

## REPORT ON BOILERS.

No. 11655.

Received at London Office

JAN 1936

Date of writing Report

19

When handed in at Local Office 31<sup>st</sup> Dec 1935 Port of Belfast

Vessels included in first entry mch.

No. in  
Reg. Book

Survey held at

Belfast

Date, First Survey

Last Survey

19

37964

on the

Tm. Sc. EMPIRE STAR

(Number of Visits)

Gross

Tons

Net

Built at

Belfast

By whom built

Harland &amp; Wolff Ltd

Yard No. 957

When built 1935

Engines made at

Belfast

By whom made

Harland &amp; Wolff Ltd

Engine No. 957

When made 1935

Boilers made at

Belfast

By whom made

Harland &amp; Wolff Ltd

Boiler No. 957

When made 1935

Owners

Blue Star Line Ltd

Port belonging to

Belfast

## VERTICAL DONKEY BOILER.

Made at Belfast

By whom made

Harland &amp; Wolff Ltd

Boiler No. 957

When made 1935

Where fixed Upper Deck in E.R.

Manufacturers of Steel

Colvilles Ltd

Total Heating Surface of each Boiler

300 sq ft.

Is forced draught fitted

No

Fuel Oil fired &amp; Exhaust gases

No. and Description of Boilers

Two Clarkson Thimble Tube "Regato 300"

Working pressure 100 lbs

Tested by hydraulic pressure to

200 lbs

Date of test

8.10.35 &amp; 29.10.35

No. of Certificate 1000 &amp; 1003

Area of Firegrate in each Boiler

No. and Description of safety valves to each boiler

2 - 1 3/4" dia

Area of each set of valves per boiler

per rule 3.26 sq ft.  
as fitted 4.80 sq ft.

Pressure to which they are adjusted

100 lbs

Are they fitted with easing gear

Yes

State whether steam from main boilers can enter the donkey boiler

Smallest distance between boiler or uptake and bunkers

or woodwork

Is oil fuel carried in the double bottom under boiler

Smallest distance between base of boiler and tank top plating

Is the base of the boiler insulated

No

Largest internal dia. of boiler

5'-11 1/4"

Height 16'-0"

Shell plates: Material

Steel

Tensile strength 28-32 tons

Thickness

1 3/32"

Are the shell plates welded or flanged at ends of butt straps

Description of riveting: circ. seams

end S.R.  
inter. S.R.

long. seams Double riveted

Dia. of rivet holes in

circ. seams 25/32"  
long. seams 25/32"

Pitch of rivets

1 3/16"  
2 7/8"

Percentage of strength of circ. seams

plate 56.9  
rivets 53.5

of Longitudinal joint

plate 72.9  
rivets 128  
combined 109.7

Working pressure of shell by rules

115 lbs

Thickness of butt straps

outer 3/8"  
inner 3/8"

Shell Crown:

Whether complete hemisphere, dished partial spherical, or flat

Yes

Material Steel

Tensile strength

26-30 tons

Thickness

2 1/32"

Radius

5'-6"

Working pressure by rules 118 lbs

Description of Furnace: Plain, spherical, or dished crown

Yes

Material Steel

Tensile strength 26-30 tons

Thickness

25/32"

INTERNAL

External diameter

top 3'-0"

bottom

Length as per rule

Working pressure by rules

Pitch of support stays circumferentially

and vertically

Are stays fitted with nuts or riveted over

Diameter of stays over thread

Radius of spherical or dished furnace crown

Working pressure by rule 144 lbs

Thickness of Ogee Ring

3/4"

Diameter as per rule

D

Working pressure by rule

Combustion Chamber: Material

Steel

Tensile strength 26-30 tons

Thickness of top plate

5/8"

Radius if dished

Working pressure by rule

Thickness of back plate

Diameter if circular 36"

Length as per rule

7'-0"

Pitch of stays

6" V.P. &amp; 6" 1/2" horiz

Are stays fitted with nuts or riveted over

Diameter of stays over thread

2 3/4"

9 BWC

Working pressure of back plate by rules

273 lbs

Tube Plates: Material

front back

Tensile strength

Thickness

Mean pitch of stay tubes in nests

If comprising shell, Dia. as per rule

front back

Pitch in outer vertical rows

Dia. of tube holes FRONT

stay plain

BACK

stay plain

Is each alternate tube in outer vertical rows a stay tube

Working pressure by rules

Girders to combustion chamber tops: Material

Tensile strength

Depth and thickness of girder at centre

Length as per rule

Distance apart

No. and pitch of stays in each

Working pressure by rule

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**Crown stays:** Material \_\_\_\_\_ Tensile strength \_\_\_\_\_ Diameter <sup>at body of stay</sup> \_\_\_\_\_  
 No. of threads per inch \_\_\_\_\_ Area supported by each stay \_\_\_\_\_ Working pressure by rules \_\_\_\_\_  
**Screw stays:** Material \_\_\_\_\_ Tensile strength \_\_\_\_\_ Diameter <sup>at turned off part</sup> \_\_\_\_\_ No. of threads per inch \_\_\_\_\_  
 Area supported by each stay \_\_\_\_\_ Working pressure by rules \_\_\_\_\_ Are the stays drilled at the outer ends \_\_\_\_\_  
**Tubes:** Material \_\_\_\_\_ External diameter <sup>plain</sup> \_\_\_\_\_ Thickness \_\_\_\_\_  
 No. of threads per inch \_\_\_\_\_ Pitch of tubes \_\_\_\_\_ Working pressure by rules \_\_\_\_\_  
**Manhole Compensation:** Size of opening in shell plate 16" x 12" Section of compensating ring 4 3/4" x 1 3/16" No. of rivets and diameter \_\_\_\_\_  
 of rivet holes 40 - 1 3/16" Outer row rivet pitch at ends 3 1/2" Depth of flange <sup>Shell Crown</sup> 3"  
**Uptake:** External diameter 21 1/16" Thickness of uptake plate 1 7/32"  
**Cross Tubes:** No. \_\_\_\_\_ External diameters \_\_\_\_\_ Thickness of plates \_\_\_\_\_

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. Marshall* Manufacturer  
 Assistant Secretary.

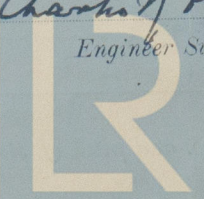
Is the approved plan of boiler forwarded herewith 11. 3. 35  
 (If not state date of approval.)  
 Total No. of visits \_\_\_\_\_  
 Dates of Survey <sup>During progress of</sup> work in shops- -  
 while building <sup>During erection on</sup> board vessel - -

Is this Boiler a duplicate of a previous case \_\_\_\_\_ If so, state Vessel's name and Report No. \_\_\_\_\_

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.)  
 The boilers were constructed under special survey and to an approved design.  
 The materials and workmanship are good. They were tested by hydraulic  
 pressure, efficiently installed and fastened on an upper deck in the motor room.  
 The safety valves were adjusted under steam, accumulation tests were satisfactory.  
 They are adapted for exhaust gas and oil burning. In our opinion they are  
 eligible for use on a classed vessel.

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

Committee's Minute  
 Assigned See Bel Rpt. 11655

*Charles H. Hunter & R. Lee Ames*  
 Engineer Surveyor to Lloyd's Register of Shipping.  

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