

# REPORT ON MACHINERY

No. 26476

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Date of writing Report 17.6.15 When handed in at Local Office 18.6.15 Port of **SUNDERLAND.**

No. in Survey held at **SUNDERLAND.** Date, First Survey 19<sup>th</sup> October 1914 Last Survey 16-6-1915

Reg. Book. 79 on the new steel **S/S "ELFORD."** (Number of Visits 48.)

Master **Gillan** Built at **Sunderland** By whom built **W. Pickersgill & Sons Ltd (No. 189)** Tons { Gross 1739 Net 1000 929 When built 1915

Engines made at **Sunderland** By whom made **MacLellan & Pollock Ltd (No. 257)** when made 1915

Boilers made at **Sunderland** By whom made **MacLellan & Pollock Ltd (No. 257)** when made 1915

Registered Horse Power Owners **Sharp & Co Ltd (Sharp & Co)** Port belonging to **Newcastle**

Nom. Horse Power as per Section 28 **299** 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 **22, 36, 60** Length of Stroke **39** Revs. per minute **70** Dia. of Screw shaft as per rule **12.5"** Material of screw shaft **Steel**

Is the screw shaft fitted with a continuous liner the whole length of the stern tube **no liner** 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 **no**

If two liners are fitted, is the shaft lapped or protected between the liners **yes** Length of stern bush **4.3 3/4"**

Dia. of Tunnel shaft as per rule **10.86"** Dia. of Crank shaft journals as per rule **11.4"** Dia. of Crank pin **11.3"** Size of Crank webs **10 7/8" x 7 3/4" thick** Dia. of thrust shaft under collars **11 3/4"** Dia. of screw **14.3"** Pitch of Screw **16.0"** No. of Blades **4** State whether moveable **no** Total surface **73 sq ft**

No. of Feed pumps **2** Diameter of ditto **3 1/2"** Stroke **20"** Can one be overhauled while the other is at work **yes**

No. of Bilge pumps **2** Diameter of ditto **3 1/2"** Stroke **20"** Can one be overhauled while the other is at work **yes**

No. of Donkey Engines **3** Sizes of Pumps **2 @ 7 1/2" x 5" x 15", 1 @ 8" x 10" x 15"** No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room **4 @ 2 1/2"** In Holds, &c. **Forward hold - 2 @ 2 1/2"**

after hold - 2 @ 2 1/2". Tunnel well - 1 @ 2 1/2".

No. of Bilge Injections **1** sizes **5 1/2"** Connected to condenser, or to circulating pump **6 P.** Is a separate Donkey Suction fitted in Engine room & size **yes 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 **none**

Are all connections with the sea direct on the skin of the ship **yes** Are they Valves or Cocks **both**

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 **forward hold outside** How are they protected **under timber boards**

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 **16-4-15** of Stern Tube **27-4-15** Screw shaft and Propeller **27-4-15**

Is the Screw Shaft Tunnel watertight **yes** Is it fitted with a watertight door **yes** worked from **Top platform**

BOILERS, &c.—(Letter for record **S**) Manufacturers of Steel **John Spence & Sons Ltd.**

Total Heating Surface of Boilers **53600 sq ft** Is Forced Draft fitted **no** No. and Description of Boilers **Two single ended marine**

Working Pressure **180** Tested by hydraulic pressure to **360** Dates of test **22-4-15 & 18-5-15** No. of Certificate **3294 & 3300**

Can each boiler be worked separately **yes** Area of fire grate in each boiler **74 sq ft** No. and Description of Safety Valves to each boiler **two direct spring**

Area of each valve **8.30** Pressure to which they are adjusted **185** Are they fitted with easing gear **yes**

Smallest distance between boiler uptakes and bunkers **4-6"** Mean dia. of boilers **16-6"** Length **10-6"** Material of shell plates **steel**

Thickness **1 1/4"** Range of tensile strength **29 1/2 - 33** Are the shell plates welded or flanged **no** Descrip. of riveting: cir. seams **DR**

long. seams **DR** Diameter of rivet holes in long. seams **1 9/16"** Pitch of rivets **9 13/16"** Lap of plates or width of butt straps **1-7 1/2"**

Per centages of strength of longitudinal joint rivets **87.6** Working pressure of shell by rules **180** Size of manhole in shell **16 x 12"**

plate **85.7** Size of compensating ring **flanged** No. and Description of Furnaces in each boiler **4 plain** Material **steel** Outside diameter **3-8"**

Length of plain part top **6-2 3/4"** bottom **6-2"** Thickness of plates crown **7 3/32"** Description of longitudinal joint **welded** No. of strengthening rings **yes**

Working pressure of furnace by the rules **181** Combustion chamber plates: Material **steel** Thickness: Sides **7/16"** Back **2 1/32"** Top **7/16"** Bottom **1"**

Pitch of stays to ditto: Sides **9 1/2" x 9"** Back **7 1/2" x 9 1/8"** Top **8 1/2" x 8 1/8"** If stays are fitted with nuts or riveted heads **nuts in caps** Working pressure by rules **191**

Material of stays **steel** Diameter at smallest part **1 7/32"** Area supported by each stay **75.50** Working pressure by rules **183** End plates in steam space:

Material **steel** Thickness **1 3/16"** Pitch of stays **19 7/8" x 17 1/8"** How are stays secured **DR** Working pressure by rules **182** Material of stays **steel**

Diameter at smallest part **6-10"** Area supported by each stay **346.0** Working pressure by rules **183** Material of Front plates at bottom **steel**

Thickness **7/16"** Material of Lower back plate **steel** Thickness **2 1/32"** Greatest pitch of stays **12 3/4" x 9 7/8"** Working pressure of plate by rules **190**

