

92048

REPORT ON BOILERS.

No. 7858.

Received at London Office 10 JAN 1929

Date of writing Report 31/12 1928 When handed in at Local Office 1928 Port of Copenhagen.

No. in Reg. Book 92048 on the Stead Twin S. Motor vessel "SIR KARL KNUDSEN" Date, First Survey 26/8 1927 Last Survey 23/12 1928

(Number of Visits 19) Gross 7747.17 Net 4581.48

Master Built at Nakskov By whom built Nakskov Skibsvaerft. Yard No. 33 When built 1928

Engines made at Copenhagen By whom made Buumiste - Wain Engine No. 1407 When made 1928

Boilers made at Aarhus By whom made Fricho Boilers No. 826-7 When made 1927-8

Nominal Horse Power 624 Owners A. F. Klumess & Co. Port belonging to Oslo.

MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel SHELL: DALZELL STEEL & IRON WORKS, MOTHERWELL, FURNACES: HESSRS. LEEDS FORGE CO. LD. COMB. CH. BACKPLATES: JOHN SPENCER & SONS LD. NEWBURN O. TYNE. (Letter for Record 5)

Total Heating Surface of Boilers 240 m² = 2583 sq. ft. Is forced draught fitted yes. Coal or Oil fired oil fired.

No. and Description of Boilers 2 of single ended, return to boiler. Working Pressure 185 lbs./sq. in.

Tested by hydraulic pressure to 328 lbs. Date of test 18/7 1928. No. of Certificates 491-2 Can each boiler be worked separately yes.

Area of Firegrate in each Boiler No. and Description of safety valves to each boiler 2 of direct spring loaded.

Area of each set of valves per boiler per Rule 6280 mm² as fitted 6640 mm² Pressure to which they are adjusted 185 lbs. 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 boiler.

Smallest distance between boilers or uptakes and bunkers or woodwork Is oil fuel carried in the double bottom under boilers No.

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

Largest internal dia. of boilers 3440 mm. Length 3150 mm. Shell plates: Material S.M. steel. Tensile strength 28 to.

Thickness 28 mm. Are the shell plates welded or flanged No. Description of riveting: circ. seams end lap, 26 rivets inter. long. seams 26 butt straps, 36 riv. Diameter of rivet holes in circ. seams 28 mm. Pitch of rivets 100 mm.

Percentage of strength of circ. end seams plate 78 mm. rivets 46.8 mm. Percentage of strength of circ. intermediate seam plate rivets.

Percentage of strength of longitudinal joint plate 72 mm. rivets 172.5 mm. Working pressure of shell by Rules 12.4 kg/cm².

Thickness of butt straps outer 25 mm. inner 25 mm. No. and Description of Furnaces in each Boiler 2 of corrugated Dighton's pat.

Material S.M. steel. Tensile strength 26.5 - 29.2 to. Smallest outside diameter 916 mm.

Length of plain part top bottom. Thickness of plates crown bottom 13.5 mm. Description of longitudinal joint welded.

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 14.77 kg/cm².

End plates in steam space: Material S.M. steel. Tensile strength FRONT END: 26-30 to. BACK END: 27.2-27.5 to. Thickness 22 mm. Pitch of stays 375.4 mm.

How are stays secured screwed into plates, nuts & washers in and outside. Working pressure by Rules 14.23 kg/cm².

Tube plates: Material front S.M. steel. back S.M. steel. Tensile strength 26-30 to. Thickness 23 mm.

Mean pitch of stay tubes in nests 218 mm. Pitch across wide water spaces 374 mm. Working pressure front 13.0 kg/cm². back 13.0 kg/cm².

Girders to combustion chamber tops: Material S.M. steel. Tensile strength 28-32 to. Depth and thickness of girder at centre 165 = 16 x 2. Length as per Rule 624 mm. Distance apart 200 mm. No. and pitch of stays in each 2 of 180 mm. Working pressure by Rules 13.05 kg/cm².

Combustion chamber plates: Material S.M. steel. Tensile strength TOP SIDES BOTTOM: 26-30 to. BACK: 28.2-28.4 to. Thickness: Sides 18 mm. Back 18 mm. Top 18 mm. Bottom 18 mm.

Pitch of stays to ditto: Sides 200 = 200 mm. Back 200 = 190 mm. Top 180 = 200 mm. Are stays fitted with nuts or riveted over yes.

Working pressure by Rules 19.78 kg/cm². Front plate at bottom: Material S.M. steel. Tensile strength 26-30 to. Thickness 23 mm.

