

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 Survey held at Aarhus - Nakskov Date, First Survey 26/8 1927 Last Survey 23/12 1928

(Number of Visits 19) Tons { Gross 7747.17 Net 4581.48

on the Steamer L. Motor vessel "SIR KARL KNUDSEN"

Master Built at Nakskov By whom built 9/8 Nakskov Skibsværft. Yard No. 33 When built 1928

Engines made at Copenhagen By whom made 9/8 Bismarck - Wain Engine No. 1407 When made 1928

DONKEY Boilers made at Aarhus By whom made 9/8 Fricks Boilers No. 826-7 When made 1927-8

Nominal Horse Power 624 Owners A. F. Klemmensen & Co. 9/8 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.T. (Letter for Record 5)

FRONT ENDS & COMB. CH. TOP & WRAPPER PLATES: WILLIAM BEARDMORE & CO. LD. PARKHEAD. BACK ENDS & TUBE PLATES: JOHN SPENCER & SONS LD. NEWBURN O. TYNE. (Letter for Record 5)

LONG STAYS: DEUTCH-LUX. BERGW. & HÜTTEN A.G. DORTMUND, STAY BOLTS: WITLOWITZER BERGB. & EISENH. GEW.

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 ft. single ended, return tubular. 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 ft. 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 t.

Thickness 28 mm. Are the shell plates welded or flanged No. Description of riveting: circ. seams { end lap, 26 rivets inter. Pitch of rivets { 100 mm. 100 mm.

long. seams 26 butt straps, 36 riv. Diameter of rivet holes in { circ. seams 28 mm. long. seams 28 mm. Pitch of rivets { 100 mm. 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. combined 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 ft. corrugated, Dighton's pat.

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

Length of plain part { top bottom Thickness of plates { crown 13.5 mm. bottom 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 t. BACK END: 27.2-27.5 t. Thickness { 23 mm. 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 t. 25.8-33 t. Thickness { 23 mm. 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 t. Depth and thickness of girder at centre 165 x 16.2. Length as per Rule 624 mm. Distance apart 200 mm. No. and pitch of stays in each 2 ft. 180 mm. Working pressure by Rules 13.05 kg/cm².

Combustion chamber plates: Material S.M. steel. TOP SIDES BOTTOM: 26-30 t. BACK: 28.2-28.4 t. 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 t.

Thickness 23 mm. Lower back plate: Material S.M. steel. Tensile strength 27.2-27.5 t. Thickness 22 mm.

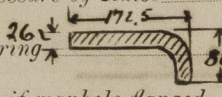
Pitch of stays at wide water space 374 x 218 mm. Are stays fitted with nuts or riveted over SCREWED INTO PLATES & EXPANDED.

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 46.375 = 17250 mm².

Over threads 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/cm² Are the stays drilled at the outer ends yes Margin stays: Diameter ^{At turned off part,} 48 mm
 No. of threads per inch 9 Area supported by each stay 59400 mm² Working pressure by Rules 16.6 kg/cm²
 Tubes: Material steel External diameter ^{Plain} 83 mm Thickness ^{Stay} 8 mm No. of threads per inch 9
 Pitch of tubes 109 x 109 mm Working pressure by Rules 13 kg/cm² Manhole compensation: Size of opening in
 shell plate 402 x 550 mm Section of compensating ring  No. of rivets and diameter of rivet holes 47 of 28 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 ^{Plate}
 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}
 Number of elements Material of tubes ^{Steel castings} 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.

Dates of Survey ^{During progress of work in shops - -} 26/8, 6/9, 26/9, 19/10, 25/11, 1927.
^{During erection on board vessel - - -} 11/2, 21/2, 25/4, 19/5, 18/7, 1928. Are the approved plans of boiler and superheater forwarded herewith yes
 while building ^(If not state date of approval.)
 building ^{board vessel - - -} 9/10, 10/10, 18/10, 30/10, 10/11, 19/11, 28/11, 29/11, 13/12, 28/12, 1928. 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 ... 4/ 3/3.00 When applied for, 11/10 1928
 Travelling Expenses (if any) 5/ 253.00 When received, 15/12 1928

Strickland
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute 10E. 15 JAN 1929 FRI 22 FEB 1929
 Assigned See Rpt. attached