

REPORT ON BOILERS

No. 11405

Received at London Office 17 MAR 1943

Date of writing Report 12. 3. 1943 When handed in at Local Office 12. 3. 1943. Port of MANCHESTER. 14 OCT 1943

No. in Reg. Book. Survey held at HYDE, Nr. Manchester Date, First Survey 3rd July, 1942 Last Survey 12th March 1943.

on the *Empire Mackay*

(Number of Visits 21.) Tons Gross Net

Master Built at Birkenhead. By whom built Harland & Wolff Ld. O/n. G.O.8458. Cammell Laird & Co. Yard No. 1105/6 When built
Engines made at By whom made Engine No. When made
Boilers made at HYDE. By whom made Joseph Adamson & Co. Ltd. Boiler No. 107 When made 1943.
Nominal Horse Power 128 Owners Port belonging to

MULTITUBULAR BOILERS ~~MANCHESTER~~ DONKEY.

Manufacturers of Steel Colvilles Ltd., GLASGOW. (Letter for Record (S))

Total Heating Surface of Boilers 1918 Sq.Ft. Is forced draught fitted Yes. Coal or Oil fired

No. and Description of Boilers One S.E. Multitubular Cylindrical Donkey Boiler. Working Pressure 150 lbs/sq.in.

Tested by hydraulic pressure to 275 lbs/sq. Date of test 28.1.43. No. of Certificate 107 Can each boiler be worked separately

Area of Firegrate in each Boiler - No. and Description of safety valves to each boiler Not fitted by J. Adamson & Co. Ltd.

Area of each set of valves per boiler {per Rule - as fitted -} Pressure to which they are adjusted - Are they fitted with easing gear -

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 - Is oil fuel carried in the double bottom under boilers -

Smallest distance between shell of boiler and tank top plating - Is the bottom of the boiler insulated -

Largest internal dia. of boilers 12'6" Length 11'0" Shell plates: Material O.H. Steel Tensile strength 29/33 tons/sq.in.

Thickness 7/8" Are the shell plates welded or flanged No. Description of riveting: circ. seams {end D.R. Lap Joint. inter. -} long. seams DB Straps 5 Rivets/Pitch Diameter of rivet holes in {circ. seams 1.3/32" long. seams 1.1/32" Pitch of rivets {3.038 6.11/16"}

Percentage of strength of circ. end seams {plate 64.0 rivets 56.0} Percentage of strength of circ. intermediate seam {plate - rivets -}

Percentage of strength of longitudinal joint {plate 84.57 rivets 106.7 combined 90.5} Working pressure of shell by Rules 154.6 lbs/sq.in.

Thickness of butt straps {outer 11/16" inner 13/16" No. and Description of Furnaces in each Boiler Two Deighton Corrugated Furnaces.

Material O.H. Steel. Tensile strength 26/30 tons/sq.in. Smallest outside diameter 3'6".

Length of plain part {top - bottom -} Thickness of plates {crown 1/2" bottom 1/2" Description of longitudinal joint Welded.

Dimensions of stiffening rings on furnace or c.c. bottom - Working pressure of furnace by Rules 171 lbs/sq.in.

End plates in steam space: Material O.H. Steel. Tensile strength 26/30 tons/sq. Thickness 15/16" Pitch of stays 15" x 16 3/4"

How are stays secured Nuts inside and outside. Working pressure by Rules 159.7 lbs/sq.in.

Tube plates: Material {front O.H. Steel. back O.H. Steel.} Tensile strength {26/30 tons/sq.in. 26/30 tons/sq.in.} Thickness {7/8" 13/16"}

Mean pitch of stay tubes in nests 9.53" Pitch across wide water spaces 13 1/2" x 7 1/4" Working pressure {front 161.4 lbs/sq.in. back 261.6 lbs/sq.in.}

Girders to combustion chamber tops: Material O.H. Steel. Tensile strength 28/32 tons/sq.in. Depth and thickness of girder

at centre 8 1/4", Two 5/4" thick Length as per Rule 29.15/16" Distance apart 11" No. and pitch of stays

in each 3 at 7 1/4" Working pressure by Rules 162.3 lbs/sq.in. Combustion chamber plates: Material O.H. Steel.

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

Pitch of stays to ditto: Sides 9 3/4" x 8 1/4" Back 8" x 9 1/4" Top 7 1/4" x 11" Are stays fitted with nuts or riveted over Others riveted over.

