

REPORT ON MACHINERY.

No. 3973

Port of MIDDLESBROUGH-ON-TEES.

Received at London Office TUES. 4 OCT 1904

No. in Survey held at Stockton Date, first Survey 6th April Last Survey 22nd Sept. 1904

eg. Book. 19 on the Steel S.S. "Grantor." (Number of Visits 32) Tons Gross 3022
Net 1936

Master Alfred Hocken Built at Stockton By whom built Napner & Son When built 1904

Engines made at Stockton By whom made Polain & Co Ltd when made 1904

Boilers made at Stockton By whom made Polain & Co Ltd when made 1904

Registered Horse Power 280 Owners K.N. Halman & Co Port belonging to London

nom. Horse Power as per Section 28 280 Is Refrigerating Machinery fitted No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Trip Lead Direct acting No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 23 1/2 - 39 - 64 Length of Stroke 42 Revs. per minute 56 Dia. of Screw shaft as per rule 13 1/4 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

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'-1"

Dia. of Tunnel shaft as per rule 11 1/2 Dia. of Crank shaft journals as per rule 12 1/4 Dia. of Crank pin 13 1/4 Size of Crank webs 20 x 8 1/2 Dia. of thrust shaft under

rollers 13 1/4 Dia. of screw 17 1/2 Pitch of screw 16 1/2 No. of blades 4 State whether moveable No Total surface 78 sq

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 4 1/2" Stroke 30" Can one be overhauled while the other is at work Yes

No. of Donkey Engines Two Sizes of Pumps Two 4 x 8 Tilts 9 x 10 No. and size of Suctions connected to both Bilge and Donkey pumps

in Engine Room Three 3" diam In Holds, &c. Two each hold 3" diam

No. of bilge injections 1 sizes 6 1/4 Connected to condenser, or to circulating pump LR Is a separate donkey suction fitted in Engine room & size One 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 Yes

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 Yes

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 New vessel Is the screw shaft tunnel watertight See ship's report

Is it fitted with a watertight door Yes worked from Top platform

BOILERS, &c.— (Letter for record A) Total Heating Surface of Boilers 4200 sq Is forced draft fitted No

No. and Description of Boilers Two Cyl. Mult. Single ended Working Pressure 180 lb Tested by hydraulic pressure to 360 lb

Date of test 27-5-04 Can each boiler be worked separately Yes Area of fire grate in each boiler 59 1/4 sq No. and Description of safety valves to

each boiler Two spring Area of each valve 8.29 sq Pressure to which they are adjusted 185 lb Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 10" Dia. of boilers 15'-3" Length 10'-3" Material of shell plates Steel

Thickness 1 5/16 Range of tensile strength 27/32 Are they welded or flanged No Descrip. of riveting: cir. seams 2 1/2 long. seams 2

Diameter of rivet holes in long. seams 1 5/16 Pitch of rivets Common 8 3/4 Top of plates or width of butt straps 1-7 1/4

Percentages of strength of longitudinal joint rivets 87.5 Working pressure of shell by rules 185 lb Size of manhole in shell 14" x 13"

Size of compensating ring 31-27-15 1/16 No. and Description of Furnaces in each boiler 3 Material Steel Outside diameter 3'-6 1/2"

Length of plain part top 6'-7" Thickness of plates bottom 7/16 Description of longitudinal joint Welded No. of strengthening rings Yes

Working pressure of furnace by the rules 191 lb 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 1/2 x 8 1/2 Back 9 1/4 x 8 1/2 Top 9 1/2 x 9 1/2 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 181 lb

Material of stays Iron Diameter at smallest part 1 9/16 Area supported by each stay 78.6 sq Working pressure by rules 183 lb End plates in steam space:

Material Steel Thickness 1 1/8 Pitch of stays 19 1/8 x 15 How are stays secured 2 x W Working pressure by rules 214 lb Material of stays Iron

Diameter at smallest part 3" Area supported by each stay 266.8 sq Working pressure by rules 184 lb Material of Front plates at bottom Steel

