

REPORT ON MACHINERY.

No. 4971.

Port of Bilbao

Received at London Office

WED. 23 MAY 1917

No. in Survey held at

BilbaoDate, first Survey Aug 16th 1916Last Survey 12th May 1917

Reg. Book.

on the

Steel s/s. "Mar Tirreno"(Number of Visits 10)Tons } Gross 3367Not 1896When built 1917-5Master A. CANDINA-11-17Built at Bilbao

By whom built

Cia Euzaldema de Com.

Engines made at

W. Hartlepool

By whom made

Central Marine Engine Works

when made

1917

Boilers made at

W. Hartlepool

By whom made

Central Marine Engine Works

when made

1917

Registered Horse Power

Owners

Compania Maritima del NervionPort belonging to Bilbao

Nom. Horse Power as per Section 28

268

Is Refrigerating Machinery fitted for cargo purposes

No

Is Electric Light fitted

No

ENGINES, &c.—Description of Engines

Triple expansion

No. of Cylinders

Three (3)No. of Cranks Three (3)Dia. of Cylinders 23" 36 $\frac{1}{2}$ " 62"Length of Stroke 42"Revs. per minute 70

Dia. of Screw shaft

as per rule 12 $\frac{7}{8}$ "

Material of

as fitted 13" 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

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

Yes

Length of stern bush

51"

Dia. of Tunnel shaft

as per rule 11 $\frac{1}{4}$ "

Dia. of Crank shaft journals

as per rule 11 $\frac{9}{8}$ "

Dia. of Crank pin

12 $\frac{1}{4}$ "

Size of Crank webs

7 $\frac{1}{2}$ " x 17 $\frac{1}{4}$ "

Dia. of thrust shaft under

collars

12 $\frac{1}{4}$ "

Dia. of screw

15 $\frac{1}{2}$ "

Pitch of Screw

16 $\frac{1}{2}$ "

No. of Blades

4

State whether moveable

No

Total surface

78 Sq. ft.

No. of Feed pumps

Two (2)

Diameter of ditto

3"

Stroke

30"

Can one be overhauled while the other is at work

Yes

No. of Bilge pumps

Two (2)

Diameter of ditto

3 $\frac{1}{2}$ "

Stroke

30"

Can one be overhauled while the other is at work

Yes

No. of Donkey Engines

Two (2)

Sizes of Pumps

4" pump 6" stroke8" pump 8" stroke

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

Two (2) 3 $\frac{1}{2}$ " in each of Nos. 1, 2, 3 & 4

In Engine Room

Two (2) 3 $\frac{1}{2}$ "

In Holds, &c.

Two (2) 3 $\frac{1}{2}$ " in each of Nos. 1, 2, 3 & 4One 3 $\frac{1}{2}$ " in dry tank under boilers. One (1) 2 $\frac{1}{4}$ " in tunnel well.

No. of Bilge Injections

One size 6 $\frac{1}{2}$ "

Connected to condenser, or to circulating pump

Yes

Is a separate Donkey Suction fitted in Engine room & size

Yes to 3 $\frac{1}{2}$ "

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 & 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

Yes

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

9-10-16

of Stern Tube

9-10-16

Screw shaft and Propeller

9-10-16

Is the Screw Shaft Tunnel watertight

Yes

Is it fitted with a watertight door

Yesworked from Above load line

BOILERS, &c.—(Letter for record

3)

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

12-12-16

No. of Certificate

3447

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

17"

Mean dia. of boilers

15'-0"

Length

10'-6"

Material of shell plates

Steel

Thickness

1 $\frac{1}{4}$ "

Range of tensile strength

27/30 Tons

Are the shell plates welded or flanged

both

Descrip. of riveting: cir. seams

long. seams

366: dble shop

Diameter of rivet holes in long. seams

1 $\frac{5}{16}$ "

Pitch of rivets

8 $\frac{1}{16}$ "

