

REPORT ON BOILERS.

No. 21874

Received at London Office 27 APR 1936

Date of writing Report 20th April 1936 When handed in at Local Office 10 Port of Hamburg

No. in Reg. Book. Survey held at Kiel and Hamburg Date, First Survey 3/5/1935 Last Survey 16th April 1936

on the Single screw "Liberian" (Number of Visits 29) Gross 5205 Tons Net 3068.37

Master Built at Hamburg By whom built Howaldtswerke A.G. Yard No. 739 When built 1936

Engines made at Kiel By whom made Howaldtswerke A.G. Engine No. 302 When made 1936

Boilers made at Kiel By whom made Howaldtswerke A.G. Boiler No. 187/8 When made 1936

Nominal Horse Power 372 Owners The United Africa Co. Ltd Port belonging to Liverpool.

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY

Manufacturers of Steel Mannesmannröhren-Werke A.G., Hückingen-Rhine (Letter for Record 5 ✓)

Total Heating Surface of Boilers 446 m² 4800 ft² Is forced draught fitted yes ✓ Coal or Oil fired coal ✓

No. and Description of Boilers 2 mult. Scotch Marine Boilers 78 B. Working Pressure 220 lb ✓

Tested by hydraulic pressure to 380 lb ✓ Date of test 4/10/35 No. of Certificate 596-7 Can each boiler be worked separately yes ✓

Area of Firegrate in each Boiler 10 m² No. and Description of safety valves to each boiler 1, 2 springs loaded ✓

Area of each set of valves per boiler { per Rule 8250 mm² as fitted 10362 mm² Pressure to which they are adjusted 220 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 700 mm Is oil fuel carried in the double bottom under boilers no.

Smallest distance between shell of boiler and tank top plating 770 mm Is the bottom of the boiler insulated yes ✓

Largest internal dia. of boilers 4000 mm Length of shell 3420 mm Shell plates: Material O.H. Steel Tensile strength 47-52 kg/mm² ✓

Thickness 35 mm ✓ Are the shell plates welded or flanged flanged ✓ Description of riveting: circ. seams { end D.R. ✓ inter. ✓

Long. seams double lt. straps ✓ Diameter of rivet holes in { circ. seams 36 mm ✓ long. seams 36 mm ✓ Pitch of rivets { 98.8 mm ✓ 241 mm ✓

Percentage of strength of circ. end seams { plate 63.5 ✓ rivets 45.2 ✓ Percentage of strength of circ. intermediate seam { plate ✓ rivets ✓

Percentage of strength of longitudinal joint { plate 85.2 ✓ rivets 86.6 ✓ combined 87.3 ✓ Working pressure of shell by Rules 15.8 kg/cm² ✓

Thickness of butt straps { outer 30 mm ✓ inner 30 mm ✓ No. and Description of Furnaces in each Boiler 3 Deighton 30 ft ✓

Material O.H. Steel Tensile strength 41-47 kg/mm² ✓ Smallest outside diameter 1085 mm ✓

Length of plain part { top 220 mm ✓ bottom 220 mm ✓ Thickness of plates { crown 17.5 mm ✓ bottom 17.5 mm ✓ Description of longitudinal joint water gas welded ✓

Dimensions of stiffening rings on furnace or c.c. bottom ✓ Working pressure of furnace by Rules 16.6 kg/cm² ✓

End plates in steam space: Material O.H. Steel Tensile strength 41-47 kg/mm² ✓ Thickness 29 mm ✓ Pitch of stays 390 x 390 mm ✓

How are stays secured into inside and outside Working pressure by Rules 18.1 kg/cm² ✓

End plates: Material { front O.H. Steel ✓ back O.H. Steel ✓ Tensile strength { 41-47 kg/mm² ✓ Thickness { 29 mm ✓ 24 mm ✓

Pitch of stay tubes in nests 330 x 220 mm ✓ Pitch across wide water spaces 365 mm ✓ Working pressure { front 18.3 kg/cm² ✓ back 19.5 kg/cm² ✓

Ends to combustion chamber tops: Material O.H. Steel Tensile strength 44-50 kg/mm² ✓ Depth and thickness of girder

Centre 220 x 2 x 25 mm ✓ Length as per Rule 822 mm ✓ Distance apart 200 mm ✓ No. and pitch of stays

Each 3 x 200 mm ✓ Working pressure by Rules 21 kg/cm² ✓ Combustion chamber plates: Material O.H. Steel ✓

Tensile strength 41-47 kg/mm² ✓ Thickness: Sides 20 mm ✓ Back 19 mm ✓ Top 20 mm ✓ Bottom 20 mm ✓

