

Rpt. 4.

# REPORT ON MACHINERY.

No. 4790

Received at London Office THU. 31. AUG. 1916

Date of writing Report 23 Aug 1916 When handed in at Local Office 10 Port of Bilbao  
No. in Survey held at Bilbao Date, First Survey April 27<sup>th</sup> Last Survey August 5 1916  
Reg. Book. on the S/S. "Inuro" (Number of Visits 25)

Master P. ALDAMIZ-04-16 Built at Bilbao By whom built Cia Euzaldema de Constr. y Rep When built 1916-8  
Engines made at W. Hartlepool By whom made Central Marine Engine works when made 1916  
Boilers made at W. Hartlepool By whom made Central Marine Engine works when made 1916  
Registered Horse Power \_\_\_\_\_ Owners Cia Vares Cantabrica de Nav. Port belonging to Bilbao  
Nom. Horse Power as per Section 28 268 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

**ENGINES, &c.**—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3  
Dia. of Cylinders 23", 36 1/2", 62" Length of Stroke 42 Revs. per minute \_\_\_\_\_ Dia. of Screw shaft as per rule 12.75 Material of screw shaft Engl. steel  
Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes Is the after end of the liner made water tight in the propeller boss Yes If the liner is in more than one length are the joints burned Yes If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive Yes If two liners are fitted, is the shaft lapped or protected between the liners \_\_\_\_\_ Length of stern bush 51"  
Dia. of Tunnel shaft as per rule 11.41 Dia. of Crank shaft journals as per rule 11.98 Dia. of Crank pin 12 1/2" Size of Crank webs 7 3/4" x 7 1/2" Dia. of thrust shaft under collars 12 1/4" Dia. of screw 15-6" Pitch of Screw 16-3" No. of Blades 4 State whether moveable No Total surface 78 Sq. ft.  
No. of Feed pumps (2) Two Diameter of ditto 3" Stroke 30" Can one be overhauled while the other is at work Yes  
No. of Bilge pumps (2) Two Diameter of ditto 3 1/2" Stroke 30" Can one be overhauled while the other is at work Yes  
No. of Donkey Engines (2) Two Sizes of Pumps Ballon duplex 4" x 6" stroke No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room Two 3 1/2" In Holds, &c. Two 3" in each of No. 1, 2, & 3 Holds, One 3" in tunnel  
No. of Bilge Injection pumps 1 size 6 1/2" Connected to condenser, or to circulating pump Yes Is a separate Donkey Suction fitted in Engine room & size Yes two 3 1/2"  
Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are the sluices on Engine room bulkheads always accessible Yes  
Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Valves and cocks  
Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Yes Are the Discharge Pipes above or below the deep water line above  
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Yes Are the Blow Off Cocks fitted with a spigot and brass covering plate Yes  
What pipes are carried through the bunkers None How are they protected \_\_\_\_\_  
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes  
Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges Yes  
Dates of examination of completion of fitting of Sea Connections 1-4-16 of Stern Tube 31-3-16 Screw shaft and Propeller 31-3-16  
Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper deck

