

# REPORT ON BOILERS.

No. 22630

Received at London Office 24 JAN 1938

Date of writing Report 12<sup>th</sup> Jan. 1938. When handed in at Local Office 19

Port of Hamburg

No. in Survey held at Hamburg

Date, First Survey 25<sup>th</sup> March 1937 Last Survey 4<sup>th</sup> Jan. 1938.

on the Steel Single Reverser "NORVIK"

(Number of Visits 16) Gross 9355 Tons Net 5987

Master Built at Hamburg By whom built Deutsche Werft A.G. Yard No. 194 When built 1938

Engines made at Augsburg By whom made Maschinenfabrik Augsburg-Kürnberg Engine No. 691210 When made 1937

Boilers made at Hamburg By whom made Deutsche Werft A.G. Boiler No. 611-612 When made 1937

Nominal Horse Power 1167 Owners Panker Corporation (Johan Rasmussen + Co) Port belonging to Panama R.P.

## MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Stay tubes: Hamburger Eisenwerk A.G. Hamburg (Saar).

Manufacturers of Steel Messrs. Gutehoffnungshütte Abt. Walzwerk Oberhausen (Letter for Record S.)

Total Heating Surface of Boilers each 145 sq. m. Is forced draught fitted yes Coal or Oil fired oil fired

No. and Description of Boilers two single ended multitubular donkey boilers Working Pressure 12 kg/cm<sup>2</sup>

Tested by hydraulic pressure to 21.5 kg/cm<sup>2</sup> Date of test 21.7.37 No. of Certificate 668+669 Can each boiler be worked separately yes

Area of Firegrate in each Boiler No. and Description of safety valves to each boiler each 2 two-spring loaded safety valves

Area of each set of valves per boiler per Rule 6767 mm<sup>2</sup> as fitted 3697 Pressure to which they are adjusted 12 kg/cm<sup>2</sup> Are they fitted with easing gear yes

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

Smallest distance between boilers or uptakes and bunkers on ~~woodwork~~ 750 mm Is oil fuel carried in the double bottom under boilers no boilers fitted in ~~traverse deck~~

Smallest distance between shell of boiler and ~~tank top~~ plating 450 mm Is the bottom of the boiler insulated yes, by span glass mats

Largest internal dia. of boilers 3400 mm Length 3294 mm Shell plates: Material S-M-Steel Tensile strength 47-53 kg/mm<sup>2</sup>

Thickness 22 mm Are the shell plates welded or flanged flanged (double butt trapped) Description of riveting: circ. seams end double row - laps.

long. seams treble row (double butt trapped) Diameter of rivet holes in circ. seams 29 mm Pitch of rivets 96 mm

Percentage of strength of circ. end seams plate 69.8% rivets 47.9% Percentage of strength of circ. intermediate seam plate - rivets -

Percentage of strength of longitudinal joint plate 84.8% rivets 101.3% combined 89.8 Working pressure of shell by Rules 12.4 kg/cm<sup>2</sup>

Thickness of butt straps outer 22 mm inner 22 mm No. and Description of Furnaces in each Boiler two corrugated furnaces (Morison type)

Material S-M-Steel Tensile strength 41-47 kg/mm<sup>2</sup> Smallest outside diameter 974 mm

Length of plain part top 316 mm Thickness of plates crown 12 mm Description of longitudinal joint watergas lapwelded

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 12.42 kg/cm<sup>2</sup>

End plates in steam space: Material S-M-Steel Tensile strength 41-47 kg/mm<sup>2</sup> Thickness 22 mm Pitch of stays 390x380 mm

How are stays secured washers and strips riveted to shell, nuts in- and outside Working pressure by Rules 14.4 kg/cm<sup>2</sup>

Tube plates: Material front S-M-Steel back S-M-Steel Tensile strength 41-47 kg/mm<sup>2</sup> Thickness 22 mm

Mean pitch of stay tubes in nests 208 x 312 mm Pitch across wide water spaces 360 mm Working pressure front 14.4 kg/cm<sup>2</sup> back 18.2 kg/cm<sup>2</sup>

Girders to combustion chamber tops: Material S-M-Steel Tensile strength 47-53 kg/mm<sup>2</sup> Depth and thickness of girder

at centre 180 - 2x14 Length as per Rule 609 mm Distance apart 220 mm No. and pitch of stays

in each 2 - 180 mm Working pressure by Rules 14 kg/cm<sup>2</sup> Combustion chamber plates: Material S-M-Steel

Tensile strength 41-47 kg/mm<sup>2</sup> Thickness: Sides 16 mm Back 19 mm Top 16 mm Bottom 22 mm

Pitch of stays to ditto: Sides 190 x 300 mm Back 190 x 210 mm Top 220 x 180 mm Are stays fitted with nuts or riveted over margin stays with nuts

Working pressure by Rules 16.4-14.8-15.4 kg/cm<sup>2</sup> Front plate at bottom: Material S-M-Steel Tensile strength 41-47 kg/mm<sup>2</sup>

