

# REPORT ON BOILERS.

Received at London Office

17 DEC 1934

Date of writing Report 12th Dec 1934 When handed in at Local Office 15th Dec 1934 Port of Gothenburg

No. in Survey held at Gothenburg Date, First Survey 27th August Last Survey 24th December 1934

SUPPLEMENT

89464 on the M/S "GRENA"

(Number of Visits 11) (Gross 817.28 Tons) (Net 4890.63)

Master J.P.B. Built at GOTHENBURG By whom built A.B. GÖTAVERKEN Yard No. 483 When built 1934

Engines made at GOTHENBURG By whom made A.B. GÖTAVERKEN Engine No. 1072 When made 1934

Boilers made at GOTHENBURG By whom made A.B. GÖTAVERKEN Boiler No. 1894/1895 When made 1934

Nominal Horse Power Owners A.S. J. LUDWIG MOWINCKELS REDERI Port belonging to BERGEN

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

Manufacturers of Steel Fabrik Deutsche Röhrenwerke AG, Hülheim (Letter for Record 5)  
Fabrik Heuss und Lehmann AG, Storforsviken, Stafors

Total Heating Surface of Boilers 2 x 130 m<sup>2</sup> = 260 m<sup>2</sup> Is forced draught fitted Yes Coal or Oil fired Oil fired.

No. and Description of Boilers Two cylindrical multitubular Working Pressure 50 lbs (10.55 kg/cm<sup>2</sup>)

Tested by hydraulic pressure to 275 lbs. Date of test 24.10.34 No. of Certificate 264, 265 Can each boiler be worked separately Yes

Area of Firegrate in each Boiler 88 cm<sup>2</sup> No. and Description of safety valves to each boiler Double spring loaded.

Area of each set of valves per boiler per Rule 88 cm<sup>2</sup> Pressure to which they are adjusted 150 lbs Are they fitted with casing gear Yes

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

Smallest distance between boilers or uptakes and bunkers or woodwork 750 mm 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 in the engine room. Is the bottom of the boiler insulated Yes.

Largest internal dia. of boilers 5556 mm Length 3408 mm Shell plates: Material S.M. Steel Tensile strength 48.2-49.2 kg/mm<sup>2</sup>

Thickness 20.5 mm Are the shell plates welded or flanged No Description of riveting: circ. seams Overlap

long. seams Double butt straps Diameter of rivet holes in circ. seams 27 mm Pitch of rivets 95 mm

Percentage of strength of circ. end seams plate 71.5% Percentage of strength of circ. intermediate seam plate

Percentage of strength of longitudinal joint plate 90.5% Working pressure of shell by Rules 12 kg/cm<sup>2</sup>

Thickness of butt straps outer 20.5 mm No. and Description of Furnaces in each Boiler 2 Morrison corrugated furnaces.

Material S.M. Steel Tensile strength 42.9-45.2 kg/mm<sup>2</sup> Smallest outside diameter 1124 mm

Length of plain part top Thickness of plates bottom 12 mm Description of longitudinal joint Welded.

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 10.75 kg/cm<sup>2</sup>

End plates in steam space: Material S.M. Steel Tensile strength 45.7-46.8 kg/mm<sup>2</sup> Thickness 21 mm Pitch of stays 405 x 330 mm

How are stays secured Double nuts & outside washers. Working pressure by Rules 11.95 kg/cm<sup>2</sup>

Tube plates: Material front S.M. Steel Tensile strength 45.7-46.8 kg/mm<sup>2</sup> Thickness 21 mm

Mean pitch of stay tubes in nests 388 x 267 mm Pitch across wide water spaces 330 mm Working pressure front 10.9 kg/cm<sup>2</sup>

Girders to combustion chamber tops: Material S.M. Steel Tensile strength 44.8 kg/mm<sup>2</sup> Depth and thickness of girder

at centre 185 mm, 2 x 20.5 mm Length as per Rule 762 mm Distance apart 207 mm No. and pitch of stays

in each 5, 210 mm Working pressure by Rules 11.9 kg/cm<sup>2</sup> Combustion chamber plates: Material S.M. Steel

Tensile strength 44.7-47.0 kg/mm<sup>2</sup> Thickness: Sides 18 Back 18 Top 18 Bottom 18

Pitch of stays to ditto: Sides 210 x 210 mm Back 209 x 215 mm Top 207 x 210 Are stays fitted with nuts or riveted over Riveted over

