

# REPORT ON MACHINERY.

No. 70513

Received at London Office SAT. 15 DEC. 1917

Date of writing Report 16th Nov 1917 When handed in at Local Office 19 Port of NEWCASTLE-ON-TYNE  
 No. in Survey held at Newcastle Date, First Survey 20th Dec 1916 Last Survey 22nd Nov 1917  
 Reg. Book. on the S.S. "Garthwaite" (Number of Visits 62)  
 Master W. Garthwaite Built at Newcastle By whom built W. Johnson & Co Tons { Gross 5659 Net 3609 When built 1917  
 Engines made at Newcastle By whom made N. E. Marine Eng Co 22 & 4 when made 1917  
 Boilers made at do By whom made do when made 1917  
 Registered Horse Power 465 Owners W. Garthwaite Port belonging to London  
 Nom. Horse Power as per Section 28 465 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 26" 43" 72" Length of Stroke 48 Revs. per minute 70 Dia. of Screw shaft as per rule 14.61" Material of Iron  
 as fitted 15" 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 5'-6"  
 Dia. of Tunnel shaft as per rule 13.05" Dia. of Crank shaft journals as per rule 13.7" Dia. of Crank pin 13 3/8" Size of Crank webs 21" x 8 3/4" Dia. of thrust shaft under  
 collars 13 3/8" Dia. of screw 17'-9" Pitch of Screw 17'-9" No. of Blades 4 State whether moveable no Total surface 96 sq  
 No. of Feed pumps 2 Diameter of ditto 4" Stroke 26" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 26" Can one be overhauled while the other is at work yes  
 No. of Donkey Engines 2 Sizes of Pumps 6" x 8" x 8" + 7 1/2" x 5" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room Three 3 1/2" In Holds, &c. No 1 hold 2-3 1/2" No 2 hold 2-3 1/2"  
 No. 3 hold 2-3 1/2" No 4 hold 2-3 1/2" Tunnel Well 1-2 1/4"  
 No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine room & size yes 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 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 Both  
 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 Hold sections How are they protected Wood casing  
 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 24.8.17 of Stern Tube 24.8.17 Screw shaft and Propeller 11-10-17  
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Top platform

**BOILERS, &c.**—(Letter for record 5) Manufacturers of Steel John Spence & Sons  
 Total Heating Surface of Boilers 6551 sq Is Forced Draft fitted yes No. and Description of Boilers 3- Single-ended  
 Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 1-10-17 No. of Certificate 9005-  
 Can each boiler be worked separately yes Area of fire grate in each boiler 49.5 sq No. and Description of Safety Valves to  
 each boiler two, spring Area of each valve 8.3 sq Pressure to which they are adjusted 185 lbs Are they fitted with easing gear yes  
 Smallest distance between boilers uptakes and bunkers or woodwork 8 ft Mean dia. of boilers 14'-0 13/16" Length 11'-6" Material of shell plates Steel  
 Thickness 1 3/32" Range of tensile strength 29 3/4 - 33 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams 9- Lap  
 long. seams S.S. L Riv Diameter of rivet holes in long. seams 1 3/16" Pitch of rivets 8 3/4" Lap of plates or width of butt straps 18"  
 Per-centages of strength of longitudinal joint 86-7 Working pressure of shell by rules 185 lbs Size of manhole in shell 16" x 12"  
 plate 86-4  
 Size of compensating ring Flanged No. and Description of Furnaces in each boiler 3- Sights Material Steel Outside diameter 40"  
 Length of plain part top 1" Thickness of plates bottom 1/2" Description of longitudinal joint Welded No. of strengthening rings yes  
 Working pressure of furnace by the rules 188 Combustion chamber plates; Material Steel Thickness: Sides 23/32" Back 23/32" Top 23/32" Bottom 7/8"  
 Pitch of stays to ditto: Sides 10 1/2" x 9 3/8" Back 10 1/2" x 9 3/8" Top 10 1/2" x 9 3/8" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 180 lbs  
 Material of stays Steel Diameter at smallest part 2.03" Area supported by each stay 98.4 sq Working pressure by rules 185 lbs End plates in steam space:  
 Material Steel Thickness 1 3/8" Pitch of stays 24" x 19 3/4" How are stays secured in. w. Working pressure by rules 185 lbs Material of stays Steel  
 Diameter at smallest part 8.29" Area supported by each stay 474 sq Working pressure by rules 181 lbs Material of Front plates at bottom Steel  
 Thickness 1" Material of Lower back plate Steel Thickness 29/32" Greatest pitch of stays 14 1/2" Working pressure of plate by rules 182 lbs  
 Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" Material of tube plates Steel Thickness: Front 1" Back 3/4" Mean pitch of stays 7 1/2"  
 Pitch across wide water spaces 14 1/2" Working pressures by rules 180 lbs Girders to Chamber tops: Material Steel Depth and  
 thickness of girder at centre 8 3/4" x 1 3/4" Length as per rule 33" Distance apart 9 3/8" Number and pitch of stays in each 2-10 1/2"  
 Working pressure by rules 185 lbs Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked  
 separately yes Diameter yes Length yes Thickness of shell plates yes Material yes Description of longitudinal joint yes Diam. of rivet  
 holes yes Pitch of rivets yes Working pressure of shell by rules yes Diameter of flue yes Material of flue plates yes Thickness yes  
 If stiffened with rings yes Distance between rings yes Working pressure by rules yes End plates: Thickness yes How stayed yes  
 Working pressure of end plates yes Area of safety valves to superheater yes Are they fitted with easing gear yes

