

## REPORT ON BOILERS.

No. 10407.

Received at London Office

DEC 11 1937

Date of writing Report

November 1937

When handed in at Local Office

1937

Port of

Copenhagen

To, in  
Book.

Survey held at

Nalborg and Copenhagen

Date, First Survey

7<sup>th</sup> April

Last Survey

November 1937

No. 140 on the

Steel Turbine Screw Motor Tanker ARGUS

(Number of Visits 16)

Gross 9512

Tons Net 5874

Boiler

Built at

Copenhagen

By whom built

A/S Burmeister & Wain's  
Mastin - og Skibbyggeri

Yard No. 628

When built 1937

Engines made at

Copenhagen

By whom made

A/S Burmeister & Wain's  
Mastin - og Skibbyggeri

Engine No.

When made 1937

Boilers made at

Nalborg

By whom made

Nalborg Værft A/S

Boiler No.

285

When made 1937

Nominal Horse Power for Sea

188.7

Owners

The Neptune Shipping Co. Ltd.

Port belonging to

Panama City

Duplicate of 1/2 Report of Christiansand, B.W. 625  
and of 1/2 Report of Panama City, B.W. 627  
(Please see Copenhagen Reports no 10271 and 10240)

## MULTITUBULAR BOILERS - MAIN, AUXILIARY, OR DONKEY.

FRONT &amp; BACK ENDS: Colvilles Limited, Glasgow - REMAINING PLATES: Appleby - Frodingham

Manufacturers of Steel

Steel Co. Ltd. Scunthorpe, FURNACES: The Broomfield Works Co. Ltd. - RIVETS: (Letter for Record)

Total Heating Surface of Boilers

2x1415 sq ft = 2830 sq ft, 2x13175 sq ft = 2635 sq ft, forced draught fitted yes Coal or Oil fired oil fired

No. and Description of Boilers

Two off single ended return multitubular Working Pressure 180 lb per sq in

Tested by hydraulic pressure to

320 lb per sq in Date of test 20.8.1937 No. of Certificate 611 Can each boiler be worked separately yes

Area of Firegrate in each Boiler

No. and Description of safety valves to each boiler 2 off directly spring loaded

Area of each set of valves per boiler

per Rule 9.60 sq ft Pressure to which they are adjusted 180 lb per sq in 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 boiler fitted

Smallest distance between boilers or uptakes and bunkers or woodwork

No bunkers or woodwork oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating

The boiler are placed in main deck Is the bottom of the boiler insulated yes

Largest internal dia. of boilers

11'5" = 3480 mm Length 3165 mm Shell plates: Material Siemens M. Steel Tensile strength 29.5-30.0 tons per sq in

Thickness

24 mm Are the shell plates welded or flanged No Description of riveting: circ. seams lap joint

Long. seams

double butt strap hick riveting Diameter of rivet holes in circ. seams 27 mm Pitch of rivets 85.5 mm

Percentage of strength of circ. end seams

plate 68.4 % rivets 45.6 % Percentage of strength of circ. intermediate seam plate 85.5 % rivets 91.0 %

Percentage of strength of longitudinal joint

combined 89.1 % Working pressure of shell by Rules 13.11 kg/cm<sup>2</sup> = 186.4 lb per sq in

Thickness of butt straps

outer 24 mm inner 24 mm No. and Description of Furnaces in each Boiler Two off corrugated, Monitors type

Material

Siemens Martin Steel Tensile strength 28.4-29.6 tons per sq in Smallest outside diameter 997 mm

Length of plain part

top 24 mm bottom 24 mm Thickness of plates crown 13.5 mm Description of longitudinal joint

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

Working pressure of furnace by Rules 13.7 kg/cm<sup>2</sup>

End plates in steam space

Material Siemens M. Steel Tensile strength 27.5-30.0 tons per sq in Thickness 25 mm Pitch of stays 432 mm x 355 mm

How are stays secured

Screwed in both plates, nuts in + outside Working pressure by Rules 12.9 kg/cm<sup>2</sup>

Tube plates

Material Siemens Martin Steel Tensile strength 28.7-30.0 tons per sq in Thickness 25 mm

Mean pitch of stay tubes in nests

90.2 mm Pitch across wide water spaces 355 mm Working pressure front 16.4 kg/cm<sup>2</sup> back 19.86 kg/cm<sup>2</sup>

Girders to combustion chamber tops

Material Siemens M. Steel Tensile strength 28.5 tons per sq in Depth and thickness of girder

at centre

215 mm x 2 x 19 mm = 38 mm Length as per Rule 744 mm Distance apart 216 mm No. and pitch of stays

in each

3 off 1 1/2" - 180 mm Working pressure by Rules 16.1 kg/cm<sup>2</sup> Combustion chamber plates: Material Siemens Martin Steel