**BOILERS, &c.**—(Letter for record S.) Manufacturers of Steel John Spencer & Sons Ltd.  
Total Heating Surface of Boilers 4090 Sq. ft. Is Forced Draft fitted No No. and Description of Boilers Two (2) Single Ended  
Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 2-5-16 No. of Certificate 3427  
Can each boiler be worked separately Yes Area of fire grate in each boiler 52 Sq. ft. No. and Description of Safety Valves to each boiler Two (2) Spring Area of each valve 8.295 Sq. in. Pressure to which they are adjusted 180 lbs Are they fitted with easing gear Yes  
Smallest distance between boilers or uptakes and bunkers or woodwork 16" Mean dia. of boilers 15-0" Length 10-6" Material of shell plates Steel  
Thickness 1/4" Range of tensile strength 27/30 Are the shell plates welded or flanged both Descrip. of riveting: cir. seams \_\_\_\_\_ long. seams 3 lb. dble straps Diameter of rivet holes in long. seams 1 5/16" Pitch of rivets 8 1/16" Lap of plates or width of butt straps 19 1/4"  
Per centages of strength of longitudinal joint 91 Working pressure of shell by rules 180.4 lbs. Size of manhole in shell 16" x 12"  
Size of compensating ring 32 x 28 x 1 5/16" No. and Description of Furnaces in each boiler three (3) Morrison Material Steel Outside diameter 46 1/8"  
Length of plain part top 8" Thickness of plates bottom 9/16" Description of longitudinal joint welded No. of strengthening rings Scup  
Working pressure of furnace by the rules 184 lbs. Combustion chamber plates: Material Steel Thickness: Sides 10/16" Back 10/16" Top 10/16" Bottom 10/16"  
Pitch of stays to ditto: Sides 9 x 8 1/2" Back 9 1/4 x 8" Top 8 3/4 x 8 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 192 lbs.  
Material of stays Steel Diameter at smallest part 1 5/8" Area supported by each stay 9 x 8 1/2" Working pressure by rules 192 lbs. End plates in steam space: Material Steel Thickness 1 5/16" Pitch of stays 2 1/2 x 19 1/2" How are stays secured dble nuts Working pressure by rules 183 lbs. Material of stays Steel  
Diameter at smallest part 3 1/4" Area supported by each stay 2 1/2 x 19 1/2" Working pressure by rules 194 lbs. Material of Front plates at bottom Steel  
Thickness 1" Material of Lower back plate Steel Thickness 1 1/16" Greatest pitch of stays 16 1/4" x 7 1/2" Working pressure of plate by rules 189 lbs.  
Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" Material of tube plates Steel Thickness: Front 1" Back 1 1/16" Mean pitch of stays 9"  
Pitch across wide water spaces 14 1/4" Working pressures by rules 189 lbs. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 8 1/2" x 1 1/2" Length as per rule 28 5/8" Distance apart 8 1/2" Number and pitch of stays in each Two (2) 8 3/4"  
Working pressure by rules 184 lbs. Superheater or Steam chest; how connected to boiler \_\_\_\_\_ Can the superheater be shut off and the boiler worked separately \_\_\_\_\_  
Diameter \_\_\_\_\_ Length \_\_\_\_\_ Thickness of shell plates \_\_\_\_\_ Material \_\_\_\_\_ Description of longitudinal joint \_\_\_\_\_ Diam. of rivet holes \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_ Diameter of flue \_\_\_\_\_ Material of flue plates \_\_\_\_\_ Thickness \_\_\_\_\_  
If stiffened with rings \_\_\_\_\_ Distance between rings \_\_\_\_\_ Working pressure by rules \_\_\_\_\_ End plates: Thickness \_\_\_\_\_ How stayed \_\_\_\_\_  
Working pressure of end plates \_\_\_\_\_ Area of safety valves to superheater \_\_\_\_\_ Are they fitted with easing gear \_\_\_\_\_

In a Report also sent on the merits of the ship

Im. 108-T.

W1630-0022



Rpt. 4  
Date of ...  
No. in ...  
Requ...  
Ma...  
En...  
Bo...

**VERTICAL DONKEY BOILER—**

Manufacturers of Steel *S. Cobille & Sons* ✓

No. *6945* ✓ Description *Cochran* ✓  
 Made at *Annan* ✓ By whom made *Cochran & Co.* ✓ When made *1915* ✓ Where fixed *Stolohol* ✓  
 Working pressure *100* tested by hydraulic pressure to *200* ✓ Date of test *8-10-15* ✓ No. of Certificate *13251* ✓ Fire grate area *26.75* ✓ Description of Safety  
 Valves *Direct Spring* ✓ No. of Safety Valves *2* ✓ Area of each *7"* ✓ Pressure to which they are adjusted *100 lbs* ✓ Date of adjustment *29-7-16* ✓  
 If fitted with easing gear *Yes* ✓ If steam from main boilers can enter the donkey boiler *No* ✓ Dia. of donkey boiler *7'-0"* ✓ Length *15'-0"* ✓  
 Material of shell plates *Steel* ✓ Thickness *7/32 - 5/8* ✓ Range of tensile strength *28.32* ✓ Descrip. of riveting long. seams *D. R. Lap* ✓  
 Dia. of rivet holes *29/32* ✓ Whether punched or drilled *Drilled* ✓ Pitch of rivets *2.92* ✓ Lap of plating *4 1/2* ✓ Per centage of strength of joint  
 Rivets *70.6* ✓ Plates *67.0* ✓  
 Working pressure of shell by rules *102* ✓ Thickness of shell crown plates *5/32 - 7/8* ✓ Radius of do. *4 1/2* ✓ No. of stays to do. *nil* ✓ Dia. of stays ✓  
 Diameter of furnace Top *Radii* Bottom *72* ✓ Length of furnace *47 3/4* ✓ Thickness of furnace plates *17/32 - 7/8* ✓ Description of joint ✓  
 Working pressure of furnace by rules *100* ✓ Thickness of furnace crown plates *17/32* ✓ Radius of do. *3 1/2* ✓ Stayed by *Hemisphere* ✓  
 Diameter of uptake *15" x 23* ✓ Thickness of uptake plates *9/16* ✓ Thickness of water tubes *Plate BACK 3/4* ✓ Dates of survey

