

## REPORT ON BOILERS.

No. 8570

15 DEC 1931

Received at London Office

Date of writing Report 10<sup>th</sup> Dec 1931 When handed in at Local Office 12<sup>th</sup> Dec 1931 Port of GOTHENBURGNo. in Survey held at GOTHENBURG Date, First Survey 19<sup>th</sup> Aug Last Survey 5<sup>th</sup> Dec 1931  
Reg. Book. (SUPPLEMENT) 41763 on the Twin Screw Motorvessel "PAN GOTHIA" (Number of Visits 11) Gross 10409 Tons Net 6225Master ✓ Built at GOTHENBURG By whom built AB GÖTAVERKEN Yard No 459 When built 1931-12  
Engines made at GOTHENBURG By whom made AB GÖTAVERKEN Engine Nos 1998 1999 When made 1931  
Boilers made at GOTHENBURG By whom made A.B. GÖTAVERKEN Boiler No. 1830-31 When made 1931  
Nominal Horse Power 712 Owners REDERIA/B. ALSE Port belonging to GOTHENBURG

## MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Plates: - Withowitzer Bergbau und Eisenhütten-Gesellschaft in Withowitz.

Manufacturers of Steel Stays: - Vereinigte Stahlwerke A.G. Dortmunder Union, Dortmund. (Letter for Record S)

Total Heating Surface of Boilers  $2 \times 142 = 284$  sq. meters [3057  $\square$ ] Is forced draught fitted Yes Coal or Oil fired oil fired or fired by means of exhaust gases from engines.

No. and Description of Boilers Two cylindrical multitubular. Working Pressure 150 lbs/sq. in.

Tested by hydraulic pressure to 275 lbs Date of test 25/9/31 11/10/31 No. of Certificate 251-252 Can each boiler be worked separately Yes

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

Area of each set of valves per boiler { per Rule 9060 mm<sup>2</sup> as fitted 10390 mm<sup>2</sup> 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 boilers fitted.

Smallest distance between boilers tank end plates &amp; A.P. bulkhead (oil) 700 mm Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating ✓ Is the bottom of the boiler insulated Yes.

Largest internal dia. of boilers 3658 mm Length 3450 mm Shell plates: Material S.M. Steel Tensile strength 44-50 Kgs/mm<sup>2</sup>

Thickness 21 mm Are the shell plates welded or flanged No Description of riveting: circ. seams end Double riveted. inter.

long. seams Double butt straps of unequal width Diameter of rivet holes in { circ. seams 27 mm long. seams 22.5 &amp; 27 mm Pitch of rivets { 95 mm 93-139.5 mm 279 mm

Percentage of strength of circ. end seams { plate 71.5% rivets 47% Percentage of strength of circ. intermediate seam { plate - rivets -

Percentage of strength of longitudinal joint { plate 90.4% rivets 107.0% combined 91.2 Working pressure of shell by Rules 10.95 Kgs/cm<sup>2</sup> (156 lbs/sq. in.)

Thickness of butt straps { outer 21 mm inner 21 mm No. and Description of Furnaces in each Boiler 2 - Morrison.

Material S.M. Steel Tensile strength 42.3-42.5 Kgs/cm<sup>2</sup> Smallest outside diameter 1124 mm

Length of plain part { top 12 mm bottom 12 mm Thickness of plates { crown 12 mm bottom 12 mm Description of longitudinal joint welded.

Dimensions of stiffening rings on furnace or c.e. bottom ✓ Working pressure of furnace by Rules 10.75 Kgs/cm<sup>2</sup> (153 lbs/sq. in.)End plates in steam space: Material S.M. Steel Tensile strength 41.5-42.0 Kgs/mm<sup>2</sup> Thickness 22 mm Pitch of stays 405 x 330 mmHow are stays secured Double nuts and outside washers Working pressure by Rules 13.6 Kgs/cm<sup>2</sup> (193 lbs/sq. in.)Tube plates: Material { front S.M. Steel Tensile strength { 41.5-42.0 Kgs/mm<sup>2</sup> Thickness { 19 mm back S.M. Steel 41.7-46.4 Kgs/mm<sup>2</sup>Mean pitch of stay tubes in nests 257 mm Pitch across wide water spaces 330 mm Working pressure { front 10.8 Kgs/cm<sup>2</sup> (154 lbs/sq. in.) back 10.5 " (150 lbs/sq. in.)Girders to combustion chamber tops: Material S.M. Steel Tensile strength 44-50 Kgs/mm<sup>2</sup> Depth and thickness of girder

