

REPORT ON BOILERS.

No. 6374

Received at London Office 10 OCT 1949

Date of writing Report 15 Sept 1949 When handed in at Local Office 6 Oct 1949 Port of Oslo

No. in Reg. Book. Survey held at Fredrikstad Date, First Survey 30/12/48 Last Survey 29/8 1949

40024 on the steel single screw steamer "Solviken" (Number of Visits 14) Gross 3112, 1/4 Tons Net 1709, 3/9

Master Built at Fredrikstad By whom built Fredrikstad Mek. Verksted No. 326 When built 1949

Engines made at Fredrikstad By whom made Fredrikstad Mek. Verksted Engine No. 1167 When made 1949

Boilers made at Fredrikstad By whom made Fredrikstad Mek. Verksted Boiler No. 1521/1522 When made 1949

Nominal Horse Power MN 508 Owners Wallen & Co Port belonging to Bergen

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel The Villerice Steel Works, Glossley Bridge & Thomas Tiggott Ltd. (Letter for Record E 21/147)

Total Heating Surface of Boilers 518, 8 m² Is forced draught fitted yes Coal or Oil fired both, oil now.

No. and Description of Boilers Two cylindrical Scotch type Working Pressure 220 lb/0"

Tested by hydraulic pressure to 380 lb/0" Date of test 2/6 & 10/6/49 No. of Certificate 147-148 Can each boiler be worked separately yes

Area of Firegrate in each Boiler 6, 24 m² No. and Description of safety valves to each boiler two spring loaded

Area of each set of valves per boiler { per Rule 97, 3 cm² as fitted 163, 4 cm² 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 Is oil fuel carried in the double bottom under boilers Boilers on upper deck

Smallest distance between shell of boiler and tank top plating Boilers on upper deck Is the bottom of the boiler insulated yes

Largest internal dia. of boilers 4850 mm Length 3660 mm Shell plates: Material S.M. steel Tensile strength 49-55 kg/cm²

Thickness 37 mm Are the shell plates welded or flanged NO Description of riveting: circ. seams { end D.R. inter " long seams 3 R. TR.D.B.S. Diameter of rivet holes in { circ. seams 38, 5 mm long seams 38, 5 " Pitch of rivets { 109 mm 250 "

Percentage of strength of circ. end seams { plate 61, 46 % rivets 42, 4 % Percentage of strength of circ. intermediate seam { plate 84, 6 % rivets 86, 6 % Working pressure of shell by Rules 15, 76 kg/cm²

Percentage of strength of longitudinal joint { plate 84, 6 % rivets 86, 6 % combined 86, 5 %

Thickness of butt straps { outer 29 mm inner 32 " No. and Description of Furnaces in each Boiler Four corrugated, Morrison type

Material S.M. steel Tensile strength 26, 9-28, 6 T/0" Smallest outside diameter 1006 mm

Length of plain part { top bottom Thickness of plates { crown 15, 5 mm bottom 15, 5 " Description of longitudinal joint

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 15, 78 kg/cm²

End plates in steam space: Material S.M. steel Tensile strength 41-47 kg/cm² Thickness 32 mm Pitch of stays 500 x 450 mm

How are stays secured double rivets and washers Working pressure by Rules 15, 75 kg/cm²

Tube plates: Material { front S.M. steel Tensile strength 41-47 kg/cm² Thickness 28, 5 mm back " " 23 "

Mean pitch of stay tubes in nests 230 x 230 mm Pitch across wide water spaces 360 x 230 mm Working pressure { front 15, 72 kg/cm² back 16, 3 "

Girders to combustion chamber tops: Material S.M. steel Tensile strength 41-47 kg/cm² Depth and thickness of girder at centre 200 x 19 mm Length as per Rule 842 mm Distance apart 200 mm No. and pitch of stays in each E.W. plate girders Working pressure by Rules K_b = 657 kg/cm² Combustion chamber plates: Material S.M. steel

Tensile strength 41-47 kg/cm² Thickness: Sides 21 mm Back 19 mm Top 21 mm Bottom 21 mm

Pitch of stays to ditto: Sides 208 x 200 mm Back 200 x 180 mm Top Are stays fitted with nuts or riveted over riveted over

Working pressure by Rules 16, 13 kg/cm² Front plate at bottom: Material S.M. steel Tensile strength 41-47 kg/cm²