Thickness 1 1/32 Material of Lower back plate Steel Thickness 1 3/32 Greatest pitch of stays 15" Working pressure of plate by rules 190 lb

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 9 5/8

Pitch across wide water spaces 14" Working pressures by rules 195.5 lb Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 7" x 1 5/8 Length as per rule 26 1/4 Distance apart 9 1/2 Number and pitch of Stays in each Two 9 1/2

Working pressure by rules 188.7 lb Superheater or Steam chest; how connected to boiler Yes 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

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

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

Lloyd's Register Foundation
W939-0092

DONKEY BOILER— No. *One* Description *Cyl Multi, 2 plain furnaces*
 Made at *Stockton* By whom made *J. Anderson & Co. Ltd* When made *1904* Where fixed *Stoke New*
 Working pressure *90 lb* tested by hydraulic pressure to *180 lb* No. of Certificate *3252* Fire grate area *26 1/2* Description of safety valves *Spring*
 No. of safety valves *2* Area of each *7.06* Pressure to which they are adjusted *90 lb* If fitted with easing gear *Yes* If steam from main boilers can
 enter the donkey boiler *No* Dia. of donkey boiler *9'-6"* Length *9'-0"* Material of shell plates *Steel* Thickness *9/16"* Range of tensile
 strength *27/32* Descrip. of riveting long. seams *Lap hot air* Dia. of rivet holes *7/8"* Whether punched or drilled *D* Pitch of rivets *2 rows 4 1/2"*
1 row 2 1/4"
 Lap of plating *6 5/8"* Per centage of strength of joint Rivets *80.9* Thickness of shell plates *11/16"* Radius of do. — No. of Stays to do. *4*
 Plates *80.5*
 Dia. of stays. *2 3/8" iron* Diameter of furnace Top *3'-0"* Bottom *7'-0"* Length of furnace top *6'-0"* Thickness of furnace plates *17/32"* Description of
 joint *Welded* Thickness of furnace crown plates *13/16" 17/32"* Stayed by *Screwed stays 1 1/4" x 1 1/2"* Working pressure of shell by rules *96 lb*
 Working pressure of furnace by rules *91 lb* Diameter of tubes *3 1/2"* Thickness of tube plates *F 11/16" B 5/8"* Thickness of stay tubes *5/16"*

SPARE GEAR. State the articles supplied:— *Set of top & bottom end connecting rods bolts & nuts. Two main bearing bolts & nuts. Set of coupling bolts. Set of feed & bilge pump valves. Set of I.P. piston springs. Set of main & donkey feed check valves. Propeller, bolts & nuts assorted.*

The foregoing is a correct description,
FOR BLAIR & Co., LIMITED. Manufacturer. of Main engines & boilers only.
Walter Borrie

SECRETARY.
 Dates of Survey while building } During progress of work in shops - - } 1904 April 6. 13. 15. 24. May 4. 18. 20. 27. 28. June 1. 2. 4. 21. 22. 28.
 } During erection on board vessel - - } July 1. 5. 7. 8. 12. 15 Aug 10. 25. 20. Sept. 2. 5. 7. 8. 13. 15. 20. 22.
 Total No. of visits *Thirty-two* Is the approved plan of main boiler forwarded herewith *No Plans*
 " " " donkey " " " *Yes*

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

The machinery of this vessel has been constructed under special survey, the materials and workmanship are good and efficient & when tested under steam were found satisfactory & in my opinion now eligible for the notification + f.m.c. 9.04. in the Register Book.

It is submitted that this vessel is eligible for THE RECORD F.M.C. 9.04

Wm. H. 10.04
4.10.04

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

The amount of Entry Fee..	£ 2 : 0 : 0	When applied for,	
Special	£ 24 : 0 : 0	When received,	20.9.1904
Donkey Boiler Fee	£ :		
Travelling Expenses (if any)	£ :		1.10.1904

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

Committee's Minute **FRI. 7 OCT 1904**

Assigned *+ f.m.c. 9.04*

MACHINERY CERTIFICATE WRITTEN