Working pressure by Rules 162.5 lbs/sq.in. Front plate at bottom: Material O.H. Steel. Tensile strength 26/30 tons/sq.in.

Thickness 7/8" Lower back plate: Material O.H. Steel. Tensile strength 26/30 tons/sq.in. Thickness 15/16"

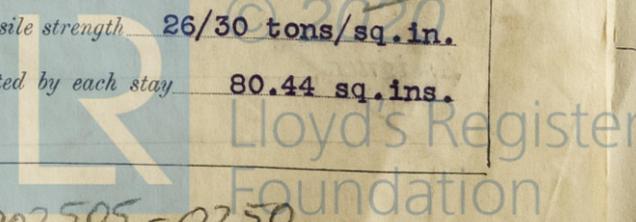
Pitch of stays at wide water space 13" x 9 1/4" Are stays fitted with nuts or riveted over Riveted over.

Working Pressure 188.3 lbs/sq.in. Main stays: Material O.H. Steel. Tensile strength 28/32 tons/sq.in.

Diameter {At body of stay, or Over threads} 2 1/2" No. of threads per inch 6 Area supported by each stay 255.4 sq.ins.

Working pressure by Rules 173.4 lbs/sq.in. Screw stays: Material O.H. Steel. Tensile strength 26/30 tons/sq.in.

Diameter {At turned off part, or Over threads} 1 1/2" No. of threads per inch 11 Area supported by each stay 80.44 sq.ins.



Working pressure by Rules **155.9 lbs/sq.in.** the stays drilled at the outer ends **No** Margin stays: Diameter ^{At turned off part,} **1 5/8" x 2" at Corner.**
 No. of threads per inch **11** Area supported by each stay **97.12 sq.ins.** Working pressure by Rules **156.7 lbs/sq.in.**
 Tubes: Material **O.H. Steel** External diameter ^{Plain} **2 1/2"** Thickness **10 L.S.G.** No. of threads per inch **9**
 Pitch of tubes **3 3/4" x 3 5/8"** Working pressure by Rules **150 lbs/sq.in.** Manhole compensation: Size of opening in
 shell plate **12 1/2" x 16 1/2"** Section of compensating ring **9 3/4" x 3/4"** No. of rivets and diameter of rivet holes **28 - 7/32" dia.**
 Outer row rivet pitch at ends **9"** Depth of flange if manhole flanged **3 5/8" Lower.** 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 pitch
 of rivets in outer row in dome connection to shell
 Type of Superheater Manufacturers of ^{Tubes} 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 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 **Yes, where applicable.**

The foregoing is a correct description,
 FOR JOSEPH ADAMSON & CO. LIMITED.
 Joseph Adamson Manufacturer.
 Joint Managing Director.

1942. July 3, 7, 18, 31. Aug. 4, 11, 19, 21, 25. Sep. 4, 24, 29.
 Dates of Survey ^{During progress of} work in shops - - Oct. 12, 20, 28. Nov. 5. Dec. 2.
 while building ^{During erection on} board vessel - - 15, 22. 1943. Jan. 28. Mar. 12.
 Total No. of visits

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.) THIS BOILER HAS BEEN CONSTRUCTED UNDER SPECIAL SURVEY OF TESTED MATERIALS AND IN ACCORDANCE WITH THE SECRETARY'S LETTERS, THE APPROVED PLANS AND THE REQUIREMENTS OF THE RULES. THE MATERIALS AND WORKMANSHIP ARE OF GOOD QUALITY AND THE BOILER WHEN TESTED IN THE SHOPS UNDER AN HYDRAULIC PRESSURE OF TWO HUNDRED AND SEVENTY FIVE LBS PER SQUARE INCH WAS FOUND SOUND AND TIGHT.

THIS BOILER IS, IN OUR OPINION, SUITABLE TO BE FITTED ON BOARD A VESSEL CLASSED WITH THIS SOCIETY AND FOR THE PURPOSE INTENDED.

THE BOILER SHELL PLATE AT THE FRONT END AND LEFT HAND SIDE HAS BEEN STAMPED:-

NO 107
LLOYDS TEST
275 lbs/sq.in.
W.P. 150 lbs/sq.in.
ELK. 28/1/43.

Covering also Mch. Rpts. Nos. 11317, 8 & 9.
 Survey Fee ... £ 51 : - : - When applied for, 11. 3. 19 43. *sd.*
 Travelling Expenses (if any) £ 4 : - : - When received, 19

Edmondson for self & D.R. Walburn.
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 12 OCT 1943**
 Assigned