

REPORT ON BOILERS.

No. 21905

Received at London Office 22 MAY 1936

Date of writing Report 10/5/36 19 When handed in at Local Office 19 Port of Hamburg

No. in Survey held at Lübeck Date, First Survey 5.9.35 Last Survey 23.4.36 19
g. Book. (Number of Visits 30) Gross 2185
Tons Net 1274

982 on the Steep & Sr. Eilbek

Built at Lübeck By whom built Lüb. Maschbau Ges. Yard No. 347 When built 1936

Engines made at Berlin-Tegel By whom made Rheinmetall-Borsig A.G. Engine No. 8142 When made 1936

Boilers made at Lübeck By whom made Lüb. Maschinenbau-Ges. Boiler No. 1227/8 When made 1936

Nominal Horse Power 221 Owners Knöhr & Burchard NfR. Port belonging to Hamburg

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Deutsche Rohrenwerke A.G., Werk Thyssen, Mülheim/Ruhr (Letter for Record S ✓)

Total Heating Surface of Boilers 292.2 m² Is forced draught fitted yes ✓ Coal or Oil fired coal ✓

No. and Description of Boilers 2 multitubular Scotch Marine Boilers Working Pressure 214 lb ✓

Tested by hydraulic pressure to 379 lb Date of test 30/1/36 No. of Certificate 604/5 Can each boiler be worked separately yes ✓

Area of Firegrate in each Boiler 3.36 m² No. and Description of safety valves to each boiler 1, 2 springs loaded ✓Area of each set of valves per boiler {per Rule 5910 mm² as fitted 7698 mm² Pressure to which they are adjusted 214 lb ✓ 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 ✓ Is oil fuel carried in the double bottom under boilers no ✓

Smallest distance between shell of boiler and tank top plating 400 mm Is the bottom of the boiler insulated yes, asbestos mats ✓

Largest internal dia. of boilers 3650 mm Length 3340 mm Shell plates: Material O.H. Steel Tensile strength 47-53 kg/mm² ✓

Thickness 29 mm ✓ Are the shell plates welded or flanged flanged ✓ Description of riveting: circ. seams {end D.R. ✓ inter. ✓

long. seams double bt. straps Diameter of rivet holes in {circ. seams 35 mm ✓ long. seams 35 mm ✓ Pitch of rivets {105.84 mm ✓ 216 mm ✓

Percentage of strength of circ. end seams {plate 67. ✓ rivets 57. ✓ Percentage of strength of circ. intermediate seam {plate ✓ rivets ✓

Percentage of strength of longitudinal joint {plate 83.6 ✓ rivets 110.5 ✓ combined 87.6 ✓ Working pressure of shell by Rules 15.35 kg/cm² ✓

Thickness of butt straps {outer 29 mm ✓ inner 29 mm ✓ No. and Description of Furnaces in each Boiler 2 Morrison ✓

Material O.H. Steel Tensile strength 41-47 kg/mm² ✓ Smallest outside diameter 1032 mm ✓

Length of plain part {top 152 mm ✓ bottom 152 mm ✓ Thickness of plates {crown 16 mm ✓ bottom 16 mm ✓ Description of longitudinal joint water gas welded ✓

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules 15.9 kg/cm² ✓End plates in steam space: Material O.H. Steel Tensile strength 41-47 kg/mm² ✓ Thickness 28 mm ✓ Pitch of stays 420 x 335 max ✓How are stays secured screwed, nuts in and outside Working pressure by Rules 17.65 kg/cm² ✓Tube plates: Material {front O.H. Steel ✓ back O.H. Steel ✓ Tensile strength {41-47 kg/mm² ✓ 41-47 kg/mm² ✓ Thickness {28 mm ✓ 28 mm ✓Mean pitch of stay tubes in nests 220 x 222 mm ✓ Pitch across wide water spaces 360 mm ✓ Working pressure {front 18.66 kg/cm² ✓ back 27.65 kg/cm² ✓Girders to combustion chamber tops: Material O.H. Steel ✓ Tensile strength 47-53 kg/mm² ✓ Depth and thickness of girder

at centre 235 mm, 2 x 14 mm Length as per Rule 694 mm ✓ Distance apart 205 mm max ✓ No. and pitch of stays

in each 3, 175 mm ✓ Working pressure by Rules 18.6 kg/cm² ✓ Combustion chamber plates: Material O.H. Steel ✓Tensile strength 41-47 kg/mm² ✓ Thickness: Sides 17 mm ✓ Back 17 mm ✓ Top 17 mm ✓ Bottom 20 mm ✓

