

REPORT ON MACHINERY

MoB No. 4226
Nrc No 49331

Port of MIDDLESBROUGH-ON-TEES.

Received at London Office FRI 8 SEP 1905

No. in Survey held at Stockton & Newcastle Date, first Survey 11th May 05 Last Survey 1st Aug 1905
 Reg. Book. 12 on the Steel S.S. Ethelstan (Number of Visits 24/23 2 Sept 1905 Nrc.)
 Master R. Jeffries Built at Newcastle By whom built B. Stephenson & Co. Ltd. Tons { Gross 3875
 Engines made at Stockton By whom made Blair & Co. Ltd. when made 1905
 Boilers made at Stockton By whom made Blair & Co. Ltd. when made 1905
 Registered Horse Power 340 Owners Narrowing S.S. Co. Ltd. Port belonging to Whitby
 Com. Horse Power as per Section 28 340 Is Refrigerating Machinery fitted 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 25-41-67 Length of Stroke 45 Revs. per minute 56 Dia. of Screw shaft 13-7 Material of W. 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
 Is 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 for protected between the liners — Length of stern bush 5'-1"
 Dia. of Tunnel shaft 12-04 as per rule 12-04 Dia. of Crank shaft journals 12-64 as per rule 12-64 Dia. of Crank pin 13-3/4 Size of Crank webs 21-1/2 x 8-3/8 Dia. of thrust shaft under
 collars 13-3/4 Dia. of screw 17-0 Pitch of screw 17-0 No. of blades 4 State whether moveable No Total surface 85 sq
 No. of Feed pumps 2 Diameter of ditto 3-1/4 Stroke 33 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 4-3/4 Stroke 33 Can one be overhauled while the other is at work Yes
 No. of Donkey Engines Two Sizes of Pumps Ballard 9x10 Feed 4x8 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Three 13-1/2 prim In Holds, &c. In all holds. Two 3-1/2
 Tunnel well out 2-1/4
 No. of bilge injections 1 sizes 6-1/4 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
 What pipes are carried through the bunkers Forward Bilge Pipe How are they protected Shrouded 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 While build Is the screw shaft tunnel watertight Yes
 Is it fitted with a watertight door Yes worked from top platform.

OILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 5620 sq Is forced draft fitted No
 No. and Description of Boilers Two Cyl Multitubular Working Pressure 165 lb Tested by hydraulic pressure to 330 lb
 Date of test 21-7-05 Can each boiler be worked separately Yes Area of fire grate in each boiler 64 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 170 lb Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 10" Span dia. of boilers 16-6" Length 11-0" Material of shell plates Steel
 Thickness 3/4" Range of tensile strength 27/32 Are they welded or flanged No Descrip. of riveting: cir. seams 18 1/2 in long. seams D. Both ship
 Diameter of rivet holes in long. seams 1-3/8 Pitch of rivets One 9-3/8 Two 14-1/16 Lap of plates or width of butt straps 1-8-1/4
 Per centages of strength of longitudinal joint 91-0 Working pressure of shell by rules 168-4 lb Size of manhole in shell 17x13
 Size of compensating ring 31x27x1-1/4 No. and Description of Furnaces in each boiler 3 Murrin's Material Steel Outside diameter 4'-1"
 Length of plain part 7-0 1/2 Thickness of plates 1-1/2 3/4 Description of longitudinal joint Welded No. of strengthening rings —
 Working pressure of furnace by the rules 173 lb Combustion chamber plates: Material Steel Thickness: Sides 5/8 1/32 Back 9/8 1/32 Top 5/8 1/32 Bottom 3/4
 Pitch of stays to ditto: Sides 7-3/4 x 9-1/4 Back 9-5/8 x 9-1/4 Top 9-3/4 x 7-3/4 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 167 lb
 Material of stays Steel Diameter at smallest part 1-7/16 Area supported by each stay 89 sq Working pressure by rules 194 lb End plates in steam space:
 Material Steel Thickness 1-7/16 Pitch of stays 22x22 How are stays secured W. 10 Working pressure by rules 168-5 lb Material of stays Steel
 Diameter at smallest part 3-1/4 Area supported by each stay 484 sq Working pressure by rules 171-4 lb Material of Front plates at bottom Steel
 Thickness 1" Material of Lower back plate Steel Thickness 1" Greatest pitch of stays 16x9-1/4 Working pressure of plate by rules 201 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" Back 13/16 Mean pitch of stays 9-5/8
 Pitch across wide water spaces 14-1/2 Working pressures by rules 182-6 lb Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 8x13-1/4 Length as per rule 2-6 Distance apart 9-3/4 Number and pitch of Stays in each Three 7-3/4
 Working pressure by rules 170 lb Superheater or Steam chest; how connected to boiler — 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 —

