

## REPORT ON BOILERS.

Received at London Office.

10 APR 1942

Date of writing Report 23rd Jan. 1942 When handed in at ~~Local~~ Office 23rd Jan. 1942

Port of RICHMOND, CALIFORNIA

No. in Reg. Book. Survey held at RICHMOND, CALIFORNIA

Date, First Survey Oct. 31st, 1941 Last Survey 6th Jan. 1942

on the S. S. "OCEAN VESTAL"

(Number of Visits. 68)

Tons { Gross 7174  
Net 4272

Built at Richmond, Calif. By whom built TODD-CALIFORNIA SHIPBUILDING DIVISION of The Yard No. 8 When built 1942

Engines made at Hamilton, Ohio By whom made Permanente Metals Corporation

General Machinery Corporation Engine No. 6525 When made 1941

Boilers made at Los Angeles, California By whom made Western Pipe &amp; Steel Co. Boiler No. 13, 16, 18 When made 1941

Nominal Horse Power 505 Owners British Government Port belonging to London

## MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY

Manufacturers of Steel Lukens Steel Company, Bethlehem Steel Company (Letter for Record S ✓)

Total Heating Surface of Boilers 7140 sq. ft. ✓ Is forced draught fitted Yes ✓ Coal or Oil fired Coal ✓

No. and Description of Boilers 3 Scotch Multitubulars ✓ Working Pressure 220

Tested by hydraulic pressure to 380 lbs. sq. in. ✓ Date of test See Los Angeles Reports No. of Certificate 13, 16, 18 Can each boiler be worked separately Yes ✓

Area of Firegrate in each boiler 43 sq. ft. No. and Description of Safety valves to each boiler 2 Spring loaded special high lift ✓

Area of each set of valves per boiler { per Rule Approved 12.67  
as fitted 5.52 sq. in. x 2 Pressure to which they are adjusted 220 lbs. 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 No woodwork ✓ Is oil fuel carried in the double bottom under boilers. No ✓

Smallest distance between shell of boiler and tank top plating 2 ft. ✓ Is the bottom of the boiler insulated. Yes ✓

Largest internal diameter of boilers 14' - 6<sup>3</sup>/<sub>16</sub>" ✓ Length 11' - 9" ✓ Shell plates: Material Steel ✓ Tensile strength 65000/75000 lbs. per sq. in. ✓

Thickness 1<sup>13</sup>/<sub>32</sub>" ✓ Are the shell plates welded or flanged No ✓ Description of riveting: circ. seams { end D.R. ---  
inter. ---

Long. seams T. R. D. B. S. ✓ Diameter of rivet holes in { circ. seams 1.5" ✓  
long. seams 1.5" ✓ Pitch of rivets { 4.25" ✓  
10" ✓

Percentage of strength of circ. end seams { plate 64.7" ✓  
rivets 47" ✓ Percentage of strength of circ. intermediate seam { plate ---  
rivets ---

Percentage of strength of longitudinal joint { plate 85" ✓  
rivets 93.4" ✓

Thickness of butt straps { outer 1<sup>3</sup>/<sub>32</sub>" ✓  
inner 1<sup>13</sup>/<sub>32</sub>" ✓ No. and Description of Furnaces in each Boiler 3 Morrison type

Material Steel Tensile strength 58,000 - 68,000 lbs. per sq. in. ✓ Smallest outside diameter 3' - 5.57" ✓

Length of plain part { top 9<sup>16</sup>/<sub>16</sub>" ✓ Thickness of plates { crown 21<sup>21</sup>/<sub>32</sub>" ✓  
bottom 9<sup>3</sup>/<sub>16</sub>" ✓ bottom 21<sup>21</sup>/<sub>32</sub>" ✓ Description of longitudinal joint Welded ✓

Dimensions of stiffening rings on furnace or c.c. bottom None ✓

End plates in steam space: Material Steel Tensile strength 58,000/68,000 lbs/sq. in. ✓ Thickness 1<sup>1</sup>/<sub>32</sub>" R.D. 1<sup>1</sup>/<sub>32</sub>" Pitch of stays 21.25"x21" ✓

How are stays secured Double Nuts

Tube plates: Material { front Steel Tensile strength { 58,000/68,000 lbs/sq. in. ✓  
back Steel 58,000/68,000 " " " Thickness { 1<sup>1</sup>/<sub>32</sub>" ✓  
1<sup>13</sup>/<sub>32</sub>" ✓

Mean pitch of stay tubes in nests 9.56" ✓ Pitch across wide water spaces 14.5" x 8.25" ✓

Girders to combustion chamber tops: Material Steel Tensile strength 65000/75000 lbs. sq. in. Depth and Thickness of girder at centre 10.25", 2 @ 7<sup>7</sup>/<sub>8</sub>" ✓ Length as per Rule 2' 10" ✓ Distance apart 11" ✓ No. and pitch of stays in each 3 x 7.625" ✓

