

## REPORT ON BOILERS.

No. 10,024

Received at London Office

Writing Report

192

When handed in at Local Office

30 Aug 1928

Port of

Belfast

in Survey held at

Belfast

Date, First Survey

26 April

Last Survey

30 August 1928

Book.

S. S. "BEHAR"

(Number of Visits 30)

Gross

Tons

Net

Built at

Greenock

By whom built

Harland &amp; Wolff Ltd Yard No. 8309K When built 1928

Made at

Glasgow

By whom made

do

Engine No. 830

When made 1928

Made at

Belfast

By whom made

Harland &amp; Wolff Ltd.

Boiler No. 8309K

When made 1928

Nominal Horse Power

1036

Owners

Hain &amp; Co. Ltd.

Port belonging to

London

## LITUBULAR BOILERS MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel

David Colville &amp; Sons Ltd.

(Letter for Record S. ✓)

Heating Surface of Boilers

15050 sq ft ✓

Is forced draught fitted

Yes ✓

Coal or Oil fired

Oil ✓

Description of Boilers

Five single-ended cylindrical 5SB

Working Pressure

230 lb.

Tested by hydraulic pressure to

395 lb.

Date of test 17. 8. 28

No. of Certificate

922

Can each boiler be worked separately

Yes ✓

Description of Firegrate in each Boiler

No. and Description of safety valves to each boiler

2-Improved Rockham Macnicoll High-Lift

Description of each set of valves per boiler

per Rule

1/2 of 18.4 in<sup>2</sup>

as fitted

19.8 in<sup>2</sup>

Pressure to which they are adjusted

230 lb./in<sup>2</sup>

Are they fitted with easing gear

Yes ✓

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

Least distance between boilers or uptakes and bunkers or woodwork

1' 8"

Is oil fuel carried in the double bottom under boilers

no

Least distance between shell of boiler and tank top plating

2' 6"

Is the bottom of the boiler insulated

yes ✓

Least internal dia. of boilers

15' 9"

Length

12' 9"

Shell plates: Material

Steel

Tensile strength

29-33 Tons

Thickness

1 5/8"

Are the shell plates welded or flanged

no

Description of riveting: circ. seams

end double

seams

keble ✓

Diameter of rivet holes in

circ. seams

1 5/8"

Pitch of rivets

3.74"

Percentage of strength of circ. end seams

plate 56.5

rivets 54.12

Percentage of strength of circ. intermediate seam

plate

Percentage of strength of longitudinal joint

plate 83.75

rivets 94.89

Working pressure of shell by Rules

233.6 lb.

Thickness of butt straps

outer 1 5/16"

inner 1 3/16"

No. and Description of Furnaces in each Boiler

Three marine 24"

Material

Steel

Tensile strength

26-30 Tons

Smallest outside diameter

45 7/16"

Thickness of plain part

top ✓

Thickness of plates

crown 3 3/32"

bottom 3 3/32"

Description of longitudinal joint

weld.

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

✓

Working pressure of furnace by Rules

232.4 lb.

Plates in steam space: Material

Steel

Tensile strength

26-30 Tons

Thickness

1 1/4"

Pitch of stays

21 x 16 3/8"

Are stays secured double-nuts, screwed into end plates, &amp; washers

Working pressure by Rules

233.7 lb.

End plates: Material

front Steel

back Steel

Tensile strength

26-30 Tons

Thickness

3 1/32"

7/8"

Pitch of stay tubes in nests

9.5"

Pitch across wide water spaces

14 1/4" x 8 1/2"

Working pressure

front 235 lb.

back 236 lb.

Boilers to combustion chamber tops: Material

Steel

Tensile strength

28-32 Tons

Depth and thickness of girder

Centre

11 3/8" - 13 1/4"

Length as per Rule

39"

Distance apart

9 1/2"

No. and pitch of stays

Each

Three 9"

Working pressure by Rules

247 lb.

Combustion chamber plates: Material

Steel

Tensile strength

26-30 Tons

Thickness: Sides

3/4"

Back

23 3/32"

Top

3/4"

Bottom

7/8"

Pitch of stays to ditto: Sides

9 x 9 1/2" (STAYS AT WINGS)

Back

8 3/8" x 8 5/16"

Top

9 x 9 1/2"

Are stays fitted with nuts or riveted over

nuts

Working pressure by Rules

239 lb.

