

REPORT ON MACHINERY.

3422

No. 3422

Received at London Office

10 MAY 88

No. in Survey held at *Belfast* Date, first Survey *31st March 87* Last Survey *3rd May 1888*
 Reg. Book. *Sup.* (Number of Visits *59*) Net *1016*
 2 on the *Steel Screw Steamer "Titanic"* Tons *1608*
 Master *M. S. Nelson* Built at *Belfast* By whom built *MacIlwaine Lewis & Co* When built *1888*
 Engines made at *Belfast* By whom made *MacIlwaine Lewis & Co* when made *1888*
 Boilers made at *Belfast* By whom made *MacIlwaine Lewis & Co* when made *1888*
 Registered Horse Power *260* Owners *William Service* Port belonging to *Glasgow*

ENGINES, &c.—

Description of Engines *Triple Expansion Three Cranks.* *MP 20 1/2*
 Diameter of Cylinders *21 1/2, 35 & 57 1/2* Length of Stroke *36* No. of Rev. per minute *75* Point of Cut off, High Pressure *20* Low Pressure *21*
 Diameter of Screw shaft *11* Diam. of Tunnel shaft *10 1/4* Diam. of Crank shaft journals *11* Diam. of Crank pin *11* size of Crank webs *13 1/4 x 7 1/4*
 Diameter of screw *14-6* Pitch of screw *15-6 to 17-3* No. of blades *four* state whether moveable *yes* total surface *52.75 sq ft*
 No. of Feed pumps *2* diameter of ditto *3* Stroke *20* Can one be overhauled while the other is at work *yes*
 No. of Bilge pumps *2* diameter of ditto *4* Stroke *20* Can one be overhauled while the other is at work *yes*
 Where do they pump from *Feed from hotwell & bilge from all bilges in holds & mach. space.*
 No. of Donkey Engines *3* Size of Pumps *10 x 10 at cyl. 8 1/2 pump 4 1/2 inch 6 1/2 inch* Where do they pump from *Boilers, Ballast tanks*
 Feed water heater, Sea, hotwell, all bilges & exhaust tank.
 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 *One* and sizes *4 1/2* Are they connected to condenser, or to circulating pump *Circulating pump*
 How are the pumps worked *by levers & links to after engine; a separate cut pump for circulating*
 Are all connections with the sea direct on the skin of the ship *yes* Are they Valves or Cocks *valves & cocks*
 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 *below*
 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 *for hold bilge suction* How are they protected *Boxed in with wood*
 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 *26th April in graving dock*
 Is the screw shaft tunnel watertight *yes* and fitted with a sluice door *yes* worked from *Main deck*

BOILERS, &c.—

Number of Boilers *Two* Description *Cyl. built Single ended* Whether Steel or Iron *Steel*
 Working Pressure *160* Tested by hydraulic pressure to *320* Date of test *18th Feb. 1888* Cert. No. *28*
 Description of superheating apparatus or steam chest *None fitted.*
 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 *45 c* Description of safety valves *B. Cockburns* 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 *11* Diameter of boilers *13-0*
 Length of boilers *9-6* description of riveting of shell long. seams *Triple 4 rivets cum. seams hold & triple* Thickness of shell plates *13/16*
 Diameter of rivet holes *1 1/4* whether punched or drilled *drilled* pitch of rivets *7" & 3 1/2"* Lap of plating *19" x 15" B.S.*
 Percentage of strength of longitudinal joint *plate 82 1/2* working pressure of shell by rules *164.6 lbs* size of manholes in shell *16" x 12"*
 Size of compensating rings *Mc Neil's pt* No. of Furnaces in each boiler *Three*
 Outside diameter *37 1/2* length, top *6-6* bottom *8-9* thickness of plates *2* description of joint *Locks welded* if rings are fitted *✓*
 Greatest length between rings *✓* working pressure of furnace by the rules *160* combustion chamber plating, thickness, sides *9/16* back *9/16* top *9/16*
 Pitch of stays to ditto, sides *7 1/4 x 7 1/4* back *7 1/4 x 7 1/4* top *8 x 6 1/2* If stays are fitted with nuts or riveted heads *nutted at both ends* working pressure of plating by rules *160 lbs*
 Diameter of stays at smallest part *1 5/8* working pressure of ditto by rules *164 lbs* bend plates in steam space, thickness *15/16*
 Pitch of stays to ditto *15 x 15* how stays are secured *washers 10" x 1/2 riveted to plate & two nuts* working pressure by rules *160 lbs* diameter of stays at smallest part *2 5/8* Steel working pressure by rules *168 lbs* Front plates at bottom, thickness *3/4* Back plates, thickness *3/4*
 Greatest pitch of stays *13* working pressure by rules *160 lbs* Diameter of tubes *3 1/2* pitch of tubes *4 3/4 x 4 3/4* thickness of tube plates, front *13/16* back *1/16* how stayed *Star tubes pitch of stays 9 1/2 x 14 1/4* width of water spaces *5/16 at sides 7/16 at ends 1/16 at back*
 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 *✓*