Combustion chamber plates: Material Steel Tensile strength 58,000/68,000 lbs/sq. in. Thickness: Sides 25<sup>25</sup>/<sub>32</sub>" ✓ Back 23<sup>23</sup>/<sub>32</sub>" ✓ Top 25<sup>25</sup>/<sub>32</sub>" ✓ Bottom 25<sup>25</sup>/<sub>32</sub>" ✓

Pitch of stays to ditto: Sides 9" x 10<sup>7</sup>/<sub>32</sub>" ✓ Back 9" x 9" ✓ Top 11" x 7<sup>5</sup>/<sub>8</sub>" ✓ Are stays fitted with nuts or riveted over Nuts

Front plate at bottom: Material Steel Tensile strength 58000/68000 lbs. per sq. in. Thickness 1<sup>1</sup>/<sub>32</sub>" ✓

Lower back plate: Material Steel Tensile strength 58000/68000 lbs. per sq. in. Thickness 1<sup>1</sup>/<sub>32</sub>" ✓

Pitch of stays at wide water space 18" x 9" ✓ 15" x 9" ✓ Are stays fitted with nuts or riveted over Nuts

Main stays: Material Steel Tensile strength 65000/75000 lbs. sq. in. Diameter { At body of stay 3<sup>1</sup>/<sub>2</sub>" ✓  
or Over threads 3<sup>3</sup>/<sub>4</sub>" ✓ No. of threads per inch 6 ✓

Screw stays: Material Steel Tensile strength 58000/68000 lbs. sq. in. Diameter { At turned off part ---  
or Over threads 1<sup>7</sup>/<sub>8</sub>" sides, 1<sup>3</sup>/<sub>4</sub>" back ✓ No. of threads per inch 9 ✓



Are the stays drilled at the outer ends ☒ No Margin stays: Diameter { At turned off part ☒ or Over threads  $2\frac{1}{8}"$ , 2"

No. of threads per inch 9

Tubes: Material Steel External diameter { Plain 3" Stay 3" Thickness {  $\frac{.165"}{8}, \frac{.16}{16}"$  No. of threads per inch 9

Pitch of tubes  $4\frac{1}{4}" \times 4\frac{1}{8}"$  Manhole compensation: Size of opening in end plate 16" x 12" Section of compensating ring None No. of rivets and diameter of rivet holes --

Outer row rivet pitch at ends -- Depth of flange if manhole flanged  $3\frac{3}{4}"$  Steam Dome: Material None

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 N. E. M. Co. Manufacturers of { Tubes Detroit Seamless Steel Tubes Co. Steel forgings Combustion Engineering Co. Steel castings None

Number of elements 174 Material of tubes Steel Internal diameter and thickness of tubes .689", .093"

Material of headers Seamless Steel Tensile strength 60,000 lbs. sq. in. Thickness  $\frac{1}{8}"$  Can the superheater be shut off and the boiler be worked separately No Is a safety valve fitted to every part of the superheater which can be shut off from the boiler No

Area of each safety valve 1.75 sq. in. Are the safety valves fitted with easing gear No

Pressure to which the safety valves are adjusted 220 lbs. sq. in. Hydraulic test pressure: tubes 1000 lbs. sq. in. forgings and castings 440 lbs. and after assembly in place 380 lbs. 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,

TODD-CALIFORNIA SHIPBUILDING DIVISION of THE PERMANENTE METALS CORPORATION

Manufacturer.

Dates of Survey { During progress of work in shops -- 23rd June to 30th Sept. 1941 Are the approved plans of boiler and superheater forwarded herewith No. (If not state date of approval) April 28th, 1941 - 5/11/41 while building { During erection on board vessel -- 31st Oct. 1941 to 6th Jan., 1942 Total No. of visits 68

Is this Boiler a duplicate of a previous case Yes If so, state Vessel's name and Report No. "OCEAN VANGUARD", "OCEAN VIGIL", "OCEAN VOICE", etc. Richmond, Calif. Rpts., 1, 2, 3, 4, & 5. These boilers,

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) constructed under Special Survey (see Los Angeles Blr. Reports No.s 13, 16, & 18 attached hereto) have now been fitted on board this vessel in accordance with the approved plans and the requirements of the Rules. The safety valves were adjusted under steam to 220 lbs. per sq. in. The boilers were tried under working conditions with good results and, in our opinion, are now in good and safe condition.

Survey Fee ... £ Inclusive fee to be charged in London When applied for, 10 When received, 10

Travelling Expenses (if any) £

John M. ... & James F. Robertson  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute NEW YORK FEB 11 1942

Assigned 3 SB (Oct) 220 lbs.



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