

REPORT ON BOILERS.

Received at London Office

21.1.40

Date of writing Report 9 January 40. When handed in to Special Office

Port of Copenhagen.

No. in Survey held at Aalborg and Nakskov Date, First Survey 12 January 1939 Last Survey 4 January 1940

on the Linge S. Motor Tanker SATURNUS

(Number of Visits 78.) Gross 9964.73. Net 5817.86.

Master Built at Nakskov. By whom built Nakskov Skibsvaerk Yard No. 91. When built 1940

Engines made at Copenhagen By whom made Burmeister & Wain Engine No. 3000 When made 1940.

Boilers made at Aalborg By whom made Aalborg Vaerkst A/S. Boilers No. 403-04 When made 1940.

Nominal Horse Power 188. Owners Rederi A/B. Salisnæs. Port belonging to Stockholm.

MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Plates: Colvilles. Tubes: Stewarts & Lloyds. Stays: Strömsnäs (Letter for Record S)

Total Heating Surface of Boilers 2 x 131 m² Is forced draught fitted yes. Coal or Oil fired Oil fired.

No. and Description of Boilers 2 off - Multitubular Working Pressure 12 kg/cm².

Tested by hydraulic pressure to 21.5 kg/cm² Date of test 25.8.39 No. of Certificate 649-50 Can each boiler be worked separately yes.

Area of Firegrate in each Boiler No. and Description of safety valves to each boiler 1 off - double valves direct spring loaded

Area of each set of valves per boiler {per Rule 7373 cm² as fitted 11380 cm² Pressure to which they are adjusted 170 lb/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

Smallest distance between boilers on uptakes and bunkers on woodwork 40" Is oil fuel carried in the double bottom under boilers

Smallest distance between shell of boiler and tank top plating 40" Is the bottom of the boiler insulated

Largest internal dia. of boilers 3480 mm Length 3100 mm Shell plates: Material S.M. Steel Tensile strength 44-55 kg/mm²

Thickness 24 mm Are the shell plates welded or flanged Description of riveting: circ. seams {end double zigzag inter. 85.5 mm

long. seams {circ. seams 26.5 mm long. seams 26.5 mm Pitch of rivets {174.66 mm

Percentage of strength of circ. end seams {plate 69.0 rivets 44.0 Percentage of strength of circ. intermediate seam {plate rivets

Percentage of strength of longitudinal joint {plate 84.8 rivets 85.6 combined 86.7 Working pressure of shell by Rules 12.5 kg/cm².

Thickness of butt straps {outer 20 mm inner 24 mm No. and Description of Furnaces in each Boiler 2 off - corrugated.

Material S.M. Steel Tensile strength 41-47 kg/mm² Smallest outside diameter 997 mm.

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

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 13.7 kg/cm²

End plates in steam space: Material S.M. Steel Tensile strength 41-47 kg/mm² Thickness 25 mm Pitch of stays 432 x 355 mm.

How are stays secured screwed into plates, nuts inside & outside Working pressure by Rules 12.9 kg/cm²

Tube plates: Material {front S.M. Steel Tensile strength 41-47 kg/mm² Thickness {25 mm back 20 mm

Mean pitch of stay tubes in nests 208 mm Pitch across wide water spaces 365 mm Working pressure {front 15.5 kg/cm² back 23.3 kg/cm²

Girders to combustion chamber tops: Material S.M. Steel Tensile strength 44-55 kg/mm² Depth and thickness of girder

at centre 215 mm. 2 x 20 mm Length as per Rule 644 mm Distance apart 216 mm No. and pitch of stays

in each 2 off - 204 mm Working pressure by Rules 25.8 kg/cm² Combustion chamber plates: Material S.M. Steel

Tensile strength 41-47 kg/mm² Thickness: Sides 16 mm Back 16 mm Top 16 mm Bottom 20 mm

Pitch of stays to ditto: Sides 204 x 216 mm Back 196 x 205 mm Top 204 x 216 mm Are stays fitted with nuts or riveted over outside - other stays