Working pressure by Rules 11.9 kg/cm<sup>2</sup> Front plate at bottom: Material S.M. Steel Tensile strength 45.7-46.8 kg/mm<sup>2</sup>

Thickness 21 mm Lower back plate: Material S.M. Steel Tensile strength 45.7-46.8 kg/mm<sup>2</sup> Thickness 21 mm + doubling 20.5 mm

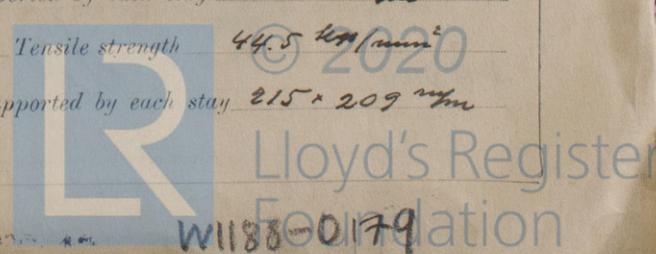
Pitch of stays at wide water space 550<sup>2</sup> mm<sup>2</sup> 330 Are stays fitted with nuts or riveted over Fitted with nuts.

Working Pressure 14.8 kg/cm<sup>2</sup> Main stays: Material S.M. Steel Tensile strength 44.0 kg/mm<sup>2</sup>

Diameter At body of stay, 63.5 mm No. of threads per inch 6 Area supported by each stay 154000 mm<sup>2</sup>

Working pressure by Rules 12.2 kg/cm<sup>2</sup> Screw stays: Material S.M. Steel Tensile strength 44.5 kg/mm<sup>2</sup>

Diameter At turned off part, 34 mm No. of threads per inch 9 Area supported by each stay 215 x 209 mm



Working pressure by Rules  $12.5 \frac{\text{kg}}{\text{cm}^2}$  Are the stays drilled at the outer ends *16* Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part, } 34 \text{ mm} \\ \text{or} \\ \text{Over threads } 38 \text{ mm} \end{array} \right.$

No. of threads per inch *9* Area supported by each stay  $210 \times 250 \text{ mm}$  Working pressure by Rules  $10.75 \frac{\text{kg}}{\text{cm}^2}$

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  $\left\{ \begin{array}{l} 3.25 \text{ mm} \\ 4.94 \text{ mm} \end{array} \right.$  No. of threads per inch *9*

Pitch of tubes  $89 \times 96 \text{ mm}$  Working pressure by Rules  $12.5 \frac{\text{kg}}{\text{cm}^2}$  Manhole compensation: Size of opening in shell plate  $400 \times 500 \text{ mm}$  Section of compensating ring *flanged* No. of rivets and diameter of rivet holes *26, 27 mm*

Outer row rivet pitch at ends  $180 \text{ mm}$  Depth of flange if manhole flanged  $85 \text{ mm}$  Steam Dome: Material

Tensile strength  Thickness of shell  Description of longitudinal joint

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

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

How connected to shell  Inner radius of crown  Working pressure by Rules

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  $\left\{ \begin{array}{l} \text{Tubes} \\ \text{Steel castings} \end{array} \right.$

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

Material of headers  Tensile strength  Thickness  Can the superheater be shut off 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 casing 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,  
**AKTIEBOLAGET GOTÄVERKEN**  
*W. Meeler* Manufacturer.

Dates of Survey  $\left\{ \begin{array}{l} \text{During progress of work in shops, } 22/8, 29/8, 29/9, 7/10, 11/10, 22/10, 24/10 \\ \text{while building } \left\{ \begin{array}{l} \text{During erection on board vessel, } 2/11, 14/11, 4/12, 7/12 \end{array} \right. \end{array} \right.$  Are the approved plans of boiler and superheater forwarded herewith *17/2-34*  
 (If not state date of approval)

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 plan 2, the Society's Rules.*

*The workmanship is good.*

*The material as per test sheets attached.*

*The boilers are marked.*

Nos. 264, 265 LLOYD'S TEST 275 LBS W. P. 150 LBS G.F. 24.10.34
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Survey Fee ... No. : *340:00* When applied for, *15<sup>th</sup> Dec. 1934*

Travelling Expenses (if any) £ : : When received, *27.12.1934*

*E. Benzelius*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **FRI. 21 DEC 1934**

Assigned *See other J.E. fol. 10084*