

# REPORT ON BOILERS.

Received at London Office SEP 7 1937

Date of writing Report 23rd Aug. 1937 When handed in at Local Office 19 Port of Oslo

No. in Reg. Book. Survey held at Fredrikstad Date, First Survey 9th March 1937 Last Survey 21st August 1937

(Number of Visits 20) Tons { Gross 1824 Net 932

on the steel screw steamer "FRANS-GORTON"

Master H. B. Jeppsson Built at Fredrikstad By whom built H/s Fredrikstad Mek. Verksted No. 283 When built 1937

Engines made at Fredrikstad By whom made H/s Fredrikstad Mek. Verksted Engine No. 1088 When made 1937

Boilers made at Fredrikstad By whom made H/s Fredrikstad Mek. Verksted Boiler No. 1337-38 When made 1937

Nominal Horse Power 277 Owners Rederiaktiebolaget Gylfe Port belonging to Helsingborg

## MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

(S)

Manufacturers of Steel Viktorie Mies Steel & Ironworks Corp. - Colville Ltd., Albert Hahn, Oberbay (Letter for Record E. 10/11/36, 2nd follow)

Total Heating Surface of Boilers 2 x 191.3 = 382.6 m<sup>2</sup> Is forced draught fitted Yes Coal or Oil fired Both

No. and Description of Boilers Two cylindrical, Scotch type 2SB Working Pressure 15.5 kg/cm<sup>2</sup>

Tested by hydraulic pressure to 26.75 kg. <sup>380 lb./sq. in.</sup> Date of test 16/6/37 No. of Certificate 111-112 Can each boiler be worked separately Yes

Area of Firegrate in each Boiler 4.5 m<sup>2</sup> No. and Description of safety valves to each boiler Two precision type, 90 mm

Area of each set of valves per boiler { per Rule 63.6 cm<sup>2</sup> as fitted 63.6 cm<sup>2</sup> } Pressure to which they are adjusted 15.5 kg/cm<sup>2</sup> they fitted with easing gear Yes

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler Yes

Smallest distance between boilers or uptakes and bunkers or woodwork at 260 mm Is oil fuel carried in the double bottom under boilers Yes

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

Largest internal dia. of boilers 4270 mm Length 3727 mm Shell plates: Material S.M. steel Tensile strength 49-55 kg/mm<sup>2</sup>

Thickness 32 mm Are the shell plates welded or flanged Yes Description of riveting: circ. seams { end D.R. inter. Yes }

long. seams D.R. double strap, (wave type) diameter of rivet holes in { circ. seams 36 mm long. seams 33 mm } Pitch of rivets { 110 mm 222.5 mm }

Percentage of strength of circ. end seams { plate 67.2 rivets 42.2 } Percentage of strength of circ. intermediate seam { plate 89.7 rivets 90.79 }

Percentage of strength of longitudinal joint { plate 89.7 rivets 90.79 combined } Working pressure of shell by Rules 15.46 kg/mm<sup>2</sup>

Thickness of butt straps { outer 24 mm inner 27 mm } No. and Description of Furnaces in each Boiler Three corrugated, Morrison type - 3 ct

Material S.M. steel Tensile strength 41-47 kg/mm<sup>2</sup> Smallest outside diameter 1083 mm

Length of plain part { top 16.5 mm bottom 16.5 mm } Thickness of plates { crown 16.5 mm bottom 16.5 mm } Description of longitudinal joint Yes

Dimensions of stiffening rings on furnace or c.c. bottom plates welded on, 75 x 16 mm Working pressure of furnace by Rules 15.66 kg/cm<sup>2</sup>

End plates in steam space: Material S.M. steel Tensile strength 41-47 kg/mm<sup>2</sup> Thickness 33.5 mm Pitch of stays 500 x 470

How are stays secured Double nuts & washers Working pressure by Rules 15.66 kg/cm<sup>2</sup>

Tube plates: Material { front S.M. steel back S.M. steel } Tensile strength { 49-55 kg/mm<sup>2</sup> 41-47 kg/mm<sup>2</sup> } Thickness { 27.5 mm 21.5 mm }

Mean pitch of stay tubes in nests 330 x 220 mm Pitch across wide water spaces 350 mm Working pressure { front 15.66 kg/cm<sup>2</sup> back 15.52 kg/cm<sup>2</sup> }

Girders to combustion chamber tops: Material S.M. steel Tensile strength 49-55 kg/mm<sup>2</sup> Depth and thickness of girder

at centre 240 x 19 mm Length as per Rule 775 Distance apart 220 No. and pitch of stays

in each 2 x 238 mm Working pressure by Rules 15.6 Combustion chamber plates: Material S.M. steel

