

# REPORT ON BOILERS.

Received at London Office 14 DEC 1936

Date of writing Report 9<sup>th</sup> Oct. 1936 When handed in at Local Office 10 Port of BREMEN

No. in Reg. Book. 68579 Survey held at WESERMÜNDE Date, First Survey 31<sup>st</sup> July 1936 Last Survey 23<sup>rd</sup> Nov. 1936

on the STEEL Sg. TRAWLER NORTHERN DUKE (Number of Visits 10) Tons { Gross 655 Net 243

Master \_\_\_\_\_ Built at WESERMÜNDE By whom built DESCHIMAG, WERK: SEEBECK Yard No. 559 When built 1936

Engines made at WESERMÜNDE By whom made DESCHIMAG, WERK: SEEBECK Engine No. 1436 When made 1936

Boiler made at WESERMÜNDE By whom made DESCHIMAG, WERK: SEEBECK Boiler No. 760 When made 1936

Nominal Horse Power 167 Owners MAC LINE LTD. Port belonging to LONDON

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

Manufacturers of Steel Mann. Mannesmannröhren-Werke, A.G. Heinrich-Rivierendamm (Letter for Record 5 ✓)

Total Heating Surface of Boilers 250 m<sup>2</sup> 2691 Is forced draught fitted no Coal or Oil fired coal fired ✓

No. and Description of Boilers One Multitubular Main Boiler Working Pressure 228 lbs (16 kg/cm<sup>2</sup>) ✓

Tested by hydraulic pressure to 392 lbs Date of test 31.8.36 No. of Certificate 183 Can each boiler be worked separately ✓

Area of Firegrate in each Boiler 6,85 m<sup>2</sup> No. and Description of safety valves to each boiler 2 spring loaded Safety Valves ✓

Area of each set of valves per boiler { per Rule 8930 m<sup>2</sup> as fitted 2 x 5026 m<sup>2</sup> Pressure to which they are adjusted 228 lbs 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 or woodwork 200 Z ✓ Is oil fuel carried in the double bottom under boilers no

Smallest distance between shell of boiler and tank top plating no tank under boiler Is the bottom of the boiler insulated yes ✓

Largest internal dia. of boilers 4650 Z Length 9375 Z Shell plates: Material F. M. Steel Tensile strength 47-54 kg/cm<sup>2</sup>

Thickness 38 Z ✓ Are the shell plates welded or flanged flanged ✓ Description of riveting: circ. seams { end by double inter. -

long. seams double butt strap Diameter of rivet holes in { circ. seams 38 Z ✓ long. seams 41 Z ✓ Pitch of rivets { 109 Z ✓ 260 Z ✓

Percentage of strength of circ. end seams { plate 60 % rivets 42 % ✓ Percentage of strength of circ. intermediate seam { plate 84 % rivets 96 % ✓

Percentage of strength of longitudinal joint { plate 84 % rivets 96 % ✓ combined 87 % ✓ Working pressure of shell by Rules 16.2 kg/cm<sup>2</sup> ✓

Thickness of butt straps { outer 29.5 Z inner 32.5 Z ✓ No. and Description of Furnaces in each Boiler 3 Morrison furnaces ✓

Material F. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup> Smallest outside diameter 1187 Z

Length of plain part { top ✓ bottom ✓ Thickness of plates { crown 18.5 Z ✓ bottom 18.5 Z ✓ Description of longitudinal joint welded ✓

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules 16.2 kg/cm<sup>2</sup> ✓

End plates in steam space: Material F. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup> Thickness 27 Z ✓ Pitch of stays 455 x 380 Z

How are stays secured with inside nuts & washers outside Working pressure by Rules 16.3 kg/cm<sup>2</sup>

Tube plates: Material { front F. M. Steel ✓ back F. M. Steel ✓ Tensile strength { 41-47 kg/cm<sup>2</sup> ✓ Thickness { 29 Z ✓ 23 Z ✓

