

# REPORT ON BOILERS.

No. 8577.

Received at London Office

20 JUL 1931

Date of writing Report 15<sup>th</sup> July 1931 When handed in at Local Office 17<sup>th</sup> July 1931 Port of Copenhagen  
 No. in Survey held at Copenhagen Date, First Survey 23<sup>rd</sup> January Last Survey 10<sup>th</sup> July 1931  
 No. of Book 756 on the Steel Twin Screw Motor Tank Vessel NOREG (Number of Visits 36) Gross 7604.86 Tons Net 4504  
 Master ✓ Built at Copenhagen By whom built Maschinen-og Skibsbyggeri Yard No. 586 When built 1931  
 Engines made at Copenhagen By whom made Maschinen-og Skibsbyggeri Engine No. 1901 When made 1931  
 Boilers made at Copenhagen By whom made Maschinen-og Skibsbyggeri Boiler No. 1851 When made 1931  
 Nominal Horse Power for Fee 133.3 Owners 1/5 1/5 Corona (H. M. Wraggell & Co. Ltd.) Port belonging to Aangesund

## MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

FLANGED MATERIAL: Jensen, Quntop & Co. La. Caldenbank and The Steel Company of Scotland, Blackhairn

REMAINING PLATES: Thoringh, Stahlwerke 7/8 Hoorden, Vreem of Hoorden, STAYS & STAYBARS: Klockner

Manufacturers of Steel Wm. 7/8 - alt George - Marien & Wm. - COMBUSTION CHAMBER TOP-PLATE GIRDERS (Letter for Record S.)

Total Heating Surface of Boilers 2 x 1000 sq ft = 2000 sq ft Is forced draught fitted yes Coal or Oil fired oil fired

No. and Description of Boilers Two off - single ended, return multitubular Working Pressure 180 lbs per sq in

Tested by hydraulic pressure to 320 lbs per sq in Date of test 7.5.1931 No. of Certificate 536-537 Can each boiler be worked separately yes

Area of Firegrate in each Boiler ✓ No. and Description of safety valves to each boiler 2 off directly spring loaded

Area of each set of valves per boiler per Rule 7.70 as fitted 11.880 Pressure to which they are adjusted 180 lbs per sq in 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 fitted

Smallest distance between boilers or uptakes and bulkheads or woodwork 7'-8" Is oil fuel carried in the double bottom under boilers ✓

Smallest distance between shell of boiler and tank top plating platform at after end of engine room Is the bottom of the boiler insulated yes

Largest internal dia. of boilers 10'-3" Length 10'-7 3/8" Shell plates: Material Siemens M. Steel Tensile strength 45.0-50.0 kg/mm<sup>2</sup>

Thickness 7/8" Are the shell plates welded or flanged No Description of riveting: circ. seams lap joint

long. seams double butt strap Diameter of rivet holes in circ. seams 1 1/8" Pitch of rivets 3 3/8"

Percentage of strength of circ. end seams plate 66.7% rivets 55.0% Percentage of strength of circ. intermediate seam plate 86.4% rivets 88.35%

Percentage of strength of longitudinal joint combined 90.37% Working pressure of shell by Rules 185.9 lbs per sq in

Thickness of butt straps outer 7/8" inner 7/8" No. and Description of Furnaces in each Boiler 2 off corrugated Morrison section

Material Siemens M. Steel Tensile strength 42.7-43.0 kg/mm<sup>2</sup> Smallest outside diameter 2'-11"

Length of plain part top 7' bottom 7' Thickness of plates crown 1/2" bottom 1/2" Description of longitudinal joint ✓

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules 205.7 lbs per sq in

End plates in steam space: Material Siemens M. Steel Tensile strength 26.5-28.2 Ton/10" Thickness 15/16" Pitch of stays 15" x 12"

How are stays secured Secured in both plates, nuts in - and outside Working pressure by Rules 218.8 lbs per sq in

Tube plates: Material front Siemens M. Steel Tensile strength 26.5-28.2 Ton/10" Thickness 15/16"

back Siemens M. Steel Tensile strength 28.0-28.1 Ton/10" Thickness 3/4"

Mean pitch of stay tubes in nests 7" x 10 1/2" Pitch across wide water spaces 14" Working pressure front 178.5 lbs per sq in

Girders to combustion chamber tops: Material Cast steel Tensile strength 29.0-29.3 Ton/10" Depth and thickness of girder

at centre 7 1/4" x 1" Length as per Rule 25 1/2" Distance apart 7 1/2" No. and pitch of stays

in each 2 off - 8" Working pressure by Rules 186.6 lbs per sq in Combustion chamber plates: Material Siemens M. Steel

Tensile strength 41.2-47.0 kg/mm<sup>2</sup> Thickness: Sides 7/8" Back 7/8" Top 7/8" Bottom 3/4"

Pitch of stays to ditto: Sides 8" x 7 1/2" Back 7 3/4" x 7" Top 8" x 7 1/2" Are stays fitted with nuts or riveted over Secured in both plates, nuts in outside

Working pressure by Rules BACK 242.2 lbs per sq in Front plate at bottom: Material Siemens M. Steel Tensile strength 26.5-28.2 Ton/10"