If not, state whether, and when, one will be sent? In a Report also sent on the Hull of the Ship?

**VERTICAL DONKEY BOILER** — *Manufacturers of Steel* Kone

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 Safety Valves \_\_\_\_\_

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

If fitted with casing 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 \_\_\_\_\_ Radius of do. \_\_\_\_\_ Stayed by \_\_\_\_\_

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

**SPARE GEAR.** State the articles supplied: — *Two top-end, two bottom-end & two main-bearing bolts & nuts, a set of coupling bolts, a set of feed & bilge pump valves, a quantity of assorted bolts nuts & iron, a propeller*

The foregoing is a correct description,  
**FOR THE NORTH EASTERN MARINE ENGINEERING CO. LTD.**  
 Manufacturer.

Dates of Survey while building	During progress of work in shops --	1916		1917	
		SECRETARY.			
		31. Jan. 19. 22. 25.	Feb. 2. 5. 6. 10. 12. 25. 31.	Aug. 2. 3. 8. 9. 10. 15. 16. 20. 21. 25. 24. 28. 29. 30.	Sept. 1. 4. 8. 11. 12.
	During erection on board vessel --	13. 17. 20. 21. 25. 26. 28.	Oct. 1. 5. 8. 10. 11. 17. 19. 30.	Nov. 1. 6. 9. 22.	
	Total No. of visits	62			

Is the approved plan of main boiler forwarded herewith *yes* ✓  
 " " " donkey " " " ✓

**Dates of Examination of principal parts**—Cylinders *1-10-17* Slides *17-9-17* Covers *29-8-17* Pistons *28-8-17* Rods *28-8-17*  
 Connecting rods *28-8-17* Crank shaft *23-8-17* Thrust shaft *10-7-17* Tunnel shafts *7-9-17* Screw shaft *6-9-17* Propeller *21-9-17*  
 Stern tube *26-6-17* Steam pipes tested *20-4-17* Engine and boiler seatings *8-10-17* Engines holding down bolts *30-10-17*  
 Completion of pumping arrangements *9-11-17* Boilers fixed *30-10-17* Engines tried under steam *9-11-17*  
 Main boiler safety valves adjusted *9-11-17* Thickness of adjusting washers *PB. P 5/32 S 1/2. CB. P 3/8 S 11/32. SB. P 3/8 S 3/8*  
 Material of Crank shaft *Steel* Identification Mark on Do. *L.H. 8-17* Material of Thrust shaft *Steel* Identification Mark on Do. *L.H. 7-17*  
 Material of Tunnel shafts *Steel* Identification Marks on Do. *L.H. 9-17* Material of Screw shafts *Iron* Identification Marks on Do. *L.H. 9-17*  
 Material of Steam Pipes *Iron* Test pressure *540 lbs* ✓

**General Remarks** (State quality of workmanship, opinions as to class, &c. *The engines & boilers of this vessel have been constructed under special survey & the materials & workmanship are found to be good. The engines have been tried under steam and the boiler safety valves adjusted at the working pressure. The machinery is now in good & safe working condition & eligible in my opinion to have the notation of +LMC 11-17*

*A report on the electric installation will be forwarded when received from the Electricians. The vessel has been fitted for carrying oil fuel in double bottom F.P. above 150° F.*

It is submitted that this vessel is eligible for **THE RECORD. + LMC 11.17. F.D.**

The amount of Entry Fee .. £ 3 : 0 : 0	When applied for, <b>13 DEC 1917</b>
Special .. .. . £ 43 : 5 : 0	
Donkey Boiler Fee .. .. . £ : : :	When received, <i>19-3-1918</i>
Travelling Expenses (if any) £ : : :	<i>20-3-18</i>

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

Committee's Minute **FRI. DEC. 21 1917.**  
 Assigned *+ LMC 11.17*

NEWCASTLE-ON-TYNE

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



MACHINERY CERTIFICATE WRITTEN