

REPORT ON BOILERS.

No. 8454.

Date of writing Report 6th March 1931. When handed in at Local Office

Received at London Office 12 MAR 1931

Port of Copenhagen

No. in Reg. Book. Survey held at

Elsinore

Date, First Survey 8th November 1930 Last Survey 26th February 1931.

89470 on the Steel S. ALEXANDRA

(Number of Visits 25.) Gross 1462.61 Tons Net 765.92

Master *✓* Built at *Elsinore* By whom built *Mts Helsingørsk Jernstøber* Yard No. 200 When built 1931
 Engines made at *Elsinore* By whom made *Mts Helsingørsk Jernstøber & Maskinbygger* Engine No. 279 When made 1931.
 Boilers made at *Elsinore* By whom made *Mts Helsingørsk Jernstøber & Maskinbygger* Boiler No. 800 When made 1931.
 Nominal Horse Power 282 Owners *Det Forenede Dampskibs Selskab* Port belonging to *Esbjerg*

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

PLATES—STAYS—SCREWSTAYS: *Willkommnen Bergbau und Eisenhütten Gesellschaft, Witten*Manufacturers of Steel FURNACES: *Mc Brown & Co. Ltd, Works, Cold, Litherwell* TUBES: *Stewart & Lloyd, Litherwell* (Letter for Record S)

Total Heating Surface of Boilers $2 \times 1980 = 3960$ square feet Is forced draught fitted *yes* Coal or Oil fired *coal*
 No. and Description of Boilers *2 off - single ended return multitubular* Working Pressure *215 lbs/sq in*

Tested by hydraulic pressure to *373 lbs/sq in* Date of test *28.1.1931* No. of Certificate *533-534* Can each boiler be worked separately *yes*

Area of Firegrate in each Boiler *700 sq ft* No. and Description of safety valves to each boiler *2 off directly spring loaded*
 Area of each set of valves per boiler *per Rule 10.76 sq in* Pressure to which they are adjusted *215 lbs/sq in* Are they fitted with easing gear *yes*

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler *No donkey boiler fitted*

Smallest distance between boilers or uptakes and bunkers or woodwork *9 1/2"* Is oil fuel carried in the double bottom under boilers *No*

Smallest distance between shell of boiler and tank top plating *15"* Is the bottom of the boiler insulated *yes*

Largest internal dia. of boilers *13'-9"* Length *11'-3"* Shell plates: Material *Premium M. Steel* Tensile strength *44-50 kg/mm²*

Thickness *1 3/8"* Are the shell plates welded or flanged *No* Description of riveting: circ. seams *lap joint double*

long. seams *double butt strap* Diameter of rivet holes in *circ. seams 1 3/8"* Pitch of rivets *4 1/16"*

Percentage of strength of circ. end seams *plate 66.15%* Percentage of strength of circ. intermediate seam *plate 64.51%*

Percentage of strength of longitudinal joint *plate 84.63%* Working pressure of shell by Rules *219.34 lbs per sq in*

Thickness of butt straps *outer 1 3/16"* No. and Description of Furnaces in each Boiler *3 off Deighton's corrugated section*

Material *Premium M. Steel* Tensile strength *28.3-29.0 Tons per sq in* Smallest outside diameter *3' 5 5/16"*

Length of plain part *top 5' 1/8"* Thickness of plates *crown 5' 1/8"* Description of longitudinal joint *✓*

Dimensions of stiffening rings on furnace or c.c. bottom *✓* Working pressure of furnace by Rules *232.4 lbs per sq in*

End plates in steam space: Material *Premium M. Steel* Tensile strength *41-47 kg/mm²* Thickness *1 1/4"* Pitch of stays *19 1/2" x 15 1/2"*

How are stays secured *Screwed into both plates, nuts in outside* Working pressure by Rules *235.3 lbs per sq in*

Tube plates: Material *Premium M. Steel* Tensile strength *41-47 kg/mm²* Thickness *1 1/16"*

Mean pitch of stay tubes in nests *8 1/2" x 8 1/2"* Pitch across wide water spaces *14"* Working pressure *front 264.5 lbs per sq in*

Girders to combustion chamber tops: Material *Premium M. Steel* Tensile strength *44-50 kg/mm²* Depth and thickness of girder *back 442.3 lbs per sq in*

at centre *8" - 2 x 3/4" = 1 1/2"* Length as per Rule *26"* Distance apart *9 13/16"* No. and pitch of stays

in each *2 off 9 1/16"* Working pressure by Rules *263.9 lbs per sq in* Combustion chamber plates: Material *Premium M. Steel*

Tensile strength *41-47 kg/mm²* Thickness: Sides *3/4"* Back *1 1/16"* Top *3/4"* Bottom *3/4"*

Pitch of stays to ditto: Sides *9 1/16" x 7 3/8"* Back *8 1/4" x 7 3/4"* Top *9 1/16" x 9 13/16"* Are stays fitted with nuts or riveted over *Nuts in - and outside*

Working pressure by Rules *TOP 222.4 lbs/sq in* Front plate at bottom: Material *Premium M. Steel* Tensile strength *41-47 kg/mm²*

