

REPORT ON BOILERS.

No. 1073

Date of writing Report 26/5/45 192

When handed in at Local Office 26/5/45 192

Received at London Office 18 JUL 1945

Port of Karachi

No. in Survey held at

Karachi

Date, First Survey

March 1944

Last Survey

3/3/1945 192

74124 on the

S.S. "EMPIRE RAJA"

(Number of Visits)

Gross 6224

Net 3794

Master

Built at

Wesermünde G

By whom built

J.C. Tecklenburg A.G.

Yard No.

When built 1922

Engines made at

Wesermünde G

By whom made

J.C. Tecklenburg A.G.

Engine No.

When made

Boilers made at

By whom made

Boiler No.

When made

Nominal Horse Power

Owners

Ministry of War Transport

Port belonging to

London

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel

Total Heating Surface of Boilers

8608 sq

Is forced draught fitted

Yes

(Letter for Record)

Coal or Oil fired

Coal

No. and Description of Boilers

Four single ended multitubular

Working Pressure

200 lbs

Tested by hydraulic pressure to

Date of test

No. of Certificate

Can each boiler be worked separately

Yes

Area of Firegrate in each Boiler

50 sq

No. and Description of safety valves to each boiler

Two spring loaded

Area of each set of valves per boiler

per Rule

as fitted 23.98 sq

Pressure to which they are adjusted

200 lbs

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

2'-3"

Is oil fuel carried in the double bottom under boilers

No

Smallest distance between shell of boiler and tank top plating

2'-1"

Is the bottom of the boiler insulated

Yes

Largest internal dia. of boilers

13'-11"

Length

11'-11 1/2"

Shell plates: Material

Tensile strength

Thickness

1 1/4"

Are the shell plates welded or flanged

No

Description of riveting: circ. seams

end

Double zigzag

long. seams

Quadruple

Diameter of rivet holes in

circ. seams

long. seams

Pitch of rivets

20"

Percentage of strength of circ. end seams

plate

rivets

Percentage of strength of circ. intermediate seam

plate

rivets

Percentage of strength of longitudinal joint

plate

rivets

combined

Working pressure of shell by Rules

Thickness of butt straps

outer

inner

1 1/2"

No. and Description of Furnaces in each Boiler

Three corrugated

Material

Tensile strength

Smallest outside diameter

40 3/8"

Length of plain part

top

bottom

4"

6 1/2"

Thickness of plates

crown

bottom

1 1/2"

11"

Description of longitudinal joint

Forge welded

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

Working pressure of furnace by Rules

249.7 lbs

End plates in steam space: Material

Tensile strength

Thickness

5"

Pitch of stays

16 3/4" x 16 1/4"

How are stays secured

Nuts inside. Outside not seen.

Working pressure by Rules

276.5 (if double nutted without washers)

Tube plates: Material

front

back

Tensile strength

Thickness

1 1/2"

15"

16"

Mean pitch of stay tubes in nests

8 3/4" x 8 3/4"

Pitch across wide water spaces

14 1/2"

Working pressure

front

back

197.4 lbs

285.6 lbs

Girders to combustion chamber tops: Material

Tensile strength

Depth and thickness of girder

plates each

3"

11"

10 3/8" x 11"

Length as per Rule

2'-5"

Distance apart

7 3/8"

at centre

3

8"

Working pressure by Rules

319.5 lbs

Combustion chamber plates: Material

Tensile strength

Thickness: Sides

43"

64"

Back

13"

16"

Top

43"

64"

Bottom

1"

Pitch of stays to ditto: Sides

7" x 8"

Back

6 1/2" x 7 1/2"

Top

7" x 8"

Are stays fitted with nuts or riveted over

nuts

Working pressure by Rules

279 lbs

Front plate at bottom: Material

Tensile strength

Thickness

1 1/8"

Lower back plate: Material

Tensile strength

Thickness

1"

Pitch of stays at wide water space

11 1/4"

Are stays fitted with nuts or riveted over

nuts

Working Pressure

394.5 lbs

Main stays: Material

Tensile strength

Diameter

At body of stay,

Over threads

3 1/8"

No. of threads per inch

8

Area supported by each stay

16 3/4" x 16 1/4"

(272.1 sq in)

