

REPORT ON MACHINERY

MON. - 5 JUN. 1916

Received at London Office

Date of writing Report 1st June 1916 When handed in at Local Office 3rd June 1916 Port of West Hartlepool

No. in Survey held at W. Hartlepool Date, First Survey 7th Dec 15 Last Survey 23rd May 1916

Reg. Book. on the Steel Screw Steamer "Moura" (Number of Visits 59)

Safety 7-16

Master _____ Built at _____ By whom built _____ When built _____

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 _____ Port belonging to _____

Nom. Horse Power as per Section 28 268 Is Refrigerating Machinery fitted for cargo purposes _____ Is Electric Light fitted _____

ENGINES, &c. — Description of Engines Triple Expansion No. of Cylinders three (3) No. of Cranks three (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 Ingot 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 Yes Length of stern bush 51"

Dia. of Tunnel shaft as per rule 11.44" Dia. of Crank shaft journals as per rule 11.98" Dia. of Crank pin 12 1/4" Size of Crank webs 7 3/8" x 17 1/4" 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 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 1/2" Strokes 30" Can one be overhauled while the other is at work Yes

No. of Donkey Engines two (2) Sizes of Pumps 4" pump, 6" stroke, 8" do., 8" do. duplex No. and size of Suctions connected to both Bilge and Donkey pumps _____

In Engine Room _____ In Holds, &c. _____

No. of Bilge Injections one size 6 1/2" Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine room & size _____

Are all the bilge suction pipes fitted with roses _____ Are the roses in Engine room always accessible _____ Are the sluices on Engine room bulkheads always accessible _____

Are all connections with the sea direct on the skin of the ship _____ Are they Valves or Cocks _____

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates _____ Are the Discharge Pipes above or below the deep water line _____

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel _____ Are the Blow Off Cocks fitted with a spigot and brass covering plate _____

What pipes are carried through the bunkers _____ How are they protected _____

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times _____

Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges _____

Dates of examination of completion of fitting of Sea Connections _____ of Stern Tube _____ Screw shaft and Propeller _____

Is the Screw Shaft Tunnel watertight _____ Is it fitted with a watertight door _____ worked from _____

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. ins. Pressure to which they are adjusted _____ Are they fitted with easing gear _____

Smallest distance between boilers or uptakes and bunkers or woodwork _____ Mean dia. of boilers 15-0" Length 10-6" Material of shell plates Steel

Thickness 1/4" Range of tensile strength 27/30 tons Are the shell plates welded or flanged both Descrip. of riveting: cir. seams _____

long. seams 3/16" db. straps Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 8 13/16" 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 manholes in shell 16" x 12"

Size of compensating ring 32" x 28" x 1 1/16" No. and Description of Furnaces in each boiler three (3), Morrison's Material Steel Outside diameter 46 1/8"

Length of plain part top 8", bottom 8" Thickness of plates 9/16" Description of longitudinal joint welded No. of strengthening rings Susp.

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 13/16"

Pitch of stays to ditto: Sides 9" x 8 1/4" 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 181 lbs.

Material of stays Steel Diameter at smallest part 1.508" 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 1/16" Pitch of stays 21 1/2" x 19 1/2" How are stays secured db. nuts Working pressure by rules 183 lbs. Material of stays Steel

Diameter at smallest part 3.161" Area supported by each stay 21 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 5/16" 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 _____

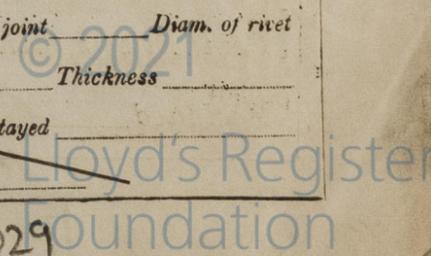
Diameter _____ Length _____ Thickness of shell plates _____ Material _____ Description of longitudinal joint _____ Diam. of rivet holes _____

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 _____

Central No. 243



IS A DONKEY BOILER FITTED?

If so, is a report now forwarded?

SPARE GEAR. State the articles supplied: - 2 top lid + 2 bottom lid 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 springs, one solid propeller, 4 assorted bolts + nuts + iron bars.

To check on board.

The foregoing is a correct description,

FOR THE CENTRAL MARINE ENGINE WORKS.

(W. GRAY & Co., Ltd.)

A. Hogarth Manufacturer. Chief Draughtsman.

Dates of Survey while building: During progress of work in shops - 1915 Dec 7, 8, 9; 1916 Jan 10, 11, 13, 14, 17, 24, 25, 26, 27, 31; Feb 1, 2, 3, 4, 8; During erection on board vessel - 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; Total No. of visits 59.

Is the approved plan of main boiler forwarded herewith Yes. ✓

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 Engines holding down bolts Completion of pumping arrangements Boilers fixed Engines tried under steam Main boiler safety valves adjusted Thickness of adjusting washers

Material of Crank shaft hot steel Identification Mark on Do. 5717 Material of Thrust shaft hot steel Identification Mark on Do. 5717

Material of Tunnel shafts hot steel Identification Marks on Do. 5717 Material of Screw shafts hot steel Identification Marks on Do. 5717

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

Is an installation fitted for burning oil fuel No. ✓ Is the flash point of the oil to be used over 150°F. ✓

Have the requirements of Section 49 of the Rules been complied with ✓

Is this machinery duplicate of a previous case Yes. ✓ If so, state name of vessel S.S. "Mar Mediterraneo" + "Mar de Norte"

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

Evaporator coils tested to 400lbs + body to 50lbs 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 "Moura" + is being shipped to Bilbao to be fitted on board her.

The amount of Entry Fee ... £ 2 : - - : When applied for, 2/6/1916. Special ... £ 22 : 6 - : 13 do due Bilbao ... 11 : 2 - : Donkey Boiler Fee ... Travelling Expenses (if any) £ 12-1-1916 13/6/16

J. M. White, Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute TUE - 5SER 1916 Assigned Su minute Boofe. 4/14/90

