

Rpt. 5a.

## REPORT ON BOILERS.

No.

19852

Received at London Office 24 APR 1931

Date of writing Report 12/4/31

When handed in at Local Office

Port of HAMBURG

No. in Survey held at Hamburg

Date, First Survey 7-11-30

Last Survey 26-3-31 1931

on the Steel Se. NORDEN (Oil Eng.)

(Number of Visits 12)

Gross 8440  
Tons Net 6286.59

Master

Built at Hamburg

By whom built Deutsche Werft A.G.

Yard No. 144

When built 1931

Engines made at Augsburg

By whom made Maschfab. Augsburg - Nürnberg A.G.

Engine No. 330440 When made 1931

Boilers made at Hamburg

By whom made Deutsche Werft A.G.

Boiler No. 429/30 When made 1931

Nominal Horse Power 1175

Owners Skibs A/S Norden, H. Kuhnle

Port belonging to Bergen.

## MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Gutehoffnungshütte, Oberhausen.

(Letter for Record 8)

Total Heating Surface of Boilers 240 m<sup>2</sup>

Is forced draught fitted yes

Coal or Oil fired oil

No. and Description of Boilers 2 multitubular Donkey Boilers.

Working Pressure 170 lb.

Tested by hydraulic pressure to 305 lb

Date of test 28-1-31

No. of Certificate 533/34

Can each boiler be worked separately yes

Area of Firegrate in each Boiler

No. and Description of safety valves to each boiler 1, 2 springs loaded

Area of each set of valves per boiler

per Rule 6800 mm<sup>2</sup>as fitted 2698 mm<sup>2</sup>

Pressure to which they are adjusted 170 lb

Are they fitted with easing gear yes

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

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 ~~bulkhead~~ <sup>bulkhead</sup> plating

400 mm

Is the bottom of the boiler insulated

yes

Largest internal dia. of boilers 3300 mm

Length 3144 mm

Shell plates: Material O.H. Steel Tensile strength 47-53 kg/mm<sup>2</sup>

Thickness 21.5 mm

Are the shell plates welded or flanged flanged

Description of riveting: circ. seams <sup>end</sup> lap joint, double

Long. seams double butt straps

Diameter of rivet holes in

circ. seams 29 mm

Pitch of rivets 170 mm

Percentage of strength of circ. end seams

plate 70.1%

rivets 45.5%

Percentage of strength of circ. intermediate seam

Percentage of strength of longitudinal joint

plate 88%

rivets 121%

combined 90.2%

Working pressure of shell by Rules 12.3 kg/cm<sup>2</sup>

Thickness of butt straps

No. and Description of Furnaces in each Boiler 2 horizontal

Smallest outside diameter 923 mm

Material O.H. Steel

Tensile strength 41-47 kg/mm<sup>2</sup>

Length of plain part

Thickness of plates

crown 11.5 mm

Description of longitudinal joint welded

Dimensions of stiffening rings on furnace or c.c. bottom

Working pressure of furnace by Rules 12.5 kg/cm<sup>2</sup>

Stays and plates in steam space: Material O.H. Steel

Tensile strength 41-47 kg/mm<sup>2</sup>

Thickness 22 mm

Pitch of stays 380 x 365 mm

How are stays secured <sup>with outside, washers and nuts inside</sup>Working pressure by Rules 13.4 kg/cm<sup>2</sup>

Tube plates: Material

Tensile strength

Thickness

Lean pitch of stay tubes in nests 312 mm

Pitch across wide water spaces 360 mm

Working pressure

Rivets to combustion chamber tops

Material O.H. Steel

Tensile strength 47-53 kg/mm<sup>2</sup>

Depth and thickness of girder

centre 180, 14 mm

Length as per Rule 650 mm

Distance apart 200 mm

No. and pitch of stays

each 2 x 180 mm

Working pressure by Rules 12 kg/cm<sup>2</sup>

Combustion chamber plates: Material O.H. 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 200 mm

Back 185 x 200 mm

Top 180 mm

Are stays fitted with nuts or riveted over <sup>other</sup> with nutsWorking pressure by Rules 16.4, 15-, 17.2 kg/cm<sup>2</sup>

Front plate at bottom: Material O.H. Steel

Tensile strength 41-47 kg/mm<sup>2</sup>

Thickness 22 mm

Lower back plate: Material O.H. Steel

Tensile strength 41-47 kg/mm<sup>2</sup>

Thickness 22 mm

Pitch of stays at wide water space 360 x 200 mm

Are stays fitted with nuts or riveted over <sup>filled with nuts</sup>Working Pressure 17.5 kg/cm<sup>2</sup>

