

REPORT ON MACHINERY.

No. 4539

Port of MIDDLESBROUGH-ON-TEES

Received at London Office SAT. APR 21 1906

No. in Survey held at Stockton Date, first Survey 3rd Jan'y 1906 Last Survey 11th April 1906
 Reg. Book. Supplement on the Steel S.S. "Mpcorne" (Number of Visits 30)
 Master W. Whitney Built at Stockton By whom built Bapna & Son Tons { Gross 2984
 Engines made at Stockton By whom made Blain & Co. Ltd when made 1906 Net 1885
 Boilers made at Stockton By whom made Blain & Co. Ltd when made 1906
 Registered Horse Power 284 Owners A. & Hood Port belonging to London
 Nom. Horse Power as per Section 28 284 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Direct acting, trip expansion No. of Cylinders 3 No. of Cranks 3
 Dia. of Cylinders 23½ - 39 - 64 Length of Stroke 42 Revs. per minute 67 Dia. of Screw shaft as per rule 13.45 Material of 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 Yes If two
 liners are fitted, is the shaft lapped or protected between the liners — Length of stern bush 5-1
 Dia. of Tunnel shaft as per rule 11.65 Dia. of Crank shaft journals as per rule 12.2 Dia. of Crank pin 13½ Size of Crank webs 20x8½ Dia. of thrust shaft under
 collars 13½ Dia. of screw 17.0 Pitch of Screw 16-0 No. of Blades 4 State whether moveable No Total surface
 No. of Feed pumps 2 Diameter of ditto 3 Stroke 30 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 4½ Stroke 30 Can one be overhauled while the other is at work Yes
 No. of Donkey Engines Two Sizes of Pumps Two 4x3 Ballat 9x10 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Two 8 diam & one 3½ diam In Holds, &c. Two each hold 3½ diam
 No. of Bilge Injections 1 sizes 6½ Connected to condenser, or to circulating pump L.P. Is a separate Donkey Suction fitted in Engine room & size Yes 4
 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 —
 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 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
 Dates of examination of completion of fitting of Sea Connections 2/2/06 of Stern Tube 2/2/06 Screw shaft and Propeller 16/3/06
 Is the Screw Shaft Tunnel watertight re ship Is it fitted with a watertight door Yes worked from Top platform

BOILERS, &c.—(Letter for record 5) Manufacturers of Steel John Spencer & Son Ltd
 Total Heating Surface of Boilers 4330 ft² Is Forced Draft fitted No No. and Description of Boilers Two Cyl. Tubular
 Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 19.2.06 No. of Certificate 3608
 Can each boiler be worked separately Yes Area of fire grate in each boiler 60 ft² No. and Description of Safety Valves to
 each boiler Two spring Area of each valve 8.29 in² Pressure to which they are adjusted 185 lbs Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 18 in Dia. of boilers 15-6 Length 10-3 Material of shell plates Steel
 Thickness 1 5/16 Range of tensile strength 28/32 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams L.D. riv
 long. seams 2 Butt 8thap Diameter of rivet holes in long. seams 1 5/16 Pitch of rivets One row 8 3/4 Lap of plates or width of butt straps 1.7 1/4
 Per centages of strength of longitudinal joint rivets 97.5% Working pressure of shell by rules 193.6 lbs Size of manhole in shell 17x13
 plate 85% Size of compensating ring 31x27x1 5/16 No. and Description of Furnaces in each boiler 3 Murrins Material Steel Outside diameter 3-10
 Length of plain part top 6-6 Thickness of plates crown 9/16 Description of longitudinal joint Welded No. of strengthening rings —
 bottom 6-4 3/4 Working pressure of furnace by the rules 191 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 1/16 Back 1 1/16 Top 1 1/16 Bottom 1 3/16
 Pitch of stays to ditto: Sides 9 3/4 x 8 1/2 Back 9 1/2 x 9 3/8 Top 9 1/2 x 9 1/4 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 193.3 lbs
 Material of stays Steel Diameter at smallest part 1 9/16 Area supported by each stay 89 ft² Working pressure by rules 193 lbs End plates in steam space:
 Material Steel Thickness 1 3/16 Pitch of stays 19x20 How are stays secured 2x10 Working pressure by rules 184 lbs Material of stays Steel
 Diameter at smallest part 3 Area supported by each stay 380 ft² Working pressure by rules 186 lbs Material of Front plates at bottom Steel
 Thickness 1 1/32 Material of Lower back plate Steel Thickness 1 1/32 Greatest pitch of stays 17 1/2 x 9 3/8 Working pressure of plate by rules 186 lbs
 Diameter of tubes 3 1/2 Pitch of tubes 4 3/4 x 4 7/8 Material of tube plates Steel Thickness: Front 1 1/32 Back 1 3/16 Mean pitch of stays 11
 Pitch across wide water spaces 14 1/2 Working pressures by rules 194 lbs Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 7x15 7/8 Length as per rule 26 1/4 Distance apart 9 1/2 Number and pitch of stays in each Two 9 1/4
 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 — 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 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 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:— *Propeller & propeller shaft. Top & bottom end connecting rod bolts & nuts. Two main bearing bolts & nuts. Set of coupling bolts. Set of feed & bilge pump valves. N & M P piston rings. 2 P piston springs 2 main feed check valves. Set air pump valves &c &c*

