sup>2</sup>** bottom **23.0 kg/cm<sup>2</sup>** Front plate at bottom: Material **S-M-Steel** Tensile strength **41-47 kg/mm<sup>2</sup>**

Thickness **24 mm** Lower back plate: Material **S-M-Steel** Tensile strength **41-47 kg/mm<sup>2</sup>** Thickness **24 mm**

Pitch of stays at wide water space **main stay, pitch diam 514 mm** Are stays fitted with nuts or riveted over **double plates riveted to end plates** nuts inside and outside

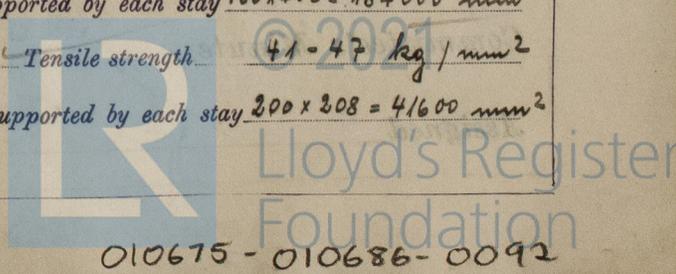
Working Pressure **19.6 kg/cm<sup>2</sup>** Main stays: Material **S-M-Steel** Tensile strength **41-47 kg/mm<sup>2</sup>**

Diameter { At body of stay, **66.58 mm** No. of threads per inch **6** Area supported by each stay **460 x 400 = 184000 mm<sup>2</sup>**

Over threads **72.0 mm** Working pressure by Rules **13.6 kg/cm<sup>2</sup>** Screw stays: Material **S-M-Steel** Tensile strength **41-47 kg/mm<sup>2</sup>**

Diameter { At turned off part, **35.38 mm** No. of threads per inch **9** Area supported by each stay **200 x 208 = 41600 mm<sup>2</sup>**

Over threads **39 mm**



Working pressure by Rules  $14.4 \text{ kg/cm}^2$  Are the stays drilled at the outer ends  Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part, } 38.38 - 47. \\ \text{or} \\ \text{Over threads } 42.0 \end{array} \right. 51.$

No. of threads per inch  $9$  Area supported by each stay  $284 \times 370 = 56800 \text{ mm}^2$  Working pressure by Rules  $12.65 \text{ kg/cm}^2$

Tubes: Material **S-TC-Steel** External diameter  $\left\{ \begin{array}{l} \text{Plain } 76 \text{ mm} \\ \text{Stay } 76 \text{ mm} \end{array} \right.$  Thickness  $\left\{ \begin{array}{l} 3.75 \text{ mm} \\ 8 + 14 \text{ mm} \end{array} \right.$  No. of threads per inch  $9$

Pitch of tubes  $104 \times 104 \text{ mm}$  Working pressure by Rules  $14.5 \text{ kg/cm}^2$  / Working stays of stay tubes  $4.17 \text{ kg/cm}^2$  Manhole compensation: Size of opening shell plate  $320 \times 425 \text{ mm}$  Section of compensating ring  $4 \times (212.5 \times 25.5)$  No. of rivets and diameter of rivet holes  $27 - 29 \text{ mm}$

Outer row rivet pitch at ends  $\sim 175 \text{ mm}$  Depth of flange if manhole flanged  $-$  Steam Dome: Material **S-TC-Steel**

Tensile strength  $41-47 \text{ kg/mm}^2$  Thickness of shell  $14 \text{ mm}$  Description of longitudinal joint **oxy-acetylene welded & secured by**

Diameter of rivet holes  $26 \text{ mm}$  Pitch of rivets  $84 \text{ mm}$  Percentage of strength of joint  $\left\{ \begin{array}{l} \text{Plate } \\ \text{Rivets} \end{array} \right. \text{welding } 60\%$

Internal diameter  $900 \text{ mm}$  Working pressure by Rules  $14.6 \text{ kg/cm}^2$  Thickness of crown  $16 \text{ mm}$  No. and diameter stays  $-$  Inner radius of crown  $720 \text{ mm}$  Working pressure by Rules  $14.85 \text{ kg/cm}^2$

How connected to shell **pressed flange riveted to shell** Size of doubling plate under dome  $-$  Diameter of rivet holes and of rivets in outer row in dome connection to shell  $29 \text{ mm } \phi - 200 \text{ mm}$

Type of Superheater \_\_\_\_\_ Manufacturers of  $\left\{ \begin{array}{l} \text{Tubes} \\ \text{Steel forgings} \\ \text{Steel castings} \end{array} \right.$

Number of elements \_\_\_\_\_ Material of tubes \_\_\_\_\_ Internal diameter and thickness of tubes \_\_\_\_\_

Material of headers \_\_\_\_\_ Tensile strength \_\_\_\_\_ Thickness \_\_\_\_\_ Can the superheater be shut off 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 at Rules \_\_\_\_\_ Pressure to which the safety valves are adjusted \_\_\_\_\_ Hydraulic test pressure tubes \_\_\_\_\_ forgings and castings \_\_\_\_\_ and after assembly in place \_\_\_\_\_ Are drain cock 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,  
17.3.1939. *W. Mehl* Manufact

Dates of Survey  $\left\{ \begin{array}{l} \text{During progress of work in shops} \\ \text{while building} \end{array} \right. \left\{ \begin{array}{l} \text{1938, Nov. 1st, 7th, 10th, 12th, 21st, 24th} \\ \text{Dec. 2, 7, 9, 14, 21, 23} \end{array} \right.$  Are the approved plans of boiler and superheater forwarded herewith  $14.5$  (If not state date of approval.)

$\left\{ \begin{array}{l} \text{During erection on board vessel} \\ \text{---} \end{array} \right. \left\{ \begin{array}{l} \text{1939, Jan. 4, 7, Febr. 24, March 10} \\ \text{---} \end{array} \right.$  Total No. of visits  $16$

Is this Boiler a duplicate of a previous case  **yes** If so, state Vessel's name and Report No. **GERMANIA** **2305**

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) **Material and workmanship of these donkey boilers are of good quality.**

The materials used in the constructions are made at Works recognized by the Committee and tested by the Society's Surveyors in accordance with the requirements of the Rules.

These donkey boilers having been made under Special Survey in conformity with the approved plan, the Secretary's letter and otherwise in compliance with the requirements of the Rules are eligible in my opinion to be classed with notation in the Register.

Two Donkey Boilers - 17.1 lbs/sq. inch pressure.

Thickness of safety valves' adjusting washers = Port boiler = port  $16.9 \text{ mm}$  starbd  $20.8 \text{ mm}$   
Starbd boiler = port  $17.9 \text{ mm}$  starbd  $22.8 \text{ mm}$

Survey Fee ... **£ 26: 537: -** When applied for, **17.3 1939.**  
Travelling Expenses (if any) £ **see: when received report** **19**

**H. Röhrs**  
Engineer Surveyor to Lloyd's Register of Shipping

Committee's Minute **FRI 31 MAR 1939**

Assigned **See FE. machy**

