

23 MAY 1932

REPORT ON BOILERS

No. 433.

17 NOV 1931

Received at London Office

Date of writing Report *Nov. 14th 31.* When handed in at Local Office *Nov 14th 31.* Port of *Sheffield*

No. in Reg. Book *40630* on the *Steel Twin Screw* *HIGHLAND PATRIOT*

Survey held at *Sheffield* Date, First Survey *4th September/31.* Last Survey *November 13th 1931.*

(Number of Visits *9.*) Gross ☒ Tons Net ☒

Built at *Belfast* By whom built *Harland & Wolff Ltd.* Yard No. *916* When built *1932*

Engines made at *Belfast* By whom made *Harland & Wolff Ltd.* Engine No. *916* When made *1932*

Boilers made at *Sheffield* By whom made *Messrs. Davy Bros. Ltd.* Boiler No. *4646* When made *1931.*

Order of Messrs. Blackson & Thimble Lake Boiler Co. Ltd. No. 428 and Owners intended for Messrs. Harland & Wolff. No. 916.

Port belonging to *Belfast*

VERTICAL DONKEY BOILER.

Made at *Sheffield* By whom made *Davy Bros. Ltd.* Boiler No. *4646* When made *1931* Where fixed ☒

Manufacturers of Steel *Colvilles Ltd. Glasgow.*

Total Heating Surface of Boiler *670 Sq. Ft.* Is forced draught fitted *No* Coal or Oil fired *Oil.*

No. and Description of Boilers *One Blackson & Thimble Lake Boiler (Type BEGATOO)* Working pressure *100 lb²*

Tested by hydraulic pressure to *200 lb²* Date of test *November 13th 1931.* No. of Certificate *539.*

Area of Firegrate in each Boiler ☒ No. and Description of safety valves to each boiler *One Cockburn 2 1/2" Double Spring Lucas Type.*

Area of each set of valves per boiler { per rule *8.74* / as fitted *9.8* } Pressure to which they are adjusted *100 lb²* 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 ☒ Largest internal dia. of boiler *7'-11"* Height *15'-6"*

Shell plates: Material *Mild Steel* Tensile strength *28/32 Lons.* Thickness *1/2"*

Are the shell plates welded or flanged *No.* Description of riveting: circ. seams { end *S.R. Lap Top* / bottom *D.R. "* / inter. *S.R. LAP* } long. seams *D.R. Butt.*

Dia. of rivet holes in { circ. seams *7/8"* / long. seams *7/8"* } Pitch of rivets { *2 1/8"* / *3.29* } Percentage of strength of circ. seams { plate *58%* / rivets *46%* } of Longitudinal joint { plate *73%* / rivets *112%* / combined *102%* }

Working pressure of shell by rules *109 lb²* Thickness of butt straps { outer *7/16"* / inner *7/16"* }

Shell Crown: Whether complete hemisphere, dished partial spherical, or flat *Dished partial spherical* Material *Mild Steel*

Tensile strength *26/30 Lons* Thickness *13/16"* Radius *6'-0"* Working pressure by rules *113 lb²*

Description of Furnace: Plain, spherical, or dished crown *Plain* Material *Mild Steel* Tensile strength *26/30 Lons*

Thickness *1 1/8"* External diameter { top *5'-2 1/4"* / bottom *5'-2 1/4"* } Length as per rule *10'-0 1/4"* Working pressure by rules *105 lb²*

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 *4'-6"* Working pressure by rule *116 lb²*

Thickness of *Dished bottom plate* *13/16"* Radius *6'-0"* Working pressure by rule *135 lb²*

Combustion Chamber: Material *Mild Steel* Tensile strength *26/30 Lons* Thickness of top plate *3/4"*

Radius if dished *4'-6"* Working pressure by rule *116 lb²* Thickness of back plate ☒ Diameter if circular *5'-0" inside*

Length as per rule ☒ Pitch of stays ☒ Are stays fitted with nuts or riveted over ☒

Diameter of stays over thread ☒ Working pressure of back plate by rules ☒

Tube Plates: Material { front *M. Steel* / back *Circular* } Tensile strength *26/30 Lons* Thickness *1 1/8"* 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 *4"* / plain ☒ } BACK { stay ☒ / plain ☒ }

Is each alternate tube in outer vertical rows a stay tube *Boiler fitted with thimble tubes* Working pressure by rules { front *105 lb²* / back *105 lb²* }

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 ☒ at body of stay, or over threads ☒
 No. of threads per inch ☒ Area supported by each stay ☒ Working pressure by rules ☒
Screw stays: Material ☒ Tensile strength ☒ Diameter ☒ at turned off part, or over threads ☒ No. of threads per inch ☒
 Area supported by each stay ☒ Working pressure by rules ☒ Are the stays drilled at the outer ends ☒
Tubes: Material *Thistle tube pressed steel* ☒ External diameter ☒ *4" diameter to 2 3/4" dia* ☒ Thickness *5" B.W.G.* ☒
 No. of threads per inch ☒ Pitch of tubes *Circular pitch 8.357 Vertical 4 3/8 Staggered* ☒ Working pressure by rules ☒
Manhole Compensation: Size of opening in shell plate *1 3/2" x 1 7/2"* ☒ Section of compensating ring *1 1/4" thick* ☒ No. of rivets and diameter ☒
 of rivet holes *48 7/8" dia holes* ☒ Outer row rivet pitch at ends *3"* ☒ Depth of flange if manhole flanged ☒
Uptake: External diameter *3' 1 1/4"* ☒ Thickness of uptake plate *5/8"* ☒
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,
DAVY BROTHERS, LIMITED.
L. Astwood Manufacturer

Dates of Survey ☒ During progress of work in shops - *Sept 4, 8, 25, Oct 6, 9, 20, 27, Nov 3 1932* ☒ Is the approved plan of boiler forwarded herewith *Yes*
 while building ☒ During erection on board vessel - ☒ (If not state date of approval.)
 Total No. of visits *9*

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) *This boiler has been built under special survey and to the approved plan. The materials have been tested in accordance with the rules and the workmanship is good throughout. This boiler has been dispatched to Messrs Harland & Wolff, Belfast.*

The boiler is marked as follows:-

*No 539.
 LLOYDS TEST
 200 LBS. " "
 W. P. 100 lbs " "
 M.A.B. 13.11.31.*

This boiler has been efficiently fastened on a flat on an upper deck at the forward end of the motor room. The safety valves were adjusted to lift at 100 lbs " under steam pressure. No accumulation of pressure was found under oil-fire conditions or under heat on full power run.

*R. Lee Amers.
 Belfast.*

Survey Fee ... £ *4* : *0* : *0* When applied for *19*
 Travelling Expenses (if any) £ *1* : *0* : *0* When received *16th Feb 1932*

Committee's Minute *TUE. 24 MAY 1932*
 Assigned *See F.B. Rpt.*

M.A. Black
 Engineer Surveyor to Lloyd's Register of Shipping.
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