Thickness 15/16" Lower back plate: Material Siemens M. Steel Tensile strength 27.5-27.8 Ton/10" Thickness 15/16"

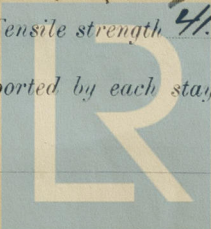
Pitch of stays at wide water space α = 16° Are stays fitted with nuts or riveted over Secured in both plates, nuts in outside

Working Pressure 361 lbs per sq in Main stays: Material Siemens M. Steel Tensile strength 44.5-47.5 kg/mm<sup>2</sup>

Diameter At body of stay, 2 1/2" 2 1/4" - 2" No. of threads per inch 11 Area supported by each stay 180 sq in

Working pressure by Rules 246.2 lbs per sq in Screw stays: Material Siemens M. Steel Tensile strength 41.0-44.8 kg/mm<sup>2</sup>

Diameter At turned off part, 1 1/2" No. of threads per inch 11 Area supported by each stay 600 sq in



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Working pressure by Rules  $209 \frac{1}{2} \text{ lb}$  Are the stays drilled at the outer ends *No* Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part. } 1 \frac{3}{4} \\ \text{Over threads } 1 \frac{1}{4} \end{array} \right.$   
No. of threads per inch *11* Area supported by each stay  $72.38 \text{ sq in}$  Working pressure by Rules  $250.8 \text{ lb per sq in}$   
Tubes: Material *Steel* External diameter  $\left\{ \begin{array}{l} \text{Plain } 2 \frac{1}{2} \\ \text{Stay } 2 \frac{1}{2} \end{array} \right.$  Thickness  $\left\{ \begin{array}{l} \text{S.W.G. No 9 } 5/16 \\ \text{ } 3/8 \end{array} \right.$  No. of threads per inch *11*  
Pitch of tubes  $3 \frac{1}{2} \times 3 \frac{1}{2}$  Working pressure by Rules  $230 \text{ lb per sq in}$  Manhole compensation: Size of opening  
shell plate  $16 \times 20$  Section of compensating ring *Flanged* No. of rivets and diameter of rivet holes  $62 \text{ off } 1 \frac{5}{16}$   
Outer row rivet pitch at ends *5* Depth of flange if manhole flanged  $3 \frac{3}{8}$  Steam Dome: Material  
Tensile strength Thickness of shell Description of longitudinal joint  
Diameter of rivet holes Pitch of rivets Percentage of strength of joint  $\left\{ \begin{array}{l} \text{Plate } \\ \text{Rivets } \end{array} \right.$   
Internal diameter Working pressure by Rules Thickness of crown No. and diameter  
stays Inner radius of crown Working pressure by Rules  
How connected to shell Size of doubling plate under dome  
of rivets in outer row in dome connection to shell Diameter of rivet holes and pitch

Type of Superheater  
Number of elements Material of tubes Manufacturers of  $\left\{ \begin{array}{l} \text{Tubes } \\ \text{Steel castings } \end{array} \right.$   
Material of headers Tensile strength Thickness  
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  
Rules Pressure to which the safety valves are adjusted Working pressure as per  
tubes castings and after assembly in place Hydraulic test pressure  
to free the superheater from water where necessary Are drain cocks or valves fitted  
Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with *yes.*  
The foregoing is a correct description.

AKTIESELSKABET  
DURMEISTER & WAHNS MÅSKIN- OG KØKKENBØYGERI  
Dates of Survey  $\left\{ \begin{array}{l} \text{During progress of work in shops } 1931: 23/1-30/1-6/2-10/2-18/2-2/3-10/3-13/3 \\ \text{ } 17/3-20/3-24/3-26/3-27/3-10/4-13/4-18/4 \\ \text{During erection on board vessel } 1931: 20/5-22/5-23/5-30/5-2/6-3/6-12/6-13/6-14/6 \\ \text{ } 17/6-19/6-22/6-23/6-24/6-26/6-27/6-1/7 \end{array} \right.$  Are the approved plans of boiler and superheater forwarded herewith *yes.*  
(If not state date of approval.)  
Total No. of visits *36.*

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

These boilers have been built under Special Survey in accordance with the Rules, the approved plan and the requirements contained in the Secretary's letter E dated 26<sup>th</sup> September 1930.

The material has been tested as required by the Rules as per Certificates produced, and the workmanship is of good description throughout. The boilers have been fitted on board the above named vessel and completed to our entire satisfaction.

Oil fuel burning arrangement has been installed and tested in accordance with the requirements of the Rules.

Two vertical simplex, double acting feed pumps  $7 \times 5 \times 12$  have been installed.

Survey Fee  $\text{£ } 242.61$  When applied for  $18.7.1931$   
Travelling Expenses (if any)  $\text{£ } \checkmark : \checkmark :$  When received  $10.10.1931$

Committee's Minute

TUE. 18 AUG 1931

Assigned

*See F.B. Rpt.*

*A. J. Jensen*  
Engineer Surveyor to Lloyd's Register of Shipping.



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Foundation