

Rpt. 5a.

## REPORT ON BOILERS.

No. 1824.

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

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 Rohrenwerke G. G. Werk Michelshausen Ruten (Letter for Record 5 ✓)

Total Heating Surface of Boilers 233 m<sup>2</sup> ✓ Is forced draught fitted yes ✓ Oil fired & exhaust gas ✓No. and Description of Boilers One Multitubular Donkey Boiler ✓ Working Pressure 180 lb (12.65 kg/cm<sup>2</sup>) ✓

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

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

Area of each set of valves per boiler { per Rule 14572 mm<sup>2</sup> as fitted 15708 " Pressure to which they are adjusted 180 lb 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 " Length 3505 " Shell plates: Material P. M. Steel ✓ Tensile strength 47-53 kg/cm<sup>2</sup> ✓

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

long. seams donkey butt straps Diameter of rivet holes in { circ. seams 32 " long. seams 32 " ✓ Pitch of rivets { 100 " 215 " ✓

Percentage of strength of circ. end seams { plate 68 % rivets 54 % Percentage of strength of circ. intermediate seam { plate 85 % rivets 93 % ✓

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 " inner 29 " ✓ 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 " ✓

Length of plain part { top 120 " bottom 120 " Thickness of plates { crown 15 " bottom 15 " ✓ 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 " ✓ Pitch of stays 420 x 390 " ✓How are stays secured nuts & 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 " 26 " ✓Mean pitch of stay tubes in nests 208 x 208 " Pitch across wide water spaces 360 " ✓ 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 " ✓ Length as per Rule 770 " ✓ Distance apart 175 &amp; 180 " No. and pitch of stays

in each 2 - 210 " ✓ 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 " Back 20 " Top 19 " Bottom 25 " ✓

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

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

Pitch of stays at wide water space 360 " ✓ Are stays fitted with nuts or riveted over stays 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 " or 84 " No. of threads per inch 8 Area supported by each stay 420 x 390 " ✓

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 " or 39 " No. of threads per inch 9 Area supported by each stay 200 x 200 " ✓



Working pressure by Rules  $15 \frac{1}{2} \text{ kg/cm}^2$  Are the stays drilled at the outer ends *yes* Margin stays: Diameter { At turned off part, or Over threads  $40, 51, 54, 72$   
No. of threads per inch  $9$  Area supported by each stay  $200 \times 360$  Working pressure by Rules  $13 \frac{1}{2} \text{ kg/cm}^2$   
Tubes: Material *P. M. Steel* External diameter { Plain  $76$  Stay  $76$  Thickness {  $3.75$   $10.1$  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 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 *no superheater* Manufacturers of { Tubes Steel forgings 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 forgings and 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,

**Bremer Vulkan**

Schiffbau und Maschinenfabrik

Manufacturers

Dates of Survey { During progress of work in shops - - - *Apr. 4, 16, 17, May 11, 18, June 25, July 2, 8, 13* Are the approved plans of boiler and superheater forwarded herewith *19.6.35*  
while building { During erection on board vessel - - - *July 13, 28 Aug. 18, Sept. 3* (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, CADILA, 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 Secretariat's 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 Port Surveyors. Materials and workmanship are of good quality. This boiler is eligible in my opinion to be recorded in the Port 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

*Perf. 20.7 2*

*Harb. 29.7 2*

Survey Fee ... £ : : *please see Rpt 46.*

Travelling Expenses (if any) £ : :

When applied for, 19

When received, 19

*A. Carstensen*

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 2 OCT 1936

Assigned

*see J.B. Machy Report*



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Foundation