DONKEY BOILER— Description *Cylindrical Multitubular horizontal Steel*
Made at *Belfast* by whom made *MacIlwaine & Lewis* when made *1888* where fixed *on main beam*
Working pressure *60 lbs* tested by hydraulic pressure to *120* No. of Certificate *29* fire grate area *10 sq ft* description of safety
valves *2 Cockburn's Spring* No. of safety valves *2* area of each *3.14* if fitted with easing gear *yes* if steam from main boilers can
enter the donkey boiler *no* diameter of donkey boiler *6'-6"* length *6'-6"* description of riveting *Lap & bolt*
Thickness of shell plates *3/16"* diameter of rivet holes *3/16"* whether punched or drilled *drilled* pitch of rivets *2 1/2"* lap of plating *4"*
per centage of strength of joint *68.6* thickness of crown plates *1/4"* stayed by *1/4"*
Diameter of furnace, top *30"* bottom *24"* length of furnace *4'-9"* thickness of plates *3/8"* description of joint *all butt straps*
Thickness of ~~furnace~~ crown plates *3/16"* stayed by *gussets & curved top plates* working pressure of shell by rules *60 lbs*
Working pressure of furnace by rules *95 lbs* diameter of uptake *1/2"* thickness of plates *1/4"* thickness of water tubes *1/4"*

SPARE GEAR. State the articles supplied:— *2 propeller blades (Steel), 2 connecting rods*
top end & 2 bottom end bolts & nuts, 2 main bearing bolts & nuts, 6
coupling bolts, 2 feed pump valves, 2 bilge pump valves, a run
of bolts & nuts, iron of various sizes, &c. &c. McIlwaine & Lewis Piston
The foregoing is a correct description,

MacIlwaine & Lewis Manufacturers.

General Remarks (State quality of workmanship, opinions as to class, &c.) *The machinery of this*
vessel has been constructed and fitted in accordance with the
plans approved of by the Committee by the plans of Main and
of donkey boilers; the Secretary's letters dated, 8th February & 27th
April, 1887, in accordance with the Rules of the Society or equal
thereto and to the satisfaction of the undersigned.

The steel used in the boilers has been tested as required
by the Rules.

The boilers were tested under hydraulic pressure and the
machinery tried under steam, giving entire satisfaction.

The Safety valves were adjusted under steam and set
to 160 lbs on main & 60 lbs on donkey boilers.

The material used in the construction and the workmanship
throughout, of the machinery, are good & satisfactory and in
my opinion the machinery is eligible for Classification, I would
therefore respectfully recommend that the Notification + L.M.C.
be granted by the Committee & entered in the Register Book.

It is submitted that
this vessel is eligible to
have + L.M.C. 5.88 recorded.

HJ 10.5.88

The amount of Entry Fee £ 2 : 0 : 0 received by me,
Special *Certificate* .. £ 33 : 0 : 0
Donkey Boiler Fee .. £ : :
Certificate (if required) .. £ : : *P. 5. 1888*
To be sent as per margin.
Selling Expenses, if any, £ ..)

James Maxton
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

FRIDAY 11 MAY 1888

+ L.M.C. 5788