

REPORT ON BOILERS.

Received at London Office 6 JAN 1944

Date of writing Report 19 When handed in at Local Office 31st Dec 1943 Port of Sunderland.
 No. in Survey held at Reg. Book. Sunderland. Date, First Survey Last Survey 30th Dec 1943
 on the "EMPIRE TRAIL" (Number of Visits /) Tons { Gross 7083 Net 4895
 Built at Sunderland By whom built Shipbuilding Corporation L^{td} (Leas Branch) Yard No. 1 When built 1943.
 Engines made at Sunderland By whom made G. Clark (1938) L^{td} Engine No. 1302 When made 1943
 Boilers made at Sunderland By whom made G. Clark (1938) L^{td} Boiler No. 1302 When made 1943.
 Nominal Horse Power 509. 510 Owners Ministry of War Transport Port belonging to Sunderland.

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Cosmick L^{td} (Letter for Record S.)
 Total Heating Surface of Boilers 4248 sq ft Is forced draught fitted Yes. Coal or Oil fired Coal.
 No. and Description of Boilers Three Single Ended multitubular return tube marine Working Pressure 220 lbs/sq in
 Tested by hydraulic pressure to 380 Date of test 8/4/43. No. of Certificate 4503/4 Can each boiler be worked separately Yes.
 Area of Firegrate in each Boiler 55 sq ft No. and Description of safety valves to each boiler 2 Backless Imp^d High Lift.
 Area of each set of valves per boiler { per Rule 6.40 as fitted 4.95 Pressure to which they are adjusted 220 Are they fitted with easing gear Yes.
 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 3'-9" Is oil fuel carried in the double bottom under boilers No.
 Smallest distance between shell of boiler and tank top plating 2'-3" Is the bottom of the boiler insulated Yes.
 Largest internal dia. of boilers 15'-0 1/16" Length 11'-6" Shell plates: Material Steel Tensile strength 29/33
 Thickness 1 1/32" Are the shell plates welded or flanged No. Description of riveting: circ. seams { end D.R. Lap inter. -
 long. seams T.R.D.B.S. Diameter of rivet holes in { circ. seams 1 1/2" Pitch of rivets { 4 1/8" 10 3/8"
 Percentage of strength of circ. end seams { plate 63.6 rivets 46.2 Percentage of strength of circ. intermediate seam { plate - rivets -
 Percentage of strength of longitudinal joint { plate 85.5 rivets 86.2 combined 88.3
 Thickness of butt straps { outer 1 1/8" inner 1 1/4" No. and Description of Furnaces in each Boiler Three Corrugated (Beighton)
 Material Steel Tensile strength 26/30 Smallest outside diameter 3'-9 3/4"
 Length of plain part { top - bottom - Thickness of plates { crown 1 1/16" bottom 1 1/16" Description of longitudinal joint Weld.
 Dimensions of stiffening rings on furnace or c.c. bottom -
 End plates in steam space: Material Steel Tensile strength 26/30 Thickness 1 1/32" Pitch of stays 19 3/4" x 19 5/8"
 How are stays secured Double nuts.
 Tube plates: Material { front Steel back Steel Tensile strength { 26/30 Thickness { 15/16" 25/32"
 Mean pitch of stay tubes in nests 9 1/16" Pitch across wide water spaces 14" x 8 1/4"
 Girders to combustion chamber tops: Material Steel Tensile strength 28/32 Depth and thickness of girder
 at centre 10 1/2" x 13 1/8" (2) Length as per Rule 2'-9 1/4 1/32" Distance apart 9 1/4" No. and pitch of stays
 in each 3 @ 8" Combustion chamber plates: Material Steel
 Tensile strength 26/30 Thickness: Sides 1 1/16" Back 1 1/16" Top 1 1/16" Bottom 1/8"
 Pitch of stays to ditto: Sides 9 1/4" x 8" Back 9 1/4" x 8" Top 9 1/4" x 8" Are stays fitted with nuts or riveted over Nuts.
 Front plate at bottom: Material Steel Tensile strength 26/30
 Thickness 15/16" Lower back plate: Material Steel Tensile strength 26/30 Thickness 2 1/32"
 Pitch of stays at wide water space 14" x 8" Are stays fitted with nuts or riveted over Nuts.
 Main stays: Material Steel Tensile strength 28/32
 Diameter { At body of stay, or 3 1/2" No. of threads per inch 6 over threads
 Screw stays: Material Steel Tensile strength 26/30
 Diameter { At turned off part, or 1 3/4" No. of threads per inch 9. over threads

Are the stays drilled at the outer ends No. 40. Margin stays: Diameter At turned off part 1 1/8" - 1 1/2"
 or Over threads
 No. of threads per inch 9.
 Tubes: Material P.D. Steel External diameter Plain 3" Stay 3" Thickness 8wg. 5/16" - 3/8" No. of threads per inch 9.
 Pitch of tubes 4 1/4" x 4 1/8" Manhole compensation: Size of opening in shell plate (See Snapplate) Section of compensating ring - No. of rivets and diameter of rivet holes
 Outer row rivet pitch at ends 4 1/4" Depth of flange if manhole flanged 4 1/4" 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 Thickness of crown No. and diameter of stays
 Inner radius of crown
 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 North Eastern Nav. Eng Co (Smoke tube) Manufacturers of Tubes Sluverts & Lloyds Steel forgings Appley, Radtingham Steel Co Steel castings
 Number of elements 144. Material of tubes P.D. Steel Internal diameter and thickness of tubes 1 5/8" x 2 1/2"
 Material of headers Ingal Steel Tensile strength 26/30 Thickness 1 1/8" Can the superheater be shut off and the boiler be worked separately Yes. Is a safety valve fitted to every part of the superheater which can be shut off from the boiler Yes.
 Area of each safety valve 3.14 sq" Are the safety valves fitted with easing gear Yes.
 Pressure to which the safety valves are adjusted 220 lbs/psi. Hydraulic test pressure: tubes 1500 lbs/psi. forgings and castings 660 lbs/psi. and after assembly in place 440 lbs/psi. Are drain cocks or valves fitted to free the superheater from water where necessary Yes.
 Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with Yes.

The foregoing is a correct description,
 GEORGE CLARK (1938) LTD. Manufacturer.

Dates of Survey During progress of work in shops - - During erection on board vessel - - -
 Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)
 Total No. of visits

Is this Boiler a duplicate of a previous case Yes. If so, state Vessel's name and Report No. 'ESSEX TRADER' (Receipt 341.)

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) These boilers have been constructed under Special Survey in accordance with the approved plan, specification & the rules of the Society. The materials & workmanship are good. On completion they have been tested by hydraulic pressure of 380 lbs/psi & found tight & sound at that pressure. They have been securely fixed on board the vessel & the safety valves of boiler & superheater adjusted to working pressure in accordance with rule requirements.

For recommendation please see machy. Rpt.

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

W. H. Hasler.
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUES. 18 JAN 1944
 Assigned see minute on J.S. Rpt.