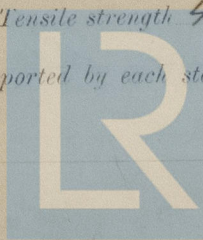
at centre 185 x 42 mm Length as per Rule 759 mm Distance apart 207 mm No. and pitch of stays

in each 2-210 mm Working pressure by Rules 13.7 Kgs/cm<sup>2</sup> (195 lbs/sq. in.) Combustion chamber plates: Material S.M. SteelTensile strength 44-50 Kgs/mm<sup>2</sup> Thickness: Sides 18 mm Back 19 mm Top 18 mm Bottom 18 mm

Pitch of stays to ditto: Sides 210 x 195 mm Back 215 x 215 mm Top 210 x 207 mm Are stays fitted with nuts or riveted over Riveted over

Working pressure by Rules 17.2 Kgs/cm<sup>2</sup> (174 lbs/sq. in.) Front plate at bottom: Material S.M. Steel Tensile strength 41.5-41.8 Kgs/mm<sup>2</sup>Thickness 22 mm Lower back plate: Material S.M. Steel Tensile strength 41.7-42 Kgs/mm<sup>2</sup> Thickness 22 mm

Pitch of stays at wide water space 340 x 215 mm Are stays fitted with nuts or riveted over Riveted over

Working Pressure 11.4 Kgs/cm<sup>2</sup> (162 lbs/sq. in.) Main stays: Material S.M. Steel Tensile strength 48.5-49.9 Kgs/mm<sup>2</sup>Diameter { At body of stay, 63.5 mm No. of threads per inch 6 Area supported by each stay 405 x 330 mm<sup>2</sup>Working pressure by Rules 15.2 Kgs/cm<sup>2</sup> (216 lbs/sq. in.) Screw stays: Material S.M. Steel Tensile strength 44.4-46.9 Kgs/mm<sup>2</sup>Diameter { At turned off part, 35 mm No. of threads per inch 9 Area supported by each stay 215 x 275 mm<sup>2</sup>Lloyd's Register  
Foundation



Working pressure by Rules  $12.2 \frac{1}{2} \frac{1}{2}$  Are the stays drilled at the outer ends *No* Margin stays: Diameter { At turned off part  $41 \frac{1}{2}$  or Over threads  $44.5 \frac{1}{2}$  }  
No. of threads per inch *9* Area supported by each stay  $277.5 \times 215 \text{ mm}^2$  Working pressure by Rules  $13.8 \frac{1}{4} \frac{1}{2}$  (196 lbs/sq in)  
Tubes: Material *L.M. Steel* External diameter { Plain  $2 \frac{1}{2}$  Stay  $2 \frac{1}{2}$  } Thickness  $5 \frac{1}{16}$  No. of threads per inch *9*  
Pitch of tubes  $96 \times 89 \frac{1}{2}$  Working pressure by Rules  $12.5 \frac{1}{4} \frac{1}{2}$  (178 lbs/sq in) Manhole compensation: Size of opening  
shell plate  $430 \times 540 \frac{1}{2}$  Section of compensating ring  $200 \times 21 \frac{1}{2}$  (flanged) No. of rivets and diameter of rivet holes  $38 - 27 \frac{1}{2}$   
Outer row rivet pitch at ends  $79.5 \frac{1}{2}$  Depth of flange if manhole flanged  $85 \frac{1}{2}$  Steam Dome: Material *None*  
Tensile strength Thickness of shell Description of longitudinal joint  
Diameter of rivet holes Pitch of rivets Percentage of strength of joint { Plate Rivets }  
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  
Number of elements Material of tubes Manufacturers of { Tubes Steel castings }  
Material of headers Tensile strength Internal diameter and thickness of tubes  
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,  
*Wm. S. J. Vedder* Manufacturer.

Dates of Survey { During progress of work in shops - - - } *1931: Aug 19, 20, 31 Sep 14, 25, 26 Oct 1* Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)  
while building { During erection on board vessel - - - } *1931 Oct 15, Dec 3, 12* Total No. of visits *11*

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)  
*These donkey boilers have been built under Special Survey in accordance with the Society's Rules and approved plan.*  
*The material as per test sheets attached.*  
*The workmanship is good.*  
*The boilers have been fitted on board this vessel under my inspection and to my satisfaction.*

Survey Fee ... *Mr. 37/1:28* When applied for, *12<sup>th</sup> Dec 1931*  
Travelling Expenses (if any) £ : : When received, *4.1. 1932*

*W. S. J. Vedder*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *18 DEC 1931*  
Assigned *See F.B. Rpt.*