

# REPORT ON MACHINERY.

Port of Middlesbrough

Received at London Office SAT. 18 JUL 1903

No. in Survey held at Middlesbrough Date, first Survey December 12<sup>th</sup> 1902 Last Survey 13<sup>th</sup> July 1903

eg. Book. 210 on the S.S. "Opland"

(Number of Visits 44) Tons Gross 1400  
Net

Master J.W. Pchlyther Built at Fevig. Arendal. By whom built Fevig Jernskibsbyggeri When built 1903

Engines made at Middlesbro By whom made Richardsons Westgarth & Co. Ltd when made 1903-7

Boilers made at ditto By whom made ditto when made 1903-7

Registered Horse Power \_\_\_\_\_ Owners H. Fredriksen Port belonging to Sandefjord

Net Horse Power as per Section 28 138 Is Refrigerating Machinery fitted no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Triple expansion No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 17 1/2 - 27 - 47 Length of Stroke 33 Revs. per minute \_\_\_\_\_ Dia. of Screw shaft as per rule 10.44  
as fitted 11.4 Lgth. of stern bush 4-0

Dia. of Tunnel shaft as per rule 8.64 Dia. of Crank shaft journals as per rule 9.08 Dia. of Crank pin 9 1/8 Size of Crank webs 6 1/2 x 13 1/2 Dia. of thrust shaft under  
as fitted 8 3/8 as fitted 9 1/8

Length of Bars 9 1/8 Dia. of screw 12-6 Pitch of screw 13-9 mean No. of blades 4 State whether moveable no Total surface 50 sq ft

No. of Feed pumps 2 Diameter of ditto 2 Stroke 19 1/2 Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 3 Stroke 19 1/2 Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 duplex Sizes of Pumps F. 4 1/2 x 2 1/2 x 4 - B. 6 x 6 x 6 No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room Three of 2 1/2 In Holds, &c. Two of 2 1/2 in each hold

One of 2 1/2 in after hold well One of 2 1/2 in tunnel well

No. of bilge injections 1 sizes 3 1/2 Connected to condenser, or to circulating pump C.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 level with

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

Are that pipes are carried through the bunkers none How are they protected ✓

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 13<sup>th</sup> July 1903 Is the screw shaft tunnel watertight See ship report

Is it fitted with a watertight door yes worked from Upper grating

BOILERS, &c.— (Letter for record (7)) Total Heating Surface of Boilers 2142 sq ft Is forced draft fitted no

No. and Description of Boilers One Marine, single ended Working Pressure 175 lbs Tested by hydraulic pressure to 350 lbs

Date of test 9.3.03 Can each boiler be worked separately ✓ Area of fire grate in each boiler 60 sq ft No. and Description of safety valves to

each boiler Two, direct spring Area of each valve 9.62 sq in Pressure to which they are adjusted 180 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 15-0 Length 10-6 Material of shell plates Steel

Thickness 1/32 Range of tensile strength 28/32 Are they welded or flanged no Descrip. of riveting: cir. seams DR Lap long. seams D Butt Strap

Diameter of rivet holes in long. seams 1/4 Pitch of rivets 8 3/4 1 row 4 3/8 2 rows Lap of plates or width of butt straps 18 3/4 x 1 3/8

Percentages of strength of longitudinal joint rivets 85.71 Working pressure of shell by rules 181 lbs Size of manhole in shell End 12" x 16"

Size of compensating ring flanged No. and Description of Furnaces in each boiler 3 plain Material Steel Outside diameter 3'-9"

Length of plain part top 3-8 1/2 Thickness of plates bottom 3-8 1/2 crown } 4/16 Description of longitudinal joint welded No. of strengthening rings one

Working pressure of furnace by the rules 180.5 Combustion chamber plates: Material Steel Thickness: Sides 4/16 Back 4/16 Top 4/16 Bottom 4/16

Pitch of stays to ditto: Sides 8 1/2 x 9 1/2 Back 8 1/2 x 10 Top 8 x 10 3/4 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 181

Material of stays Area Diameter at smallest part 2.09 Area supported by each stay 106 Working pressure by rules 177 lbs End plates in steam space:

Material Steel Thickness 1/32 Pitch of stays 20 1/2 x 15 How are stays secured DR & W. Working pressure by rules 176.8 Material of stays Steel

Diameter at smallest part 4.959 Area supported by each stay 261 Working pressure by rules 187 Material of Front plates at bottom Steel

Thickness 7/8 Material of Lower back plate Steel Thickness 7/8 Greatest pitch of stays 15 x 8 1/2 Working pressure of plate by rules 177.5

Diameter of tubes 3 1/2 Pitch of tubes 4 1/2 x 4 1/2 Material of tube plates Steel Thickness: Front 1/32 Back 3/32 Mean pitch of stays 11 1/2

Pitch across wide water spaces 14 1/2 Working pressures by rules 9.11 Girders to Chamber tops: Material Steel Depth and

Thickness of girder at centre 8 x 1 3/4 Length as per rule 2-4 1/2 Distance apart 10 1/2 Number and pitch of Stays in each Two 8"