**SPARE GEAR.** State the articles supplied:— *1 propeller. 1 set of piston rings. 1 set of shaft coupling bolts. 1 ditto of bottom end bolts. 1 ditto crosshead bolts. 1 ditto main beaming bolts. A complete set of spanners. A set of feed & tilge pump valves. An assortment of bolts and nuts, and iron of various sizes.*

The foregoing is a correct description,

Manufacturer.

Dates of Survey while building  
 During progress of work in shops— *1915 Dec 7, 8, 9. Jan 1916, 10, 11, 13, 14, 17, 24, 25, 26, 27, 31. Feb 1, 2, 3, 4, 8, 9, 10, 14, 15, 23, 24, 25, 29. Mar 1, 2, 10, 13, 14, 15, 17, 22, 23, 24, 27, 31. April 11, 12, 13, 14, 17, 19, 27, 28. May 1, 2, 3, 4, 5, 8, 9, 11, 15, 18, 19, 22, 23.*  
 During erection on board vessel— *1916 Mar 1, 2, 22, 29, 30, 31. April 1, 11. June 14, 16, 17, 24, 28. July 5, 6, 8, 19, 28, 29. Aug. 1, 3, 4, 5.*  
 Total No. of visits *59 + 25 at 1st.* Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts—Cylinders *18-5-16*. Slides *18-5-16*. Covers *18-5-16*. Pistons *18-5-16*. Rods *2-5-16*.  
 Connecting rods *28-4-16* Crank shaft *15-5-16*. Thrust shaft *15-5-16*. Tunnel shafts *9-5-16* Screw shaft *25-2-16* Propeller *2-3-16*.  
 Stern tube *2-3-16* Steam pipes tested *18-5-16*. Engine and boiler seatings *11-4-16*. Engines holding down bolts *8-7-16*  
 Completion of pumping arrangements *8-7-16* Boilers fixed *16-6-16* Engines tried under steam *29-7-16*  
 Main boiler safety valves adjusted *29-7-16*. Thickness of adjusting washers *Port M. Ambar 3. 12 1/2 mm, Starb. M. Ambar 3. 10 1/2 mm.*  
 Material of Crank shaft *Engt. Steel* Identification Mark on Do. *5717* Material of Thrust shaft *Engt. Steel* Identification Mark on Do. *5717*.  
 Material of Tunnel shafts *Engt. Steel* Identification Marks on Do. *5717* Material of Screw shafts *Engt. Steel* Identification Marks on Do. *5717*.  
 Material of Steam Pipes *Steel Lap welded.* ✓ Test pressure *600 lbs.* ✓

**General Remarks** (State quality of workmanship, opinions as to class, &c. *Workmanship good.* ✓)

*Craprovalin coils tested to 400 lbs & body to 50 lbs water pressure.*  
*The engine & boiler have been constructed under special survey and in accordance with the requirements of the Society's Rules. The machinery is intended for the new steamer "Grouse" & is being shipped to Bilbao to be fitted on board her.*

*The Main Engines & Boilers as per Test Hartlepool Rpt N° 15253, and the donkey boiler as per Glasgow Rpt N° 36505, have now been fitted aboard, secured, mounted & tested with satisfactory results. All safety valves have now been adjusted under steam pressure. The Main & Auxiliary machinery have been tested with satisfactory results.*

*The vessel is eligible in our opinion to have the notation of L.M.C. 8-16. Recorded in the Register Book.*

The amount of Entry Fee .. £ 50 :	When applied for,
Special .. £ 250 :	3-8-16 .. 19...
W. H. & C. Credit Rbt R 11-2/	3
Donkey Boiler Fee .. £ :	When received,
Travelling Expenses (if any) £ 10 :	3-8-16 .. 19...

*THE BROOD. + L.M.C. 8.16. J.W.D.*  
*J. de. Montegabal + John Tolloch 29/9/16.*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute TUE. -5 SEP. 1916  
 Assigned + L.M.C. 8.16



MACHINERY CERTIFICATE WRITTEN

Certificate (if required) to be sent to the Surveyors are requested not to write on or below the space for Committee's Minute.