

REPORT ON BOILERS.

No. 62987

OCT 24 1940

Received at London Office

Date of writing Report 18-10-1940 When handed in at Local Office 21-10-1940 Port of Glasgow

No. in Survey held at
Reg. Book.

Dumbarton

Date, First Survey 27-9-40

Last Survey 17-10-1940

on the

EMPIRE FROST

(Number of Visits 24)

Gross 7005
Net 5129

Master

Built at

Port Glasgow

By whom built

Tithgows & Co.

Yard No.

939

When built

1940

Engines made at

Gumock

By whom made

Rankin & Blackmore

Engine No.

472

When made

1940

Boilers made at

Dumbarton

By whom made

Wm Denny & Bros Ltd

Boiler No.

5-0-338

When made

1940

Nominal Horse Power

436

Owners

The Ministry of Shipping Port belonging to Greenock

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel

Bolwilles & Co.

(Letter for Record

S.

Total Heating Surface of Boilers

5830

Is forced draught fitted

Yes

Coal or Oil fired

Coal

No. and Description of Boilers

2. Multitubular

Working Pressure

220

Tested by hydraulic pressure to

380

Date of test

8-10-40

No. of Certificate

20647

Can each boiler be worked separately

Area of Firegrate in each Boiler

67 sq

No. and Description of safety valves to each boiler

2. Cockburns Improved High Lift MC.

Area of each set of valves per boiler

per Rule

9.4 sq MC

as fitted

11.8 sq MC

Pressure to which they are adjusted

220 lbs MC.

Are they fitted with easing gear

Yes MC.

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

24" MC

Is oil fuel carried in the double bottom under boilers

No MC

Smallest distance between shell of boiler and tank top plating

26" MC

Is the bottom of the boiler insulated

Yes MC

Largest internal dia. of boilers

16'-3"

Length

12'-0"

Shell plates: Material

S

Tensile strength

29-33

Thickness

1 1/32"

Are the shell plates welded or flanged

No

Description of riveting: circ. seams

end J.R.

inter. MC

long. seams

T.R.I.B.S.

Diameter of rivet holes in

circ. seams

1 5/8"

long. seams

Pitch of rivets

4 1/2"

11 5/16"

Percentage of strength of circ. end seams

plate

61.5

rivets

48.7

Percentage of strength of circ. intermediate seam

plate

MC

Percentage of strength of longitudinal joint

plate

85.3

rivets

87.2

combined

88.1

Working pressure of shell by Rules

226

Thickness of butt straps

outer

1 1/4"

inner

1 3/8"

No. and Description of Furnaces in each Boiler

4. Heighton

Material

S

Tensile strength

26-30

Smallest outside diameter

3'-5 5/16"

Length of plain part

top

✓

bottom

Thickness of plates

crown

2 1/32"

bottom

Description of longitudinal joint

weld

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

None

Working pressure of furnace by Rules

232

End plates in steam space: Material

S

Tensile strength

26-30

Thickness

1 5/32"

Pitch of stays

20" x 22"

How are stays secured

J.H.

Working pressure by Rules

229

Tube plates: Material

front

S.

back

S.

Tensile strength

26-30

Thickness

1 3/32"

13/16"

Mean pitch of stay tubes in nests

9 7/8"

Pitch across wide water spaces

14"

Working pressure

front

back

Girders to combustion chamber tops: Material

S

Tensile strength

29-33

Depth and thickness of girder

at centre

10 1/2" x 1 1/2"

Length as per Rule

34 1/2"

Distance apart

9' - 9 1/2"

No. and pitch of stays

in each

3 - 8 1/2"

Working pressure by Rules

245

Combustion chamber plates: Material

S

Tensile strength

26-30

Thickness: Sides

3/4"

Back

3/4"

Top

3/4"

Bottom

7/8"

Pitch of stays to ditto: Sides

9 1/2" x 8 1/2"

Back

9 1/2" x 8 1/2"

Top

9 1/2" x 8 1/2"

Are stays fitted with nuts

Fire side only

Working pressure by Rules

250

Front plate at bottom: Material

S

Tensile strength

26-30

Thickness

1 1/32"

Lower back plate: Material

S

Tensile strength

26-30

Thickness

1"

Pitch of stays at wide water space

14 1/4" x 9 1/2"

Are stays fitted with nuts or riveted over

nuts

Working Pressure

286

Main stays: Material

S

Tensile strength

28-32

Diameter

At body of stay,

3 1/2"

or

Over threads

No. of threads per inch

9

Area supported by each stay

440 sq

Working pressure by Rules

245

Screw stays: Material

S

Tensile strength

26-30

Diameter

At turned off part,

1 3/4"

or

Over threads

No. of threads per inch

9

Area supported by each stay

80.5 sq

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Working pressure by Rules **226** Are the stays drilled at the outer ends **to** Margin stays: Diameter { At turned off part, or Over threads **2"** ✓
No. of threads per inch **9** Area supported by each stay **107** Working pressure by Rules **230**
Tubes: Material **S** External diameter { Plain **3"** Stay **3"** Thickness **5/16" - 3/8"** No. of threads per inch **9** ✓
Pitch of tubes **4 1/4" x 4 1/8"** Working pressure by Rules **250** Manhole compensation: Size of opening in
shell plate **16" x 12"** Section of compensating ring **30" x 33" x 1 1/32"** No. of rivets and diameter of rivet holes **28 - 1 5/8"** ✓
Outer row rivet pitch at ends **11 7/8"** Depth of flange if manhole flanged **✓** Steam Dome: Material **home**
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 **home**

Manufacturers of

Tubes
Steel forgings
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 forgings and 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

For and on behalf of
WILLIAM DERRY & BROTHERS, LTD
Engineering Dept.

Manufacturer.

Dates of Survey { During progress of work in shops - - } 1940 Apr: 5. 12. May: 13. 24 June: 5. 19. 28
while building { During erection on board vessel - - } July: 5. 12. 18. 23. 26 Aug: 2. 9. 16. 23. 27
Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.) **Yes.** ✓
Total No. of visits **7 24**

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

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) **These Boilers have been built under special survey in accordance with the approved plan and the Society's Rules and requirements the materials and workmanship are good.**

They have been shipped to Greenock for fitting on board.

Survey Fee ... £ **31 : 19 : 0**

When applied for, **22 OCT 1940**

Travelling Expenses (if any) £ : :

When received, **10 DEC 1940**

Jas. Cairns
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 22 OCT 1940**

Assigned **TRANSMIT TO LONDON**



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