

REPORT ON MACHINERY.

107

Port of *Middlesbrough-on-Tees*

2 JUL 1890

No. 104

Received at London Office

No. in Survey held at *Stockton-on-Tees* Date, first Survey *21st Dec^r 1890* Last Survey *26th June 1890*
Reg. Book.

(Number of Visits *35*)

on the *Screw Steamer Darlington*

Tons *Gross 2523*
Net 1625

Master *Richardson* Built at *Stockton* By whom built *Richardson, Duck & Co* When built *1890*

Engines made at *Stockton* By whom made *Blair & Co^y Limited* when made *1890*

Boilers made at *Stockton* By whom made *Blair & Co^y Limited* when made *1890*

Registered Horse Power *200* Owners *Commercial S. S. Co^y Ltd* Port belonging to *London*

ENGINES, &c.— *Triple expansion*

Description of Engines *Triple expansion, Inverted, Direct Acting with 3 Cranks* No. of Cylinders *Three*

Diam. of Cylinders *22½ - 34 - 61* Length of Stroke *42* Rev. per minute *58* Point of Cut off, High Pressure *5* Low Pressure *5*

Diameter of Screw shaft *12½* Diam. of Tunnel shaft *11½* Diam. of Crank shaft journals *12* Diam. of Crank pin *12½* size of Crank webs *8½ x 19½*

Diameter of screw *16'0"* Pitch of screw *15½ feet* No. of blades *4* state whether moveable *to* total surface *71 Sq. feet*

No. of Feed pumps *2* diameter of ditto *3½* 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*

Where do they pump from *Engine Room Bilges, After Well, Fore Hold and Tanks.*

No. of Donkey Engines *Two* Size of Pumps *(4 x 8)* *(9 x 10)* Where do they pump from *Feed - Sea, Hotwell Tanks.*

Ballast - All tanks, Engine Room Bilges, Fore Hold, Tunnel and Sea this Condenser

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 *¾"* Are they connected to condenser, or to circulating pump *Circulating pump.*

How are the pumps worked *By Levers from the cross head 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 *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 *None*

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* *Before launching*

Is the screw shaft tunnel watertight *✓* and fitted with a sluice door *Yes* worked from *Top platform in Engine room*

BOILERS, &c.—

No. of Boilers *Two* Description *Single End, Cylindrical* Material *Steel* Letter (for record)

Working Pressure *160 lbs* Tested by hydraulic pressure to *320 lbs* Date of test *29th May 1890 (H^o 1047)*

Description of superheating apparatus or steam chest *None* Heating surface *3740 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 *478.5* Description of safety valves *Spring* No. to each boiler *Two*

Area of each valve *7.06 Sq. ins* 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 *14'6" 3/8"*

Length of boilers *10'0"* description of riveting of shell long. seams *Double Lap* Thickness of shell plates *1 5/16"*

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

Per centage of strength of longitudinal joint *84* working pressure of shell by rules *164 lbs* size of manholes in shell *16 x 12"*

Size of compensating rings *28 x 24 x 1 5/8"* No. of Furnaces in each boiler *Three* Description of Furnaces *Corrugated*

Outside diameter *3'8"* length *6'3"* thickness of plates *3 3/4"* description of joint *Welded* if rings are fitted *✓*

Greatest length between rings *✓* working pressure of furnace by the rules *164 lbs* combustion chamber plating, thickness, sides *9/16"* back *9/16"* top *9/16"*

Pitch of stays to ditto, sides *1/2 x 1/2* back *1/2 x 1/2* top *1/2 x 1/2* If stays are fitted with nuts or riveted heads *Auto* working pressure of plating by rules *160 3/4 lbs*

Diameter of stays at smallest part *1 1/8"* working pressure of ditto by rules *180 lbs* end plates in steam space, thickness *1 3/32"*

Pitch of stays to ditto *15" x 15"* how stays are secured *Double nut & washer* working pressure by rules *169 lbs* diameter of stays at smallest part *2 5/8"*

Greatest pitch of stays *12"* working pressure by rules *144 lbs* Diameter of tubes *3 1/2"* 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 *9 1/2 x 9"* width of water spaces *✓*

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 *✓*

(State if Report is of the Ship)

[Form No. 8-2000-1/12/89-T. 65-Copyright Int.]

DONKEY BOILER— Description *Vertical, Bestus Patent.*
 Made at *Lakehead* by whom made *Clarke Chapman & Co.* when made *3.3.90* where fixed *In Stockholm*
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *3150* fire grate area *20 sq. feet* description of
 valves *Spring* No. of safety valves *One* area of each *9.62 sq. ft.* if fitted with easing gear *Yes* if steam from main boilers
 enter the donkey boiler *No* diameter of donkey boiler *6' 0"* length *13' 0"* description of riveting *Lap Double*
 Thickness of shell plates *1/16"* diameter of rivet holes *1/8"* whether punched or drilled *Drilled* pitch of rivets *3 3/16"* lap of plating *4 1/2"*
 per centage of strength of joint *72* thickness of crown plates *3/16"* stayed by *Six Stays 1 1/8" diameter.*
 Diameter of furnace, top *2' 8"* bottom *5' 1"* length of furnace *4' 0"* thickness of plates *3/16"* description of joint *Lap Single*
 Thickness of furnace crown plates *3/16"* stayed by *Same as shell crown plates.* working pressure of shell by rules *94*
 Working pressure of furnace by rules *98 lbs* diameter of uptake *11 1/2" tapered* thickness of plates *3/16"* thickness of water tubes *3/16"*

SPARE GEAR. State the articles supplied:— *3 Crank shaft, 1 Propeller, 2 Crank pin Bolts & nuts, 2 Cross head Bolts & nuts, 2 Main Bearing Bolts & nuts, 1 Set Coupling Bolts & nuts, 1 Set Piston Springs, 1 Set Feed & Bilge pump valves. Bolts & nuts are Iron various sizes.*

The foregoing is a correct description,

Pro Blair & Co Ltd
W. B. Blair.

Manufacturers of Marine Engines & Boilers.

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 the vessel 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 the vessel is eligible to have + L.M.C. 6.90 recorded.

W.A.
2-7-90

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

Special £ 32 : 5 : ..

Donkey Boiler Fee £ : : ..

Certificate (if required) .. £ : : ..

To be sent as per margin.

(Travelling Expenses, if any, £)

Committee's Minute

FRI 4 JULY 1890

+ L.M.C. 6/90

Wm. A. Motter
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Lloyd's Register
 Foundation