

14 SEP 1932

Rpt. 5a.

REPORT ON BOILERS.

No. 10,892

Received at London Office

Date of writing Report

19

When handed in at Local Office

6 July 1932

Port of Belfast

No. in Reg. Book

Belfast

Date, First Survey

see machinery report

Last Survey

19

on the

S.S. BHADRAYATI

(Number of Visits)

Gross 1307
Net 553

Master

Built at Glasgow

By whom built Harland & Wolff Ltd.

Yard No. 9259. When built 1932

Engines made at

Belfast

By whom made

Harland & Wolff Ltd.

Engine No. 9259. When made 1932

Boilers made at

Belfast

By whom made

Harland & Wolff Ltd.

Boiler No. 9259. When made 1932

Nominal Horse Power

269

Owners

Bombay Str. Nav. Co. Ltd.

Port belonging to

Bombay

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel

Bolville's Ltd.

(Letter for Record 5)

Total Heating Surface of Boilers

4546 sq ft

Is forced draught fitted

Yes

Coal or Oil fired both

No. and Description of Boilers

Two single-ended cylindrical

Working Pressure 200 lbs

Tested by hydraulic pressure to

250 lbs

Date of test 31.5.32

No. of Certificate 967

968

Can each boiler be worked separately Yes

Area of Firegrate in each Boiler

65.7 sq ft

No. and Description of safety valves to each boiler

Two spring-loaded uniputed high lift

Area of each set of valves per boiler

per Rule 2 of 15.85 sq ft

as fitted 9.81 sq ft

Pressure to which they are adjusted

Are they fitted with easing gear

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

Is oil fuel carried in the double bottom under boilers

Smallest distance between shell of boiler and tank top plating

Is the bottom of the boiler insulated

Largest internal dia. of boilers

14'-6" mean Length 11'-9"

Shell plates: Material

Steel

Tensile strength 29.33 sq ft

Thickness

1 1/8"

Are the shell plates welded or flanged

No.

Description of riveting: circ. seams

end double

long. seams

Kettle d.b.s.

Diameter of rivet holes in

circ. seams 1 3/8"

long. seams 1 3/8"

Pitch of rivets

3.278"

Percentage of strength of circ. end seams

plate 58.1

rivets 55.2

Percentage of strength of circ. intermediate seam

plate

rivets

Percentage of strength of longitudinal joint

plate 85.23

rivets 91.1

combined 88.7

Working pressure of shell by Rules 204 lbs

Thickness of butt straps

outer 1 3/32"

inner 1 5/32"

No. and Description of Furnaces in each Boiler

Three Deighton 3 ft

Material

Steel

Tensile strength

26.30 Tons

Smallest outside diameter

3'-9"

Length of plain part

top

Thickness of plates

crown 5/8"

bottom 5/8"

Description of longitudinal joint

Weld

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

Working pressure of furnace by Rules 202 lbs

End plates in steam space: Material

Steel

Tensile strength

26.30 Tons

Thickness

1 3/32"

Pitch of stays 16 1/2" x 18 1/2"

How are stays secured double nuts screwed into end plates and washers

Working pressure by Rules 207 lbs

Tube plates: Material

front Steel

back Steel

Tensile strength

26.30 Tons

Thickness

7/8"

Mean pitch of stay tubes in nests

8"

Pitch across wide water spaces

13 3/4" x 7 3/4"

Working pressure

front 210 lbs

back 260 lbs

Girders to combustion chamber tops: Material

Steel

Tensile strength

28.32 Tons

Depth and thickness of girder

at centre

10" x 1 5/8"

Length as per Rule

34 7/16"

Distance apart

10 1/4"

No. and pitch of stays

in each

three 8 1/2"

Working pressure by Rules 209 lbs

Combustion chamber plates: Material

Steel

Tensile strength

26.30 Tons

Thickness: Sides

23/32"

Back

21/32"

Top

23/32"

Bottom

23/32"

Pitch of stays to ditto: Sides

8 1/2" x 10 1/4"

Back

8 1/2" x 8 3/8"

Top

8 1/2" x 10 1/4"

Are stays fitted with nuts or riveted over

nuts

Working pressure by Rules 204 lbs

Front plate at bottom: Material

Steel

Tensile strength

26.30 Tons

Thickness

7/8"

Lower back plate: Material

Steel

Tensile strength

26.30 Tons

Thickness

7/8"

Pitch of stays at wide water space

13 1/2" x 8 1/2"

Are stays fitted with nuts or riveted over

nuts

Working Pressure 217 lbs

Main stays: Material

Steel

Tensile strength

28.32 Tons

Diameter

At body of stay, 2 3/4"

Over threads 3 1/4" part 3" back

No. of threads per inch

Five

Area supported by each stay

26.21"

Working pressure by Rules 250 lbs

Screw stays: Material

Steel

Tensile strength

26.30 Tons

Diameter

At turned off part, 1 5/8"

Over threads 1 3/4"

No. of threads per inch

Two

Area supported by each stay

68" 87.125"

002498-002505-0323

Lloyd's Register Foundation

Working pressure by Rules 206 lb Are the stays drilled at the outer ends No. Margin stays: Diameter $\left\{ \begin{array}{l} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{array} \right. \underline{1\frac{3}{8}'' 2''}$

No. of threads per inch 2en Area supported by each stay 1010" Working pressure by Rules 211 lb

Tubes: Material mailed iron External diameter $\left\{ \begin{array}{l} \text{Plain} \\ \text{Stay} \end{array} \right. \underline{2\frac{3}{4}''}$ Thickness $\left\{ \begin{array}{l} \text{No. 8 W.G.} \\ \text{7/8'' 7/16'' 1/2''} \end{array} \right. \underline{7/8''}$ No. of threads per inch 2en

Pitch of tubes 4\frac{1}{2}'' x 3\frac{3}{8}'' Working pressure by Rules plain 275 lb Stay 351 lb Manhole compensation: Size of opening in shell plate 16'' x 12'' Section of compensating ring 36'' x 32'' x 1\frac{25}{64}'' No. of rivets and diameter of rivet holes 28 - 1\frac{1}{2}''

Outer row rivet pitch at ends 10\frac{1}{4}'' Depth of flange if manhole flanged thickened 2'' Steam Dome: Material ✓

Tensile strength • Thickness of shell • Description of longitudinal joint •

Diameter of rivet holes • Pitch of rivets • Percentage of strength of joint $\left\{ \begin{array}{l} \text{Plate} \\ \text{Rivets} \end{array} \right. \underline{•}$

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 ✓ Manufacturers of $\left\{ \begin{array}{l} \text{Tubes} \\ \text{Steel castings} \end{array} \right. \underline{•}$

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 22 inclusive for boilers been complied with Yes.

The foregoing is a correct description,
 FOR HARLAND AND WOLFF, LIMITED,
A. J. Marshall Manufacturer,
 Assistant Secretary.

Dates of Survey $\left\{ \begin{array}{l} \text{During progress of} \\ \text{work in shops - -} \\ \text{while building} \end{array} \right. \left\{ \begin{array}{l} \text{During erection on} \\ \text{board vessel - - -} \end{array} \right.$

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 No. If so, state Vessel's name and Report No. ✓

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

These boilers have been constructed under Special Survey. The materials and workmanship are sound and good. They have been tested by hydraulic pressure in accordance with the rules, with satisfactory results.

Survey Fee £ See Machinery Report. When applied for, 19

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

R. Lee James
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 13 SEP 1932**

Assigned **SEE ACCOMPANYING MACHINERY REPORT.**