DONKEY BOILER— No. *The Description* *Cylindrical Multitubular*
 Made at *Newcastle* By whom made *R. Stephens & Co.* When made *4-8 05* Where fixed *upper deck*
 Working pressure *90* tested by hydraulic pressure to *180* No. of Certificate *7051* Fire grate area *31 1/4* Description of safety valves *Spring*
 No. of safety valves *2* Area of each *5.94* Pressure to which they are adjusted *90* If fitted with easing gear *No* If steam from main boilers can enter the donkey boiler *No*
 Dia. of donkey boiler *10-4 3/4* Length *9-0* Material of shell plates *S* Thickness *5/8* Range of tensile strength *28/32*
 Descrip. of riveting long. seams *tube riv lap* Dia. of rivet holes *15/16* Whether punched or drilled *d* Pitch of rivets *3 1/8*
 Lap of plating *6 3/4* Per centage of strength of joint *Rivets 76.3 Plates 74.5* Thickness of shell *iron* plates *23/32* Radius of do. *Pitch* No. of Stays to do. *17 x 14*
 Dia. of stays *2-51* Diameter of furnace Top *39* Bottom *✓* Length of furnace *66* Thickness of furnace plates *1/2* Description of joint *d shape*
 Thickness of furnace crown plates *5 1/2 B 17/32* Stayed by *Steel stays 1-24 area* Working pressure of shell by rules *96*
 Working pressure of furnace by rules *103* Diameter of uptake *tube 3 1/4* Thickness of uptake plates *F 23/32 B 11/16* Thickness of water tubes *✓*

SPARE GEAR. State the articles supplied:— *Propeller & propeller shaft. Set of top & bottom end connecting and bolts & nuts. Two main bearing bolts, set of coupling bolts & nuts, set of feed & bilge pump valves, set N & M piston rings, 2 piston springs. Four feed check valves, 3 piston bolts.*

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

Wm Eschelby

Manufacturer. of main engines & boilers.

Dates of Survey while building { During progress of work in shops - 1905 May 11-16-19-21 June 5-7-8-21-23-29-30 July 4-6-14-14-16-17-18-19-20-24-25-26-27-28-31
 { During erection on board vessel - Aug 1 Nov. Aug 21-28 Sep 2-3 Visits.
 Total No. of visits *Twenty Seven* Is the approved plan of main boiler forwarded herewith *No. 131ain.*
 " " " donkey " " " *Yes.*

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

The engine & boiler of this vessel have been constructed under special survey. the materials & workmanship are good & efficient, & when tested under steam were found satisfactory, & in our opinion now eligible for the notification + f.m.c. 9.05 in the Register Book.

It is submitted that this vessel is eligible for THE RECORD H.L.M.C. 9.05.

S.M. F.M.S. 8-9-05.

The amount of Entry Fee. £ *2* : : : When applied for, *7 SEP 1905*
 Special .. £ *34* : : :
 Donkey Boiler Fee *March* £ *2* : *2 paid 105* When received, *13/9/05*
 Travelling Expenses (if any) £ : : :

Committee's Minute

TUES. 12 SEP 1905

Assigned

+ L.M.C. 9.05

John H Heck.

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

FRI. 22 SEP 1905



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MACHINERY CERTIFICATE
 WRITTEN