

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  
Reg. Book.Date, First Survey April 27<sup>th</sup>

Last Survey August 5 1916

on the

S/S. "Inuro"

(Number of Vents 25)

Gross 2904  
Tons  
Net 1638

Master P. ALDAMIZ 04-16 Built at Bilbao

By whom built Cia Eustaldema de Constr. 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, &amp;c.—Description of Engines

Triple Expansion

No. of Cylinders 3

No. of Cranks 3

Dia. of Cylinders 23", 36", 62"

Length of Stroke 42

Revs. per minute

Dia. of Screw shaft

as per rule 12.75

Material of screw shaft

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

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"

Size of Crank webs 7" x 7"

Dia. of thrust shaft under

collars 12"

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"

Stroke 30"

Can one be overhauled while the other is at work Yes

No. of Donkey Engines (2) Two

Sizes of Pumps 4" x 6" and 8" x 8"

No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Two 3"

In Holds, &amp;c. Two 3" in each of No. 1, 2, &amp; 3 Holds, One 3" in tunnel

No. of Bilge Injection 1 size 6"

Connected to condenser or to circulating pump Yes

Is a separate Donkey Suction fitted in Engine room &amp; size for two 3"

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

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, &amp;c.—(Letter for record S.)

Manufacturers of Steel John Spencer &amp; 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 the dble straps

Diameter of rivet holes in long. seams 15/16

Pitch of rivets 8 1/2"

Lap of plates or width of butt straps 19 1/4"

Per centages of strength of longitudinal joint

rivets 91

plate 85.1

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) Harmonic

Material Steel

Outside diameter 46 1/8"

Length of plain part top 8"

Thickness of plates crown 9/16"

Description of longitudinal joint welded

No. of strengthening rings Six

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 1/4"

Back 9 1/4 x 8"

Top 8 1/4 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 1/4"

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 1/4"

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

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Lloyd's Register

Foundation

W1630-0022



# 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 *Stolabole*

Working pressure *100* tested by hydraulic pressure to *200* Date of test *8-10-15* No. of Certificate *1325* Fire grate area *26.75* Description of Safety

Valves *Direct Spring* No. of Safety Valves *2* Area of each *2* 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 *20.6* Plates *67.0*

Working pressure of shell by rules *102* Thickness of shell crown plates *5/32 - 7/8* Radius of do. *42* 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. *36* Stayed by *Hemisphere*

Diameter of uptake *15" x 23* Thickness of uptake plates *9/16* Thickness of water tubes *1 1/8* 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 beam 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, 18, 19, 22, 23, 24, April 27, 28, 31, April 11, 11, June 14, 16, 17, 24, 28, July 5, 6, 8, 19, 20, 29, Aug 1, 3, 4, 5, 1916, Mar 1, 2, 22, 29, 30, 31, April 1, 11, June 14, 16, 17, 24, 28, July 5, 6, 8, 19, 20, 29, Aug 1, 3, 4, 5*  
During erection on board vessel—  
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. Boiler 3/16, Starb. M. Boiler 3/16*

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.*)

*Crankshaft coils tested to 4000 lb & body to 50 lbs water pressure.*

*The engine & boilers have been constructed under special survey and in accordance with the requirements of the Societies 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 West 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 :  
Special .. £ 250 :  
W. H. & C. R. B. 11-24 .. £ :  
Donkey Boiler Fee .. £ :  
Travelling Expenses (if any) £ 10 :  
When applied for, 3-8-16  
When received, 3-8-16

Committee's Minute TUE.-5 SEP. 1916

Assigned *+ L.M.C. 8-16*

*THE RECORD + L.M.C. 8-16*  
*J. de. Montgabal & John Pollock*  
*Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.*