Lap of plates or width of butt straps

19 $\frac{1}{4}$ "

Per centages of strength of longitudinal joint

rivets 91plate 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 $\frac{5}{16}$ "

No. and Description of Furnaces in each boiler

Three (3) Morrison

Material

Steel

Outside diameter

46 $\frac{1}{8}$ "

Length of plain part

top 8"

Thickness of plates

crown 9/16"bottom 9/16"

Description of longitudinal joint

Welded

No. of strengthening rings

Suspension

Working pressure of furnace by the rules

184 lbs

Combustion chamber plates: Material

Steel

Thickness: Sides

1 $\frac{1}{16}$ "

Back

1 $\frac{1}{16}$ "

Top

1 $\frac{1}{16}$ "

Pitch of stays to ditto: Sides

9" x 8 $\frac{1}{4}$ "

Back

9 $\frac{1}{4}$ " x 8"

Top

8 $\frac{3}{4}$ " x 8 $\frac{1}{2}$ "

If stays are fitted with nuts or riveted heads

nuts

Working pressure by rules

181 lbs

Material of stays

Steel

Diameter at smallest part

1.508

Area supported by each stay

9" x 8 $\frac{1}{4}$ "

Working pressure by rules

192 lbs

End plates in steam space:

Material

Steel

Thickness

1 $\frac{5}{16}$ "

Pitch of stays

21 $\frac{1}{2}$ " x 19 $\frac{1}{2}$ "

How are stays secured

dble nut

Working pressure by rules

183 lbs

Material of stays

Steel

Diameter at smallest part

3.161

Area supported by each stay

21 $\frac{1}{2}$ " x 19 $\frac{1}{2}$ "

Working pressure by rules

194 lbs

Material of Front plates at bottom

Steel

Thickness

1"

Material of Lower back plate

Steel

Thickness

1 $\frac{5}{16}$ "

Greatest pitch of stays

16 $\frac{1}{4}$ " x 7 $\frac{1}{2}$ "

Working pressure of plate by rules

189 lbs

Diameter of tubes

3 $\frac{1}{4}$ "

Pitch of tubes

4 $\frac{1}{2}$ "

Material of tube plates

Steel

Thickness: Front

1"

Back

1 $\frac{1}{16}$ "

Mean pitch of stays

9"

Pitch across wide water spaces

14 $\frac{1}{4}$ "

Working pressures by rules

189 lbs

thickness of girder at centre

8 $\frac{1}{2}$ " x 1 $\frac{1}{4}$ "

Length as per rule

28 $\frac{5}{8}$ "

Distance apart

8 $\frac{1}{2}</$

VERTICAL DONKEY BOILER—

Manufacturers of Steel

S. Colville & Sons.

No. 7102 Description Cochran

Made at Annan By whom made Cochran

When made 1916. Where fixed Stobrod.

Working pressure 100 lbs. tested by hydraulic pressure to 200 Date of test 25-2-16. No. of Certificate 13364 Fire grate area 26.75 Description of Safety

Valves 2 Direct spring. No. of Safety Valves Two Area of each 7" Pressure to which they are adjusted 100 lbs. Date of adjustment 12-3-17

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 5/8" Range of tensile strength 28-32. Descrip. of riveting long. seams D.R. Lap.

Dia. of rivet holes 3/32 Whether punched or drilled Drilled Pitch of rivets 2.92" Lap of plating 4 1/2" Per centage of strength of joint Rivets 70

Working pressure of shell by rules 106 Thickness of shell crown plates 15/32 Radius of do. 42" No. of stays to do. 916 Dia. of stays 7/8

Diameter of furnace Top Rad Bottom 72" Length of furnace 47 3/4 Thickness of furnace plates 17/32 Stayed by Hemisphere.

Working pressure of furnace by rules 100. Thickness of furnace crown plates 17/32 Stayed by Hemisphere.

