

# REPORT ON BOILERS.

No. 4580

Received at London Office 25 JUL 1935

Date of writing Report *6th July 1935* When handed in at Local Office *20/7/35* Port of *Oporto*

No. in Survey held at *Oporto* Date, First Survey *30/6 1934* Last Survey *12/7 - 19 35*

on the *Steel single screw motor ship "HARRON HAVAN"* (Number of Visits *15*) Tons {Gross *6582* Net *3705*}

Boiler made at *Oporto* By whom built *M. Adams & Co. Verdet* Yard No. *465* When built *1935*

Engines made at *Oporto* By whom made *M. Adams & Co. Verdet* Engine No. *87* When made *1935*

Boilers made at *Oporto* By whom made *M. Adams & Co. Verdet* Boiler No. *-* When made *1935*

Indicated Horse Power *489* Owners *Pellandale Petroleum Company* Port belonging to *Oporto*

## MULTITUBULAR BOILERS ~~MAIN~~, ~~AUXILIARY~~, ~~OR~~ ~~DONKEY~~

Manufacturers of Steel *Steel Co. of Scotland, Stewart & Lloyd, Scotland Iron & Steel Co., Glasgow, Scotland* Letter for Record *-*

Total Heating Surface of Boilers *1454 sq. ft. each* Is forced draught fitted *YES* Coal or Oil fired *Oil & kerosene gas*

Material and Description of Boilers *Two cylindrical multitubular* Working Pressure *150 lbs./sq. in.*

Tested by hydraulic pressure to *275 lbs./sq. in.* Date of test *16/10/34* No. of Certificate *109 & 110* Can each boiler be worked separately *Yes*

Area of Firegrate in each Boiler *11.25 sq. ft.* No. and Description of safety valves to each boiler *one donkey - spring loaded 3 dia.*

Weight of each set of valves per boiler *per Rule 11 in. as fitted 14.12* Pressure to which they are adjusted *150 lbs./sq. in.* Are they fitted with easing gear *Yes*

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler *Yes*

Smallest distance between boilers or uptakes and bunkers or woodwork *Yes* Is oil fuel carried in the double bottom under boilers *Yes*

Smallest distance between shell of boiler and tank top plating *plates placed on flat above tank top* Is the bottom of the boiler insulated *YES*

Largest internal dia. of boilers *11'6"* Length *10'9"* Shell plates: Material *S.M. steel* Tensile strength *28-35 tons/in.*

Thickness *7/8"* Are the shell plates welded or flanged *Yes* Description of riveting: circ. seams *end D.R. lap inter. Yes*

Percentage of strength of circ. end seams *D.R. butt straps* Diameter of rivet holes in *circ. seams 1" long. seams 1 1/16"* Pitch of rivets *3" 5 5/8"*

Percentage of strength of circ. intermediate seam *plate 66% rivets 54%* Percentage of strength of circ. intermediate seam *plate rivets*

Percentage of strength of longitudinal joint *plate 81.1 rivets 83.2 combined 89.6* Working pressure of shell by Rules *155.5 LBS*

Thickness of butt straps *outer 23/32" inner 27/32"* No. and Description of Furnaces in each Boiler *Two corrugated, Morrison type*

Material *S.M. steel* Tensile strength *26-30 tons/in.* Smallest outside diameter *143 7/8" 40 1/4"*

Length of plain part *top bottom* Thickness of plates *crowns 7/16" bottoms* Description of longitudinal joint *-*

Dimensions of stiffening rings on furnace or c.c. bottom *-* Working pressure of furnace by Rules *155 lbs./sq. in.*

End plates in steam space: Material *S.M. steel* Tensile strength *26-30 tons/in.* Thickness *15/16"* Pitch of stays *17" x 16"*

How are stays secured *Double nuts, washers on outside* Working pressure by Rules *154.3 lbs./sq. in.*

End plates: Material *front S.M. steel back* Tensile strength *26-30 tons/in.* Thickness *15/16" 7/8"*

Minimum pitch of stay tubes in nests *12.6875"* Pitch across wide water spaces *14"* Working pressure *front 166.6 lbs./sq. in. back 172"*

End plates to combustion chamber tops: Material *S.M. steel* Tensile strength *28-36 tons/in.* Depth and thickness of girder

Centre *8" x 3/4" (burr off)* Length as per Rule *2' 4 1/8"* Distance apart *13 1/2"* No. and pitch of stays

Each *Two 8 3/4"* Working pressure by Rules *153.2 lbs./sq. in.* Combustion chamber plates: Material *S.M. steel*

Tensile strength *26-30 tons/in.* Thickness: Sides *3/4"* Back *3/4"* Top *3/4"* Bottom *3/4"*

