

# REPORT ON MACHINERY.

Mbr. No. 2996  
Hul - 16430

Port of MIDDLESBROUGH-ON-TEES.

Received at London Office WED. 23 NOV. 1904  
Date, first Survey 30<sup>th</sup> June 1904 Last Survey Nov. 10<sup>th</sup> 1904

No. in Survey held at Middlesbrough  
Reg. Book. 563 on the S.S. "Grace"

Master Joseph Lea Built at Gool By whom built Gool & R. Co Tons { Gross 354  
Engines made at Middlesbrough By whom made Richardsons Westgarth & Co Net 139  
Boilers made at ditto By whom made ditto When built 1904  
Registered Horse Power \_\_\_\_\_ when made 1904  
Owners A. H. Kemp. Port belonging to London  
Nom. Horse Power as per Section 28 85 1/2 Is Refrigerating Machinery fitted no Is Electric Light fitted no

**ENGINES, &c.—Description of Engines** Compound No. of Cylinders 2 No. of Cranks 2  
Dia. of Cylinders 17" - 38" Length of Stroke 27" Revs. per minute \_\_\_\_\_ Dia. of Screw shaft as per rule 8.02 Material of screw shaft Scraper 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 fitting If two  
liners are fitted, is the shaft lapped or protected between the liners \_\_\_\_\_ Length of stern bush 2'-9"  
Dia. of Tunnel shaft as per rule 7.33 Dia. of Crank shaft journals as per rule 7.67 Dia. of Crank pin 8" Size of Crank webs 5 1/4" x 13 1/4" Dia. of thrust shaft under  
collars 8" Dia. of screw 9'-6" Pitch of screw 9'-6" No. of blades 4 State whether moceable no Total surface 30 sq ft  
No. of Feed pumps 1 Diameter of ditto 3" Stroke 13" Can one be overhauled while the other is at work ✓  
No. of Bilge pumps 1 Diameter of ditto 3" Stroke 13" Can one be overhauled while the other is at work ✓  
No. of Donkey Engines 2 duplex Sizes of Pumps Feed 4 1/2" x 2 1/4" x 4" Ballast 5 1/2" x 4 1/4" x 5" No. and size of Suctions connected to both Bilge and Donkey pumps  
In Engine Room Two of 2" ✓ one of 2 1/2" ✓ In Holds, &c. Two of 2 1/2" ✓  
No. of bilge injections 1 sizes 3" Connected to condenser, or to circulating pump C.P. 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 Suction from hold port side 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  
When were stern tube, propeller, screw shaft, and all connections examined in dry dock Now new Is the screw shaft tunnel watertight none  
Is it fitted with a watertight door ✓ worked from \_\_\_\_\_

**BOILERS, &c.—** (Letter for record (7)) Total Heating Surface of Boilers 1577 sq ft Is forced draft fitted no  
No. and Description of Boilers One single ended Working Pressure 130 lb Tested by hydraulic pressure to 260 lb.  
Date of test 5-10-04 Can each boiler be worked separately ✓ Area of fire grate in each boiler 58 sq ft No. and Description of safety valves to  
each boiler Two direct spring Area of each valve 11.04" 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 11 1/2" Mean dia. of boilers 13'-6" Length 10'-6" Material of shell plates Steel  
Thickness 27/32 Range of tensile strength 28/32 Are they welded or flanged no Descrip. of riveting: cir. seams DR Lap long. seams DR Butt St.  
Diameter of rivet holes in long. seams 15/16 Pitch of rivets 6 1/4" row 3 1/8" 2 row Lap of plates or width of butt straps 14 1/2" x 13"  
Per centages of strength of longitudinal joint rivets 97.5 Working pressure of shell by rules 131.4 Size of manhole in shell end 16" x 12"  
Size of compensating ring flanged No. and Description of Furnaces in each boiler 3 plain Material Steel Outside diameter 3'-6 1/4"  
Length of plain part top 7'-0" bottom 7'-0" Thickness of plates crown 1 1/16" bottom 1 1/16" Description of longitudinal joint welded No. of strengthening rings ✓  
Working pressure of furnace by the rules 143 1/2 Combustion chamber plates: Material Steel Thickness: Sides 1 1/16" Back 2 1/16" Top 5/16" Bottom 1/16"  
Pitch of stays to ditto: Sides 10" x 10" Back 8 1/2" x 10" Top 9 1/2" x 10" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 141  
Material of stays 9 S Area at smallest part 1.48 sq" Area supported by each stay 100" Working pressure by rules 145 End plates in steam space:  
Material Steel Thickness 3/32 Pitch of stays 17 1/2" x 18 1/2" How are stays secured DR & W. Working pressure by rules 137 Material of stays Steel  
Area at smallest part 4.19 sq" Area supported by each stay 293" Working pressure by rules 143 Material of Front plates at bottom Steel  
Thickness 7/8" Material of Lower back plate Steel Thickness 25/32 Greatest pitch of stays 15 3/8" x 8 1/2" Working pressure of plate by rules 137  
Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates Steel Thickness: Front 7/8" Back 23/32 Mean pitch of stays 11 1/4"  
Pitch across wide water spaces 14 1/4" Working pressures by rules 135 Girders to Chamber tops: Material Steel Depth and  
thickness of girder at centre W 7 1/2" x 13 1/4" Length as per rule 2'-7 3/4" Distance apart 12" C Number and pitch of Stays in each Two 9 1/2"  
Working pressure by rules 158 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 \_\_\_\_\_

