

# REPORT ON MACHINERY.

95

Port of Middlesbro' on Tees.  
 Received at London Office 13

No. in Survey held at Middlesbro' Date, first Survey 13 December Last Survey 16 June 1890.  
 Reg. Book. (Number of Visits 40)

on the Screw Steamer "Inverness."  
 Master H. H. Padgett Built at Stockton By whom built Ropner & Son When built 1890

Engines made at Stockton By whom made Blair & Co. Ltd. when made 1890  
 Boilers made at Stockton By whom made Blair & Co. Ltd. when made 1890

Registered Horse Power 160 Owners Hull Steam Shipping Co. Port belonging to Hull.

GINES, &c. — Triple expansion

Description of Engines Triple Expansion, Inverted, Direct Acting, Surface Condensing No. of Cylinders Three  
 Diam. of Cylinders 21" 35" 54" Length of Stroke 39" Rev. per minute 60 Point of Cut off, High Pressure 1/2 Low Pressure 3/4  
 Diameter of Screw shaft 11 1/2" Diam. of Tunnel shaft 11" Diam. of Crank shaft journals 11 1/2" Diam. of Crank pin 12" size of Crank webs 19" x 7 1/2"  
 Diameter of screw 18' 0" Pitch of screw 15' 0" No. of blades 4 state whether moveable No total surface 61 Sq. feet.  
 No. of Feed pumps 2 diameter of ditto 2 1/4" Stroke 28" Can one be overhauled while the other is at work Yes.  
 No. of Bilge pumps 2 diameter of ditto 4" Stroke 28" Can one be overhauled while the other is at work Yes.  
 Where do they pump from Fore Peak, Fore Hold, Engine Room Bilges, After Well, Sea & Tanks.  
 No. of Donkey Engines Two Size of Pumps 4" x 8" Where do they pump from Feed - Sea, Tanks & Hotwell.  
Ballast - All tanks, Engine Room Bilges, Forepeak, Fore Hold, and after hold.  
 Are all the bilge suction pipes fitted with roses Yes Are the roses always accessible Yes Are the sluices on Engine room bulkheads always accessible Yes  
 No. of bilge injections 1 and sizes 6" Are they connected to condenser, or to circulating pump One to Circulating pump.  
 How are the pumps worked By Levers from the Crosshead of the After Engine.  
 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 Away  
 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 all pipes carried through the bunkers None How are they protected By  
 Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times Yes.  
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges Yes.  
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock New vessel, before launching.  
 Is the screw shaft tunnel watertight Yes. and fitted with a sluice door Yes worked from Top platform in Engine room.

BOILERS, &c. —  
 No. of Boilers Two Description Single End: by Corliss Patent Material Steel Letter (for record)  
 Working Pressure 160 lbs. Tested by hydraulic pressure to 320 lbs. Date of test 14 May 1890 (N: 1041)  
 Description of superheating apparatus or steam chest None. Heating surface 2990 Sq. feet.  
 Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately Yes  
 No. of square feet of fire grate surface in each boiler 3 1/2 Sq. ft. Description of safety valves Spring No. to each boiler 2  
 Area of each valve 4.9 Sq. ins. Are they fitted with easing gear Yes No. of safety valves to superheater 1 area of each valve 1  
 Are they fitted with easing gear Yes Smallest distance between boilers and bunkers or woodwork 12" Diameter of boilers 12' 9 1/4"  
 Length of boilers 10' 0" description of riveting of shell long. seams 8/16 Strap Treble circum. seams Lap Double Thickness of shell plates 1 1/8"  
 Diameter of rivet holes 1 1/8" whether punched or drilled Drilled pitch of rivets 8" Lap of plating 16" 8" wide 6"  
 Percentage of strength of longitudinal joint 83.6 working pressure of shell by rules 167.8 lbs. size of manholes in shell 16" x 12"  
 Size of compensating rings 28" x 24" x 1 1/8" No. of Furnaces in each boiler 2 Description of Furnaces Corrugated  
 Outside diameter 3' 10" length 6' 3" thickness of plates 19/32" description of joint Welded if rings are fitted Yes  
 Greatest length between rings Yes working pressure of furnace by the rules 163 lbs. combustion chamber plating, thickness, sides 3/16" back 3/16" top 3/16"  
 Thickness of stays to ditto, sides 3/2" x 3/4" back 3/2" x 3/8" top 3/2" x 3/4" stays are fitted with nuts or riveted heads Nuts in main working pressure of plating by  
 rules 130.8 lbs. Diameter of stays at smallest part 1 1/2" working pressure of ditto by rules 138 lbs. end plates in steam space, thickness 1 1/2"  
 Thickness of stays to ditto 1 1/4" x 1 1/4" how stays are secured Double nuts working pressure by rules 161.2 lbs. diameter of stays at  
 smallest part 2 1/8" working pressure by rules 166 lbs. Front plates at bottom, thickness 1" Back plates, thickness 1"  
 Greatest pitch of stays 12" working pressure by rules 137 lbs. Diameter of tubes 3 1/4" pitch of tubes 4' 8" x 4' 8" thickness of tube  
 plates, front 1" back 3/8" how stayed Stay tubes pitch of stays 9 1/2" x 9 1/2" width of water spaces  
 Diameter of Superheater or Steam chest 1" length 1" thickness of plates 1" description of longitudinal joint Welded diam. of rivet holes 1"  
 Thickness of rivets 1" working pressure of shell by rules 166 lbs. diameter of flue 1" thickness of plates 1" If stiffened with rings Yes  
 Distance between rings Yes working pressure by rules 166 lbs. end plates of superheater, or steam chest; thickness 1" how stayed Stay tubes  
 Superheater or steam chest; how connected to boiler Stay tubes