Working pressure by Rules

314.3 lbs

Screw stays: Material

Tensile strength

Diameter

At turned off part,

Over threads

1 1/16"

No. of threads per inch

10

Area supported by each stay

56 sq"

Working pressure by Rules

279 lbs

Front plate at bottom: Material

Tensile strength

Thickness

1 1/8"

Lower back plate: Material

Tensile strength

Thickness

1"

Pitch of stays at wide water space

11 1/4"

Are stays fitted with nuts or riveted over

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Working pressure by Rules

279 lbs

Front plate at bottom: Material

Tensile strength

Thickness

1 1/8"

Working pressure by Rules 297 lbs. Are the stays drilled at the outer ends no Margin stays: Diameter { At turned off part, 3/32
Over threads 1/32
No. of threads per inch 10 Area supported by each stay 66.56 Working pressure by Rules 358.5 lbs.
Tubes: Material _____ External diameter { Plain 3" Thickness { 5/16 No. of threads per inch 10
Stay 3"
Pitch of tubes 4 3/8" Working pressure by Rules _____ Manhole compensation: Size of opening in
shell plate 19 1/2" x 15 3/8" Section of compensating ring 1 1/4" x 13 1/2" No. of rivets and diameter of rivet holes 48
Outer row rivet pitch at ends 7" Depth of flange if manhole flanged 2 7/8" (flange on 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 _____ 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 Superheat arrangements removed. The boiler is now without superheat. Manufacturers of { Tubes _____
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 _____ 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 _____

The foregoing is a correct description,

Manufacturer.

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

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

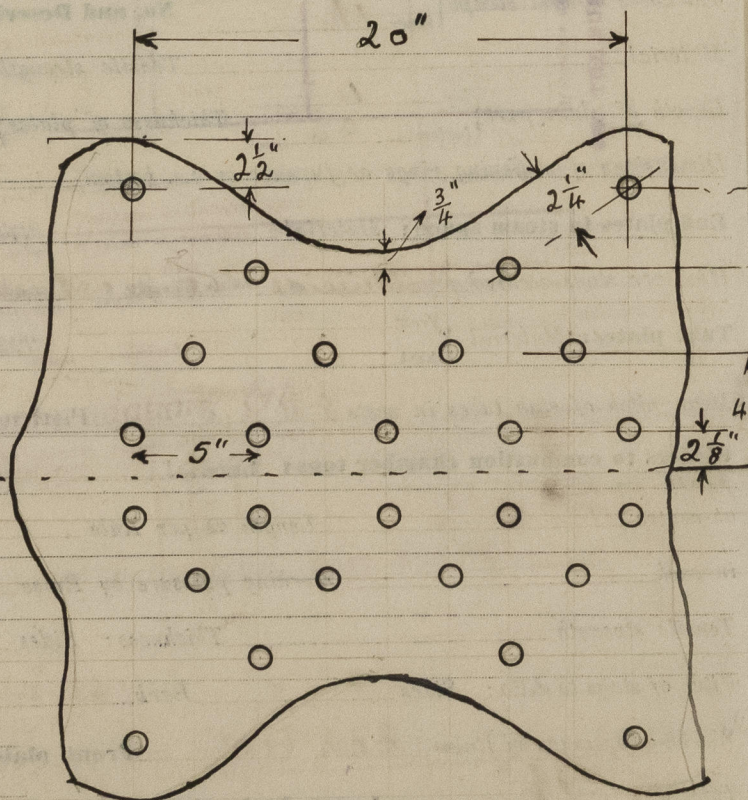
Total No. of visits

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

The thicknesses of the various plates were obtained by measurement at the edges, each plate being measured in several places. The diameters of rivets could not be obtained but, as a guide the maximum diameter of the heads was measured. All rivets have round heads of good shape and not pressed out at the edges and the diameters are: Shell long. seams 2 5/8"; Shell circ. seams 2 5/16"; Manhole compensating ring 2 5/8".

The quality of workmanship, as far as can be judged from boilers not examined during construction, is good.

Shell Butt Strap



Survey Fee No. FEE £ : :
Travelling Expenses (if any) £ : :

When applied for, 192
When received, 192

John Rundle
Engineer/Surveyor to Lloyd's Register of Shipping.

Committee's Minute

REC'D 5 OCT. 1949

Assigned

See minute on R-9



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Foundation