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

5800-965M

**DONKEY BOILER**— No. *One* Description *Vertical*  
 Made at *Goole* By whom made *Webster & Bickerton* When made *1904* Where fixed *Stokehole*  
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *1342* Fire grate area *134 sq. ft.* Description of safety valves *Direct Spring*  
 No. of safety valves *1* Area of each *7"* Pressure to which they are adjusted *80 lbs* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Dia. of donkey boiler *5'-0"* Length *6'-6"* Material of shell plates *Steel* Thickness *3/16"* Range of tensile strength *27-32* Descrip. of riveting long. seams *S.R. Lap* Dia. of rivet holes *7/8"* Whether punched or drilled *Drilled* Pitch of rivets *3 3/8"*  
 Lap of plating *4 5/8"* Per centage of strength of joint Rivets *75* Plates *72* Thickness of shell crown plates *1/16"* Radius of do. *Flat* No. of Stays to do. *8*  
 Dia. of stays. *1 3/4"* Diameter of furnace Top *4'-0"* Bottom *4'-2 1/2"* Length of furnace *2'-7 1/2"* Thickness of furnace plates *1/2"* Description of joint *S.R. Lap* Thickness of furnace crown plates *9/16"* Stayed by *8 Stays 1 3/4" dia* Working pressure of shell by rules *117 lbs*  
 Working pressure of furnace by rules *120 lbs* Diameter of uptake *12"* Thickness of uptake plates *1/2"* Thickness of water tubes *3/8"*

**SPARE GEAR.** State the articles supplied:— *2 Bolts & nuts for piston rods, connecting rods & main bearings 1 set coupling bolts & nuts. 3 Piston bolts 1 set air and circulating pump valves 1 set feed & bilge pump valves 2 feed check valves 2 donkey pump valves. 1 set H.P. piston rings & L.P. piston springs*  
*Bolts & nuts assorted.*  
 The foregoing is a correct description,  
 For RICHARDSONS, WESTGARTH & Co., Ltd. Manufacturer.  
*H. Jackson*

Dates of Survey while building  
 During progress of work in shops— *1904 June 30. July 7. 8. 12. 14. 18. 19. 20. 28. Aug 11. 12. 22. 23. 29. Sep 5. 7. 8. 14. 17. 21. 22. 28. Oct 3. 4. 5. 11. 27. 28.*  
 During erection on board vessel— *29. 31. Hull. Sep. 30. Oct. 4. Nov. 7. (D.B.) July 25 Aug 25 Sep 30 Oct 4 + Nov. 10*  
 Total No. of visits— *(Mdb) 30. (Hull) 8. Total 38* Is the approved plan of main boiler forwarded herewith *Yes*  
 " " " donkey " " " *yes*

**General Remarks** (State quality of workmanship, opinions as to class, &c. *This vessel's machinery is placed aft. It has been built under special survey. The materials and workmanship are good. After fitting and securing on board it has been tried under steam satisfactorily and is now in good and safe working condition, and eligible in our opinion to have the record LMC 11.04.*

It is submitted that this vessel is eligible for THE RECORD L.M.C. 11.04

*R.D. Shilston*  
*23.11.04*  
*R.D.*  
*23.11.04*

Certificate (if required) to be sent to Memo

The amount of Entry Fee... £ 1 : : : When applied for, *memo. 13.11.04 memo. 21/11 2.17.10 no Hull 24/11*  
 Special .. £ 12 : 15 : : *2.11.1904*  
 Donkey Boiler Fee .. £ 2 : 2 : : *22-11-04*  
 Travelling Expenses (if any) £ - : 15 : 10 : : *2.11.1904*  
*Hill*  
*24.11.04*

*R.D. Shilston*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

FRI. 25 NOV 1904

MACHINERY CERTIFICATE WRITTEN.



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Assigned

+ L.M.C. 11.04