Diameter of tubes **3 1/4"** Pitch of tubes **4 1/8" x 4 1/8" x 4 1/8"** Material of tube plates **steel** Thickness: Front **13/16"** Back **13/16"** Mean pitch of stays **11 1/6"**

Pitch across wide water spaces **13 1/2" x 9 1/8"** Working pressures by rules **235** Girders to Chamber tops: Material **steel** Depth and thickness of girder at centre **2 @ 6 7/8" x 7/8"** Length as per rule **27 1/2"** Distance apart **87 1/8"** Number and pitch of stays in each **2 @ 8 1/2"**

Working pressure by rules **192** Superheater or Steam chest; how connected to boiler **none** Can the superheater be shut off and the boiler worked separately **yes**

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



VERTICAL DONKEY BOILER— Manufacturers of Steel

No. \_\_\_\_\_ Description \_\_\_\_\_

Made at \_\_\_\_\_ By whom made \_\_\_\_\_ When made \_\_\_\_\_ Where fixed \_\_\_\_\_

Working pressure tested by hydraulic pressure to \_\_\_\_\_ Date of test \_\_\_\_\_ No. of Certificate \_\_\_\_\_ Fire grate area \_\_\_\_\_ Description of Stays \_\_\_\_\_

Valves \_\_\_\_\_ No. of Safety Valves \_\_\_\_\_ Area of each \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ Date of adjustment \_\_\_\_\_

If fitted with easing gear \_\_\_\_\_ If steam from main boilers can enter the donkey boiler \_\_\_\_\_ Dia. of donkey boiler \_\_\_\_\_ Length \_\_\_\_\_

Material of shell plates \_\_\_\_\_ Thickness \_\_\_\_\_ Range of tensile strength \_\_\_\_\_ Descrip. of riveting long. seams \_\_\_\_\_

Dia. of rivet holes \_\_\_\_\_ Whether punched or drilled \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Lap of plating \_\_\_\_\_ Per centage of strength of joint \_\_\_\_\_ Rivets \_\_\_\_\_ Plates \_\_\_\_\_

Working pressure of shell by rules \_\_\_\_\_ Thickness of shell crown plates \_\_\_\_\_ Radius of do. \_\_\_\_\_ No. of stays to do. \_\_\_\_\_ Dia. of stays \_\_\_\_\_

Diameter of furnace Top \_\_\_\_\_ Bottom \_\_\_\_\_ Length of furnace \_\_\_\_\_ Thickness of furnace plates \_\_\_\_\_ Description of joint \_\_\_\_\_

Working pressure of furnace by rules \_\_\_\_\_ Thickness of furnace crown plates \_\_\_\_\_ Stayed by \_\_\_\_\_

Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_ Dates of survey \_\_\_\_\_

SPARE GEAR. State the articles supplied:— Two connecting rod top and bottom end bolts and nuts, two main bearing bolts, one set of coupling bolts, one set of feed and bilge pump valves, 1/2 set of air and circulating pump valves, 1/2 set of valves for ballast donkey, 1/2 set of valves one feed donkey. Iron and bolts of various sizes.

The foregoing is a correct description,  
**MAO COLL & POLLOCK LTD.** Manufacturer.

Ships MacCall  
 Dates of Survey while building: During progress of work in shops \_\_\_\_\_ During erection on board vessel \_\_\_\_\_ Total No. of visits \_\_\_\_\_

1914. Oct. 19. 29. Nov. 9. 11. Dec. 3. 8. 16. 23. 30. Jan. 6. 11. 12. 18. 21. 25. 29. Feb. 1. 3. 9. 10. 17. 19. 24. 26. Mar. 2. 8. 10. 16. 22. 29. Apr. 8. 9. 19. 19. 22. 27. 30.

Is the approved plan of main boiler forwarded herewith yes

Dates of Examination of principal parts—Cylinders 9-2-15 Slides 8-3-15 Covers 26-1-15 Pistons 26-1-15 Rods 18-1-15

Connecting rods 1-2-15 Crank shaft 13-1-15 Thrust shaft 17-2-15 Tunnel shafts 1-2-15 Screw shaft 24-2-15 Propeller 24-2-15

Stern tube 18-1-15 Steam pipes tested 31-5-15 Engine and boiler seatings 22-4-15 Engines holding down bolts 20-5-15

Completion of pumping arrangements 15-6-15 Boilers fixed 2-6-15 Engines tried under steam 7-6-15

Main boiler safety valves adjusted 7-6-15 Thickness of adjusting washers Possible both 1/2" standard 1/8" 5/16"

Material of Crank shaft 9. steel Identification Mark on Do. A144 AFB Material of Thrust shaft 9. steel Identification Mark on Do. A088 AE

Material of Tunnel shafts 9. steel Identification Marks on Do. A120 AFB Material of Screw shafts 9. steel Identification Marks on Do. A106 AE

Material of Steam Pipes Solid drawn copper 3 @ 4 1/2 x 5/8 Test pressure 400 lbs per square inch.

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

When the starboard boiler was under hydraulic test, a crack was found in the weld of its starboard wing from the front edge to the rivet, this was caulked, subsequently examined under steam and found tight and in my opinion the furnace is efficient and unimpaired. The attention of the Owners representative was drawn to this matter and their letter accepting same is attached hereto.

The materials and workmanship are good. The machinery has been constructed under special survey and is eligible in my opinion for classification and the record LMC 6.15.

It is submitted that this vessel is eligible for THE RECORD. + LMC 6.15.

The amount of Entry Fee .. £ 2 : 0 : When applied for, 18 JUN 1915

Special .. £ 34 : 19 : When received, 4/8/15

Donkey Boiler Fee .. £ : : 5/6/15

Travelling Expenses (if any) £ : : \_\_\_\_\_

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

Committee's Minute  
 Assigned + LMC 6.15



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