Mean pitch of stay tubes in nests 330 x 220 Z Pitch across wide water spaces 270 Z ✓ Working pressure { front 16 kg/cm<sup>2</sup> ✓ back 17.8 - - ✓

Girders to combustion chamber tops: Material F. M. Steel Tensile strength 47-54 kg/cm<sup>2</sup> Depth and thickness of girder at centre 235. 2 x 17 Z Length as per Rule 800 Z Distance apart 190 Z ✓ No. and pitch of stays in each 3. 180 Z ✓ Working pressure by Rules 17.8 kg/cm<sup>2</sup> Combustion chamber plates: Material F. M. Steel ✓

Tensile strength 41-47 kg/cm<sup>2</sup> Thickness: Sides 16 Z Back 16 Z Top 16 Z Bottom 25 Z ✓

Pitch of stays to ditto: Sides 180 x 190 Z ✓ Back 180 x 200 Z Top 180 x 190 Z Are stays fitted with nuts or riveted over fitted with nuts

Working pressure by Rules 17.2 kg/cm<sup>2</sup> ✓ Front plate at bottom: Material F. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup>

Thickness 29 Z ✓ Lower back plate: Material F. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup> Thickness 26 Z ✓

Pitch of stays at wide water space 360 x 180 Z ✓ Are stays fitted with nuts or riveted over fitted with nuts

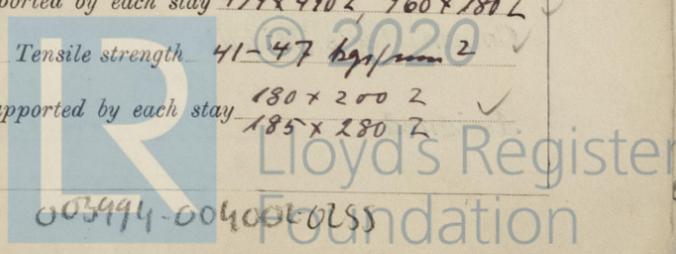
Working Pressure 24 kg/cm<sup>2</sup> ✓ Main stays: Material F. M. Steel Tensile strength 44-50 kg/cm<sup>2</sup>

Diameter { At body of stay, 72 Z ✓ 56 Z ✓ No. of threads per inch 6 ✓ Area supported by each stay 457 x 470 Z 760 x 180 Z ✓

Over threads 80 Z ✓ 64 Z ✓

Working pressure by Rules 16.2 kg/cm<sup>2</sup> ✓ Screw stays: Material F. M. Steel Tensile strength 41-47 kg/cm<sup>2</sup> ✓

Diameter { At turned off part, 39 Z ✓ 45 Z ✓ No. of threads per inch 9 ✓ Area supported by each stay 180 x 200 Z ✓ 185 x 280 Z ✓



Working pressure by Rules  $16.6; 16.7 \text{ kg/cm}^2$  Are the stays drilled at the outer ends *no* Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{array} \right. 48 \text{ Z } 54 \text{ Z}$   
 No. of threads per inch 9 Area supported by each stay  $180 \times 200, 180 \times 280 \text{ Z}$  Working pressure by Rules  $17.5 \text{ kg/cm}^2, 16.5 \text{ kg/cm}^2$   
 Tubes: Material *P. M. Steel* External diameter  $\left\{ \begin{array}{l} \text{Plain } 83 \text{ Z} \\ \text{Stay } 83 \text{ Z} \end{array} \right.$  Thickness  $\left\{ \begin{array}{l} 4 \text{ Z} \\ 8 \text{ Z} \end{array} \right.$  No. of threads per inch 9  
 Pitch of tubes  $110 \times 110 \text{ Z}$  Working pressure by Rules  $16 \text{ kg/cm}^2$  Manhole compensation: Size of opening in shell plate  $300 \times 400 \text{ Z}$  Section of compensating ring *full plate under dome* No. of rivets and diameter of rivet holes  $44, 38 \text{ Z}$   
 Outer row rivet pitch at ends  $170 \text{ Z}$  Depth of flange if manhole flanged *v* Steam Dome: Material *P. M. Steel*  
 Tensile strength  $41-47 \text{ kg/cm}^2$  Thickness of shell  $15 \text{ Z}$  Description of longitudinal joint *ly. double riveted*  
 Diameter of rivet holes  $23 \text{ Z}$  Pitch of rivets  $87 \text{ Z}$  Percentage of strength of joint  $\left\{ \begin{array}{l} \text{Plate } 74\% \\ \text{Rivets } 56\% \end{array} \right.$   
 Internal diameter  $800 \text{ Z}$  Working pressure by Rules  $18.6 \text{ kg/cm}^2$  Thickness of crown  $19 \text{ Z}$  No. and diameter of stays *none* Inner radius of crown  $800 \text{ Z}$  Working pressure by Rules  $16.7 \text{ kg/cm}^2$   
 How connected to shell *by flanged collar* Size of doubling plate under dome  $1450 \text{ Z f} \times 35 \text{ Z}$  Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell  $26 \text{ Z}; 90 \text{ Z}$

