

## REPORT ON BOILERS.

No. 51748

Date of writing Report 27-8-1942

When handed in at Local Office

Received at London Office

Port of HULL.

No. in Survey held at HULL.

Date, First Survey 7.4.42.

Last Survey 3.9.1942.

on the STEAM TUG.

EMPIRE SAM.

(Number of Visits 45)

Gross 275  
Net Nil

Built at SELBY.

By whom built

Cochrane &amp; Co. Ltd.

Yard No. 1250. When built 1942

Engines made at HULL.

By whom made

Armstrong &amp; Co. Ltd.

Engine No. 711 When made

Boilers made at HULL.

By whom made

Armstrong &amp; Co. Ltd.

Boiler No. 711. When made

Nominal Horse Power 132.

Owners

Ministry of War Transport.

Port belonging to

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

Manufacturers of Steel Appleby Frodingham Steel Co. Ltd.

(Letter for Record 5)

Total Heating Surface of Boilers 2390 sq. ft.

Is forced draught fitted No.

Coal or Oil fired Oil

No. and Description of Boilers 1 S.E. Cylindrical multitubular

Working Pressure 200 lb./sq. in.

Tested by hydraulic pressure to 350 lb./sq. in.

Date of test 24/7/42.

No. of Certificate 4155.

Can each boiler be worked separately ONE ONLY.

Area of Firegrate in each Boiler —

(of) No. and Description of safety valves to each boiler 2. Spring loaded

Area of each set of valves per boiler

per Rule 13.90

Pressure to which they are adjusted 200 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 or uptakes and bunkers or woodwork 1'-6".

Is oil fuel carried in the double bottom under boilers No.

Smallest distance between shell of boiler and tank top plating None

Is the bottom of the boiler insulated Yes.

Largest internal dia. of boilers 15'-6 1/2". Length 11'-6".

Shell plates: Material Steel

Tensile strength 29-33 tons/sq. in.

Thickness 1 3/8".

Are the shell plates welded or flanged No.

Description of riveting: circ. seams

D.R. Cap.

long. seams T.R., D.B.S.

Diameter of rivet holes in

circ. seams 1 3/32"

Pitch of rivets

4 3/16"

Percentage of strength of circ. end seams

plate 66.4%

rivets 42.7%

Percentage of strength of circ. intermediate seam

plate 85.7%

rivets 85.0%

Percentage of strength of longitudinal joint

plate 85.7%

rivets 85.0%

Thickness of butt straps

outer 1 1/16"

inner 1 3/16"

No. and Description of Furnaces in each Boiler 3 cf. Deighlan Section

Material Steel

Tensile strength 26-30 tons/sq. in.

Smallest outside diameter 3'-11 3/8"

Length of plain part

top —

bottom —

Thickness of plates

crown 3 1/16"

Description of longitudinal joint Weld

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

End plates in steam space: Material Steel

Tensile strength 26-30 tons/sq. in.

Thickness 1 3/16"

Pitch of stays 18 3/4" x 18 1/2" MEAN.

How are stays secured Nuts wide and out.

Tube plates: Material

front Steel

Tensile strength

26-30 tons/sq. in.

Thickness

1 5/16"

Mean pitch of stay tubes in nests 9 1/2" x 9 1/2".

Pitch across wide water spaces 14 1/4" x 9 1/2".

Girders to combustion chamber tops: Material Steel

Tensile strength 29-33 tons/sq. in.

Depth and thickness of girder

at centre 9 1/2".

Length as per Rule 2'-11".

Distance apart 9".

No. and pitch of stays

in each 3 @ 8 3/4".

Combustion chamber plates: Material Steel

Tensile strength 26-30 tons/sq. in.

Thickness: Sides 3/4".

Back 2 3/32"

Top 2 3/32"

Bottom 3/4".

Pitch of stays to ditto: Sides 9 1/2" x 8 3/4".

Back 9 1/2" x 8 1/2".

Top 9" x 8 3/4".

Are stays fitted with nuts or riveted over Nuts.

Front plate at bottom: Material Steel

Tensile strength 26-30 tons/sq. in.

Thickness 1 5/16".

Lower back plate: Material Steel

Tensile strength 26-30 tons/sq. in.

Thickness 7/8".

Pitch of stays at wide water space 14 1/4" x 8 1/2".

Are stays fitted with nuts or riveted over Nuts.

Main stays: Material Steel

Tensile strength 28-32 tons/sq. in.

Diameter

At body of stay, 3 1/2"

No. of threads per inch 6.

Screw stays: Material Steel

Tensile strength 26-30 tons/sq. in.

Diameter

At turned off part, 1 3/4"

No. of threads per inch 9.



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Are the stays drilled at the outer ends No. Margin stays: Diameter { At turned off part, or Over threads 1 7/8" + 2"  
No. of threads per inch 9.  
Tubes: Material IRON. External diameter { Plain 3 1/2" Stay 3 1/2" Thickness { 8 W.G. 5/16" No. of threads per inch 9.  
Pitch of tubes 4 3/4" Manhole compensation: Size of opening in shell plate 16" x 12" Section of compensating ring 1 3/8" x 15" No. of rivets and diameter of rivet holes 28 @ 1 3/32"  
Outer row rivet pitch at ends 9 3/8" Depth of flange if manhole flanged 3 3/8" Steam Dome: Material NONE  
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 NONE. 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 Yes.

For AMOS & SMITH LTD.  
The foregoing is a correct description,  
A. A. Blundell Manufacturer.

Dates { During progress of work in shops - - - See machinery report attached. Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)  
while { During erection on board vessel - - - Total No. of visits

Is this Boiler a duplicate of a previous case Yes. If so, state Vessel's name and Report No. EMPIRE PAT. HULL RPT. 51723.

#### GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

The Boiler has been constructed under Special Survey in accordance with the Rules and the approved plans.

The Workmanship and material are good and, when subjected to an hydraulic test of 350 lbs./sq. in. it was found satisfactory in every respect.

The safety valves were adjusted to 200 lbs.

Survey Fee ... £ : : When applied for, 19  
Travelling Expenses (if any) £ : : When received, 19

J. P. H. ...  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRL 9 OCT 1942

Assigned

See Hull G.B. 51748



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Foundation