Diameter of uptake 15" X 23 Thickness of uptake plates 9/16. Thickness of water tubes 1/2" Dates of survey 1916. Jan 21. 28. Feb 11. 18.

SPARE GEAR. State the articles supplied:— 2 top end & 2 bottom end bolts & nuts for connecting rod. 2 main bearing bolts & nuts; One set of coupling bolts & nuts; 2 feed pump valves; 2 bilge pump valves; One set of H.P. piston spring; One solid propeller; 4 assorted bolts & nuts & iron bars.

The foregoing is a correct description,

(Signed) John B. Williams. Manufacturer.

1916. Feb 3. 4. 10. 14. 17. 24. 25. Mar 1. 2. 14. 15. May 1. June 15. 16. 19. 20. 21. 22. 23. 28. 29. July 3. 4. 5. 19. 28. 31. Aug 1. 2. 11. 16. 18. 25. 28. 29. 30. 31. Sep 1. 11. 12. 20. 22. 27. Oct 2. 3. 4. 5. 6. 9. 11. 12. 13. 18. 19. 20. 23. 24. 25. 26. 27. 30. Nov 1. 3. 10. 13. 14. 15. 16. 17. 20. 21. 22. 23. 24. 30. Dec 1. 4. 5. 7. 8. 11. 12. 13. 14. 15. 18. 19. 20. 21. 22. 1917 Jan 4. 8. 9. Feb 10. 13. 14. 15. 16. 17. 20. 21. 22. 23. 24. 25. 26. 27. 30. Mar 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. Apr 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. May 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. Jun 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. Jul 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. Aug 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. Sep 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. Oct 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. Nov 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. Dec 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31.

Dates of Examination of principal parts—Cylinders 22-12-16 Slides 4-1-17 Covers 8-1-17. Pistons 20-12-16 Rods 30-11-16.

Connecting rods 18-12-16 Crank shaft 20-12-16 Thrust shaft 20-12-16. Tunnel shafts 21-12-16. Screw shaft 3-7-16 Propeller 4-7-16.

Stern tube 4-7-16. Steam pipes tested 4-1-17. Engine and boiler seatings 18-4-17. Engines holding down bolts 4-5-17.

Completion of pumping arrangements 11-5-17. Boilers fixed 4-5-17. Engines tried under steam 12-5-17.

Main boiler safety valves adjusted 12-5-17. Thickness of adjusting washers Port Main Boiler 10 3/4. Starb Main Boiler 11 3/4.

Material of Crank shaft Scrap iron Identification Mark on Do. 5844. Material of Thrust shaft Scrap iron Identification Mark on Do. 5844.

Material of Tunnel shafts Scrap iron Identification Marks on Do. 5844. Material of Screw shafts Scrap iron Identification Marks on Do. 5778.

Material of Steam Pipes Steel lap-welded. Test pressure 600 lbs.

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

Evaporator coils tested to 400 lbs. & body to 50 lbs water pressure.

The Engines & Boilers have been constructed under special Survey & in accordance with the

requirements of the Society's Rules. The Machinery is intended for the new Steamer "New Firm"

& is being shipped to Bilbao to be fitted on board her.

The Main Engines & Boilers as per West Hartlepool Rpt No 15333, and the Donkey boilers as

per Glasgow Rpt No 35819, have now been fitted aboard, secured, mounted and tested

with satisfactory results. All the Safety valves of both main boilers & of donkey boilers

have now been adjusted under steam pressure. The main & Auxiliary machinery

have been tested with satisfactory results.

This Vessel is Eligible in my opinion to have the Notation of LMC. 5-17. Records

in the Society's Register Book.

The amount of Entry Fee. 50 : When applied for, 14/5-1917.

Special Donkey Boiler Fee 250 : When received, 14/5-1917.

Travelling Expenses (if any) 4-50

Committee's Minute

Assigned

WED 30 MAY 1917

+ L.M.C. 5-17

J. de Montgobal

Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

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Lloyd's Register

Foundation