Pitch of stays to ditto: Sides 200 x 200 mm ✓ Back 185 x 215 mm ✓ Top 200 x 200 mm ✓ Are stays fitted with nuts or riveted over back & top with nuts ✓

Working pressure by Rules 16.6 22.2 24.8 kg/cm² ✓ Front plate at bottom: Material O.H. Steel Tensile strength 41-47 kg/mm² ✓

Thickness 29 mm ✓ Lower back plate: Material O.H. Steel Tensile strength 41-47 kg/mm² ✓ Thickness 24 mm ✓

Pitch of stays at wide water space d = 550 mm ✓ Are stays fitted with nuts or riveted over ridge over margin with nuts ✓

Working Pressure 23.6 kg/cm² ✓ Main stays: Material O.H. Steel Tensile strength 44-50 kg/mm² ✓

Gauge { At body of stay, 66.55 mm ✓ No. of threads per inch 6 ✓ Area supported by each stay 390 x 390 = 152100 mm² ✓

Over threads 72 mm ✓

Working pressure by Rules 17.7 kg/cm² ✓ Screw stays: Material O.H. Steel Tensile strength 41-47 kg/mm² ✓

Gauge { At turned off part, 38.38 mm ✓ No. of threads per inch 9 ✓ Area supported by each stay 41,275 mm² ✓

Over threads 42 mm ✓

Working pressure by Rules $17.4 \frac{\text{kg}}{\text{cm}^2}$ Are the stays drilled at the outer ends yes Margin stays: Diameter { At turned off part, 44.38 mm or $48. \text{ mm}$ Over threads }
No. of threads per inch 9 Area supported by each stay $52,263 \text{ mm}^2$ Working pressure by Rules $19.2 \frac{\text{kg}}{\text{cm}^2}$
Tubes: Material O.H. Steel External diameter { Plain $83. \text{ mm}$ Stay $83. \text{ mm}$ } Thickness { $4. \text{ mm}$ 8.5 mm } No. of threads per inch 9
Pitch of tubes $110 \times 110 \text{ mm}$ Working pressure by Rules $16 \frac{\text{kg}}{\text{cm}^2}$ Manhole compensation: Size of opening in
shell plate $440 \times 540 \text{ mm}$ Section of compensating ring $480 \times 480 \times 35 \text{ mm}$ No. of rivets and diameter of rivet holes 40, 26 mm
Outer row rivet pitch at ends 220 mm Depth of flange if manhole flanged 103 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-Gen Manufacturers of Tubes Messrs. Press-+Walzwerk + G. Düsseldorf
Number of elements 52 each Material of tubes O.H. Steel Steel castings Nordische Stahlwerke Bochum
Material of headers Cast Steel Tensile strength $41-55 \frac{\text{kg}}{\text{cm}^2}$ Thickness 20 mm 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 $\phi 40 \text{ mm}$, 1257 mm^2 Are the safety valves fitted with easing gear yes Working pressure as per
Rules $20.2 \frac{\text{kg}}{\text{cm}^2}$ $5=84$ Pressure to which the safety valves are adjusted 220 lbs Hydraulic test pressure
tubes 1000 lbs castings 1000 lbs and after assembly in place $46.5 \frac{\text{kg}}{\text{cm}^2}$ 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


Howaldtswerke A.G.

The foregoing is a correct description,

Manufactured

Dates of Survey { During progress of work in shops - 1935-17, 24, 28, 31, 11/12, 12/29, 12/14, 23, 26 Are the approved plans of boiler and superheater forwarded herewith yes.
while building { During erection on board vessel - 14/3/36, 16/3/36, 26/3/36, 2/4/36 (If not state date of approval.)
Total No. of visits 29

Is this Boiler a duplicate of a previous case yes If so, state Vessel's name and Report No. "S.S. Guinian" Rep. No. 21844.

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These Main Boilers have been constructed under special Survey in accordance with the approved plan 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 by the Society's Surveyors. Material and workmanship are of good quality. They have been satisfactorily fitted on board, their safety valves adjusted to 220 lbs and examined under working condition and were found in order. These Main Boilers are eligible in my opinion to be noted in the Register Book with the notation of:-  Boiler pressure 220 lbs.

Sp. Boil. Port. Boil.

Thickness of Washers: for $\phi 10 \text{ mm}$ for $\phi 11.5 \text{ mm}$
Aft $\phi 15 \text{ mm}$ Aft $\phi 18 \text{ mm}$

Survey Fee £

When applied for, 19

Travelling Expenses (if any) £

When received, 19

Committee's Minute

Assigned

See minute on
T.E. Rpt.



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