Thickness *1 1/16"* Lower back plate: Material *Premium M. Steel* Tensile strength *41-47 kg/mm²* Thickness *1 5/16" + 1/16" doubling*

Pitch of stays at wide water space *d = 17 1/4"* Are stays fitted with nuts or riveted over *Nuts in - and outside*

Working Pressure *243 lbs per sq in* Main stays: Material *Premium M. Steel* Tensile strength *44-50 kg/mm²*

Diameter *At body of stay, 3 1/4"* No. of threads per inch *9* Area supported by each stay *30.2 sq in*

Working pressure by Rules *266.2 lbs/sq in* Screw stays: Material *Premium M. Steel* Tensile strength *41-47 kg/mm²*

Diameter *At turned off part, 1 7/8"* No. of threads per inch *9* Area supported by each stay *70.2 sq in*

Working pressure by Rules $303.8 \text{ lb}/\text{sq. in.}$ Are the stays drilled at the outer ends *No* Margin stays: Diameter $\left\{ \begin{array}{l} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{array} \right. 2\frac{1}{8}'' \text{ conn. } 2\frac{1}{4}''$

No. of threads per inch *9* Area supported by each stay $86.20''$ Working pressure by Rules $330.2 \text{ lb}/\text{sq. in.}$

Tubes: Material *Steel* External diameter $\left\{ \begin{array}{l} \text{Plain} \\ \text{Stay} \end{array} \right. 3''$ Thickness $\left\{ \begin{array}{l} \text{S.W.G. No. 8} \\ 5/16'' - 3/8'' \end{array} \right.$ No. of threads per inch *9*

Pitch of tubes $4\frac{1}{2}'' \times 4\frac{1}{2}''$ Working pressure by Rules $250 \text{ lb}/\text{sq. in.}$ Manhole compensation: Size of opening in shell plate $16\frac{1}{2}'' \times 20\frac{1}{2}''$ Section of compensating ring *Flanged* No. of rivets and diameter of rivet holes $36 \text{ of } 1\frac{3}{8}''$

Outer row rivet pitch at ends $7\frac{3}{8}''$ Depth of flange if manhole flanged $3\frac{1}{2}''$ Steam Dome: Material *✓*

Tensile strength *✓* Thickness of shell *✓* Description of longitudinal joint *✓*

Diameter of rivet holes *✓* Pitch of rivets *✓* Percentage of strength of joint $\left\{ \begin{array}{l} \text{Plate} \\ \text{Rivets} \end{array} \right. \text{✓}$

Internal diameter *✓* Working pressure by Rules *✓* Thickness of crown *✓* No. and diameter of stays *✓*

How connected to shell *✓* Inner radius of crown *✓* Working pressure by Rules *✓*

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 *W. Schmidt's patent* Manufacturers of *Tubes Messrs. Tubes Ltd. Birmingham*
Steel castings Messrs. Van der Haarwerk, Varde

Number of elements 2×32 Material of tubes *Steel* Internal diameter and thickness of tubes $18'' \times 3''$

Material of headers *Cast steel* Tensile strength $32.4 \text{ tons}/\text{sq. in.}$ Thickness $18'' \times 25''$ Can the superheater be shut off and the boiler be worked separately *No* 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 $3.140''$ Are the safety valves fitted with easing gear *Yes* Working pressure as per Rules $1204 \text{ lb}/\text{sq. in.}$ Pressure to which the safety valves are adjusted $215 \text{ lb}/\text{sq. in.}$ Hydraulic test pressure: tubes $1000 \text{ lb}/\text{sq. in.}$, castings $645 \text{ lb}/\text{sq. in.}$ and after assembly in place $645 \text{ lb}/\text{sq. in.}$ 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*

AKTIESELSKABET
HELSINGBORGSKA MASKINFABRIKEN
W. Schmidt Manufacturer.

Dates of Survey $\left\{ \begin{array}{l} \text{During progress of work in shops} \\ \text{while building} \end{array} \right. \left\{ \begin{array}{l} \text{1930: } 8/11 - 11/12 - 5/12 - 8/12 - 10/12 - 16/12 - 18/12 - 22/12 - 27/12 \\ \text{1931: } 4/1 - 5/1 - 9/1 - 10/1 - 14/1 - 16/1 - 21/1 - 28/1 \end{array} \right.$ Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)

$\left\{ \begin{array}{l} \text{During erection on board vessel} \end{array} \right. \left\{ \begin{array}{l} \text{1931: } 3/2 - 7/2 - 9/2 - 11/2 - 17/2 - 25/2 - 26/2 \end{array} \right.$ Total No. of visits *25*

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) *These boilers and superheaters have been built under Special Survey in accordance with the Rules, the approved plans and the requirements contained in the Secretary's Letters E dated 17.7.1930 and 17.11.1930.*

The material has been tested as required by the Rules as per certificates produced and the workmanship is of good description throughout.

The boilers have been fitted on board the above named vessel and completed to our entire satisfaction.

Survey Fee *Noted on the Machinery Rpt.* When applied for. *✓* 192

Travelling Expenses (if any) £ : : When received. 192

A. E. Jacobsen *W. Mauren*
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

WED. 8 APR 1931

Assigned

See F.E. Rpt.



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