Type of Superheater *Smoke tube (Schmidt)* Manufacturers of  $\left\{ \begin{array}{l} \text{Tubes } \text{P. M. \& W.} \text{ works } 9.9. \text{ of } \text{Dindorf-Reinhold} \\ \text{Steel forgings} \\ \text{Steel castings } \text{Nordische} \text{ Metallwerke, } \text{Nürnberg} \end{array} \right.$   
 Number of elements  $68$  Material of tubes *P. M. Steel, standard* Internal diameter and thickness of tubes  $17 \text{ Z } 2.5 \text{ Z}$   
 Material of headers *cast steel* Tensile strength  $41-55 \text{ kg/cm}^2$  Thickness  $18 \text{ Z}$  Can the superheater be shut off and the boiler be worked separately *yes* Is a safety valve fitted to every part of the superheater which can be shut off from the boiler *yes*  
 Area of each safety valve  $804 \text{ Z}$  Are the safety valves fitted with easing gear *yes* Working pressure as per Rules  $16.5 \text{ kg/cm}^2$  Pressure to which the safety valves are adjusted  $228 \text{ lbs}$  Hydraulic test pressure: tubes  $100 \text{ kg/cm}^2$  forgings and castings  $50 \text{ kg/cm}^2$  and after assembly in place  $50 \text{ kg/cm}^2$  Are drain cocks or valves fitted to free the superheater from water where necessary *yes*

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

Deutsche Schiff- und Maschinenbau Aktiengesellschaft

The foregoing is a correct description,

*ppr. Kocks & Hoffmann*

Manufacturer.

Dates of Survey  $\left\{ \begin{array}{l} \text{During progress of work in shops - } 1936 \text{ July } 31, \text{ Aug. } 4, 7, 14, 28, 31 \\ \text{while building } \left\{ \begin{array}{l} \text{During erection on board vessel - } \text{Sept. } 29, \text{ Nov. } 6, 20, 23. \end{array} \right. \end{array} \right.$  Are the approved plans of boiler and superheater forwarded herewith  $8. 11. 35$ . (If not state date of approval.)  
 Total No. of visits  $10$

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

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) *This Boiler and Superheater have been built under Special Survey in accordance with the appr. plans, the Secretary's letters, 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 as per Rule. Materials and workmanship are of good quality, and the boiler is eligible in my opinion to be recorded in the Port Reg. Books with 228 lbs of pressure.*

Marks on Boiler:

No 183  
 LLOYD'S TEST  
 392 lbs  
 WP 228 "  
 A.C. 31.8.36.

Thickness of adjusting washers:

Gun valve  $35.9 \text{ Z}$   
 Pist. "  $31.4 \text{ Z}$   
 Superh. "  $15 \text{ Z}$

Survey Fee ...  $\text{£}$  : : } *incl. on Rpt. 4* When applied for, 19  
 Travelling Expenses (if any)  $\text{£}$  : : } When received, 19

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

Committee's Minute *FRI. 18 DEC 1936*

Assigned *See minute on F.E. 18*



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