

## REPORT ON BOILERS.

No. 15

Received at London Office

14 OCT 1929

Date of writing Report 23-8-1929 When handed in at Local Office 23-8-1929 Port of Nicolaieff, Russia.

No. in Reg. Book. Survey held at Nicolaieff. Date, First Survey 21-10-26. Last Survey 21-8-1929.

on the Donkey Boilers for M.V. "EMBANET" (Number of Visits ✓) Gross 4491 Tons Net 5335

Master Built at Nicolaieff. By whom built Andre Marti Yard No. 185. When built 1929.

Engines made at Augsburg, Germany. By whom made Masch. Augsburg. Kürnberg A. G. Engine Nos. 26710/20 When made 1927.

Boilers made at Nicolaieff. By whom made Nicolaieff. yard Andre Marti Boiler No. 1402. When made 1929.

Nominal Horse Power 944. Owners The Raphta Syndicate U. S. S. R. Port belonging to Khorovissisk.

## MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel? Lugansk Steel Works Lugansk, U. S. S. R. (Letter for Record S.)

Total Heating Surface of Boilers 76.9 Square Metres. Is forced draught fitted No. Coal or Oil fired Oil.

No. and Description of Boilers Two single-ended Return Tube. Working Pressure 85 lbs/sq. in.

Tested by hydraulic pressure to 170 lbs/sq. in. Date of test 16.2.29. No. of Certificate 1002. Can each boiler be worked separately Yes.

Area of Firegrate in each Boiler ✓ No. and Description of safety valves to each boiler 2 Spring Loaded ✓

Area of each set of valves per boiler {per Rule 8071 sq. in. / as fitted 8142 sq. in.} Pressure to which they are adjusted 6 ATM/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 ✓

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 No.

Largest internal dia. of boilers 2830 mm. Length 2498 mm. Shell plates: Material Steel. Tensile strength 44/51 Kilo/m/m<sup>2</sup>.

Thickness 15 mm. Are the shell plates welded or flanged No. Description of riveting: circ. seams {end D. R. / inter. D. R.}

long. seams D. R. Lap. Diameter of rivet holes in {circ. seams 25 mm. / long. seams 24 mm.} Pitch of rivets {76.4 / 78.6}

Percentage of strength of circ. end seams {plate 67.2 / rivets 60.6.} Percentage of strength of circ. intermediate seam {plate 67.1 / rivets 61.0.}

Percentage of strength of longitudinal joint {plate 69.4 / rivets 65.2 / combined ✓} Working pressure of shell by Rules 93.8 lbs/sq. in. = 6.6 Kilo/cm<sup>2</sup>.

Thickness of butt straps {outer ✓ / inner ✓} No. and Description of Furnaces in each Boiler Two plain.

Material Steel. Tensile strength 41/47 Kilo/m/m<sup>2</sup>. Smallest outside diameter 772 mm.

Length of plain part {top 940 mm. / bottom 940 mm.} Thickness of plates {crown 11 mm. / bottom 11 mm.} Description of longitudinal joint Weld.

Dimensions of stiffening rings on furnace or on bottom 75 mm x 13 mm. Working pressure of furnace by Rules 129 lbs/sq. in. = 9.07 Kilo/cm<sup>2</sup>.End plates in steam space: Material Steel. Tensile strength 41/47 Kilo/m/m<sup>2</sup>. Thickness 18 mm. Pitch of stays 500 mm dia.How are stays secured Double nuts + Washers. Working pressure by Rules 131 lbs/sq. in. = 9.25 Kilo/cm<sup>2</sup>.Tube plates: Material {front Steel. / back Steel.} Tensile strength {41/47 Kilo/m/m<sup>2</sup>.} Thickness {18 mm. / 18 mm.}Mean pitch of stay tubes in nests 200 x 200 mm. Pitch across wide water spaces 360 mm. Working pressure {front 93 lbs/sq. in. = 6.5 Kilo/cm<sup>2</sup>. / back 195 " = 13.75 "}Girders to combustion chamber tops: Material Steel. Tensile strength 44/51 Kilo/m/m<sup>2</sup>. Depth and thickness of girder

at centre 2 @ 130 x 12 mm. Length as per Rule 440 mm. Distance apart 200 mm. No. and pitch of stays

in each 2 @ 140 mm. Working pressure by Rules 167 lbs/sq. in. = 11.8 Kilo/cm<sup>2</sup>. Combustion chamber plates: Material Steel.Tensile strength 41/47 Kilo/m/m<sup>2</sup>. Thickness: Sides 12 mm. Back 12 mm. Top 12 mm. Bottom 12 mm.

Pitch of stays to ditto: Sides 140 x 145 mm. Back 180 x 145 mm. Top 140 x 200 mm. Are stays fitted with nuts or riveted over Riveted over.