The foregoing is a correct description,
FOR BLAIR & CO., LIMITED.

W. Borrie Manufacturer. of main engines & boilers.

Dates of Survey while building	During progress of work in shops—	1906 Jan 3. 8. 12. Feb 1. 2. 5. 6. 9. 13. 15. 16. 19. March 2. 3. 5. 6. 6. 8. 12.
	During erection on board vessel—	14. 15. 16. 19. 23. 24. 30. April 5. 6. 10. 11.
	Total No. of visits	Thirty

Is the approved plan of main boiler forwarded herewith *No. 10 plain*

" " " donkey " " " *Yes*

Dates of Examination of principal parts—	Cylinders <i>5/15/06</i>	Slides —	Covers <i>19/2/06</i>	Pistons —	Rods —
Connecting rods —	Crank shaft <i>2/2/06</i>	Thrust shaft <i>3/1/06</i>	Tunnel shafts <i>1-2-9-13/2/06</i>	Screw shaft <i>6/3/06</i>	Propeller <i>6/3/06</i>
Stern tube <i>2/3/06</i>	Steam pipes tested <i>2/1/06</i>	Engine and boiler seatings <i>12/3/06</i>	Engines holding down bolts <i>5/4/06</i>		
Completion of pumping arrangements <i>4/4/06</i>	Boilers fixed <i>4/4/06</i>	Engines tried under steam <i>4/4/06</i>			
Main boiler safety valves adjusted <i>4/4/06</i>	Thickness of adjusting washers <i>1 1/2" 1 3/4" 1 1/2" 1 3/4" 1 1/2" 1 3/4" 1 1/2" 1 3/4"</i>				
Material of Crank shaft <i>W.D.</i>	Identification Mark on Do. <i>5682</i>	Material of Thrust shaft <i>W.D.</i>	Identification Mark on Do. <i>5608</i>		
Material of Tunnel shafts <i>Scrap S</i>	Identification Marks on Do. <i>5678 5711</i>	Material of Screw shafts <i>W.D.</i>	Identification Marks on Do. <i>5713</i>		
Material of Steam Pipes <i>Copper solid drawn</i>		Test pressure <i>360 lbs per sq in</i>			

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

The engines and boilers of this vessel have been constructed under Special Survey. The materials and workmanship are good and efficient and when tested under steam were found satisfactory and in my opinion now eligible for the notation + L.M.C. 4.06 in the Register Book.

It is submitted that
this vessel is eligible for
THE RECORD *L.M.C. 4.06.*

Geo. A. Milner
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

The amount of Entry Fee..	£ 2 : 0 : 0	When applied for,	<i>19. 4. 1906</i>
Special	£ 24 . 4 : 0	When received,	<i>19. 4. 1906</i>
Donkey Boiler Fee .. .	£ : : :		
Travelling Expenses (if any) £	: : :		

Committee's Minute *TUES. 24 APL 1906*

Assigned *+ Lmc 4.06*