Tensile strength

27.7-28.6 tons per sq in Thickness: Sides 16 mm Back 16 mm Top 16 mm Bottom 20 mm

Pitch of stays to ditto

Sides 180 mm x 216 mm Back 196 mm x 205 mm Top 180 mm x 216 mm Are stays fitted with nuts or riveted over in - and outside

Working pressure by Rules

BACK: 15.5 kg/cm<sup>2</sup> Front plate at bottom: Material Siemens M. Steel Tensile strength 28.7-30.0 tons per sq in

Thickness

25 mm Lower back plate: Material Siemens M. Steel Tensile strength 27.5-28.9 tons per sq in Thickness 25 mm

Pitch of stays at wide water space

a = 444 mm Are stays fitted with nuts or riveted over nuts in - and outside

Working Pressure

22.4 kg/cm<sup>2</sup> Main stays: Material Siemens M. Steel Tensile strength 29.17 tons per sq in

Diameter

At body of stay, 2 3/4" No. of threads per inch 11 Area supported by each stay 153360 mm<sup>2</sup>

Over threads

3" - 2 3/4" 3" - 2 3/4" 1 1/4" - 27 tons per sq in

Working pressure by Rules

16.4 kg/cm<sup>2</sup> Screw stays: Material Siemens M. Steel Tensile strength 1 3/4" - 27.9 tons per sq in

Diameter

At turned off part, 1 1/2" No. of threads per inch 11 Area supported by each stay 40180 mm<sup>2</sup>

Over threads

1 1/2" 1 1/2"

Working pressure by Rules  $14.1 \text{ kg/cm}^2$  Are the stays drilled at the outer ends *No* Margin stays: Diameter { At turned off part, or Over threads  $1\frac{1}{4}"$  ✓  
No. of threads per inch  $11$  ✓ Area supported by each stay  $56580 \frac{1}{4} \text{ cm}^2$  Working pressure by Rules  $14.6 \text{ kg/cm}^2$  ✓  
Tubes: Material *S. M. S.* External diameter { Plain  $2\frac{1}{2}"$  ✓ Stay  $2\frac{1}{2}"$  ✓ Thickness {  $\frac{3}{8}"$  ✓ No. of threads per inch  $11$  ✓  
Pitch of tubes  $89\frac{1}{4} \times 91\frac{1}{4}$  ✓ Working pressure by Rules  $230 \text{ lb. per sq. in.}$  ✓ Manhole compensation: Size of opening  $14\frac{1}{4}"$  ✓  
shell plate  $305\frac{1}{4} \times 405\frac{1}{4}$  ✓ Section of compensating ring *flat* ✓ No. of rivets and diameter of rivet holes  $48 \times 26\frac{1}{4}$  ✓  
Outer row rivet pitch at ends  $179\frac{1}{4}$  ✓ Depth of flange if manhole flanged  $90\frac{1}{4}$  ✓ 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 rivets ✓  
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 from the boiler ✓  
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 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 23 inclusive for boilers been complied with *yes* ✓

The foregoing is a correct description,  
AKTIESELSKABET  
BURMEISTER & WAIN'S MASKIN- OG SKIBSBYGGERI

Dates of Survey { During progress of work in shops - - - 1937:  $7\frac{1}{4}$  -  $2\frac{1}{4}$  -  $7\frac{1}{5}$  -  $2\frac{1}{5}$  -  $8\frac{1}{6}$  -  $10\frac{1}{6}$  -  $11\frac{1}{6}$  ✓  
while building { During erection on board vessel - - - 1937:  $14\frac{1}{10}$  -  $22\frac{1}{10}$  -  $30\frac{1}{10}$  -  $5\frac{1}{11}$  -  $17\frac{1}{11}$  -  $19\frac{1}{11}$  ✓  
Are the approved plans of boiler and superheater forwarded herewith *yes* ✓  
(If not state date of approval.)  
Total No. of visits  $16$

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These boilers have been built under Special Survey by Messrs. Halsborg Væft & and installed on board the vessel by Messrs. Burmeister & Wain's Maskin- og Skibsbysggeri, Copenhagen, in accordance with the requirements of the Rules, the approved plan and the Secretary's letter E dated 8<sup>th</sup> June 1936. The material has been tested as required by the Rules as per certificates produced and the workmanship is good.

Survey Fee ...  $422.69$  ✓ When applied for,  $9.12.1937$  ✓  
Travelling Expenses (if any)  $75.00$  ✓ When received,  $8/2.1938$  ✓

*P. Laugesen*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **FRI. 17 DEC 1937**  
Assigned *See Gen. Reg. 10407*