

# REPORT ON BOILERS.

No. 8164

9 AUG 1932

Received at London Office

Port 29 July 1932 When handed in at Local Office 4 Aug. 1932 Port of Bilbao  
 Held at Bilbao Date, First Survey 26 June 1931 Last Survey 23 July 1932  
 (Number of Visits 35) Gross 7932.06 Tons  
 Net 4411.76  
 Built at Bilbao By whom built Cia. Euskalduna Yard No. 96 When built 1932  
 Augsburg By whom made Masch. fab. Augsburg-Muenchen Engine No. 350150/160 When made 1932  
 Bilbao By whom made Cia. Euskalduna de Constr. Boiler No. 121/2 When made 1932  
 Power 755 Owners Cia. Arrendataria del Monopolio de Petroleos S.A. Port belonging to Santander.

## TUBULAR BOILERS MAIN AUXILIARY OR DONKEY.

Material of Steel Alto Horno de Vizcaya S.A.; Gutehoffnungshutte A.G. Oberhausen. (Letter for Record S)  
 Surface of Boilers 127.43 m<sup>2</sup> = 1372 sq. ft. Is forced draught fitted Yes Coal or Oil fired Oil or Bituminous  
 Description of Boilers Two cylindrical multitubular marine type Working Pressure 10.5 kg/cm<sup>2</sup> = 150 lb/sq. in.  
 Hydraulic pressure to 27.5 lb/sq. in. Date of test 19/4/32, 4/5/32 No. of Certificate 121, 122 Can each boiler be worked separately Yes  
 No. and Description of safety valves to each boiler Two direct spring loaded, 3" diam.  
 Set of valves per boiler per Rule 12.45 sq. in. Pressure to which they are adjusted 150 lb/sq. in. Are they fitted with easing gear Yes  
 Donkey boilers, state whether steam from main boilers can enter the donkey boiler Yes  
 Connecting rods Distance between boilers or uptakes and bunkers or woodwork Is oil fuel carried in the double bottom under boilers Yes  
 Tube shaft Distance between shell of boiler and tank top plating In 'tween deck. Is the bottom of the boiler insulated Yes  
 Down bolts Journal dia. of boilers 3500 L Length 3280 L Shell plates: Material S.M. steel Tensile strength 44/55 kg/cm<sup>2</sup>  
 Conditions 15/1 27 L Are the shell plates welded or flanged No Description of riveting: circ. seams Double zig-zag  
 Mark KH. 1/4 29.5 L Inter. 33.5 L End 90 L; Int. 120 L  
 Marks 29.5 L Pitch of rivets 185 L {See London Letter E 23-12-31.  
 of strength of circ. end seams plate 67.2 % rivets 46 % Percentage of strength of circ. intermediate seam plate 72.1% rivets 66.8%  
 of strength of longitudinal joint plate 84% rivets 105% combined 89.25% Working pressure of shell by Rules 13.95 kg/cm<sup>2</sup> = 198 lb/sq. in.  
 of butt straps outer 20 L inner 20 L No. and Description of Furnaces in each Boiler Two Morrison type corrugated (nests)  
 S.M. steel Tensile strength 26/30 kg/cm<sup>2</sup> Smallest outside diameter 1020 L  
 plain part top 15 L bottom 15 L Thickness of plates crown 15 L bottom 15 L Description of longitudinal joint Welded.  
 of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 15.05 kg/cm<sup>2</sup> = 214 lb/sq. in.  
 in steam space: Material S.M. steel Tensile strength 41/47 kg/cm<sup>2</sup> Thickness 25 L Pitch of stays 360 x 380 L  
 stays secured Nuts & washers, made of brass Working pressure by Rules 14.75 kg/cm<sup>2</sup> = 210 lb/sq. in.  
 Material front S.M. steel Tensile strength 41/47 kg/cm<sup>2</sup> Thickness 20 L  
 back S.M. steel Tensile strength 41/47 kg/cm<sup>2</sup> Thickness 18 L  
 Pitch of stay tubes in nests 190 L Pitch across wide water spaces 360 L Working pressure front 10.7 kg/cm<sup>2</sup> = 152 lb/sq. in. back 21.5 kg/cm<sup>2</sup> = 303 lb/sq. in.  
 to combustion chamber tops: Material S.M. steel Tensile strength 44/55 kg/cm<sup>2</sup> Depth and thickness of girder  
 170 L; 2 x 19 L Length as per Rule 700 L Distance apart 180 L No. and pitch of stays  
 3 @ 180 L Working pressure by Rules 13.9 kg/cm<sup>2</sup> = 195 lb/sq. in. Combustion chamber plates: Material S.M. steel.  
 strength 41/47 kg/cm<sup>2</sup> Thickness: Sides 15 L Back 16 L Top 15 L Bottom 19 L  
 stays to ditto: Sides 200 x 180 L Back 210 x 210 L Top 180 x 180 L Are stays fitted with nuts or riveted over Nuts  
 pressure by Rules Sides = 15 kg/cm<sup>2</sup> Back = 14.2 kg/cm<sup>2</sup> Front plate at bottom: Material S.M. steel Tensile strength 41/47 kg/cm<sup>2</sup>  
 20 L Lower back plate: Material S.M. steel Tensile strength 41/47 kg/cm<sup>2</sup> Thickness 20 L  
 stays at wide water space 360 L Are stays fitted with nuts or riveted over Nuts  
 Pressure 19.8 kg/cm<sup>2</sup> = 282 lb/sq. in. Main stays: Material S.M. steel Tensile strength 41/47 kg/cm<sup>2</sup> {See London Letter E 13/1/32  
 At body of stay, 68 L No. of threads per inch 6 Area supported by each stay 360 x 380 L  
 Over threads 76 L  
 pressure by Rules 20.9 kg/cm<sup>2</sup> = 297 lb/sq. in. Screw stays: Material S.M. steel Tensile strength 41/47 kg/cm<sup>2</sup>  
 At turned off part, 35 L back; 31 L sides No. of threads per inch 9 Area supported by each stay 210 x 210 L back  
 Over threads 39 L; 35 L 200 x 180 L sides