Thickness 28, 5 mm Lower back plate: Material S.M. steel Tensile strength 41-47 kg/cm² Thickness 25 mm

Pitch of stays at wide water space 180 x 335 mm Are stays fitted with nuts or riveted over riveted over

Working pressure 17, 43 kg/cm² Main stays: Material S.M. steel Tensile strength 44-50 kg/cm²

Diameter { At body of stay 3 1/4 " No. of threads per inch 6 Area supported by each stay 450 x 500 mm

Working pressure by Rules 16, 5 kg/cm² Screw stays: Material S.M. steel Tensile strength 41-47 kg/cm²

Diameter { At turned off part 1 1/2 " No. of threads per inch 9 Area supported by each stay 200 x 180 mm

Working pressure by Rules 15.78 kg/cm^2 Are the stays drilled at the outer ends ☒ no ☐ yes Margin stays: Diameter $1\frac{3}{4}"$ At turned off part ☒ or Over threads ☐ No. of threads per inch 9 Area supported by each stay $180 \times 267.5 \text{ mm}$ Working pressure by Rules 17.07 kg/cm^2 Tubes: Material seamless steel External diameter $3\frac{1}{2}"$ Thickness 4.25 mm No. of threads per inch 9 Pitch of tubes $115 \times 115 \text{ mm}$ Working pressure by Rules 16.5 kg/cm^2 Manhole compensation: Size of opening in shell plate $400 \times 300 \text{ mm}$ Section of compensating ring $820 \times 37 \text{ mm}$ No. of rivets and diameter of rivet holes 42 - 38.5 mm Outer row rivet pitch at ends 225 mm Depth of flange if manhole flanged ☒ Steam Dome: Material ☒ Tensile strength ☒ Thickness of shell ☒ Description of longitudinal joint ☒ Diameter of rivet holes ☒ Pitch of rivets ☒ Percentage of strength of joint ☒ 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 F.M.V. smoke tube Manufacturers of Tubes Glowell & Co Ltd, Sheffield Steel forgings Frederikstad Mek. Verkskud Steel castings Stavanger Elektro Staalverk Number of elements 58 Material of tubes seamless steel Internal diameter and thickness of tubes 21.5 mm 2.75 mm Material of headers cast steel Tensile strength 48 kg/mm^2 Thickness $20 \text{ \& } 25 \text{ mm}$ Can the superheater be shut off and the boiler be worked separately ☒ yes ☐ no Is a safety valve fitted to every part of the superheater which can be shut off from the boiler ☒ yes ☐ no Area of each safety valve 12.6 cm^2 Are the safety valves fitted with easing gear ☒ yes ☐ no Working pressure as per Rules 220 lb/in^2 Pressure to which the safety valves are adjusted 220 lb/in^2 Hydraulic test pressure: tubes 46.5 kg/cm^2 forgings and castings 46.5 kg/cm^2 and after assembly in place see letter 14/4/38 re yard No 283 Are drain cocks or valves fitted to free the superheater from water where necessary ☒ yes ☐ no

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with ☒ yes ☐ no

Frederikstad Mek. Verkskud The foregoing is a correct description, Manufacturer.

Dates of Survey while building	During progress of work in shops	During erection on board vessel	Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)	Total No. of visits
1948: 30/12	1949: 11/1, 17/1, 4/2, 11/4, 12/5, 18/5, 2/6, 10/6, 18/6	23/6, 30/7, 17/8, 29/8	21/1/47 18/3/47	14

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

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

These boilers have been constructed in accordance with the approved plan, as amended, and in conformity with the Secretary's letters concerning the boilers. The materials have been tested by the Society's Surveyors at approved steel works. The workmanship is of the best description throughout.

The electric welding has been carried out to our satisfaction by recognised welders using approved electrodes. The electrically welded combustion chambers were heat treated on completion of the welding, and were specially examined during the hydraulic testing of the boilers.

The boilers were tested by hydraulic pressure to 380 lb/in^2 , and the safety valves adjusted under steam to 220 lb/in^2 .

It is recommended that these boilers be classed in the Society's Register Book, with record 220 lb., 25 B., 8 c f., G.S. 134, HS 5584, F.D., S.

Survey Fee charged with machinery:	}	When applied for.....19.....
Travelling Expenses (if any) £ :		When received.....19.....

P. Sira Muri
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 18 NOV 1949

Assigned See F.E. Melby opt.



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