

## REPORT ON BOILERS.

No. 9387

Received at London Office 23 NOV 1931

Date of writing Report 9<sup>th</sup> November 1931

When handed in at Local Office

10<sup>th</sup> Nov 31

Port of

TRIESTE

No. in Survey held at

VENICE

Date, First Survey

23<sup>rd</sup> Dec. 1930

Last Survey

23<sup>rd</sup> Oct 31

192

39729 on the STEEL TWIN SCREW "CABO DELGADO"

(Number of Visits 27)

Gross 372 5

Tons Net 121.0

Master Built at VENICE

By whom built CANTIERI NAVALI ED OFFICINE MECCANICHE DI VENEZIA Yard No. 74 When built 1931

Engines made at VENICE

By whom made CANT. NAV. ED OFF. MECC. DI VENEZIA Engine No. P 1577 S 1578 When made 1931

Boilers made at VENICE

By whom made CANT. NAV. ED OFF. MECC. DI VENEZIA Boiler No. P 56 S 57 When made 1931

Nominal Horse Power 159 183

Owners GOVERNMENT OF PORTUGUESE COLONY Port belonging to PORTO AMELIA IN MOZAMBIQUE

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

Manufacturers of Steel Vessels Witkowitz Bergbau &amp; Eisenhütten-Gesellschaft of Witkowitz

(Letter for Record (S))

Total Heating Surface of Boilers 374 m<sup>2</sup>

Is forced draught fitted ho

Coal or Oil fired Coal

No. and Description of Boilers Two - Single Ended - Marine Type

Working Pressure 11.5 kg/cm<sup>2</sup>

Tested by hydraulic pressure to 300 lbs

Date of test 25.8.31

No. of Certificate 302 303

Can each boiler be worked separately Yes

Area of Firegrate in each Boiler 5.85 m<sup>2</sup>

No. and Description of safety valves to each boiler One pair spring loaded.

Area of each set of valves per boiler 9125 m<sup>2</sup>Pressure to which they are adjusted 11.75 kg/cm<sup>2</sup> 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 29 cms

Is oil fuel carried in the double bottom under boilers ✓

Smallest distance between shell of boiler and tank top plating No tank under boilers

Is the bottom of the boiler insulated No

Largest internal dia. of boilers 3900 mm

Length 3450 mm

Shell plates: Material Steel

Tensile strength 44-50 kg/mm<sup>2</sup>

Thickness 25 mm

Are the shell plates welded or flanged ho

Description of riveting: circ. seams end D.R. Lap.

long. seams T.R. DBS.

Diameter of rivet holes in circ. seams 31 mm.

Pitch of rivets 92.8 mm.

Percentage of strength of circ. end seams plate 66.6%

rivets 53.25%

Percentage of strength of circ. intermediate seam plate ✓

rivets ✓

Percentage of strength of longitudinal joints plate 84.6%

rivets 140%

Working pressure of shell by Rules 11.63 kg/cm<sup>2</sup>

combined 90.0%

Thickness of butt straps outer 23 mm.

No. and Description of Furnaces in each Boiler Three Jonson Corrugated.

Material Steel

Tensile strength 44-47 kg/mm<sup>2</sup>

Smallest outside diameter 974 mm.

Length of plain part top ✓

Thickness of plates crown 12 mm.

Description of longitudinal joint Welded

Dimensions of stiffening rings on furnace or c.c. bottom ✓

Working pressure of furnace by Rules 12.42 kg/cm<sup>2</sup>

End plates in steam space: Material Steel

Tensile strength 44-47 kg/mm<sup>2</sup>

Thickness 22 mm

Pitch of stays 450 mm x 400 mm

How are stays secured Double nuts and riveted washers.

Working pressure by Rules 11.69 kg/cm<sup>2</sup>

Tube plates: Material front Steel

Tensile strength 44-47 kg/mm<sup>2</sup>

Thickness 22 mm

back Steel

Tensile strength 44-47 kg/mm<sup>2</sup>

Thickness 18 mm

Mean pitch of stay tubes in nests 208 mm

Pitch across wide water spaces 375 mm.

Working pressure front 12.66 kg/cm<sup>2</sup>back 18.74 kg/cm<sup>2</sup>

Girders to combustion chamber tops: Material Steel

Tensile strength 44-50 kg/mm<sup>2</sup>

Depth and thickness of girder

at centre 170 mm 40 mm

Length as per Rule 716 mm

Distance apart 200 mm.

No. and pitch of stays

in each 3 - 180 mm.

Working pressure by Rules 12.5 kg/cm<sup>2</sup>

Combustion chamber plates: Material Steel

Tensile strength 44-47 kg/mm<sup>2</sup>

Thickness: Sides 16 mm.

Back 16 mm

Top 16 mm

Bottom 20 mm

Pitch of stays to ditto: Sides 180 x 180 mm.

Back 180 x 180 mm

Top 180 x 200 mm

Are stays fitted with nuts or riveted over margin girder stays fitted with nuts. All others riveted over.

