

# REPORT ON MACHINERY.

No. 329

Port of Middlesbrough-on-Tees

No. in Survey held at Stockton-on-Tees Date, first Survey 26<sup>th</sup> Sept 1890 Last Survey 9<sup>th</sup> Feb 1891  
Reg. Book.

on the Screw Steamer "Daybreak"

Master Built at Stockton By whom built Ropner & Son Tons { Gross 2921.58  
Net 1905.50  
When built 1891

Engines made at Stockton-on-Tees By whom made Blair & Co<sup>l</sup> Limited when made 1891.

Boilers made at Stockton-on-Tees By whom made Blair & Co<sup>l</sup> Limited when made 1891.

Registered Horse Power 230. Owners J. Hood & Co<sup>l</sup> Port belonging to West Hartlepool

Manufacturers HP 190.  
Rule HP 235.

NGINES, &c.—

Description of Engines Inverted Direct Acting, Triple expansion No. of Cylinders Three

Diam. of Cylinders 23"-34 1/2"-61 1/2" Length of Stroke 39" Rev. per minute 60 Point of Cut off, High Pressure 1/2 Low Pressure 1/2

Diameter of Screw shaft 12" Diam. of Tunnel shaft 11 1/4" Diam. of Crank shaft journals 11 1/4" Diam. of Crank pin 12 1/2" size of Crank webs 19 1/4" x 8 1/8"

Diameter of screw 16.0" Pitch of screw 15.0" No. of blades 4 state whether moveable to total surface 41 Sq. feet

No. of Feed pumps 2 diameter of ditto 3 1/2" Stroke 28" Can one be overhauled while the other is at work Yes.

No. of Bilge pumps 2 diameter of ditto 4 1/2" Stroke 28" Can one be overhauled while the other is at work Yes.

Where do they pump from Sea, Tanks, Fore, main & after Holds, Tunnel, Tunnel well & Engine room.

No. of Donkey Engines 2 Size of Pumps 14" x 8" (Fore) 14" x 9" (Ballast) Where do they pump from Feed - Sea, Tanks & Hotwell.

Ballast - Sea, all tanks, Engine room, Fore, main & after Holds, Tunnel & Tunnel well.

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 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 Aft.

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 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

OILERS, &c.—

No. of Boilers Two Description by 10" built single end Material Steel Letter (for record) S

Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbs. Date of test 9<sup>th</sup> December 1890 (165.)

Description of superheating apparatus or steam chest None Heating Surface 3520 Sq. feet.

Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately

No. of square feet of fire grate surface in each boiler 449 1/2 sq. ft. Description of safety valves Direct Spring No. to each boiler Two

Area of each valve 7.06 sq. in. Are they fitted with easing gear Yes No. of safety valves to superheater area of each valve

Are they fitted with easing gear Smallest distance between boilers and bunkers or woodwork 14" Diameter of boilers 14' 0 1/2"

Length of boilers 10' 0" description of riveting of shell long. seams D. B. Shop Triple circum. seams Lap Double Thickness of shell plates 1 1/4"

Diameter of rivet holes 1 1/4" 1 1/8" whether punched or drilled Drilled pitch of rivets 8" 4 1/2" Lap of plating 18 1/4" 6 1/4"

Per centage of strength of longitudinal joint 84.3% working pressure of shell by rules 162.5 lbs size of manholes in shell 16" x 12"

Size of compensating rings 28" x 24" x 1 1/4" No. of Furnaces in each boiler 3 Description of Furnaces Corrugated

Outside diameter 3' 6" length 6' 3" thickness of plates 3/16" description of joint Welded if rings are fitted

Greatest length between rings working pressure of furnace by the rules 166 lbs combustion chamber plating, thickness, sides 9/16" back 9/16" top 9/16"

Pitch of stays to ditto, sides 1/2" x 1/4" back 1/2" x 1/4" top 1/2" x 1/4" If stays are fitted with nuts or riveted heads Auto working pressure of plating by

rules 172 lbs Diameter of stays at smallest part 1 1/8" working pressure of ditto by rules 179 lbs end plates in steam space, thickness 1/8"

