

REPORT ON BOILERS.

No. 9708

Received at London Office

-3 APR 1934

Date of writing Report 28th March 1934 When handed in at Local Office 21st March 1934 Port of Gothenburg

No. in Survey held at Gothenburg Date, First Survey 15th November 1932 Last Survey 21st March 1934

Reg. Book No. 34786 on the M/S "SENATOR" (Number of Visits 14) Gross 6588.55 Tons Net 4001.75

Master _____ Built at Gothenburg By whom built W. Götarsken Yard No. 461 When built 1934

Engines made at Gothenburg By whom made W. Götarsken Engine No. 1003/1004 When made 1934

Boilers made at Gothenburg By whom made W. Götarsken Boiler No. 1841/1842 When made 1934

Nominal Horse Power 543 Owners Stavanger Tankrederi A/S Port belonging to Stavanger

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Witkowitzer Bergbau & Eisenhütten Gew. Witkowitz (Letter for Record S.)

Total Heating Surface of Boilers 2 x 120 m² = 240 m² Is forced draught fitted Yes Coal or Oil fired Oil or exhaust gases p.m. eng.

No. and Description of Boilers 2 S.B. 2580 φ Working Pressure 50 lbs 1055 kg/cm²

Tested by hydraulic pressure to 275 lbs. Date of test 24.3.33 No. of Certificate 2552256 Can each boiler be worked separately Yes.

Area of Firegrate in each Boiler ✓ No. and Description of safety valves to each boiler Doubly spring loaded.

Area of each set of valves per boiler per Rule 7610 mm² as fitted 8440 mm² Pressure to which they are adjusted 150 lbs. Are they fitted with easing gear Yes.

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler No main boiler.

Smallest distance between boilers or uptakes and bunkers or woodwork ✓ Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating Boilers fitted on a platform Is the bottom of the boiler insulated Yes.

Largest internal dia. of boilers 3420 mm Length 3370 mm Shell plates: Material S.H. Steel Tensile strength 44-50 kg/mm²

Thickness 20 mm Are the shell plates welded or flanged No Description of riveting: circ. seams end O.R. overlap

long. seams T.R.O.B.S. Diameter of rivet holes in circ. seams 26 mm long. seams 25 & 26 mm Pitch of rivets 160 mm 225 mm

Percentage of strength of circ. end seams plate 67.5% rivets 43% Percentage of strength of circ. intermediate seam plate 90.5% rivets 101%

Percentage of strength of longitudinal joint combined 91% Working pressure of shell by Rules 11 kg/cm²

Thickness of butt straps outer 20 mm inner 20 mm No. and Description of Furnaces in each Boiler 2 morison corrugated furnaces.

Material S.H. Steel. Tensile strength 41.5-41.7 kg/mm² Smallest outside diameter 1074 mm.

Length of plain part top bottom Thickness of plates 18 mm Description of longitudinal joint Welded.

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules 11.25 kg/cm²

End plates in steam space: Material S.H. Steel Tensile strength 42.5-46 kg/mm² Thickness 20 mm Pitch of stays 405 x 330 mm

How are stays secured Double nuts & outside washers. Working pressure by Rules 11.2 kg/cm²

Tube plates: Material front S.H. Steel back S.H. Steel Tensile strength 42.5-46 kg/mm² 42-44.8 kg/mm² Thickness 20 mm 19 mm

Mean pitch of stay tubes in nests 275 mm. Pitch across wide water spaces 330 x 170 mm. Working pressure front 12.6 kg/cm² back 14.65 kg/cm²

Girders to combustion chamber tops: Material S.H. Steel. Tensile strength 44-50 kg/mm² Depth and thickness of girder

at centre 185 mm. Length as per Rule 707 mm Distance apart 210 mm. No. and pitch of stays

in each 2. Working pressure by Rules 12.1 kg/cm² Combustion chamber plates: Material S.H. Steel.

Tensile strength 42.5-44.8 kg/mm² Thickness: Sides 19 mm Back 19 mm Top 19 mm Bottom 19 mm

Pitch of stays to ditto: Sides 210 x 217 mm Back 218 x 252 mm Top 210 x 207 mm Are stays fitted with nuts or riveted over Riveted over.

Working pressure by Rules 10.75 kg/cm² Front plate at bottom: Material S.H. Steel. Tensile strength 42.2-45.9 kg/mm²

Thickness 20 mm. Lower back plate: Material S.H. Steel Tensile strength 42.5-46.0 kg/mm² Thickness 20 mm.

