

REPORT ON BOILERS.

No. 25978

Received at London Office

Date of writing Report 1/7-60. 19 -- When handed in at Local Office 5/7 1960 Port of Gothenburg.

No. in Survey held at Gothenburg Date, First Survey 23/2 -60 Last Survey 17/6 19 60

Reg. Book. (Number of Visits 8) Gross 3850

on the "PARANAGUA" Tons Net

Built at Helsingfors By whom built Valmet O/y Yard No. 203 When built --

Engines made at --- By whom made --- Engine No. --- When made ---

Boiler made at Gothenburg By whom made A-B. Lindholmens Varv Boiler No. 3452 When made 1960

Owners Commissao de Marinha Mercante Port belonging to Rio de Janeiro

VERTICAL BOILER.

Made at Gothenburg By whom made A/B Lindholmens Varv Boiler No. 3452 When made 1960 Where fixed ---

Manufacturers of Steel Avesta Jernverk, Stewart & Lloyd's. Exh. or

Total Heating Surface of each Boiler 893 sq. ft. Is forced draught fitted --- Coal or Oil fired oil fired.

No. and Description of Boilers 1 vertical comb. oil fired and exh. heated boiler Working Pressure 100 lbs.

Tested by hydraulic pressure to 200 lbs. Date of test 1st June, 1960. No. of Certificate 872

Area of fire grate in each Boiler --- No. and description of safety valves to each boiler 1 double spring loaded

Area of each set of valves per boiler { per Rule 6300 mm² Pressure to which they are adjusted --- Are they fitted with easing gear ---
as fitted 7650 mm²

State whether steam from main boilers can enter the donkey boiler --- Smallest distance between boiler or uptake and bunkers

or woodwork --- Is oil fuel carried in the double bottom under boiler --- Smallest distance between base of boiler and tank top plating

Is the base of the boiler insulated --- Largest internal dia. of boiler 1980 mm. Height 4370 mm.

Shell plates: Material S.M. Steel Tensile strength 44 - 50 kg/mm² Thickness 10 mm.

Are the shell plates welded or flanged Welded If fusion welded, state name of welding firm A/B Lindholmens Varv

Have all the requirements of the Rules for Class I vessels been complied with Yes Description of riveting: circ. seams { end E.W. inter E.W.

long. seams E.W. Dia. of rivet holes in { circ. seams Pitch of rivets Thickness of butt straps { outer inner

Shell Crown: Whether complete hemisphere, dished partial spherical, or flat --- Material --- Tensile strength --- Thickness ---

Radius 50 mm. Description of Furnace: Plain, spherical, or dished crown Plain Material S.M. Steel

Tensile strength 41 - 47 kg/mm² Thickness 18/20 mm. External diameter { top 1600 mm. Height 1160 mm.
bottom 1600 mm. Length as per Rule

Pitch of support stays circumferentially None and vertically None Are stays fitted with nuts or riveted over ---

Diameter of stays over thread --- Radius of spherical or dished furnace crown ---

Thickness of Ogee Ring --- Diameter as per Rule { D --- d ---

Combustion Chamber: Material --- Tensile strength --- Thickness of top plate ---

Radius if dished --- Thickness of back plate --- Diameter if circular ---

Length as per Rule --- Pitch of stays ---

Are stays fitted with nuts or riveted over --- Diameter of stays over thread ---

Tube Plates: Material { top Tensile strength { 41 - 47 kg/mm² Thickness { 20 mm. Mean pitch of stay tubes in nests 285 mm.
back bottom 41 - 47 kg/mm² 20 mm.

If comprising shell, dia. as per Rule { front Pitch in outer vertical rows { Dia. of tube holes FRONT { stay BACK { stay
back plain plain plain

Is each alternate tube in outer vertical rows a stay tube ---

Girders to Combustion Chamber Tops: Material --- Tensile strength ---

Depth and thickness of girder at centre --- Length as per Rule ---

Distance apart --- No. and pitch of stays in each ---

004394-004404-0078

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Crown Stays: Material --- Tensile strength --- Diameter { at body of stay, --- or over threads. ---

No. of threads per inch --- Screw Stays: Material --- Tensile strength ---

Diameter { at turned off part, --- or over threads. --- No. of threads per inch --- Are the stays drilled at the outer ends ---

Tubes: Material S.M. Steel External diameter { plain 51 mm. ✓ stay 51 mm. ✓ Thickness { 3 mm. ✓ 9 mm. ✓

No. of threads per inch Electrically welded ✓ Pitch of tubes Δ 73 mm. ✓

Manhole Compensation: Size of opening in shell plate 470 x 370 mm. ✓ Section of compensating ring 5000 mm. ✓ No. of rivets and diameter of rivet holes Electrically welded ✓ Outer row rivet pitch at ends --- Depth of flange if manhole flanged ---

Uptake: External diameter --- Thickness of uptake plate ---

Cross Tubes: No. --- External diameters { --- Thickness of plates ---

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with Yes.

The foregoing is a correct description,
AKTIEBOLAGET LINDHOLMENS VARV
ÅNGPANNÄVDELNINGEN
Curt Palmberg Manufacturer.

Dates of Survey while building { During progress of work in shops - - 23/2 - 17/6 -60. Is the approved plan of boiler forwarded herewith 23/10-59 (If not state date of approval.)

{ During erection on board vessel - - - Total No. of visits 8.

Is this Boiler a duplicate of a previous case Yes If so, state Vessel's name and Report No. m.s. "Todos os Santos" - Valmet O/y No.201 Gothenburg FE Report No.25788.

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) This boiler has been built under Special Survey in accordance with the Rules for Welded Pressure Vessels Class I and approved plan. The workmanship is good. All welded parts of this boiler have been stress relieved in accordance with the Rules. The material fulfils the requirements of the Rules. A plan showing the position and number of X-ray films taken together with a report issued by Tekniska Röntgencentralen, indicating the category in which each film has been placed are attached. Routine tests of the welding gave following results:-

Tensile all welded material:- 10.0 mm. Φ U.T.S. 51.0 kg/mm², Y.P. 40.8 kg/mm², Elongation 33.6%, Red of area 71%

Tensile welded joint:- 9.7 x 24.7 \square U.T.S. 48.3 kg/mm². Bend test - 180° Good. Macro test - Good.

Note I:- The diameter of Exhaust Gas Inlethas been increased to 950 mm. as noted on the plan approved 23/10-59.

For identification purposes the boiler has been marked:-

No. 872
Lloyd's test Got. 200 lbs
WP 100 lbs.
LE 1.6.60.
LV No.3452

Note II:- As the order of 4 boilers now is completed, material certificates for the boilers are now enclosed.

Survey Fee ... Kr. 300:- : When applied for 5/7 19 60

Travelling Expenses (if any) £ -- -- When received --- 19 --

N. H. Fjellberg
Engineer Surveyor to Lloyd's Register of Shipping.
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Date THURSDAY 13 JUL 1961

Committee's Minute