

# REPORT ON MACHINERY.

No. 5895

Port of MIDDLESBOUGH-ON-TEES

Received at London Office FRI. 23 III 1909

No. in Survey held at Middlesbrough Date, first Survey 27<sup>th</sup> Jan'y Last Survey 20<sup>th</sup> July 1909  
 Reg. Book. 10 on the S.S. "Breaksea" (Number of Visits 324) 30 July 09  
 Master Gool Built at Gool By whom built Gool S.B. & R. Co. Ltd Tons Gross 305 Net 134 When built 1909  
 Engines made at Middlesbrough By whom made Richardsons, Westgarth & Co. Ltd when made 1909  
 Boilers made at do By whom made do when made 1909  
 Registered Horse Power 62 Owners H. H. HARRITT & Co. McNeil Hindle & Co. Port belonging to Cardiff  
 Nom. Horse Power as per Section 28 62 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted No

**ENGINES, &c.**—Description of Engines Compound No. of Cylinders 2 No. of Cranks 2  
 Dia. of Cylinders 15" 33" Length of Stroke 24" Revs. per minute 105 Dia. of Screw shaft 7.48" as per rule 7.3" as fitted 7.5" Material of screw shaft Iron  
 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 ✓ If two liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 2'-7"  
 Dia. of Tunnal shaft 6.47" as per rule 6.59" as fitted 6.4" Dia. of Crank shaft journals 6.79" as per rule 6.92" as fitted 7" Dia. of Crank pin 7" Size of Crank webs 1 1/2" x 5" Dia. of thrust shaft under collars 7" Dia. of screw 9'-0" Pitch of Screw 11'-0" No. of Blades 4 State whether moveable No Total surface 27 sq. ft.  
 No. of Feed pumps one Diameter of ditto 2 1/2" Stroke 12" Can one be overhauled while the other is at work ✓  
 No. of Bilge pumps one Diameter of ditto 3" Stroke 12" Can one be overhauled while the other is at work ✓  
 No. of Donkey Engines one Sizes of Pumps 5 1/4" x 3 1/2" x 5" No. and size of Suctions connected to both Bilge and Donkey pumps one 2"  
 In Engine Room Two 2" In Holds, &c. One each two inches, to the fore peak tank, the fore hold, and after peak tank.  
 No. of Bilge Injections 1 sizes 2 1/2" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine room & size yes 2 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 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 Fore peak tank suction 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 18.6.09 of Stern Tube 12.7.09 Screw shaft and Propeller 12.7.09  
 Is the Screw Shaft Tunnel watertight none Is it fitted with a watertight door ✓ worked from Engines aft.

**BOILERS, &c.**—(Letter for record or) Manufacturers of Steel John Spencer Sons Ltd  
 Total Heating Surface of Boilers 1196 sq. ft. Forced Draft fitted No No. and Description of Boilers One S.B. Cyl. Multi  
 Working Pressure 130 lbs Tested by hydraulic pressure to 260 lbs Date of test 23.6.09 No. of Certificate 4285  
 Can each boiler be worked separately ✓ Area of fire grate in each boiler 32 1/2 sq. ft. No. and Description of Safety Valves to each boiler Two direct spring Area of each valve 4.9" Pressure to which they are adjusted 135 lbs Are they fitted with easing gear yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 2'-6" Mean dia. of boilers 11'-6" Length 10'-0" Material of shell plates Steel  
 Thickness 3/4" Range of tensile strength 28 3/4 - 32 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams B.R. Lap  
 long. seams B.R. Lap Diameter of rivet holes in long. seams 15/16" Pitch of rivets 5" Lap of plates or width of butt straps 10 5/8"  
 Per centages of strength of longitudinal joint rivets 82.1 plate 81.25 Working pressure of shell by rules 133 lbs Size of manhole in shell 16" x 12"  
 Size of compensating ring 34 1/2" x 29" x 3/4" No. and Description of Furnaces in each boiler Two plain Material Steel Outside diameter 3'-4"  
 Length of plain part top 6'-2 1/2" bottom 6'-1 1/2" Thickness of plates crown 5/8" bottom 3/8" Description of longitudinal joint welded No. of strengthening rings Length at bottom  
 Working pressure of furnace by the rules 141 Combustion chamber plates: Material Steel Thickness: Sides 9/16" Back 7/32" Top 9/16" Bottom 5/8"  
 Pitch of stays to ditto: Sides 9 1/2" x 8 1/2" Back 9 1/4" x 8" Top 9" x 8 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 131 lbs  
 Material of stays S. Area Diameter at smallest part 1.78" Area supported by each stay 81" Working pressure by rules 165 End plates in steam space: Material Steel Thickness 13/16" Pitch of stays 16" x 15" How are stays secured Area Working pressure by rules 130 lbs Material of stays Steel  
 Diameter at smallest part 3.34" Area supported by each stay 232" Working pressure by rules 150 Material of Front plates at bottom Steel  
 Thickness 7/8" Material of Lower back plate Steel Thickness 3/4" Greatest pitch of stays 17 1/2" x 8" Working pressure of plate by rules 130  
 Diameter of tubes 3 1/2" Pitch of tubes 4 3/4" x 4 3/4" Material of tube plates Steel Thickness: Front 7/8" Back 3/4" Mean pitch of stays 11 7/8"  
 Pitch across wide water spaces 14 1/2" Working pressures by rules 130 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 7 1/2" x 1 1/4" Length as per rule 27.03" Distance apart 9" Number and pitch of stays in each 2 @ 8 1/2"  
 Working pressure by rules 167 lbs Superheater or Steam chest; how connected to boiler None 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 ✓