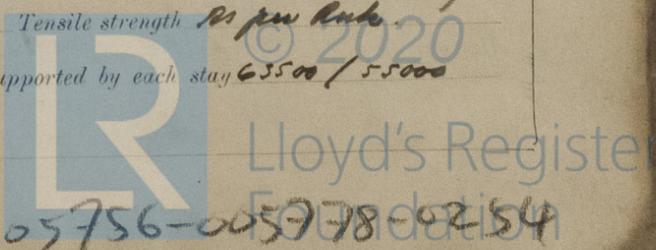
Pitch of stays at wide water space 330 x 218 mm. Are stays fitted with nuts or riveted over Riveted with nuts.

Working Pressure 14.65 kg/cm² Main stays: Material S.H. Steel. Tensile strength as per Rule.

Diameter At body of stay, or Over threads 63.5 mm. No. of threads per inch 6 Area supported by each stay 154000 mm²

Working pressure by Rules 13 kg/cm² Screw stays: Material S.H. Steel Tensile strength as per Rule.

Diameter At turned off part, or Over threads 41.3 & 38.1 mm. No. of threads per inch 9 Area supported by each stay 63500 / 55000



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Working pressure by Rules $10.34 \frac{\text{kg}}{\text{cm}^2}$ Are the stays drilled at the outer ends No. Margin stays: Diameter $\left\{ \begin{array}{l} \text{At turned off part.} \\ \text{or} \\ \text{Over threads} \end{array} \right. 41.3 \text{ mm.}$

No. of threads per inch 9. Area supported by each stay 6250 Working pressure by Rules $10.25 \frac{\text{kg}}{\text{cm}^2}$

Tubes: Material *S. 4. Steel* External diameter $\left\{ \begin{array}{l} \text{Plain} \\ \text{Stay} \end{array} \right. \left. \begin{array}{l} 2\frac{1}{2}'' \\ 2\frac{1}{2}'' \end{array} \right.$ Thickness $\left\{ \begin{array}{l} 2.25 \text{ mm} \\ 7.94 \text{ mm} \end{array} \right.$ No. of threads per inch 9.

Pitch of tubes $89 \times 95 \text{ mm.}$ Working pressure by Rules $12.5 \frac{\text{kg}}{\text{cm}^2}$ Manhole compensation: Size of opening in shell plate 302×400 Section of compensating ring *Flanged.* No. of rivets and diameter of rivet holes $36 \text{ à } 26 \text{ mm.}$

Outer row rivet pitch at ends 115 mm. Depth of flange if manhole flanged 80 mm. Steam Dome: Material

Tensile strength Thickness of shell Description of longitudinal joint

Diameter of rivet holes Pitch of rivets Percentage of strength of joint $\left\{ \begin{array}{l} \text{Plate} \\ \text{Rivets} \end{array} \right. \left. \begin{array}{l} \text{---} \\ \text{---} \end{array} \right.$

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 *None* Manufacturers of $\left\{ \begin{array}{l} \text{Tubes} \\ \text{Steel castings} \end{array} \right. \left. \begin{array}{l} \text{---} \\ \text{---} \end{array} \right.$

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

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

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

Rules Are the safety valves fitted with easing gear Working pressure as per tubes Pressure to which the safety valves are adjusted Hydraulic test pressure:

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,
ARTIFABOLAGET GOTAVÄRKEN
H. G. H. Allmar Manufacturer.

Dates of Survey $\left\{ \begin{array}{l} \text{During progress of work in shops} \\ \text{while building} \end{array} \right. \left. \begin{array}{l} \text{of } 1932 \text{ } 15.12.28/11 \\ \text{of } 1933 \text{ } 13.24/11 \\ \text{of } 1934 \text{ } 3.9.16.24/3 \\ \text{of } 1932 \text{ } 4/3 \\ \text{of } 1934 \text{ } 1/2 \\ \text{of } 1934 \text{ } 14.2/3 \end{array} \right.$ Are the approved plans of boiler and superheater forwarded herewith $27.8.31.$ (If not state date of approval.)

Total No. of visits $14.$

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

These boilers have been built under special survey in accordance with Rules & approved plans. The material as per test sheets attached. The workmanship is good. The boilers have been fitted as donkey boilers on board this vessel under my inspection and to my satisfaction.

Survey Fee ... *Rs.* : 313 : 46 When applied for, $31/3$ 1934.
 Travelling Expenses (if any) £ : : When received, 9.4 192 *31/3*

E. Bernholm
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *TUE 10 APR 1934*

Assigned *See other J.E. Rpt*
Sol. 9708