Lower back plate: Material S.M. steel. Tensile strength 27.2-27.5 to. Thickness 22 mm.

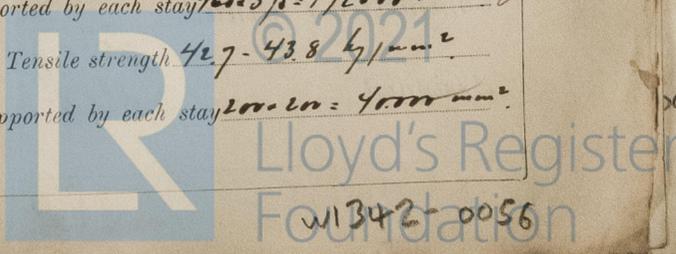
Pitch of stay at wide water space 374 = 218 mm. Are stay fitted with nuts or riveted over SCREWED INTO PLATES & EXPANDED.

Working Pressure 13 kg/cm². Main stays: Material S.M. steel. Tensile strength 45.6 kg/cm².

Diameter At body of stay, 64 mm. No. of threads per inch 6. Area supported by each stay 460 x 375 = 172500 mm².

Working pressure by Rules 14.9 kg/cm². Screw stays: Material S.M. steel. Tensile strength 42.7-43.8 kg/cm².

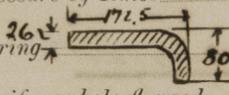
Diameter At turned off part, 43 mm. No. of threads per inch 9. Area supported by each stay 200 x 200 = 40000 mm².



Working pressure by Rules 19 kg/cm^2 Are the stays drilled at the outer ends *yes* Margin stays: Diameter $\begin{cases} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{cases} \begin{cases} 48 \text{ mm} \\ 48 \text{ mm} \end{cases}$

No. of threads per inch 9 Area supported by each stay 59400 mm^2 Working pressure by Rules 16.6 kg/cm^2

Tubes: Material *steel* External diameter $\begin{cases} \text{Plain} \\ \text{Stay} \end{cases} \begin{cases} 83 \text{ mm} \\ 83 \text{ mm} \end{cases}$ Thickness $\begin{cases} 3.75 \text{ mm} \\ 8 \text{ mm} \end{cases}$ No. of threads per inch 9

Pitch of tubes $109 \times 109 \text{ mm}$ Working pressure by Rules 13 kg/cm^2 Manhole compensation: Size of opening in shell plate $402 \times 550 \text{ mm}$ Section of compensating ring  No. of rivets and diameter of rivet holes $47 \text{ of } 28 \text{ mm}$

Outer row rivet pitch at ends 125 mm Depth of flange if manhole flanged 80 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 $\begin{cases} \text{Plate} \\ \text{Rivets} \end{cases}$

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 Manufacturers of $\begin{cases} \text{Tubes} \\ \text{Steel castings} \end{cases}$

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, 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 23 inclusive for boilers been complied with *yes*

The foregoing is a correct description,
PAUL FRICHS Manufacturer.
Charallem

Dates of Survey $\begin{cases} \text{During progress of work in shops} \\ \text{During erection on board vessel} \end{cases} \begin{matrix} 26/8, 6/9, 26/9, 19/10, 25/11, 1927. \\ 11/2, 21/2, 25/4, 19/5, 18/7, 1928. \end{matrix}$ Are the approved plans of boiler and superheater forwarded herewith *yes* (If not state date of approval.)

while building $\begin{matrix} 9/10, 10/10, 18/10, 30/10, 10/11, 19/11, 28/11, 29/11, 31/11, 28 \end{matrix}$ Total No. of visits 19

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) *The donkey boilers as above described have been built under special survey and in accordance with the approved plan and the requirements contained in the Secretary's letter & dated 22/9 & 13/10 1927. The material used for the construction has been tested and examined as required by the Rules and found good, and the workmanship is of good quality throughout.*

The boilers together with the oil fuel burning arrangement have been fitted on board the vessel in accordance with the Society's Rules, the approved plan and the requirements contained in the Secretary's letter & dated 13/9 28, and on completion the whole installation was tested under full power working conditions and found satisfactory.

Recommend the vessel to have notation of 2 DB 185 B. in the Register Book.

Survey Fee ... $3/3.00$ When applied for, $11/10$ 1928

Travelling Expenses (if any) 253.00 When received, $15/12$ 1928

Stuibiff
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute $\text{JUE. 15 JAN 1929 FRI. 22 FEB 1929}$

Assigned *See P.B. rpt. attached*

