

# REPORT ON BOILERS.

28 SEP 1936

Received at London Office

Date of writing Report 22<sup>nd</sup> Sept. 1936 When handed in at Local Office 19 Port of BREMEN

No. in Survey held at VEGESACK Date, First Survey 4<sup>th</sup> April 1936 Last Survey 3<sup>rd</sup> Sept 1936

Reg. Book. 85438 on the SINGLE SCREW TANKER TORNUS (Number of Visits 13) Tons {Gross 8054  
Net 4756

Master                      Built at VEGESACK By whom built BREMER VULKAN Yard No. 722 When built 1936

Engines made at VEGESACK By whom made BREMER VULKAN Engine No. 384/389 When made 1936

Boilers made at VEGESACK By whom made BREMER VULKAN Boiler No. 728 When made 1936

Nominal Horse Power 502 Owners SARAWAK OILFIELDS, LD. Port belonging to MIRI

## MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Mann. Deutsche Röhrenwerke G. G. Werk Mülheim Ratur (Letter for Record 5 ✓)

Total Heating Surface of Boilers 233 m<sup>2</sup> ✓ Is forced draught fitted yes ~~Coal~~ Oil fired & exhaust gas ✓

No. and Description of Boilers One Multitubular Donkey Boiler Working Pressure 180 lbs (12.65 kg/cm<sup>2</sup>) ✓

Tested by hydraulic pressure to 320 lbs Date of test 13.7.36 No. of Certificate 179 ✓ Can each boiler be worked separately —

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

Area of each set of valves per boiler {per Rule 12572 mm<sup>2</sup>  
as fitted 15708 } Pressure to which they are adjusted 180 lbs Are they fitted with easing gear yes ✓

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler only one donkey boiler ✓

Smallest distance between boilers or uptakes and bunkers or woodwork — Is oil fuel carried in the double bottom under boilers —

Smallest distance between shell of boiler and tank top plating — Is the bottom of the boiler insulated yes ✓

Largest internal dia. of boilers 4362 mm Length 3505 mm Shell plates: Material P. M. Steel Tensile strength 47-53 kg/cm<sup>2</sup> ✓

Thickness 29 mm ✓ Are the shell plates welded or flanged flanged ✓ Description of riveting: circ. seams {end double  
inter.                     

long. seams double butt straps Diameter of rivet holes in {circ. seams 32 mm  
long. seams 32 mm } Pitch of rivets { 100 mm  
215 mm }

Percentage of strength of circ. end seams {plate 68%  
rivets 54% } Percentage of strength of circ. intermediate seam {plate                       
rivets                      }

Percentage of strength of longitudinal joint {plate 85%  
rivets 93%  
combined 88.5% } Working pressure of shell by Rules 13 kg/cm<sup>2</sup>

Thickness of butt straps {outer 29 mm  
inner 29 mm } No. and Description of Furnaces in each Boiler 3 furnaces of Morrison type ✓

Material P. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup> ✓ Smallest outside diameter 1080 mm ✓

Length of plain part {top 120 mm  
bottom 120 mm } Thickness of plates {crown 15 mm  
bottom 15 mm } Description of longitudinal joint welded

Dimensions of stiffening rings on furnace or c.c. bottom — Working pressure of furnace by Rules 14.2 kg/cm<sup>2</sup> ✓

End plates in steam space: Material P. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup> Thickness 29 mm ✓ Pitch of stays 420 x 390 mm

How are stays secured with washers inside & outside Working pressure by Rules 17 kg/cm<sup>2</sup>

Tube plates: Material {front P. M. Steel  
back P. M. Steel } Tensile strength { 41-47 kg/cm<sup>2</sup>  
41-47 } Thickness { 26 mm  
26 mm }

Mean pitch of stay tubes in nests 208 x 208 mm Pitch across wide water spaces 360 mm ✓ Working pressure {front 16 kg/cm<sup>2</sup>  
back 40 }

Girders to combustion chamber tops: Material P. M. Steel Tensile strength 47-53 kg/cm<sup>2</sup> Depth and thickness of girder at centre 230 x 12 mm ✓ Length as per Rule 770 mm ✓ Distance apart 175 & 180 mm No. and pitch of stays in each 2 - 210 mm ✓ Working pressure by Rules 14.8 kg/cm<sup>2</sup> ✓ Combustion chamber plates: Material P. M. Steel ✓

Tensile strength 41-47 kg/cm<sup>2</sup> Thickness: Sides 19 mm ✓ Back 20 mm ✓ Top 19 mm ✓ Bottom 25 mm ✓

Pitch of stays to ditto: Sides 200 x 220 mm Back 200 x 200 mm Top 210 x 175/180 mm Are stays fitted with nuts or riveted over partly fitted with nuts  
partly riveted over

Working pressure by Rules 14.0 kg/cm<sup>2</sup> Front plate at bottom: Material P. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup>

Thickness 26 mm ✓ Lower back plate: Material P. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup> Thickness 26 mm ✓

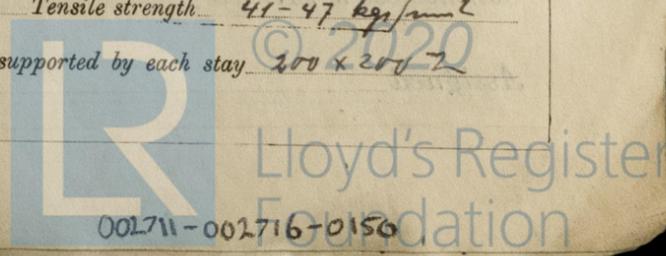
Pitch of stays at wide water space 360 mm ✓ Are stays fitted with nuts or riveted over fitted with nuts ✓