Pitch of stays to ditto: Sides *10" x 8 1/4"* Back *9 1/8" x 8 1/8"* Top *8 3/4" x 13 1/2"* Are stays fitted with nuts or riveted over *Riveted over*

Working pressure by Rules *157.3 lbs./sq. in.* Front plate at bottom: Material *S.M. steel* Tensile strength *26-30 tons/in.*

Thickness *15/16"* Lower back plate: Material *S.M. steel* Tensile strength *26-30 tons/in.* Thickness *15/16"*

Pitch of stays at wide water space *15 1/2"* Are stays fitted with nuts or riveted over *Riveted over*

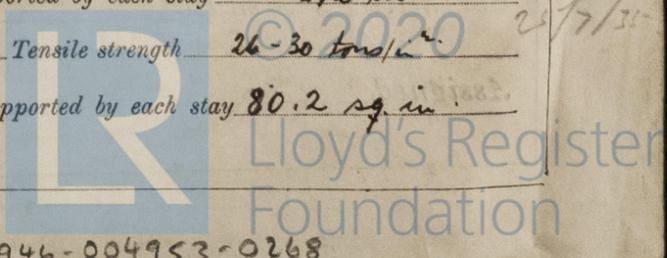
Working Pressure *150 lbs./sq. in.* Main stays: Material *S.M. steel* Tensile strength *28-35 tons/in.*

At body of stay, meter *2 1/2"* No. of threads per inch *8"* Area supported by each stay *272 sq. in.*

Over threads *-* Working pressure by Rules *162 lbs./sq. in.* Screw stays: Material *S.M. steel* Tensile strength *26-30 tons/in.*

At turned off part, meter *1 1/2"* No. of threads per inch *9* Area supported by each stay *80.2 sq. in.*

Over threads *-*



Working pressure by Rules 161.7 lbs Are the stays drilled at the outer ends No Margin stays: Diameter 1 7/8"  
 No. of threads per inch 9 Area supported by each stay 102.07 sq" Working pressure by Rules 150.4 lbs  
 Tubes: Material S.M. steel External diameter 2 1/2" Thickness 3/8" - 5/16" No. of threads per inch 10  
 Pitch of tubes 3 1/8" x 3 5/8" Working pressure by Rules 175 lbs Manhole compensation: Size of opening in  
 shell plate 16" x 12" Section of compensating ring 15 1/6" x 14" No. of rivets and diameter of rivet holes 28, 1"  
 Outer row rivet pitch at ends 7 1/2" Depth of flange if manhole flanged - Steam Dome: Material -  
 Tensile strength 7 Thickness of shell 7 Description of longitudinal joint 7  
 Diameter of rivet holes 7 Pitch of rivets 7 Percentage of strength of joint 7  
 Internal diameter 7 Working pressure by Rules 7 Thickness of crown 7 No. and diameter of  
 stays 7 Inner radius of crown 7 Working pressure by Rules 7  
 How connected to shell 7 Size of doubling plate under dome 7 Diameter of rivet holes and pitch  
 of rivets in outer row in dome connection to shell 7

Type of Superheater 7 Manufacturers of 7  
 Number of elements 7 Material of tubes 7 Internal diameter and thickness of tubes 7  
 Material of headers 7 Tensile strength 7 Thickness 7 Can the superheater be shut off and  
 the boiler be worked separately 7 Is a safety valve fitted to every part of the superheater which can be shut off from the boiler 7  
 Area of each safety valve 7 Are the safety valves fitted with easing gear 7 Working pressure as per  
 Rules 7 Pressure to which the safety valves are adjusted 7 Hydraulic test pressure:  
 tubes 7, castings 7 and after assembly in place 7 Are drain cocks or valves fitted  
 to free the superheater from water where necessary 7

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with yes  
 The foregoing is a correct description,  
[Signature] Manufacturer.

Dates of Survey 1934  
 During progress of work in shops - - 30/6, 13/7, 19/7, 24/8, 24/9, 16/10 Are the approved plans of boiler and superheater forwarded herewith 28/3/34  
 while building 1/6, 6/6, 19/6, 21/6, 9/7, 12/7, 13/7 Total No. of visits 15

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.)  
 These boilers have been constructed in accordance with the approved plans,  
 and as amended. The materials have been tested by the Society's Surveyors.  
 The workmanship is of the best description throughout. The boilers have been  
 tested by hydraulic pressure to 275 lbs./in<sup>2</sup>, and the safety valves have been  
 adjusted under steam to 150 lbs./in<sup>2</sup>.  
 It is recommended that these boilers be classed in the Society's  
 Register Book with notation 2 DB 150 lbs.

Survey Fee £167.15 When applied for, 22/7/1934  
 Travelling Expenses (if any) £ When received, see mch report

[Signature] [Signature]  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 16 AUG 1935  
 Assigned See Cal JE 4580 FRI. 11 OCT 1935  
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