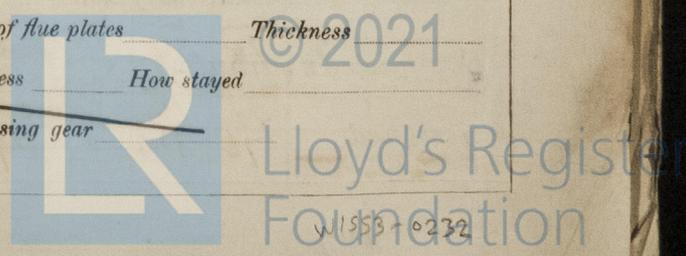
Working pressure by rules 184 Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked

separately \_\_\_\_\_ Diameter \_\_\_\_\_ Length \_\_\_\_\_ Thickness of shell plates \_\_\_\_\_ Material \_\_\_\_\_ Description of longitudinal joint \_\_\_\_\_ Diam. of rivets \_\_\_\_\_

Pitch of rivets \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_ Diameter of flue \_\_\_\_\_ Material of flue plates \_\_\_\_\_ Thickness \_\_\_\_\_

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 \_\_\_\_\_



**DONKEY BOILER**— No. *One* Description *Blake's improved patent Vertical*  
 Made at *Middlesbrough* By whom made *Richardsons Westgarth & Co* When made *9.3.03* Where fixed *Stokehold*  
 Working pressure *100lb* tested by hydraulic pressure to *200lb* No. of Certificate *2939* Fire grate area *13 ft<sup>2</sup>* Description of safety valves *Direct Spr*  
 No. of safety valves *one* Area of each *7.07* Pressure to which they are adjusted *100lbs* If fitted with easing gear *Yes* If steam from main boiler, *2*  
 enter the donkey boiler *no* Dia. of donkey boiler *5-9* Length *13-0* Material of shell plates *Steel* Thickness *15/32* Range of ten-  
 strength *27/32* Descrip. of riveting long. seams *DR lap* Dia. of rivet holes *13/16* Whether punched or drilled *drilled* Pitch of rivets *2*  
 Lap of plating *H/4* Per centage of strength of joint Rivets *70.2* Thickness of shell crown plates *15/32* Radius of do. *Semi-c* No. of Stays to do. *✓*  
 Dia. of stays. *✓* Diameter of furnace Top *3-0* Bottom *4-6* Length of furnace *3-4 1/2* Thickness of furnace plates *17/32* Descripti-  
 joint *SR lap* Thickness of furnace crown plates *Comb Chambr Top 4/16 Stayed by dished 3-9 rad Cylindrical* Working pressure of shell by rules *10*  
 Working pressure of furnace by rules *109* Diameter of uptake *2 1/2* Thickness of uptake plates *7 15/16* Thickness of water tubes *✓*

**SPARE GEAR.** State the articles supplied:— *2 Connecting rod bolts & nuts. 2 piston rod ditto*  
*2 main bearing ditto. 1 set coupling ditto. 1 pair bearing for crosshead. Crank*  
*pin and main bearing. 1 set piston valve rings 1 set M.P. piston rings (6 pair)*  
*1/2 set air pump valves 1 set feed & bilge P. valves. 1 check valve. 3/4 crank shaft.*  
*Propeller. tail shaft. stem bush.*  
*Bolts, nuts, & iron*  
 For RICHARDSONS, WESTGARTH & Co. Ltd.  
 The foregoing is a correct description,  
*Richardson* Manufacturer.

Dates { During progress of work in shops - } *1902. Dec. 12. 18. 19. 1903. Jan. 7. 9. 9. 15. 17. 20. 28. Feb. 9. 21. 25. 27. Mar. 4. 5. 6. 17. 21. 25. 26. 31. Apr. 2.*  
 of Survey { During erection on board vessel - } *May. 13. 14. 18. 26. June 4. 10. 12. 18. 24. 26. 30. July. 2. 3. 5. 8. 9. 10. 13.*  
 while building { Total No. of visits } *44.* Is the approved plan of main boiler forwarded herewith *yes*  
 " " " donkey " " " *no*

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
*Machinery not fitted aft*  
*Cedervalls patent lubricating box fitted.*

Material of screw shaft *Ingot 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~~ *lubricating box* 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 non-corrosive *✓* If two liners are fitted, is the shaft lapped or protected between the liners *✓*

*This vessel's machinery has been built under the survey and tested as required by the Rules. The material and workmanship are good.*  
*After fitting and securing on board it has been tried under steam with satisfactory results and is now in good working order and eligible, in my opinion, to have the notation **LMC 7-03.***

It is submitted that this vessel is eligible for THE RECORD. + *LMC 7-03. Dec. light*

*CM.*  
*20.7.03*

|                              |               |                   |
|------------------------------|---------------|-------------------|
| The amount of Entry Fee.     | £ 2 : 0 : 0   | When applied for, |
| Special                      | £ 20 : 14 : 0 | 15.7.1903         |
| Donkey Boiler Fee            | £ :           | When received,    |
| Travelling Expenses (if any) | £ :           | 15.7.1903         |

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

Committee's Minute *TUES. 22 DEC 1903* *FRI. 15 JAN 1904*  
 Assigned *TUES. 19 JAN 1904* *FRI. 11 NOV 1904*  
*FRI. 7 APL 1905* *FRI. 25 NOV 1904*  
*FRI. 25 JUN 1905*

all certificates (if appropriate) to be sent to Middlesbrough office

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

*James*