VERTICAL DONKEY BOILER— Manufacturers of Steel

No. *None* 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 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  
 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 top + two bottom-end connecting rod bolts + nuts. Two main bearing bolts + nuts. One set of coupling bolts + nuts. One set of feed + bilge pump valves. One set of L.P. piston springs. Assorted bolts + nuts etc.*

The foregoing is a correct description,

For RICHARDSONS, WESTGARTH & Co. Ltd.

Manufacturer.

Dates of Survey while building  
 During progress of work in shops - - 1909 Jan 27, Feb 8-26, Mar 6-16-19-25, Apr 14-15-21-25-29, May 4-13-18-27-28  
 During erection on board vessel - - June 5-7-10-14-18-21-23-29 July 2-12-13-14-15-16-20 Hull: Jun 7-15-16-18-24 Jul 2-26  
 Total No. of visits 32 + 11 = 43  
 Is the approved plan of main boiler forwarded herewith Yes

Dates of Examination of principal parts—Cylinders 13.5.09 Slides 14.6.09 Covers 14.6.09 Pistons 28.5.09 Rods 28.5.09  
 Connecting rods 28.5.09 Crank shaft 14.4.09 Thrust shaft 2.7.09 Tunnel shafts *None* Screw shaft 2.7.09 Propeller 2.7.09  
 Stern tube 2.7.09 Steam pipes tested 15.7.09 Engine and boiler seatings 18.6.09 Engines holding down bolts 14.7.09  
 Completion of pumping arrangements 29.7.09 Boilers fixed 14.7.09 Engines tried under steam 20.7.09  
 Main boiler safety valves adjusted 16.7.09 Thickness of adjusting washers P 1/4" S 9/32"  
 Material of Crank shaft *Steel* Identification Mark on Do. 4781 C.J.H. Material of Thrust shaft *Steel* Identification Mark on Do. 3036 P.A.  
 Material of Tunnel shafts *None* Identification Marks on Do. ✓ Material of Screw shafts *Iron* Identification Marks on Do. 6399 J.K.  
 Material of Steam Pipes *Solid drawn copper* Test pressure 260 lbs

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

*The Engines and Boiler of this vessel have been constructed under Special Survey, are of good material and workmanship, and have been fitted and secured on board in accordance with the Rules. They are now in good working condition and in our opinion eligible to have the notation of +LMC 7.09 in the Register Book.*

*This vessel has been fitted here, with an extra donkey pump 4 1/2" x 2 3/4" x 4" connected to all parts of vessel.*

*This vessel has now sailed for Goolie for completion.*

*The pumping arrangement, now completed, tried and found good.*

It is submitted that this vessel is eligible for THE RECORD. +LMC 7.09  
 J.R.R. #42-12-8-09  
 12.8.09  
 J. Ker & James Barclay  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

The amount of Entry Fee . . . £ 1 : 0 :  
 Special . . . £ 9 : 6 :  
 Donkey Boiler Fee . . . £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, 22/7/09  
 When received, 26/7/09

Committee's Minute  
 Assigned  
 TUES. 17 AUG 1909  
 + LMC 7.09

MACHINERY CERTIFICATE WRITTEN.



Certificate (if required) to be sent to Committee's Minute.