Working pressure by Rules 14.2-15.5-14.2-15.7 kg/cm² Front plate at bottom: Material S.M. Steel Tensile strength 41-47 kg/mm²

Thickness 25 mm Lower back plate: Material S.M. Steel Tensile strength 41-47 kg/mm² Thickness 25 mm

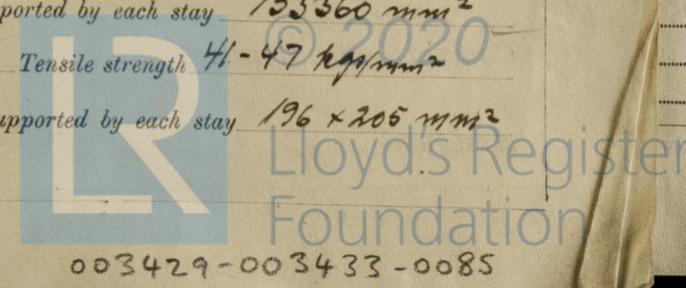
Pitch of stays at wide water space 205 x 365. Are stays fitted with nuts or riveted over filled with nuts.

Working Pressure 13.8 kg/cm² Main stays: Material S.M. Steel Tensile strength 44-55 kg/mm².

Diameter {At body of stay, or Over threads 69.8 No. of threads per inch 9 Area supported by each stay 153360 mm²

Working pressure by Rules 15.9 kg/cm² Screw stays: Material S.M. Steel Tensile strength 41-47 kg/mm²

Diameter {At turned off part, or Over threads 38 mm No. of threads per inch 9 Area supported by each stay 196 x 205 mm²



Working pressure by Rules 14.2 kg/cm^2 Are the stays drilled at the outer ends *no* Margin stays: Diameter $\begin{cases} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{cases} \begin{cases} 44.5 \text{ mm} \\ 44.5 \text{ mm} \end{cases}$

No. of threads per inch *9* Area supported by each stay $205 \times 290 \text{ mm}^2$ Working pressure by Rules 14.1 kg/cm^2

Tubes: Material *S.M. Steel* External diameter $\begin{cases} \text{Plain} \\ \text{Stay} \end{cases} \begin{cases} 76 \text{ mm} \\ 76 \text{ mm} \end{cases}$ Thickness $\begin{cases} 3.65 \text{ mm} \\ 3/8'' \end{cases}$ No. of threads per inch *9*

Pitch of tubes 104 mm Working pressure by Rules 13.5 kg/cm^2 Manhole compensation: Size of opening in shell plate $405 \times 505 \text{ mm}$ Section of compensating ring *flanged* No. of rivets and diameter of rivet holes *48 off - 26.5 mm.*

Outer row rivet pitch at ends 179 mm Depth of flange if manhole flanged 90 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 $\begin{cases} \text{Tubes} \\ \text{Steel forgings} \\ \text{Steel castings} \end{cases}$

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

As 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,
ALBORG MÆRSET AIS Manufacturer.

Dates of Survey $\begin{cases} \text{During progress of work in shops} \\ \text{while building} \end{cases} \begin{cases} 12/1 - 25/1 - 1/2 - 15/4 - 25/4 - 4/5 - 20/5 - 3/6 - 13/6 \\ 29/6 - 30/6 - 18/7 - 24/7 - 1/8 - 25/8 - 19/39 \end{cases}$ Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)

Total No. of visits *28.*

board vessel $\begin{cases} 9/11 - 15/11 - 16/11 - 22/11 - 29/11 - 5/12 - 6/12 \\ 12/12 - 19/12 - 28/12 - 29/12 - 30/12 - 31 - 4/1940 \end{cases}$

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.)

The above boilers have been constructed and fitted under special survey in accordance with the Society's Rules and the approved plan. The material has - as per certificates submitted - been tested and examined as per Rules and found satisfactory. The workmanship is of good description throughout. Recommend the notation "2 D.B. 170 lbs" to be made in the Register Book.

Survey Fee ... *kr. 425.00* When applied for, *19 40*

Travelling Expenses (if any) *kr. 178.00* When received, *19*

J. Langhøj
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned *See Epw J.C. 11091*