Working pressure by Rules 11.5 kg/cm<sup>2</sup>

Front plate at bottom: Material Steel

Tensile strength 44-47 kg/mm<sup>2</sup>

Thickness 22 mm.

Lower back plate: Material Steel

Tensile strength 44-47 kg/mm<sup>2</sup>

Thickness 22 mm.

Pitch of stays at wide water space 600 mm (diam. of largest tube) Are stays fitted with nuts or riveted over Fitted with nuts.

Working Pressure 12.8 kg/cm<sup>2</sup>

Main stays: Material Steel

Tensile strength 44-50 kg/mm<sup>2</sup>

Diameter At body of stay, or Over threads 68 mm.

No. of threads per inch 6

Area supported by each stay 180,000 mm<sup>2</sup>Working pressure by Rules 13.13 kg/cm<sup>2</sup>

Screw stays: Material Steel

Tensile strength 44-47 kg/mm<sup>2</sup>

Diameter At turned off part, or Over threads 31.75 mm.

No. of threads per inch 12

Area supported by each stay 36000 mm<sup>2</sup> (tops)



Working pressure by Rules  $11.5 \text{ kg/cm}^2$  Are the stays drilled at the outer ends *ho* Margin stays: Diameter  $\begin{cases} \text{At turned off part,} \\ \text{Over threads} \end{cases} \begin{cases} 41.2 \text{ mm} \\ 41.2 \text{ mm} \end{cases}$

No. of threads per inch  $12$  Area supported by each stay  $276.25 \times 180 \text{ mm}^2$  Working pressure by Rules  $13.8 \text{ kg/cm}^2$

Tubes: Material *Steel* External diameter  $\begin{cases} \text{Plain } 83 \text{ mm} \\ \text{Stay } 83 \text{ mm} \end{cases}$  Thickness  $\begin{cases} 3.5 \text{ mm} \\ 6 \text{ mm} + 5 \text{ mm} \end{cases}$  No. of threads per inch  $9$

Pitch of tubes  $104 \times 104 \text{ mm}$  Working pressure by Rules *PLAIN*  $11.5 \text{ kg/cm}^2$  *STAY*  $30.0 \text{ kg/cm}^2$  Manhole compensation: Size of opening in shell plate  $300 \text{ mm} \times 400 \text{ mm}$  Section of compensating ring  $150 \text{ mm} \times 25 \text{ mm}$  No. of rivets and diameter of rivet holes  $32 - 31 \text{ mm}$

Outer row rivet pitch at ends  $110 \text{ mm}$  Depth of flange if manhole flanged ☒ Steam Dome: Material *Steel*

Tensile strength  $41 - 47 \text{ kg/mm}^2$  Thickness of shell  $15 \text{ mm}$  Description of longitudinal joint *Welded seam Covered by double riveted butt strap.*

Diameter of rivet holes  $23 \text{ mm}$  Pitch of rivets  $70 \text{ mm}$  Percentage of strength of joint  $\begin{cases} \text{Plate } 67\% \\ \text{Rivets } 60\% \end{cases}$

Internal diameter  $1200 \text{ mm}$  Working pressure by Rules  $13.5 \text{ kg/cm}^2$  Thickness of crown  $20 \text{ mm}$  No. and diameter of stays *none* Inner radius of crown  $1200 \text{ mm}$  Working pressure by Rules  $14.0 \text{ kg/cm}^2$

How connected to shell *double riveted joint* Size of doubling plate under dome *none* Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell  $23 \text{ mm} \times 115 \text{ mm}$

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 23 inclusive for boilers been complied with *Yes.*

The foregoing is a correct description,

*G. F. F. F.* CANTIERI NAVALI E OFFICINE MECCANICHE DI VENEZIA Manufacturer.

Dates of Survey  $\begin{cases} \text{During progress of work in shops - } 1930 \text{ Dec } 23, 23, 1931 \text{ Mar } 17, 25, \text{ Apr } 3, 24, \\ \text{May } 4, 11, 20, \text{ June } 11, 18, 25, \text{ July } 9, 24, 28, 31, \\ \text{Aug } 6, 25, \text{ Sep } 4 \end{cases}$  Are the approved plans of boiler and superheater forwarded herewith *Yes.*

while building  $\begin{cases} \text{During erection on board vessel - } 1931 \text{ Sep } 14, 17, \text{ Oct } 2, 12, 19, 22, 23 \end{cases}$  (If not state date of approval.)

Total No. of visits *Twentyseven*

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

The Boilers have been built under Special Survey and Satisfactorily fitted in the Vessel. The Materials and Workmanship are good.

For Notation please see Machinery report.

Survey Fee  $\text{£}$  *See Machinery Report* : When applied for, 192

Travelling Expenses (if any)  $\text{£}$  : When received, 192

*Alfred Lee*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute 4 DEC 1931

Assigned *See F.B. Rpt.*