DONKEY BOILER— Description *Vertical, Cylindrical with 5 cross water tubes.*  
Made at *Stockton* by whom made *Riley Bros.* when made *17.5.90* where fixed *In Stockton*  
Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *1042* fire grate area *24 sq. feet* description of safety  
valves *Spring* No. of safety valves *one* area of each *14.19* <sup>sq. in.</sup> if fitted with easing gear *Yes* if steam from main boilers can  
enter the donkey boiler *No* diameter of donkey boiler *6' 6"* length *13' 6"* description of riveting *Long<sup>th</sup> Lap Double*  
Thickness of shell plates *1/2"* diameter of rivet holes *1 1/8"* whether punched or drilled *punched* pitch of rivets *2 1/8"* lap of plating *4 1/2"*  
per centage of strength of joint *41.4* thickness of crown plates *1/2"* stayed by *Six stays 1 1/2" dia.*  
Diameter of furnace, top *4' 10 1/8"* bottom *5' 1/2"* length of furnace *5' 5"* thickness of plates *5/8"* description of joint *Lap Single*  
Thickness of furnace crown plates *1/2"* stayed by *Shell crown plate stays* working pressure of shell by rules *80 lbs*  
Working pressure of furnace by rules *84 lbs* diameter of uptake *16"* thickness of plates *1/2"* thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *1 Propellor, 1 Propellor shaft, 2 main Bearings, 2 Crosshead Bolts & nuts, 2 Crank pin Bolts & nuts, 1 Set Coupling Bolts & nuts, 1 Set Feed Bridge pump valves, 1 Set piston Spring Bolts & nuts ass't. sizes, Iron ass't. sizes.*

The foregoing is a correct description,

*Robt Blair & Co. Ltd* Manufacturers of Engines & Main Boilers.  
*R. Blair*

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

*The materials and workmanship are of the best description.*

*The Engines and Boilers have been constructed under special survey, when fitted on board they were tried under steam and worked satisfactorily.*

*The whole Machinery is now in good and efficient condition, and eligible in my opinion to have the notation **L.M.C. 6.90.** marked in the Society's Register Book.*

*It is submitted that this vessel is eligible to have + L.M.C. 6-90 recorded*

*W.A.*

*21-6-90*

The amount of Entry Fee .. £ 2 : : : received by me,

Special .. .. £ 30 : 1 : :

Donkey Boiler Fee .. .. £ : : :

Certificate (if required) .. £ : : :

To be sent as per margin.

(Travelling Expenses, if any, £ .. ..)

Committee's Minute

TUES 24 JUNE 1890

*+ L.M.C. 6/90*

*Wm Austin*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.