

REPORT ON BOILERS.

No. 33861

Received at London Office

6 JAN 1944

Date of writing Report

19

When handed in at Local Office

31st Dec 1943

Port of

Sunderland.

No. in Survey held at
Reg. Book.

Sunderland.

Date, First Survey

Last Survey 30th Dec 1943

on the

"EMPIRE TRAIL"

(Number of Visits

Gross 7083
Net 4895

Built at Sunderland By whom built Shipbuilding Corporation L^d (Leas Branch) Yard No. 1 When built 1943
 Engines made at Sunderland By whom made G. Clark (1938) L^d Engine No. 1302 When made 1943
 Boilers made at Sunderland By whom made G. Clark (1938) L^d Boiler No. 1302 When made 1943
 Nominal Horse Power 509.510 Owners Ministry of War Transport Port belonging to Sunderland

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel

Cochran L^d

Total Heating Surface of Boilers

4248 sq ft

Is forced draught fitted

Yes.

(Letter for Record

S.

Coal or Oil fired

Coal.

No. and Description of Boilers

Three Single Ended Multitubular return tube marine

Working Pressure

220 lbs/sq in

Tested by hydraulic pressure to

380

Date of test

8/4/43

No. of Certificate

4503/4

Can each boiler be worked separately

Yes.

Area of Firegrate in each Boiler

55 sq ft

No. and Description of safety valves to each boiler

2 Cockburn Imp^d High Lift

Area of each set of valves per boiler

per Rule

as fitted

4.95 sq ft

Pressure to which they are adjusted

220

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

3'-9"

Is oil fuel carried in the double bottom under boilers

No.

Smallest distance between shell of boiler and tank top plating

2'-3"

Is the bottom of the boiler insulated

Yes.

Largest internal dia. of boilers

15'-0 1/16"

Length

11'-6"

Shell plates: Material

Steel

Tensile strength

29/33

Thickness

1 1/32"

Are the shell plates welded or flanged

No.

Description of riveting: circ. seams

end

D.R. Lap

long. seams

T.R.D.B.S.

Diameter of rivet holes in

circ. seams

1 1/2"

Pitch of rivets

4 1/8"

inter.

10 3/8"

Percentage of strength of circ. end seams

plate

63.6

rivets

46.2

Percentage of strength of circ. intermediate seam

plate

—

rivets

Percentage of strength of longitudinal joint

plate

85.5

rivets

86.2

combined

88.3

Thickness of butt straps

outer

1 1/8"

inner

1 1/4"

No. and Description of Furnaces in each Boiler

Three Corrugated (Beighton)

Material

Steel

Tensile strength

26/30

Smallest outside diameter

3'-9 3/4"

Length of plain part

top

—

bottom

Thickness of plates

crown

1 1/16"

bottom

Description of longitudinal joint

butt.

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

End plates in steam space: Material

Steel

Tensile strength

26/30

Thickness

1 1/32"

Pitch of stays

19 3/4" x 19 5/8"

How are stays secured

Double nuts.

Tube plates: Material

Steel

Tensile strength

26/30

Thickness

15/16"

25/32"

Mean pitch of stay tubes in nests

9 1/16"

Pitch across wide water spaces

14" x 8 1/4"

Girders to combustion chamber tops: Material

Steel

Tensile strength

28/32

Depth and thickness of girder

at centre

10 1/2" x 13 1/8" (2)

Length as per Rule

2'-9 1/4" x 3/2"

Distance apart

9 1/4"

No. and pitch of stays

in each

3 @ 8"

Combustion chamber plates: Material

Steel

Tensile strength

26/30

Thickness: Sides

1 1/16"

Back

1 1/16"

Top

1 1/16"

Bottom

1 1/8"

Pitch of stays to ditto: Sides

9 1/4" x 8"

Back

9 1/4" x 8"

Top

9 1/4" x 8"

Are stays fitted with nuts or riveted over

nuts.

Front plate at bottom: Material

Steel

Tensile strength

26/30

Thickness

15/16"

Lower back plate: Material

Steel

Tensile strength

26/30

Thickness

2 1/32"

Pitch of stays at wide water space

14" x 8"

Are stays fitted with nuts or riveted over

nuts.

Main stays: Material

Steel

Tensile strength

28/32

Diameter

At body of stay,

3 1/2"

or

Over threads

No. of threads per inch

6

Screw stays: Material

Steel

Tensile strength

26/30

Diameter

At turned off part,

1 3/4"

or

Over threads

No. of threads per inch

9

Are the stays drilled at the outer ends no. Margin stays: Diameter ^{At turned off part} 1 1/8" - 1 1/2"
No. of threads per inch 9.
Tubes: Material S.D. Steel External diameter ^{Plain} 3" Thickness ^{8wg.} 5/16" - 3/8" No. of threads per inch 9.
Pitch of tubes 4 1/4" x 4 1/8" Manhole compensation: Size of opening in
shell plate (See Sample) Section of compensating ring - No. of rivets and diameter of rivet holes
Outer row rivet pitch at ends 4 1/4" Depth of flange if manhole flanged 4 1/4" 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 - Thickness of crown - Rivets
stays - Inner radius of crown - No. and diameter of
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 North Eastern Mar. Eng Co Manufacturers of Sluverts & Lloyds
(Smoke tubes) Apply Hadfield Steel Co
Number of elements 144. Material of tubes S.D. Steel Internal diameter and thickness of tubes 1 5/8" x 2 1/2"
Material of headers Inged Steel Tensile strength 26/30 Thickness 1 1/8" Can the superheater be shut off and
the boiler be worked separately Yes. Is a safety valve fitted to every part of the superheater which can be shut off from the boiler Yes.
Area of each safety valve 3.14 sq" Are the safety valves fitted with easing gear Yes.
Pressure to which the safety valves are adjusted 220 lbs/psi. Hydraulic test pressure:
tubes 1500 lbs/psi. forgings and castings 660 lbs/psi. and after assembly in place 440 lbs/psi. Are drain cocks or
valves fitted to free the superheater from water where necessary Yes.
Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with Yes.

The foregoing is a correct description,

GEORGE CLARK (1938) LTD

Manufacturer.

Chas. J. Berry.

Dates of Survey ^{During progress of} work in shops - -
while ^{During erection on} board vessel - -
building

Are the approved plans of boiler and superheater forwarded herewith
(If not state date of approval.)

Total No. of visits

Is this Boiler a duplicate of a previous case Yes. If so, state Vessel's name and Report No. 'ESSEX TRADER' (1 Sept. 41.)

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

These boilers have been
Constructed under Special Survey in accordance with the
approved plan, specification & the rules of the Society.
The materials & workmanship are good.
On completion they have been tested by hydraulic pressure of
380 lbs/psi & found tight & sound at that pressure.
They have been securely fixed on board the vessel & the
Safety valves of boiler & superheater adjusted to working
pressure in accordance with rule requirements.

For recommendation please see Machy. Rpt.

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

W. H. Fraser.

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUES. 18 JAN 1944

Assigned

see minute
on J.B. Rpt.



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Foundation