

## REPORT ON BOILERS.

No. 357

Received at London Office

25 MAY 1925

Date of writing Report 19th May 1925 When handed in at Local Office 22nd May 1925 Port of Danzig

No. in Reg. Book. 88722 on the Steel S.S. ELISABETH MÆRSK Date, First Survey 6th Oct. 24 Last Survey 15th May 1925 (Number of Visits 8) Tons { Gross 1893 Net 1116

Master Built at Danzig By whom built F. Schichan Yard No. 7156 When built 1925 Engines made at Elbing By whom made F. Schichan Engine No. 3326 When made 1925 Boilers made at Elbing By whom made F. Schichan Boiler No. 3603/04 When made 1925 Nominal Horse Power 223 Owners A. P. Möller Port belonging to Odensee

## MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Krupp, Essen, Germany; The Leeds Forge Co. (Letter for Record S. )

Total Heating Surface of Boilers 280 sqm. 3014 ft. Is forced draught fitted yes Coal or Oil fired Coal

No. and Description of Boilers 2 multitubular single end Working Pressure 14 kg/cm. 200 lb.

Tested by hydraulic pressure to 24.5 kg/cm. Date of test 7/11/24 No. of Certificate 55456 Can each boiler be worked separately yes

Area of Firegrate in each Boiler 3.6 sqm. No. and Description of safety valves to each boiler 2 spring loaded

Area of each set of valves per boiler { per Rule 125 sqcm as fitted 132 } Pressure to which they are adjusted 200 lb. 14 kg/cm. 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 220 mm Is oil fuel carried in the double bottom under boilers no

Smallest distance between shell of boiler and tank top plating 1300 mm Is the bottom of the boiler insulated yes

Largest internal dia. of boilers 4000 mm Length 3125 mm Shell plates: Material steel Tensile strength 46.3 - 51.3

Thickness 30 mm Are the shell plates welded or flanged flanged Description of riveting: circ. seams { end double inter. } long. seams { cable } Diameter of rivet holes in { circ. seams 29 mm long. seams 32 } Pitch of rivets { 85 mm 320 }

Percentage of strength of circ. end seams { plate 66% rivets 42.5% } Percentage of strength of circ. intermediate seam { plate rivets } Working pressure of shell by Rules 14 kg/cm. 200 lb.

Percentage of strength of longitudinal joint { plate 85.5% rivets 93.5% combined } Thickness of butt straps { outer 23 mm inner 26 } No. and Description of Furnaces in each Boiler 2 Morrison

Material steel Tensile strength 41 - 47 kg/cm. Smallest outside diameter 1936 mm

Length of plain part { top 300 mm bottom } Thickness of plates { crown 18 mm bottom } Description of longitudinal joint welded

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 15 kg/cm.

End plates in steam space: Material steel Tensile strength 43.2 - 45.8 Thickness 25 - 33 mm Pitch of stays 380 - 440 mm

How are stays secured riveted washers nuts in- and outside Working pressure by Rules 14.2 kg/cm.

Tube plates: Material { front steel back } Tensile strength { 44.8 45.9 } Thickness { 25 mm 25 }

Mean pitch of stay tubes in nests 224 mm Pitch across wide water spaces 365 mm Working pressure { front 14.3 kg/cm back 23.2 }

Girders to combustion chamber tops: Material steel Tensile strength 47.5, 47.6 Depth and thickness of girder at centre 200 x 76 mm Length as per Rule 700 440 mm Distance apart 195 mm No. and pitch of stays in each 3 - 175 mm Working pressure by Rules 15.1 kg/cm. Combustion chamber plates: Material steel

Tensile strength 45.9 - 43.8 Thickness: Sides 17 mm Back 17 mm Top 17 mm Bottom 21 mm

Pitch of stays to ditto: Sides 190 x 175 mm Back 193 x 183 mm Top 195 x 175 mm Are stays fitted with nuts or riveted over nuts

Working pressure by Rules 19.5 kg/cm. Front plate at bottom: Material steel Tensile strength 46.0, 45.8 Thickness 26 mm Lower back plate: Material steel Tensile strength 45.0 Thickness 25 mm

Pitch of stays at wide water space 345 mm Are stays fitted with nuts or riveted over nuts

Working Pressure 14 kg/cm. Main stays: Material steel Tensile strength 44 - 51 kg/cm.

Diameter { At body of stay, 50 - 60 mm Over threads 76 - 66 } No. of threads per inch 6 Area supported by each stay 2150 - 2500 sqcm

Working pressure by Rules 15.8 kg/cm. Screw stays: Material steel Tensile strength 41 - 47 kg/cm.

Diameter { At turned off part, 34 mm Over threads 38.1 } No. of threads per inch 9 Area supported by each stay 360 sqcm



Working pressure by Rules 15.8 kgs Are the stays drilled at the outer ends no ✓ Margin stays: Diameter { At turned off part, 42.5 - 47 mm or Over threads 44.6 - 50.8 ✓  
No. of threads per inch 9 ✓ Area supported by each stay 560 - 740 sq cm Working pressure by Rules 14.8 - 15.1 kgs  
Tubes: Material steel ✓ External diameter { Plain 83 mm Stay 83 ✓ Thickness { 4 mm ✓ No. of threads per inch 9 ✓  
Pitch of tubes 112 mm ✓ Working pressure by Rules 18.1 kgs Manhole compensation: Size of opening in shell plate 500 x 400 mm ✓ Section of compensating ring 7100 x 840 x 30 mm No. of rivets and diameter of rivet holes 44, 32 mm dia ✓  
Outer row rivet pitch at ends 230 mm ✓ Depth of flange if manhole flanged 80 mm ✓ 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 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 W. Schmidt Patent ✓ Manufacturers of { Tubes ✓ Steel castings G. Liebeck & G. Gieseler ✓  
Number of elements 42 ✓ Material of tubes steel ✓ Internal diameter and thickness of tubes 18 mm, 2.5 mm ✓  
Material of headers cast steel ✓ Tensile strength ✓ Thickness 30 mm ✓ Can the superheater be shut off and the boiler be worked separately no ✓ 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 5.64 sq cm ✓ Are the safety valves fitted with easing gear yes ✓ Working pressure as per Rules 14 kgs ✓ Pressure to which the safety valves are adjusted 14 kgs ✓ Hydraulic test pressure: tubes 42 kgs ✓, castings 42 kgs ✓ and after assembly in place ✓ Are drain cocks or valves fitted to free the superheater from water where necessary yes ✓  
Have all the requirements of Sections 14 to 23 inclusive for boilers been complied with yes ✓

The foregoing is a correct description,  
Dr. W. Müller Manufacturer.

Dates of Survey { During progress of work in shops - - } 6.10.24, 20.10.24, 7.11.24, 17.2.25, 17.3.25 Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)  
while building { During erection on board vessel - - } 4.4.25, 12.5.25, 15.5.25 Total No. of visits: 8

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)  
These boilers have been built under special Survey in accordance with the approved plan and in conformity with the Society's Rules. Material and workmanship are of good quality.  
Both boilers were tested to 350 lbs. hydraulic pressure and found tight and sound at that pressure, also under steam they were tight, adjusted their safety valves to 200 lbs.  
Thickness of adjusting washers: No. 1 boiler front 22 mm, aft 20.5 mm  
No. 2 boiler front 22 mm, aft 20.5 mm  
Superheater etc. 10 mm, etc. 9.5 mm

Survey Fee ... £ : : When applied for, 192  
Travelling Expenses (if any) £ : : When received, 192

McKillop James C. Dykes  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 29 MAY 1925  
Assigned \_\_\_\_\_