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Working pressure by Rules *Bucks: 13.6 lb/cu. = 193 lb/o.*  
*Sides: 12.8* Are the stays drilled at the outer ends *M* Margin stays: Diameter *At turned off part, 3*  
 No. of threads per inch *9* Area supported by each stay *(180 + 105) x 210* Working pressure by Rules *10.5*  
 Tubes: Material *S.M. steel* External diameter *Plain 63 1/2* Thickness *4 1/2* No. of threads per inch *10*  
 Pitch of tubes *95 1/2* Working pressure by Rules *14.3 lb/cu. = 203 lb/o.* Manhole compensation: *10*  
 shell plate *450 x 550 1/2* Section of compensating ring *145 x 27 1/2* No. of rivets and diameter of rivet holes *48*  
 Outer row rivet pitch at ends *90 1/2* Depth of flange if manhole flanged *90 1/2* Steam Dome: Material *Steel*  
 Tensile strength *45* Thickness of shell *8* Description of longitudinal joint *Plate*  
 Diameter of rivet holes *3/16* Pitch of rivets *1 1/2* Percentage of strength of joint *80*  
 Internal diameter *50 1/2* Working pressure by Rules *10.5* Thickness of crown *1/2*  
 stays *2/16* Inner radius of crown *1 1/2* Working pressure by Rules *10.5*  
 How connected to shell *Size of doubling plate under dome* Diameter of rivet *3/16*  
 of rivets in outer row in dome connection to shell *225*

Type of Superheater *None fitted.* Manufacturers of Tubes *Steel castings*  
 Number of elements *Material of tubes* Internal diameter and thickness of tubes *Can the superheater*  
 Material of headers *Tensile strength* Thickness *Is a safety valve fitted to every part of the superheater which can be shut off from the boiler*  
 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 *Hydraulic*  
 Rules *Pressure to which the safety valves are adjusted* and after assembly in place *Are drain cocks*  
 tubes *castings* *to free the superheater from water where necessary*

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

The foregoing is a correct description of the boiler and superheater forwarded herewith (If not state date of approval.)

1931: Jan 26; July 1, 30; Aug. 6; Sept. 16, 29; Oct. 2, 6, 7, 22; Nov. 1, 18;  
 Dec. 15, 28, 31; 1932: Feb. 4, 10, 23; Mar. 1, 4, 7, 23, 30; Apr. 6, 19, 29; May 4, 9;  
 May 19, June 3, 6, 28, July 5, 22, 23. Total No. of visits *35.*

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) *The two Donkey Boilers*  
*been constructed under survey, of tested materials and in accordance*  
*the approved plan, London letter E 20/12/31 - 13/1/32 and Rules & Regulations. The*  
*workmanship is good and the boilers have been tested on completion to 2*  
*hydraulic pressure and found tight and sound. The two Donkey Boilers*  
*been satisfactorily fitted on board this vessel, examined under steam*  
*their safety valves adjusted under steam to working pressure of 150*  
*accumulation tests held, and found in order. In my opinion these Don*  
*Boilers are eligible to be classed with notation in the Register Book*  
*2 D.B. - 150 lbs.*

Survey Fee *...* Charged on *...* When applied for, *192*  
 Travelling Expenses (if any) *...* Machinery *...* When received, *192*

Committee's Minute *FRI. 12 AUG 1932*  
 Assigned *See F.E. Ref.*  
 Engineer Surveyor to Lloyd's Register of Shipping *John Marshall*