Thickness 22 mm Lower back plate: Material S-M-Steel Tensile strength 41-47 kg/mm<sup>2</sup> Thickness 22 mm

Pitch of stays at wide water space diameter 500 mm Are stays fitted with nuts or riveted over margin stays with nuts

Working Pressure 12.5 kg/cm<sup>2</sup> Main stays: Material S-M-Steel Tensile strength 41-47 kg/cm<sup>2</sup>

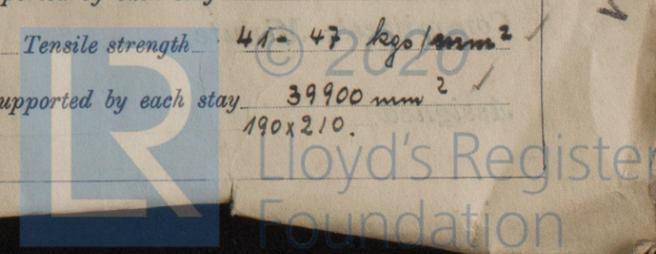
Diameter At body of stay, 62.6 mm or Over threads, 68 mm No. of threads per inch 6 Area supported by each stay 390 x 380 = 148200 mm<sup>2</sup>

Working pressure by Rules 14.5 kg/cm<sup>2</sup> Screw stays: Material S-M-Steel Tensile strength 41-47 kg/cm<sup>2</sup>

Diameter At turned off part, 35.4 - 41.4 - 47.4 or Over threads, 39 - 45 - 51 No. of threads per inch 9 Area supported by each stay 39900 mm<sup>2</sup>

190 x 210.

all 25/1/38



Working pressure by Rules  $15 \text{ kg/cm}^2$  Are the stays drilled at the outer ends  Margin stays: Diameter { At turned off part, 41.4 - 47.4 mm or Over threads 45 - 51.0 mm

No. of threads per inch 9 Area supported by each stay  $57750 \text{ mm}^2$  Working pressure by Rules  $14.6 \text{ kg/cm}^2$

Tubes: Material S-TC-Steel External diameter { Plain 76 mm Stay 76 mm Thickness { 3.75 mm 8.0 mm No. of threads per inch 9

Pitch of tubes  $104 \times 104 \text{ mm}$  Working pressure by Rules  $14.6 \text{ kg/cm}^2$  Manhole compensation: Size of opening in shell plate  $300 \times 400 \text{ mm}$  Section of compensating ring  $2 \times (25 \times 225)$  No. of rivets and diameter of rivet holes 32 of 29 mm  $\phi$

Outer row rivet pitch at ends 125 mm Depth of flange if manhole flanged - Steam Dome: Material S-TC-Steel

Tensile strength  $41-47 \text{ kg/mm}^2$  Thickness of shell 14 mm Description of longitudinal joint oxy-acetylene welded and secured by Plate 69% Rivets 35% welding 60%

Diameter of rivet holes 23 mm Pitch of rivets 74 mm Percentage of strength of joint {

Internal diameter 800 mm Working pressure by Rules  $16.4 \text{ kg/cm}^2$  Thickness of crown 17 mm No. and diameter of stays - Inner radius of crown 800 mm Working pressure by Rules  $14.4 \text{ kg/cm}^2$

How connected to shell pressed flange and riveted Size of doubling plate under dome - Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell 29 mm - 199 mm

Type of 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 \_\_\_\_\_

The foregoing is a correct description,  
**DEUTSCHE WERFT**  
 AKTIENGESELLSCHAFT  
 Manufacturers

Dates of Survey { During progress of work in shops - - 1937 Mar. 25 Apr. 6, 17, 22, May 3, June 3, 5, 15, 21, July 15, 21, Are the approved plans of boiler and superheater forwarded herewith 13. 11. 35 (If not state date of approval.)

while building { During erection on board vessel - - - 1937 Nov. 27 Dec. 20, 29, 1938 Jan. 4 Total No. of visits 16

Is this Boiler a duplicate of a previous case  If so, state Vessel's name and Report No. 

HERINA	REPORT No. 21708
THORNEIMER	" 21233
MORLYS	" 22061
REGULUS	" 22091

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.) Material and workmanship of these donkey boilers are of good quality. The materials used in the constructions are made at works recognized by the Committee and tested by the Society's Surveyors in accordance with the requirements of the Rules.

These donkey boilers having been made under Special Survey in conformity with the approved plan, the Secretary's Letter and otherwise in compliance with the requirements of the Rules, is eligible in my opinion to be classed in the Society's Register Book = Donkey boiler pressure 170 lbs/sq. inch.

Thickness of adjusting washers: Port donkey boiler: Port 19.2 mm Itb 18.5 mm  
 Itb donkey boiler: Port 19.6 mm Itb 19.8 mm

Survey Fee ... x RJC: 4/6 - } When applied for, 17. 7. 1938  
 Travelling Expenses (if any) £ : : } When received, 4/12 1938

*Friedrich Hill*  
 H. Rohrs  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 1 FEB. 1938 - 35-2

Assigned See other F.E. report