Working pressure by Rules 100 lbs/sq. in. = 7.1 Kilo/cm<sup>2</sup>. Front plate at bottom: Material Steel. Tensile strength 41/47 Kilo/m/m<sup>2</sup>.Thickness 18 mm. Lower back plate: Material Steel. Tensile strength 41/47 Kilo/m/m<sup>2</sup>. Thickness 16 mm.

Pitch of stays at wide water space 360 x 145 mm. Are stays fitted with nuts or riveted over Nuts.

Working Pressure 127 lbs/sq. in. = 8.9 Kilo/cm<sup>2</sup>. Main stays: Material Steel. Tensile strength 44/51 Kilo/m/m<sup>2</sup>.Diameter {At body of stay, 2" / Over threads 2" / No. of threads per inch 6 / Area supported by each stay 196350 mm<sup>2</sup>.Working pressure by Rules 95 lbs/sq. in. = 8.9 Kilo/cm<sup>2</sup>. Screw stays: Material Steel. Tensile strength 41/47 Kilo/m/m<sup>2</sup>.Diameter {At turned off part, 1 1/4" / Over threads 1 1/4" / No. of threads per inch 11 / Area supported by each stay 31500 mm<sup>2</sup>.



Working pressure by Rules  $11.6 \text{ lbs/cm}^2$  Are the stays drilled at the outer ends *no* Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part,} \\ \text{or} \\ \text{Over threads} \end{array} \right. 1\frac{1}{2}"$   
No. of threads per inch *9* Area supported by each stay  $63000 \text{ m}^2$  Working pressure by Rules  $12 \text{ lbs/cm}^2 = 8.9 \text{ lbs/cm}^2$   
Tubes: Material *Steel* External diameter  $\left\{ \begin{array}{l} \text{Plain} \\ \text{Stay} \end{array} \right. 46 \text{ m}$  Thickness  $\left\{ \begin{array}{l} 3.25 \text{ m} \\ 14 \end{array} \right.$  No. of threads per inch *11*  
Pitch of tubes  $100 \times 100 \text{ m}$  Working pressure by Rules  $140 \text{ lbs/cm}^2 = 10 \text{ lbs/cm}^2$  Manhole compensation: Size of opening in  
shell plate  $300 \times 400 \text{ m}$  Section of compensating ring  $700 \text{ m dia} \times 25 \text{ m}$  No. of rivets and diameter of rivet holes  $51 - 25 \text{ m}$   
Outer row rivet pitch at ends  $48 \text{ m}$  Depth of flange if manhole flanged *✓* Steam Dome: Material *Steel*  
Tensile strength  $44/51 \text{ lbs/m}^2$  Thickness of shell  $12 \text{ m}$  Description of longitudinal joint *Lap. S. R.*  
Diameter of rivet holes  $22 \text{ m}$  Pitch of rivets  $49 \text{ m}$  Percentage of strength of joint  $\left\{ \begin{array}{l} \text{Plate} \\ \text{Rivets} \end{array} \right. 55.1$   
Internal diameter  $700$  Working pressure by Rules  $222 \text{ lbs/cm}^2 = 15.6 \text{ lbs/cm}^2$  Thickness of crown  $16 \text{ m}$  No. and diameter of  
stays *✓* Inner radius of crown  $700 \text{ m}$  Working pressure by Rules  $240 \text{ lbs/cm}^2 = 19 \text{ lbs/cm}^2$   
How connected to shell *Double riveted flange* Size of doubling plate under dome  $700 \text{ m dia} \times 25 \text{ m}$  Diameter of rivet holes and pitch  
of rivets in outer row in dome connection to shell  $20 \text{ m}$   $46 \text{ m}$

Type of Superheater *✓* Manufacturers of  $\left\{ \begin{array}{l} \text{Tubes} \\ \text{Steel castings} \end{array} \right. \text{✓}$   
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 23 inclusive for boilers been complied with *yes*

The foregoing is a correct description,

*M. J. J. J. J.*

Manufacturer.

Dates of Survey  $\left\{ \begin{array}{l} \text{During progress of} \\ \text{work in shops} \end{array} \right. \text{✓}$  Are the approved plans of boiler and superheater forwarded herewith *yes*  
 $\left\{ \begin{array}{l} \text{while} \\ \text{building} \end{array} \right. \left\{ \begin{array}{l} \text{During erection on} \\ \text{board vessel} \end{array} \right. \text{✓}$  (If not state date of approval.)  
Total No. of visits *Constant attendance during construction*

#### GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

These boilers have been built under Special Survey in accordance with the Rules and approved plans. The materials and Workmanship are sound & good. The boilers have now been fitted on board the vessel in a satisfactory manner, examined under steam, and the safety valves adjusted to 6 ATMS. /  $\text{m}^2$ . They are in my opinion eligible to be included with the machinery for Record of  $\times$  L.M.C. 9-29.

Survey Fee ... £ : : } When applied for, 192  
Travelling Expenses (if any) £ : : } When received, 192

*J. J. J. J.*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *Enl. 25 OCT 1929*

Assigned

*See Report attached*



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Foundation