Pitch of stays to ditto 16 1/4" x 13" how stays are secured Double nut working pressure by rules 171 lbs diameter of stays at

smallest part 2 1/2" working pressure by rules 181 lbs Front plates at bottom, thickness 1" Back plates, thickness 1"

Greatest pitch of stays 12 5/8" working pressure by rules 160.6 lbs Diameter of tubes 3 1/4" pitch of tubes 4 1/2" x 4 5/8" thickness of tube

plates, front 1" back 5/8" how stayed Stay tubes pitch of stays 14 1/4" x 9" width of water spaces 5"

Diameter of Superheater or Steam chest length thickness of plates description of longitudinal joint diam. of rivet holes

Pitch of rivets working pressure of shell by rules diameter of flue thickness of plates If stiffened with rings

Distance between rings working pressure by rules end plates of superheater, or steam chest; thickness how stayed

Superheater or steam chest; how connected to boiler



2 *See*  
**DONKEY BOILER**— Description *Vertical with 3 cross water tubes.*  
 Made at *Stockton* by whom made *J. Ludron & Co. Ltd.* when made *16.12.90* where fixed *In Stockton.*  
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *140* fire grate area *22.5 sq. ft.* description of safety  
 valves *Sweet Spring* No. of safety valves *one* area of each *11.04 sq. in.* if filled with easing gear *Yes* if steam from main boilers can  
 enter the donkey boiler *No* diameter of donkey boiler *6' 0"* length *11' 6"* description of riveting *Long Lap Double.*  
 Thickness of shell plates *13/32"* diameter of rivet holes *13/16"* whether punched or drilled *Drilled* pitch of rivets *2 1/2"* lap of plating *4 1/2"*  
 per centage of strength of joint *78.14* thickness of crown plates *13/32"* stayed by *12 Stays 1 1/2" dia.*  
 Diameter of furnace, top *4' 9"* bottom *5' 4 1/2"* length of furnace *4' 10 1/2"* thickness of plates *13/32"* description of joint *Long Lap rivet.*  
 Thickness of furnace crown plates *13/16"* stayed by *Same as shell crown plates* working pressure of shell by rules *85 lbs*  
 Working pressure of furnace by rules *85 lbs* diameter of uptake *15"* thickness of plates *7/16"* thickness of water tubes *3/8"*

**SPARE GEAR.** State the articles supplied:— *1 Propeller, 2 main Bearing Bolts & nuts, 1 set*  
*Coupling Bolts & nuts, 2 branch pin Bolts & nuts, 2 Cross Lead Bolts & nuts,*  
*1 set Feed & Balge pump valves, 1 set Piston Springs, 120 Bolts ass't. Pins*  
*Iron of various sizes*

The foregoing is a correct description.

**FOR BLAIR & CO., LIMITED** Manufacturers of Marine Engines & Boilers.  
*J. R. Chelmsford*

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

*The Engines and Boilers of this vessel have been constructed*  
*under Special Survey, and the Materials and Workmanship are*  
*of the best description. The main steam pipes have been tested*  
*by Hydraulic pressure as required by the Rules. When fitted*  
*on board the Engines and Boilers were examined under*  
*steam and found to work satisfactorily.*

*The Machinery throughout is now in good and*  
*efficient condition and eligible in my opinion to have*  
*the notation **L.M.C. 2.91.** marked in the Society's Register*  
*Book.*

*It is submitted that this*  
*vessel is eligible to have*  
*+ L.M.C. 2-91 recorded.*

*M.A.*

*12-2-91*

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

Special .. £ 31 : 15 : -

Donkey Boiler Fee .. £ : : -

Certificate (if required) .. £ : : - 10.2.1891

(Travelling Expenses, if any, £ )

Committee's Minute **FRI. 13 FEB 1891**

*+ L. Mib. 2/91*

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