

10.19.22.25.27
12.13.21.
Oct 11.14.20

pt. 5a.

REPORT ON BOILERS.

No. 34109

Received at London Office

8 JAN 1945

Date of writing Report

19

When handed in at Local Office

3 JAN 1945

Port of

Sunderland.

No. in Survey held at

Book.

Sunderland

Date, First Survey

Last Survey

29 Dec 1944

EMPIRE MANDALAY

(Number of Visits

Tons

Gross 7085

Net 4889

21.6.42

alt at

Sunderland Barrow.

By whom built

Shipbldg. Corporation (Leas Branch)

Yard No.

5.

When built

1944

Engines made at

Sunderland

By whom made

Vickers Armstrong Ltd

Engine No.

847

When made

Boilers made at

Sunderland

By whom made

G. Clark (1938) Ltd

Boiler No.

1333

When made

1944.

Original Horse Power

510

Owners

Ministry of War Transport
(R. Chapman Son)

Port belonging to

Sunderland.

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel

Steel Co. of Scotland

Total Heating Surface of Boilers

4248 sq. ft.

Is forced draught fitted

Yes.

Coal or Oil fired

Coal.

No. and Description of Boilers

Three Single Ended Multitubular return tube marine

Working Pressure

220 lb./sq. in.

Tested by hydraulic pressure to

380 lb./sq. in.

Date of test

28/4/44

No. of Certificate

4547

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

6.4 0-1/2"

Pressure to which they are adjusted

220

Are they fitted with easing gear

Yes.

Area of each set of valves per boiler

per Rule

as fitted

495 0-1/2"

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler

No.

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" mean

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

inter.

Long. seams

T.R.D.B.S.

Diameter of rivet holes in

circ. seams

1 1/2"

Pitch of rivets

4 1/8"

10 3/8"

Percentage of strength of circ. end seams

plate

63.6

rivets

46.2

Percentage of strength of circ. intermediate seam

plate

85.5

rivets

86.2

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 (Keighley)

Material

Steel

Tensile strength

26/30

Smallest outside diameter

3'-9 3/4"

Length of plain part

top

bottom

Thickness of plates

crown

bottom

1 1/16"

Description of longitudinal joint

welded

Dimensions of stiffening rings on furnace or e.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

front

back

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"

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

4/8"

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 1/4"

No. of threads per inch

6.

crew stays: Material

Steel

Tensile strength

26/30

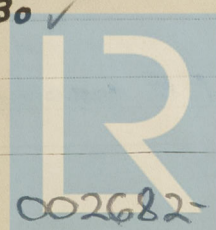
Diameter

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 1/8" x 2"*

No. of threads per inch *9.* ✓

Tubes: Material *S. D. Steel* External diameter { Plain *3"* Stay *3"* Thickness { *8 lb.* *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

shell plate *(In 2nd plate)* Section of compensating ring *-* No. of rivets and diameter of rivet holes *-*

Outer row rivet pitch at ends *-* Depth of flange if manhole flanged *4 1/4"* Steam Dome: Material *same.*

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 *N.E.M. (wallhead) Smoke tube* ✓ Manufacturers of { Tubes *Salter Steel* Steel forgings *Appley Tradingham Steel Co.* Steel castings

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 *Inpa 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. ft.* ✓ Are the safety valves fitted with easing gear *Yes.* ✓

Pressure to which the safety valves are adjusted *220 lbs.* ✓ Hydraulic test pressure

tubes *1500 lbs.* ✓ forgings and castings *6600 lbs.* ✓ and after assembly in place *440 lbs.* ✓ Are drain cocks on 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 (1886) Ltd.* Manufacturer.

Dates of Survey { During progress of work in shops - - - *See Report 4* Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)

while building { 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 Indor*

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. In completion they were tested by hydraulic pressure of 380 lbs & found tight & sound at that pressure. They have been securely fixed on board the vessel & safety valves of boilers & superheaters adjusted under steam to working pressure as above in accordance with rule requirements.*

In recommendation, please see Machinery Rpt.

Survey Fee £ : : When applied for, 19

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

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

Committee's Minute *FRI. 16 FEB 1945*

Assigned *See F.E. machy. rpt.*