

REPORT ON BOILERS.

No. 12993

Received at London Office

AUG 17 1940

Date of writing Report 8th June 1940 When handed in at Local Office 18th June 1940 Port of Gothenburg

No. in Survey held at Gothenburg Date, First Survey 14th November 1939 Last Survey 7th May 1940

Reg. No. 39780 on the BELLONA (Number of Visits 25) Gross 11267 Tons Net 6800

Master Built at Gothenburg By whom built A/B. Gotaverken Yard No. 540 When built 1940

Engines made at Gothenburg By whom made A/B. Gotaverken Engine No. 1371 When made 1940

Boilers made at do. By whom made do. Boilers No. 2085 2086 When made 1940

Nominal Horse Power 1231 Owners Rederi A/B. ZENIT Port belonging to Gothenburg

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Colvilles Ltd. (Letter for Record S)

Total Heating Surface of Boilers $2 \times 165 \text{ m}^2$ Is forced draught fitted Yes Coal or Oil fired Oil

No. and Description of Boilers 2 Scotch multitubular Working Pressure 10.55 kg/cm^2 150 lb/in^2

Tested by hydraulic pressure to 19.4 kg/cm^2 275 lb/in^2 Date of test 10-1-40 No. of Certificate 335, 336 Can each boiler be worked separately Yes

Area of Firegrate in each Boiler No. and Description of safety valves to each boiler 1 double spring loaded

Area of each set of valves per boiler {per Rule 8670 mm^2 as fitted 11350 mm^2 Pressure to which they are adjusted 150 lb/in^2 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 boilers

Smallest distance between boilers or uptakes and bunkers $2 \text{ ft } 6 \text{ in A.P. bkhd.}$ Is oil fuel carried in the double bottom under boilers no.

Smallest distance between shell of boiler and tank top plating Boilers on a flat above thrust Is the bottom of the boiler insulated Yes

Largest internal dia. of boilers 3735 Length 3450 Shell plates: Material S.M. Steel Tensile strength $44/50 \text{ kg/mm}^2$

Thickness 21.5 Are the shell plates welded or flanged no Description of riveting: circ. seams {end D.R. lap inter. Yes

Long. seams D.B. steps 4 rows rivets Diameter of rivet holes in {circ. seams 27 long. seams 27, 23 Pitch of rivets {93 279

Percentage of strength of circ. end seams {plate 71 rivets 46.8 Percentage of strength of circ. intermediate seam {plate Yes rivets Yes

Percentage of strength of longitudinal joint {plate 90.3 rivets 93 combined 91.3 Working pressure of shell by Rules 11 kg/cm^2

Thickness of butt straps {outer 21.5 inner 21.5 No. and Description of Furnaces in each Boiler 2 Morrison corrugated

Material S.M. Steel Tensile strength $41/47 \text{ kg/mm}^2$ Smallest outside diameter 1124

Length of plain part {top 267 bottom 267 Thickness of plates {crown 12 bottom 12 Description of longitudinal joint welded

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 10.76 kg/cm^2

End plates in steam space: Material S.M. Steel Tensile strength $41/47 \text{ kg/mm}^2$ Thickness 22 Pitch of stays 415×375

How are stays secured Double nuts & loose washers outside Working pressure by Rules 12 kg/cm^2

Tube plates: Material {front S.M. Steel back S.M. Steel Tensile strength $41/47 \text{ kg/mm}^2$ Thickness {22 19

Mean pitch of stay tubes in nests 282.5 Pitch across wide water spaces 330 Working pressure {front 12 kg/cm^2 back 11.33 kg/cm^2

Girders to combustion chamber tops: Material S.M. Steel Tensile strength $44/50 \text{ kg/mm}^2$ Depth and thickness of girder

at centre 200, 2×21.5 Length as per Rule 759 Distance apart 225 No. and pitch of stays

in each 2, 210 Working pressure by Rules 15.3 kg/cm^2 Combustion chamber plates: Material S.M. Steel

Tensile strength $41/47 \text{ kg/mm}^2$ Thickness: Sides 18 Back 19 Top 18 Bottom 18

Pitch of stays to ditto: Sides 215×210 Back 205×225 Top 210×225 Are stays fitted with nuts or riveted over Riveted

Working pressure by Rules 11.25 kg/cm^2 Front plate at bottom: Material S.M. Steel Tensile strength $41/47 \text{ kg/mm}^2$

Thickness 22 Lower back plate: Material S.M. Steel Tensile strength $41/47 \text{ kg/mm}^2$ Thickness 22

Pitch of stays at wide water space 350×205 Are stays fitted with nuts or riveted over Riveted

Working Pressure 11.2 kg/cm^2 Main stays: Material S.M. Steel Tensile strength $44/50 \text{ kg/mm}^2$

Diameter {At body of stay, or Over threads 63.5 No. of threads per inch 6 Area supported by each stay 415×375

Working pressure by Rules 12.95 kg/cm^2 Screw stays: Material S.M. Steel Tensile strength $41/47 \text{ kg/mm}^2$

Diameter {At turned off part, or Over threads 38 No. of threads per inch 9 Area supported by each stay 210×225

Working pressure by Rules 12 kg/cm^2 Are the stays drilled at the outer ends *no* Margin stays: Diameter { At turned off part, ☒ or Over threads *44.5* ☒ No. of threads per inch *9* Area supported by each stay 225×282.5 Working pressure by Rules 12.7 kg/cm^2 Tubes: Material *S.M. Steel* External diameter { Plain $2\frac{1}{2}"$ ☒ Stay $2\frac{1}{2}"$ ☒ Thickness { 10 LSG ☒ $5/16"$ ☒ No. of threads per inch *9* Pitch of tubes 89×96 Working pressure by Rules 15.2 kg/cm^2 Manhole compensation: Size of opening in shell plate 400×600 Section of compensating ring $700 \times 800 \times 21.5$ No. of rivets and diameter of rivet holes *36, 27 mm* Outer row rivet pitch at ends 125 mm Depth of flange if manhole flanged 85 mm in endplate 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 Manufacturers of { Tubes Steel forgings 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 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 Are the safety valves fitted with easing gear Working pressure as per Rules Pressure to which the safety valves are adjusted Hydraulic test pressure tubes forgings and castings and after assembly in place Are drain cocks 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 *Yes*

The foregoing is a correct description,

Dates of Survey { During progress of *1939, Nov. 14, Dec. 5, 14, 15, 23* Are the approved plans of boiler and superheater forwarded herewith *23-5-38* work in shops - *1940, Jan. 3, 5, 9, 10, 11* (If not state date of approval.) while building { During erection on *1940 Feb. 6, 7, 13, 15, 19, 22, 29, Mar. 1, 12* Total No. of visits *25* board vessel - *24, 30, April 1, 9, May 7*

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

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

These donkey boilers have been constructed under special survey in accordance with the Rules & approved plans.

The workmanship is good and the certificates for the material are attached.

The boilers have been securely fitted in the vessel under my inspection & to my satisfaction and the safety valves adjusted to 150 lb/in^2

Survey Fee ... *kr. 450:00* :

Travelling Expenses (if any) £ :

When applied for, *18th June 1940*

When received, *24th Aug 1940*

H.B. Liggins
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

FRI. 23 AUG 19

See Got. JE 12993



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Foundation