

REPORT ON BOILERS.

No. 52431.

Received at London Office

18 MAY 1944

16 MAY 1943

Date of writing Report

19

When handed in at Local Office

19

Port of HULL

No. in
Reg. Book.

Survey held at HULL

Date, First Survey 24. 1. 44

Last Survey 4. 5. 1944

on the STEAM TUG.

EMPIRE BETSY.

A/MS 712 (Number of Visits 24)

Gross 274.35
Net Nil

Built at SELBY

By whom built Cochrane & Sons. Ltd

Yard No. 1280. When built 1944

Engines made at HULL

By whom made Amos & Smith Ltd

Engine No. 738. When made

Boilers made at HULL

By whom made Amos & Smith Ltd

Boiler No. 738. When made

Nominal Horse Power 132

Owners The Ministry of War Transport Port belonging to

MULTITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Appleby Frodingham Steel Co. Ltd & Colvilles.

(Letter for Record 5.)

Total Heating Surface of Boilers 2390 sq. ft. ✓

Is forced draught fitted No. ✓

Coal or Oil fired Oil Fuel ✓

No. and Description of Boilers One S.B. ✓

Working Pressure 200 lb./sq. in. ✓

Tested by hydraulic pressure to 350 lb./sq. in. Date of test 4.3.44. No. of Certificate 4220. Can each boiler be worked separately ✓

Area of Firegrate in each Boiler — (0.5) No. and Description of safety valves to each boiler 2. Spring loaded ✓

Area of each set of valves per boiler {per Rule 13-9 sq. in. ✓
as fitted 14.137 sq. in. 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 No.

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

Shell plates: Material Steel ✓ Tensile strength 29-33 ton/ft. ✓

Thickness 1 3/8" ✓ Are the shell plates welded or flanged No

Description of riveting: circ. seams {end D.R. Cap. ✓
inter. —

long. seams T.R., D.B.S. ✓

Diameter of rivet holes in {circ. seams 1 13/32" ✓
long. seams 1 13/32" ✓Pitch of rivets {4 3/16" ✓
9 7/8" ✓

Percentage of strength of circ. end seams {plate 66-4%.

rivets 42-7%.

Percentage of strength of circ. intermediate seam {plate —

rivets —

Percentage of strength of longitudinal joint {plate 85-7%.

rivets 85-0%

combined 90-15%.

Thickness of butt straps {outer 1 1/16" ✓
inner 1 3/16" ✓

No. and Description of Furnaces in each Boiler 3. C.F. Deighton Section. ✓

Material Steel

Tensile strength 26-30 ton/ft. ✓

Smallest outside diameter 3'-11 3/8" ✓

Length of plain part {top —
bottom —Thickness of plates {crown 3 1/16" ✓
bottom 3 1/16" ✓

Description of longitudinal joint Weld ✓

Dimensions of stiffening rings on furnace or c.c. bottom None.

End plates in steam space: Material Steel

Tensile strength 26-30 ton/ft. ✓

Thickness 1 3/16" ✓

Pitch of stays 18 3/4" x 18 1/2" ✓

How are stays secured Nuts inside and out.

Tube plates: Material {front Steel ✓
back Steel ✓Tensile strength {26-30 ton/ft. ✓
26-30 ton/ft. ✓Thickness {1 5/16" ✓
7/8" ✓

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 ton/ft. ✓

Depth and thickness of girder

at centre 9 1/2" x 7 7/8" I-beam

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 ton/ft. ✓

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 ton/ft. ✓

Thickness 1 5/16" ✓

Lower back plate: Material Steel

Tensile strength 26-30 ton/ft. ✓

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

Diameter {At body of stay, 3 1/4" ✓
or
Over threads —

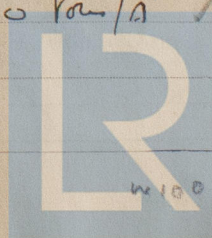
No. of threads per inch 6. ✓

Screw stays: Material Steel

Tensile strength 26-30 ton/ft. ✓

Diameter {At turned off part, —
or
Over threads 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 chan. External diameter { Plain 3 1/2" Stay 3 1/2" Thickness { 8 wg. 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 13/8" x 15" No. of rivets and diameter of rivet holes 28 at 1 13/32"

Outer row rivet pitch at ends 9 7/8" Depth of flange if manhole flanged bottom 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 AL. Kearney For AMOS & SMITH LTD. The foregoing is a correct description, Manufacturer.

Dates of Survey { During progress of 1944 Jan. 24. Feb. 18. 29. Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)

while building { work in shops - - Mar. 1. 4. 10. 13. 22. Total No. of visits 24.

board vessel - - See machinery report.

Is this Boiler a duplicate of a previous case yes If so, state Vessel's name and Report No. Empire Bet, Hull Rpt. No. 51664

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 plan.

The workmanship and materials are good and when subjected to an hydraulic test of 350 lbs /sq" it was found satisfactory in every respect.

The above boiler installed in 'Empire Betsy' at Hull, examined under steam, safety valves adjusted and accumulation test held. Boiler found satisfactory on completion of all tests L.S. Shields.

Survey Fee £ : : When applied for, 19

Travelling Expenses (if any) £ : : When received, 19

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute 25 MAY 1944

Assigned See J.L. machinery rpt



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