

# REPORT ON BOILERS.

Received at London Office. 40 NOV 1946

Date of writing Report. 20th Nov. 1946. When handed in at Local Office. 21st Nov. 1946. Port of. Gothenburg.

No. in Reg. Book. Survey held at. Gothenburg. Date, First Survey. 3rd May. Last Survey. 13th Nov. 1946.

on the "ARABIAN QUEEN" (Number of Visits. 21) Tons Gross. Net.

Master. Built at. Gothenburg. By whom built. A-B. Götaverken. Yard No. 609. When built. 1946. See note on Got 15050

Engines made at. Gothenburg. By whom made. A-B. Götaverken. Engine No. When made.

Boilers made at. Gothenburg. By whom made. A-B. Lindholmens Varv. Boiler No. 2751-2. When made. 1946

Nominal Horse Power. 245. Owners. Rederi A-B. Transoil. Port belonging to. Gothenburg

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

Manufacturers of Steel. Avesta Jernverks A-B., Avesta. (Letter for Record. s)

Total Heating Surface of Boilers. 2 x 1838 square feet (2 x 170.8 m<sup>2</sup>). Is forced draught fitted. Coal or Oil fired. Oil

No. and Description of Boilers. 2 Scotch donkey boilers. Working Pressure. 10.55 kg/cm<sup>2</sup>

Tested by hydraulic pressure to. 19.5 kg/cm<sup>2</sup>. Date of test. 13.11.46. No. of Certificate. 504 & 505. Can each boiler be worked separately.

Area of Firegrate in each Boiler. No. and Description of safety valves to each boiler.

Area of each set of valves per boiler. Pressure to which they are adjusted. Are they fitted with easing gear.

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.

Smallest distance between shell of boiler and tank top plating. Is the bottom of the boiler insulated.

Largest internal dia. of boilers. 3750 mm. Length. 3450 mm. Shell plates: Material. S.M. Steel. Tensile strength. 44-50 kg/mm<sup>2</sup>

Thickness. 23.5 mm. Are the shell plates welded or flanged. No. Description of riveting: circ. seams. E.W.

long. seams. E.W. Diameter of rivet holes in circ. seams. Pitch of rivets.

Percentage of strength of circ. end seams. Percentage of strength of circ. intermediate seam.

Percentage of strength of longitudinal joint. Working pressure of shell by Rules. 10.75 kg/cm<sup>2</sup>

Thickness of butt straps. No. and Description of Furnaces in each Boiler. 2 Morison corrugated

Material. S.M. Steel. Tensile strength. 41-47 kg/mm<sup>2</sup>. Smallest outside diameter. 1124 mm.

Length of plain part. Thickness of plates. Description of longitudinal joint. E.W.

Dimensions of stiffening rings on furnace or c.c. bottom. Working pressure of furnace by Rules. 10.75 kg/cm<sup>2</sup>

End plates in steam space: Material. S.M. Steel. Tensile strength. 41-47 kg/mm<sup>2</sup>. Thickness. 22 mm. Pitch of stays. 425 x 376

How are stays secured. E.W. with E.W. outside washers. Working pressure by Rules. 22.4 kg/cm<sup>2</sup>

Tube plates: Material. S.M. Steel. Tensile strength. 41-47 kg/mm<sup>2</sup>. Thickness. 19 mm.

Mean pitch of stay tubes in nests. 277.5 mm. Pitch across wide water spaces. 330 mm. Working pressure. 11.95 kg/cm<sup>2</sup>

Girders to combustion chamber tops: Material. S.M. Steel. Tensile strength. 44-50 kg/mm<sup>2</sup>. Depth and thickness of girder

at centre. 235 x 25 mm. Length as per Rule. 771 mm. Distance apart. 225 mm. No. and pitch of stays

in each. E.W. Working pressure by Rules. 10.7 kg/cm<sup>2</sup>. Combustion chamber plates: Material. S.M. Steel

Tensile strength. 41-47 kg/mm<sup>2</sup>. Thickness: Sides. 18 mm. Back. 18 mm. Top. 18 mm. Bottom. 18 mm. R.to shell

Pitch of stays to ditto: Sides. 240x195 mm. Back. 225 x 205 mm. Top. 225 x E.W. Are stays fitted with nuts or riveted over. rem. E.W.

Working pressure by Rules. 16.7 kg/cm<sup>2</sup>. Front plate at bottom: Material. S.M. Steel. Tensile strength. 41 - 47 kg/mm<sup>2</sup>

Thickness. 22 mm. Lower back plate: Material. S.M. Steel. Tensile strength. 41 - 47 kg/mm<sup>2</sup>. Thickness. 22 mm.

Pitch of stays at wide water space. 330 mm. Are stays fitted with nuts or riveted over. E.W.

Working pressure. 18.45 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. 60 mm. No. of threads per inch. E.W. Area supported by each stay. 425 x 376 mm.

Working pressure by Rules. 13.55 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. No. of threads per inch. E.W. Area supported by each stay. Side 195 x 240 mm. Back 225 x 205 mm.



Working pressure by Rules 15 kg/cm<sup>2</sup> Are the stays drilled at the outer ends No ✓ Margin stays: Diameter 45 mm. ✓  
 No. of threads per inch E.W. ✓ Area supported by each stay 277.5 x 205 Working pressure by Rules 17.8 kg/cm<sup>2</sup>  
 Tubes: Material S.M. Steel ✓ External diameter { Plain 63.5 mm. ✓ Thickness 3.5 mm. ✓ No. of threads per inch 9 ✓  
 Stay 63.5 mm. ✓  
 Pitch of tubes 96 x 89 mm. ✓ Working pressure by Rules 14.5 kg/cm<sup>2</sup> Manhole compensation: Size of opening in shell plate 570 x 455 mm. ✓ Section of compensating ring 11920 mm. ✓ No. of rivets and diameter of rivet holes E.W.  
 Outer row rivet pitch at ends — Depth of flange if manhole flanged 89 mm. 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 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 Yes

The foregoing is a correct description,  
**AKTIEBOLAGET LINDHOLMENS VARV**  
 LINDHOLMENS VÄRMEANLÄGGNINGEN Manufacturer

Dates of Survey { During progress of work in shops - - } 3rd May - 13th November 1946 Are the approved plans of boiler and superheater forwarded herewith No (If not state date of approval.)  
 { During erection on board vessel - - - } — Total No. of visits 2

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 built under special survey in accordance with the Rules for Welded Pressure Vessels Class I and approved plan and will be fitted in A-B. Götaverken's Yard No. 604. The workmanship is good. All welded parts of the boilers have been stress-relieved in accordance with the Rules. Test sheets for the material of the boilers are attached. Chalmers' certificate of routine tests of welding carried out in my presence and plans showing the position and number of X-ray films and indicating the category in which each film was placed by Tekniska Röntgencentralen and four representative films are attached. Macro tests carried out at A-B. Lindholmens Varv with satisfactory results. The boilers have been marked:

No. 504 & 505  
 LLOYD'S TEST 275 LBS.  
 WP 150 LBS.  
 SJ 13.11.46

Survey Fee ... Kr. 960:00 When applied for, 21st Nov. 1946.  
 Travelling Expenses (if any) £ — : — : — When received — : — : —

*Sten Johansson*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute —  
 Assigned For minute see JE head R/S