

## REPORT ON BOILERS.

No. 10085

17 DEC 1934

Received at London Office

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

15th Dec 1934

Port of

Gothenburg

No. in Reg. Book. Survey held at

Gothenburg

Date, First Survey 6th June

Last Survey 28th November 1934

SUPPLEMENT

85565 on the

M/S "BRAJARA"

(Number of Visits 13)

Gross 8116.17

Tons Net 4893.74

Master Built at GOTHEBURG By whom built A.B. GÖTAVERKEN Yard No. 482 When built 1934

Engines made at GOTHEBURG By whom made A.B. GÖTAVERKEN Engine No. 1071 When made 1934

DONKEY

Boilers made at GOTHEBURG By whom made A.B. GÖTAVERKEN Boiler No. 1892/1893 When made 1934

Nominal Horse Power Owners REDERI A/S FREIKOLL Port belonging to OSLO

## MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Jesso's Deutsche Röhrenwerke AG. Mülheim (Letter for Record S ✓)

Total Heating Surface of Boilers  $2 \times 130 \text{ m}^2 = 260 \text{ m}^2$  Is forced draught fitted Yes Coal or Oil fired oil firedNo. and Description of Boilers Two cylindrical multitubular Working Pressure 150 lbs / 10.55 kg/cm<sup>2</sup>

Tested by hydraulic pressure to 275 lbs. Date of test 28.9.34 No. of Certificate 2622263 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 88 cm<sup>2</sup> 82 as fitted 90 cm<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

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 3556 mm Length 3408 mm Shell plates: Material S.H. Steel Tensile strength 44.8-49.6 kg/cm<sup>2</sup>

Thickness 20.5 mm Are the shell plates welded or flanged No Description of riveting: circ. seams { end Overlap inter. None.

long. seams Double Butt Strap Diameter of rivet holes in { circ. seams 27 mm long. seams 23 &amp; 27 mm Pitch of rivets { 95 mm 279 mm

Percentage of strength of circ. end seams { plate 71.5 % rivets 47.5 % Percentage of strength of circ. intermediate seam { plate rivets

Percentage of strength of longitudinal joint { plate 90.5 % rivets 100 % combined 91.6 % Working pressure of shell by Rules 11.3 kg/cm<sup>2</sup>

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

Material S.H. Steel Tensile strength 45.1-46.2 kg/cm<sup>2</sup> Smallest outside diameter 1124 mm

Length of plain part { top bottom Thickness of plates { crown 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.H. Steel Tensile strength 45.4-47.0 kg/cm<sup>2</sup> Thickness 21 mm Pitch of stays 405 x 330 mmHow are stays secured Double nuts and outside washers. Working pressure by Rules 11.95 kg/cm<sup>2</sup>Tube plates: Material { front S.H. Steel back S.H. Steel Tensile strength { 45.4-47.0 kg/cm<sup>2</sup> 44.0-46.5 kg/cm<sup>2</sup> Thickness { 21 mm 18 mmMean pitch of stay tubes in nests 288 x 267 mm Pitch across wide water spaces 330 mm Working pressure { front 10.9 kg/cm<sup>2</sup> back 10.55 kg/cm<sup>2</sup>Girders to combustion chamber tops: Material S.H. Steel Tensile strength 44.8-48.6 kg/cm<sup>2</sup> Depth and thickness of girder

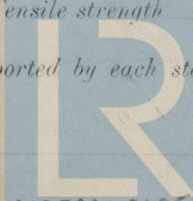
at centre 185 mm, 2 x 20.5 mm Length as per Rule 762 mm Distance apart 207 mm No. and pitch of stays

in each 2, 210 mm Working pressure by Rules 11.9 kg/cm<sup>2</sup> Combustion chamber plates: Material S.H. SteelTensile strength 43.2-46.7 kg/cm<sup>2</sup> Thickness: Sides 18 mm Back 18 mm Top 18 mm Bottom 18 mm

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 Riv. over

Working pressure by Rules 11.9 kg/cm<sup>2</sup> Front plate at bottom: Material S.H. Steel Tensile strength 45.4-47.0 kg/cm<sup>2</sup>Thickness 21 mm Lower back plate: Material S.H. Steel Tensile strength 45.4-47.0 kg/cm<sup>2</sup> Thickness 21 mm + doubling 20.5 mm

Pitch of stays at wide water space 550 mm 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.H. Steel Tensile strength 44.0 kg/cm<sup>2</sup>Diameter { At body of stay or Over threads 63.5 mm No. of threads per inch 6 Area supported by each stay 154000 mm<sup>2</sup>Working pressure by Rules 13.2 kg/cm<sup>2</sup> Screw stays: Material S.H. Steel Tensile strength 44.5 kg/cm<sup>2</sup>Diameter { At turned off part or Over threads 34 mm 38 mm No. of threads per inch 9 Area supported by each stay 215 x 209 mm<sup>2</sup>

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Working pressure by Rules  $12.5 \text{ kg/cm}^2$  Are the stays drilled at the outer ends *No* Margin stays: Diameter { At turned off part,  $34 \text{ mm}$  or Over threads  $38 \text{ mm}$  }  
No. of threads per inch  $9$  Area supported by each stay  $210 \times 250 \text{ mm}^2$  Working pressure by Rules  $10.75 \text{ kg/cm}^2$   
Tubes: Material *steel* External diameter { Plain  $2 \frac{1}{2}''$  Stay  $2 \frac{1}{2}''$  } Thickness {  $3.25 \text{ mm}$   $2.94 \text{ mm}$  } No. of threads per inch  $9$   
Pitch of tubes  $89 \times 96 \text{ mm}$  Working pressure by Rules  $12.5 \text{ kg/cm}^2$  Manhole compensation: Size of opening in shell plate  $400 \times 500 \text{ mm}$  Section of compensating ring *flanged*  $20 \text{ mm}$  No. of rivets and diameter of rivet holes  $36; 27 \text{ mm}$   
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 { 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 Manufacturers of { Tubes Steel castings }  
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 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,  
*Antiebolaget Gotaverken* Manufacturer.

Dates of Survey { During progress of work in shops - -  $4/6, 17/7, 24/7, 15/8, 27/8, 30/8, 17/9, 20/9, 28/9$  Are the approved plans of boiler and superheater forwarded herewith  $17/2 - 34$  (If not state date of approval.)  
while building { During erection on board vessel - - -  $20/10, 30/10, 26/11, 28/11$  } Total No. of visits  $13$

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)  
*These Donkey Boilers have been built under special survey in accordance with plan & the Society's Rules.*  
*The workmanship is good.*  
*The material as per test sheets attached.*  
*The boilers are marked.*

No. 262, 263  
40405 TS 57 275 LBS  
WP 150 LBS  
CB 28.9.34

Survey Fee ... *£4* :  $340:00$  When applied for  $15 \text{th Dec } 1934$   
Travelling Expenses (if any) £ : : When received  $27.12$   $1934$  *HD 31*

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

Committee's Minute *FM, 21 DEC 1934*  
Assigned *See other fol. 7E 10085*