Tensile strength 41-47 kg/mm<sup>2</sup> Thickness: Sides 21 mm Back 19 mm Top 21 mm Bottom 21 mm

Pitch of stays to ditto: Sides 245 x 180 mm Back 180 x 195 mm Top 220 x 238 mm Are stays fitted with nuts or riveted over Riveted over

Working pressure by Rules 16.18, side pl. 15.6 Front plate at bottom: Material S.M. steel Tensile strength 41-47 kg/mm<sup>2</sup>

Thickness 27.5 mm Lower back plate: Material S.M. steel Tensile strength 41-47 kg/mm<sup>2</sup> Thickness 24 mm

Pitch of stays at wide water space 320 x 195 mm Are stays fitted with nuts or riveted over Riveted over

Working Pressure 15.71 kg/cm<sup>2</sup> Main stays: Material S.M. steel Tensile strength 44-55 kg/mm<sup>2</sup>

Diameter { At body of stay, 83 mm (3 1/4") } No. of threads per inch 6 Area supported by each stay 500 x 470 mm = 235000

Working pressure by Rules 15.6 kg/cm<sup>2</sup> Screw stays: Material S.M. steel Tensile strength 41-47 kg/mm<sup>2</sup>

Diameter { At turned off part, 38 mm (1 1/2") } No. of threads per inch 9 Area supported by each stay 180 x 195 mm = 35100

Working pressure by Rules  $16.18 \text{ kg/cm}^2$  Are the stays drilled at the outer ends  No Margin stays: Diameter  $45 \text{ mm}$  (1 3/4")  
 No. of threads per inch 9 Area supported by each stay  $250 + 195 = 487.50 \text{ cm}^2$  Working pressure by Rules  $16.86 \text{ kg/cm}^2$   
 Tubes: Material Seamless S.M. steel External diameter { Plain  $83 \text{ mm}$  (3 1/4") Stay  $83 \text{ mm}$  (3 1/4") Thickness { 4 mm / 8 mm No. of threads per inch 9 /  
 Pitch of tubes  $110 + 110 \text{ mm}$  Working pressure by Rules  $15.8 \text{ kg/cm}^2$  Manhole compensation: Size of opening in  
 shell plate  $400 + 300 \text{ mm}$  Section of compensating ring  $950 + 31 \text{ mm}$  No. of rivets and diameter of rivet holes  $42 \times 33 \text{ mm}$   
 Outer row rivet pitch at ends 200 Depth of flange if manhole flanged 90 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 Fredrikstad Manufacturers of { Tubes Albert Hahne, Odenberg  
 Steel forgings Fred. Mek. Verksted  
 Steel castings Strømmers Verksted  
 Number of elements 44 pr. boiler Material of tubes Seamless S.M. steel Internal diameter and thickness of tubes 20 x 2.5 mm  
 Material of headers Cast steel Tensile strength 47 kg/cm<sup>2</sup> by test Thickness 20 - 25 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 8.04 cm<sup>2</sup> Are the safety valves fitted with easing gear  Yes Working pressure as per  
 Rules 15.5 kg/cm<sup>2</sup> Pressure to which the safety valves are adjusted 15.5 kg/cm<sup>2</sup> Hydraulic test pressure:  
 tubes 100 kg/cm<sup>2</sup> forgings and castings 46.5 kg/cm<sup>2</sup> and after assembly in place 15.5 kg/cm<sup>2</sup> 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

The foregoing is a correct description,  
 pr. % FREDRIKSTAD MEK. VERKSTED  
 Manufacturer: W. A. ...

Dates of Survey { During progress of work in shops - March 9th - 20th, April 9th, 17th, 20th Are the approved plans of boiler and superheater forwarded herewith E. 10/11/36  
 while building { June 2nd, 19th, 16th (If not state date of approval.)  
 { July 27th, August 3rd, 17th, 20th + 21st Total No. of visits 20

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, and as amended, and in conformity with the Secretary's letters concerning these 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 boilers were tested by hydraulic pressure to 380 lbs. per sq. inch, and the safety valves of the boilers and superheaters were subsequently adjusted under steam to  $15.5 \text{ kg/cm}^2$  (220 lbs./in<sup>2</sup>)

It is recommended that these boilers be classed in the Society's Register Book, with records: 220 lbs. 2SB. 6cf. 65. 98 HS 4120 F.D. S.

Survey Fee ... kr. entered When applied for, 4/7/1937  
 Travelling Expenses (if any) kr. on ready or Rpt When received, 10

Perfinn Røis, Grunde  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI 24 SEP 1937

Assigned See other FE report

