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# REPORT ON BOILERS.

No. 18651.

Received at London Office 17 DEC 1948

Date of writing Report 11th Dec. 1948 When handed in at Local Office 16th Dec. 1948 Port of MIDDLESBROUGH.

No. in Reg. Book. Survey held at STOCKTON-on-TEES Date, First Survey 16th Sept. Last Survey 9th Dec. 1948.

on the STEINGRIM STANGE (Number of Visits 8.) Gross 10099 Tons Net 5895

Built at Sunderland By whom built Sir J. Lamb & Sons Ld. Yard No. 483 When built 1949

Engines made at Sunderland By whom made W. Bayford & Sons Ld. Engine No. 766 When made 1949

Boilers made at Stockton. By whom made Stockton C.E. & R.B. Ltd. Boiler No. 7093 When made 1948.

Nominal Horse Power 4 1/2. Owners Skib a/s Arnelin Port belonging to Oslo.

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

Manufacturers of Steel Appleby-Frodingham Steel Co. (Letter for Record)

Total Heating Surface of Boilers 1700 sq. ft. Is forced draught fitted Cold air Coal or Oil fired Oil & Exh. Gas. Forced D.

No. and Description of Boilers 1 S.E. Multitubular Working Pressure 150 lbs.

Tested by hydraulic pressure to 275 lbs Date of test 9.12.48 No. of Certificate 7262 Can each boiler be worked separately

Area of Firegrate in each Boiler No. and Description of safety valves to each boiler 1 - 2 1/2" D.S. H.L.

Area of each set of valves per boiler (per Rule 20.3 sq. in. as fitted 11.98 sq. in. Pressure to which they are adjusted 150 lb/psi 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 11' 10 3/4" Length 11' 6" Shell plates: Material Steel Tensile strength 29.33

Thickness 13/16" Are the shell plates welded or flanged No Description of riveting: circ. seams end DR.L inter.

long. seams TR-DBS Diameter of rivet holes in circ. seams 1.1/16" Pitch of rivets 3.106" long. seams 15/16" 6 1/2"

Percentage of strength of circ. end seams plate 65.8% rivets 55.1 Percentage of strength of circ. intermediate seam plate rivets

Percentage of strength of longitudinal joint plate 85.6 rivets 97.0 combined

Thickness of butt straps outer 5/8" inner 3/4" No. and Description of Furnaces in each Boiler 2 Deighton

Material Steel Tensile strength 26-30 Smallest outside diameter 3' 6 1/2"

Length of plain part top bottom Thickness of plates crown 15/32" bottom Description of longitudinal joint welded

Dimensions of stiffening rings on furnace or c.c. bottom

End plates in steam space: Material Steel Tensile strength 26.30 Thickness 13/16" Pitch of stays 16 1/2 x 14" (mean)

How are stays secured Double nuts and washers, stays screwed into both plates.

Tube plates: Material front Steel Tensile strength 26-30 Thickness 13/16" back 3/4"

Mean pitch of stay tubes in nests 9 1/4" Pitch across wide water spaces 13 1/2"

Girders to combustion chamber tops: Material Steel Tensile strength 28-32 Depth and thickness of girder

at centre 7" x 1 1/2" Length as per Rule 2' 4.3/32" Distance apart 8 1/2" No. and pitch of stays

in each Solid welded Combustion chamber plates: Material Steel

Tensile strength 26.30 Thickness: Sides 21/32" Back 19/32" Top 21/32" Bottom 21/32"

Pitch of stays to ditto: Sides 10" x 9" Back 9" x 9" Top - Are stays fitted with nuts or riveted over nuts

Front plate at bottom: Material Steel Tensile strength 26.30

Thickness 13/16" Lower back plate: Material Steel Tensile strength 26.30 Thickness 3/4"

Pitch of stays at wide water space 13 1/2" Are stays fitted with nuts or riveted over nuts

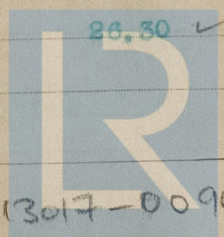
Main stays: Material Steel Tensile strength 28-32

Diameter At body of stay, or Over threads 2.3/8" No. of threads per inch 6

Screw stays: Material Steel Tensile strength 26.30

Diameter At turned off part, or Over threads 1 1/2" No. of threads per inch 9

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6 NOV 1949  
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Are the stays drilled at the outer ends No Margin stays: Diameter { At turned off part, or Over threads } 1.5/8" ✓  
No. of threads per inch 9  
Tubes: Material Hot Rolled W. External diameter { Plain 2 1/2" ✓ Stay 2 1/2" ✓ } Thickness { 9 S.W.G. ✓ 5/16" ✓ } No. of threads per inch 9 ✓  
Pitch of tubes 3 3/4" x 3.5/8" Manhole compensation: Size of opening in shell plate 81" x 17 ✓ Section of compensating ring 57" x 1 1/2" ✓ No. of rivets and diameter of rivet holes 52 - 15/16" ✓  
Outer row rivet pitch at ends 6 1/2" ✓ Depth of flange if manhole flanged 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 { Plate \_\_\_\_\_ Rivets \_\_\_\_\_ }  
Internal diameter \_\_\_\_\_ Thickness of crown \_\_\_\_\_ No. and diameter of stays \_\_\_\_\_ Inner radius of crown \_\_\_\_\_  
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 \_\_\_\_\_  
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 \_\_\_\_\_

The foregoing is a correct description,  
Manufacturer. \_\_\_\_\_

Dates of Survey { During progress of work in shops - - } 1948. Sept. 16, Oct. 4, 8, Nov. 10, 17, 25, Dec. 1, 9. Are the approved plans of boiler and superheater forwarded herewith Yes. (If not state date of approval.)  
{ During erection on board vessel - - } \_\_\_\_\_ Total No. of visits 8.

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.)

This boiler has been constructed under special survey and in accordance with the Rule Requirements and approved plan.  
The materials used, and workmanship are good and on completion this boiler was hydraulically tested to 275 lbs per sq. inch and found satisfactory.  
This boiler is being forwarded to Sunderland for Messrs. W. Doxford's Contract No. 267.

*This boiler has been securely fixed on board the vessel  
The Safety valves adjusted under steam & working pressure  
as above*

*In recommendation please see Machinery Rpt.*

*John H. M. Deane*

Survey Fee ... £ 28 : 8 : 0 } When applied for, 16.12.1948.  
Travelling Expenses (if any) £ : : } When received, 19

*C. Norman Stuart*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 11 NOV 1949  
Assigned See F.E. Mch. rpt.