Working Pressure 23 kg/cm<sup>2</sup> Main stays: Material P. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup>

Diameter {At body of stay, 76 mm  
or 84 mm  
Over threads 84 mm } No. of threads per inch 8 Area supported by each stay 420 x 390 mm

Working pressure by Rules 18.5 kg/cm<sup>2</sup> Screw stays: Material P. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup>

Diameter {At turned off part, 39 mm  
or                       
Over threads 39 mm } No. of threads per inch 9 Area supported by each stay 200 x 200 mm



Working pressure by Rules  $15 \text{ kg/cm}^2$  Are the stays drilled at the outer ends *yes* Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{array} \right. 40, 51, 54, 72$   
 No. of threads per inch  $9$  Area supported by each stay  $200 \times 360$  Working pressure by Rules  $13 \text{ kg/cm}^2$   
**Tubes:** Material *P. M. Steel* External diameter  $\left\{ \begin{array}{l} \text{Plain } 76 \\ \text{Stay } 76 \end{array} \right. \checkmark$  Thickness  $\left\{ \begin{array}{l} 3.75 \\ 10.1 \end{array} \right. \checkmark$  No. of threads per inch  $9$   
 Pitch of tubes  $104 \times 104$  Working pressure by Rules  $13.5 \text{ kg/cm}^2$  Manhole compensation: Size of opening in shell plate  $425/525$  Section of compensating ring  $230 \times 29$  No. of rivets and diameter of rivet holes  $40$  rivets of  $32$   
 Outer row rivet pitch at ends  $190$  Depth of flange if manhole flanged  $100$  Steam Dome: Material *no steam dome*  
 Tensile strength  $\checkmark$  Thickness of shell  $\checkmark$  Description of longitudinal joint  $\checkmark$   
 Diameter of rivet holes  $\checkmark$  Pitch of rivets  $\checkmark$  Percentage of strength of joint  $\left\{ \begin{array}{l} \text{Plate} \\ \text{Rivets} \end{array} \right. \checkmark$   
 Internal diameter  $\checkmark$  Working pressure by Rules  $\checkmark$  Thickness of crown  $\checkmark$  No. and diameter of stays  $\checkmark$   
 Inner radius of crown  $\checkmark$  Working pressure by Rules  $\checkmark$   
 How connected to shell  $\checkmark$  Size of doubling plate under dome  $\checkmark$  Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell  $\checkmark$

Type of Superheater *no superheater* Manufacturers of  $\left\{ \begin{array}{l} \text{Tubes} \\ \text{Steel forgings} \\ \text{Steel castings} \end{array} \right. \checkmark$   
 Number of elements  $\checkmark$  Material of tubes  $\checkmark$  Internal diameter and thickness of tubes  $\checkmark$   
 Material of headers  $\checkmark$  Tensile strength  $\checkmark$  Thickness  $\checkmark$  Can the superheater be shut off and the boiler be worked separately  $\checkmark$  Is a safety valve fitted to every part of the superheater which can be shut off from the boiler  $\checkmark$   
 Area of each safety valve  $\checkmark$  Are the safety valves fitted with easing gear  $\checkmark$  Working pressure as per Rules  $\checkmark$  Pressure to which the safety valves are adjusted  $\checkmark$  Hydraulic test pressure tubes  $\checkmark$  forgings and castings  $\checkmark$  and after assembly in place  $\checkmark$  Are drain cocks of valves fitted to free the superheater from water where necessary  $\checkmark$

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with *yes*.

The foregoing is a correct description,  
**Bremer Vulkan**

Schiffbau und Maschinenfabrik Manufacturer

Dates of Survey  $\left\{ \begin{array}{l} \text{During progress of work in shops} \\ \text{while building} \end{array} \right. \left\{ \begin{array}{l} \text{Apr. 4, 16, 27, 1936} \\ \text{May 11, 18, June 25, July 2, 8, 13} \\ \text{July 23, 28, Aug 29, Sept. 3} \end{array} \right.$  Are the approved plans of boiler and superheater forwarded herewith  $19.6.35$  (If not state date of approval.)  
 Total No. of visits  $13$

Is this Boiler a duplicate of a previous case *yes* If so, state Vessel's name and Report No. *ALEXIA, GENOVA, CADILFA, TARDON*

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.) *This boiler has been built under special survey in accordance with the approved plan, the Secretarij letter and in conformity with the requirements of the Rules. The materials used in the construction are made at works recognized by the Committee and tested by the Sr. Surveyors. Materials and workmanship are of good quality. This boiler is eligible in my opinion to be recorded in the Sr. Reg. Book with D.B. pressure 180 lbs.*

Marks on boiler:  
 No 179  
 LLOYD'S TEST  
 320 lbs  
 WP 180 lbs  
 A.C. 13.7.36

Thickness of adjusting washers  
 Per 20.7  
 Hart. 29.7

Survey Fee  $\dots \dots \dots$  £  $\dots$  : : } When applied for,  $\dots$  10  
 Travelling Expenses (if any) £  $\dots$  : : } When received,  $\dots$  10

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

Committee's Minute **FRI. 2 OCT 1936**  
 Assigned *see J.B. Machy Report*