Main stays: Material O.H. Steel

Tensile strength 41-47 kg/mm<sup>2</sup>

At body of stay, 62.6

70.6 mm

No. of threads per inch 6

Area supported by each stay max. 174,600 mm<sup>2</sup>

Over threads 62.-

76.- mm

Working pressure by Rules 12.6 kg/cm<sup>2</sup>

Screw stays: Material O.H. Steel

Tensile strength 41-47 kg/mm<sup>2</sup>

At turned off part, 35.4

mm

No. of threads per inch 9

Area supported by each stay 37,000 mm<sup>2</sup>

Over threads 39.-

mm



Working pressure by Rules  $16 \frac{1}{2} \text{ lb./sq. in.}$  Are the stays drilled at the outer ends no Margin stays: Diameter { At turned off part,  $4\frac{1}{4}$  or  $4\frac{3}{8}$  Over threads  $4\frac{1}{2}$  -  $5\frac{1}{2}$  -  
No. of threads per inch 9 Area supported by each stay  $54,600$   $75,000$  Working pressure by Rules  $15.4$   $15.2 \text{ lb./sq. in.}$   
Tubes: Material Seamless drawn External diameter { Plain  $76 \text{ mm}$  Thickness {  $3.75 \text{ mm}$  No. of threads per inch 9  
O.H. Steel { Stay  $76 \text{ mm}$   $8 \text{ mm}$   
Pitch of tubes  $104 \text{ mm}$  Working pressure by Rules  $13.5 \text{ lb./sq. in.}$  Manhole compensation: Size of opening  
shell plate  $300 \times 400 \text{ mm}$  Section of compensating ring  $225 \times 21.5 \text{ mm}$  No. of rivets and diameter of rivet holes  $32, 29 \text{ mm } \phi$   
Outer row rivet pitch at ends  $125 \text{ mm}$  Depth of flange if manhole flanged  $74 \text{ mm}$  Steam Dome: Material O.H. Steel  
Tensile strength  $41 - 47 \text{ lb./sq. in.}$  Thickness of shell  $14 \text{ mm}$  Description of longitudinal joint welded and butt straps  
Diameter of rivet holes  $24 \text{ mm}$  Pitch of rivets  $74 \text{ mm}$  Percentage of strength of joint { Plate  $67.5\%$   
Rivets  $75\%$   
Internal diameter  $800 \text{ mm}$  Working pressure by Rules " Thickness of crown  $17 \text{ mm}$  No. and diameter  
stays none Inner radius of crown  $800 \text{ mm}$  Working pressure by Rules  $14.5 \text{ lb./sq. in.}$   
How connected to shell riveted Size of doubling plate under dome none Diameter of rivet holes and pitch  
of rivets in outer row in dome connection to shell  $29 \text{ mm } \phi, 199 \text{ mm}$

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  
Rules Pressure to which the safety valves are adjusted Hydraulic test pressure and description  
tubes, castings and after assembly in place Are drain cocks or valves fitted by hydraulic test  
to free the superheater from water where necessary

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

DEUTSCHE WERFT  
AKTIENGESELLSCHAFT

The foregoing is a correct description,

Manufactured

Dates of Survey { During progress of work in shops - - - 1930. Nov. 2, 28, Dec. 23 / March 5, 14, 1931  
while building { During erection on board vessel - - - 1931. Jan. 19, 28, 30, Feb. 6, 23  
Total No. of visits 12

#### GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

These Donkey Boilers have been constructed under special survey in accordance with the Society's Rules, the approved plans and instructions thereto. The materials used in the construction and the workmanship are of good quality. The Boilers have been tested under hydraulic pressure of 305 lbs. with satisfactory result. Under steam they were found tight and the safety valves have been adjusted to 170 lbs pressure.

Distance of washers of safety valves:-

	port	star
Port Boiler	$29 \text{ mm}$	$42 \text{ mm}$
Star. "	$36 \text{ mm}$	$36 \text{ mm}$

In my opinion these Donkey Boilers are eligible to be classed in the Society's Reg. Bk. of support with notation of "170 lb"

Note! The approved plan has been retained and will be transmitted after completion of the Yard's No 143. Three plans showing the position of the Donkey Boilers relative to each other is attached hereto.

Survey Fee ... £ 14 4 0

When applied for, 20.4.1931

Travelling Expenses (if any) £ :

When received, 21.5.1931

Committee's Minute FRI. 1 MAY 1931

Assigned

Sec. F. E. Rpl.



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Foundation