Pitch of stays to ditto: Sides 205 x 175 mm ✓ Back 190 x 195 mm ✓ Top 205 x 175 mm ✓ Are stays fitted with nuts or riveted over with nuts ✓

Working pressure by Rules 19.5, 19.1, 19.5 kg/cm² ✓ Front plate at bottom: Material O.H. Steel ✓ Tensile strength 41-47 kg/mm² ✓Thickness 28 mm ✓ Lower back plate: Material O.H. Steel ✓ Tensile strength 41-47 kg/mm² ✓ Thickness 28 mm ✓

Pitch of stays at wide water space d = 480 mm ✓ Are stays fitted with nuts or riveted over with nuts ✓

Working Pressure 23. kg/cm² ✓ Main stays: Material O.H. Steel ✓ Tensile strength 43.3-49.3 kg/mm² ✓Diameter {At body of stay, 70. to 68. mm ✓ or 77. to 74. mm ✓ No. of threads per inch 6 ✓ Area supported by each stay 149,400 137,200 mm² ✓Working pressure by Rules 20.9, 20.5 kg/cm² ✓ Screw stays: Material O.H. Steel ✓ Tensile strength 40.2-46.2 kg/mm² ✓Diameter {At turned off part, 37. mm ✓ or 41.3 mm ✓ No. of threads per inch 9 ✓ Area supported by each stay 37,000 mm² ✓

Working pressure by Rules 8.6 kg/cm^2 Are the stays drilled at the outer ends ☒ Margin stays: Diameter { At turned off part 43.5 50.5 46.5
or Over threads 47.6 55. 50.8
No. of threads per inch 9 Area supported by each stay $4.45, 500$ $2,60,400$ Working pressure by Rules $4.21, 2, 2, 2, 4$ $3, 19.5$
Tubes: Material 0.4 Steel External diameter { Plain 83 mm Thickness 4 mm No. of threads per inch 9
Stay 83 mm 8.5 10 11.5
Pitch of tubes $110 \times 111 \text{ mm}$ Working pressure by Rules 16 kg/cm^2 Manhole compensation: Size of opening in
shell plate $430 \times 530 \text{ mm}$ Section of compensating ring $879 \times 985 \times 31 \text{ mm}$ No. of rivets and diameter of rivet holes $38, 35 \text{ mm}$
Outer row rivet pitch at ends 158 mm Depth of flange if manhole flanged 98 mm Steam Dome: Material none
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 *Schmidt'sche Heissdampf Ges.* Manufacturers of Tubes *Metallwerke Ohligs*
Number of elements 48 Material of tubes $0.4 \text{ Steel, seaml.}$ Internal diameter and thickness of tubes 17 mm 2.5 mm
Material of headers 0.4 Steel seaml. Tensile strength $41 \div 50 \text{ kg/cm}^2$ Thickness 28 mm 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 3848 cm^2 Are the safety valves fitted with easing gear ☒ Working pressure as per
Rules 31.5 kg/cm^2 , $5 = 110 \text{ mm}$ Pressure to which the safety valves are adjusted 2.14 lb Hydraulic test pressure:
tubes 1000 lbs , castings 70 kg/cm^2 and after assembly in place 45 lbs 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,

Lubecker
Maschinenbau-Gesellschaft

Manufacturers.

Dates of Survey { During progress of work in shops - *31 Sept, 5, 19, 24, 25 Oct, 25 Dec* Are the approved plans of boiler and superheater forwarded herewith *16-10-35*
while building { During erection on board vessel - *Mar. 5, 9, 12, 18, 23 Apr. 1, 6, 9, 16, 23* (If not state date of approval) *12-11-35*
Total No. of visits 30

Is this Boiler a duplicate of a previous case ☒ If so, state Vessel's name and Report No. *"Steinbock" No. 21825*

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

These Boilers are built under Special Survey in accordance with the approved plans, the Secretary's Letters and the Society's Rules. The materials used in the construction and the workmanship are of good quality. They have been satisfactorily fitted on board and the safety valves have been adjusted under steam to a pressure of 2.14 lb. In my opinion these boilers are eligible for notation in the Reg. Bk. of 2 SB, 4 cf, 2.14 lb.

Survey Fee ... *See machinery Report* When applied for, 19
Travelling Expenses (if any) £ *Report* When received, 19

P.A. Trust
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 26 MAY 1936

Assigned

See minute on J.E. Mchly Rpt.



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