Front plate at bottom: Material

Steel

Tensile strength

26-30 Tons

Thickness

3 1/32"

Lower back plate: Material

Steel

Tensile strength

26-30 Tons

Thickness

7/8"

Pitch of stays at wide water space

12 3/4" x 8 5/16"

Are stays fitted with nuts or riveted over

nuts

Working Pressure

264.3 lb.

Main stays: Material

Steel

Tensile strength

28-32 Tons

Pitch of stays at body of stay

At body of stay

3 1/4"

No. of threads per inch

Wire

Area supported by each stay

314.4 sq in

Working pressure by Rules

256 lb.

Screw stays: Material

Steel

Tensile strength

26-30 Tons

Pitch of stays at turned off part

At turned off part

1 3/4" - 1 7/8"

No. of threads per inch

2 in

Area supported by each stay

73.77 sq in 85.5 sq in

W1267-0.58



Working pressure by Rules *745 lb* Are the stays drilled at the outer ends *no* Margin stays: Diameter { At turned off part, *1 7/8"* or *2 1/2"* Over threads *1 7/8"* *2 1/2"* *✓*  
No. of threads per inch *2 1/2* Area supported by each stay *89.87 sq"* Working pressure by Rules *237 lb*  
Tubes: Material *Iron* External diameter { Plain *3"* Stay *3"* Thickness { *no. 7* *3/32"* *3/8"* *1/2"* No. of threads per inch *2 1/2*  
Pitch of tubes *1 1/4" x 1 1/4"* Working pressure by Rules *Plain 300 lb Stay 309 lb* Manhole compensation: Size of opening *16" x 12"* Section of compensating ring *36" x 32" x 1 1/2" double* No. of rivets and diameter of rivet holes *24 - 1 1/2"*  
Outer row rivet pitch at ends *10 1/2"* Depth of flange if manhole flanged *✓* 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 of rivets in outer row in dome connection to shell

**SUPERHEATERS FITTED IN THE THREE FORWARD BOILERS ONLY:-**  
Type of Superheater *The Superheater Co. Ltd.* Manufacturers of { Tubes *The Superheater Co. Ltd.* Steel castings *Superheater Co. Ltd.*  
Number of elements *207* Material of tubes *S.D. Steel* Internal diameter and thickness of tubes *17 mm. 3 mm.*  
Material of headers *Steel* Tensile strength Thickness *3/4"* Can the superheater be shut off 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 *1.77 ins.* Are the safety valves fitted with easing gear *yes* Working pressure a Rules Pressure to which the safety valves are adjusted *235-240 lbs./sq. in.* Hydraulic test pressure tubes *1000 lbs.* castings *690 lbs.* and after assembly in place *460 lbs.* Are drain cocks or valves to free the superheater from water where necessary *yes*  
Have all the requirements of Sections 14 to 23 inclusive for boilers been complied with *yes*

The foregoing is a correct description,  
FOR HARLAND AND WOLFF, LIMITED,

1925  
Dates of Survey { During progress of work in shops - *Apr 26 May 23-10-11-14-16-21-24 June 5-11-15 July 3-14-24-26-27-30 Aug 2-3-6-7-13-14-15-17-28* Are the approved plans of boiler and superheater forwarded herewith *yes* (If not state date of approval.)  
while building { During erection on board vessel - *27-28-30 = 30* Total No. of visits

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.) *These boilers have been constructed to approved plan and under special survey. The workmanship and materials are sound and good. They have been subjected to hydraulic test with satisfactory results. Superheaters have been fitted to the three forward boilers and subsequently tested after assembly in place. These boilers are eligible, in my opinion, for a classed vessel.*

Marks in Superheaters

PORT FORWARD	CENTRE FORWARD	STAR FORWARD
LLOYD'S TEST 460 LBS W.P. 230 LBS R.L.A. 28.8.28	LLOYD'S TEST 460 LBS W.P. 230 LBS R.L.A. 30.8.28	LLOYD'S TEST 460 LBS W.P. 230 LBS R.L.A. 15.8.28

The Boilers have been despatched to Greenock.

*These 5 Boilers — the forward 3 being fitted with Superheaters — have been properly fitted in the vessel. All safety valves have been adjusted as per accompanying Engine Report and the boilers accumulated under full working conditions with satisfactory results.*

Survey Fee *£125-18-0* £ 50 : 7 : 0 When applied for, *30 Aug 1928*  
Travelling Expenses (if any) £ : : When received, *Low ltr 7/9/1928*

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

Committee's Minute **GLASGOW 13 NOV 1928**

Assigned *See Glasgow Report No. 448601*