

REPORT ON MACHINERY.

No. 3201

Received at London Office WEDNES. 17 MARCH 1886

No. in Survey held at *Belfast* Date, first Survey *2nd Oct 1885* Last Survey *12th March 1886*
 Reg. Book. (Number of Visits *25*)
 Run up on the *Steel Screw Steamer "Iran" after Harland & Wolff 1885* Tons *2316 94 net*
 Master *Ed. Cooper* Built at *Belfast* By whom built *Harland & Wolff* When built *1885-6*
 Engines made at *Belfast* By whom made *"* when made *1885-6*
 Boilers made at *"* By whom made *"* when made *1885-6*
 Registered Horse Power *400* Owners *Edward Percy Bates* Port belonging to *Liverpool*

ENGINES, &c.—

Description of Engines *Triple Expansion, Three Cranks.*
 Diameter of Cylinders *28, 43, 41* Length of Stroke *51* No. of Rev. per minute *64* Point of Cut off, High Pressure *2/6* Intermediate *2/6* Low Pressure *2/6*
 Diameter of Screw shaft *15* Diam. of Tunnel shaft *13 1/4* Diam. of Crank shaft journals *15* Diam. of Crank pin *15* size of Crank webs *17 x 10 3/4*
 Diameter of screw *17-6* Pitch of screw *21-0* No. of blades *4* state whether moveable *yes* total surface *845 sq ft*
 No. of Feed pumps *Two* diameter of ditto *3 3/4* Stroke *32* Can one be overhauled while the other is at work *yes*
 No. of Bilge pumps *Two* diameter of ditto *4* Stroke *32* Can one be overhauled while the other is at work *yes*
 Where do they pump from *Feed Pumps from hotwell & sea Bilge Pumps from all bilges and welley*
 No. of Donkey Engines *Three* Size of Pumps *10 x 10 - 7 x 4 9 5 x 3 1/2* Where do they pump from *all Bilges, sea, ballast tanks, Boilers and hotwell*
 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" dia* Are they connected to condenser, or to circulating pump *to the circulating pump*
 How are the pumps worked *by levers worked from piston rod crosshead*
 Are all connections with the sea direct on the skin of the ship *yes* Are they Valves or Cocks *both cocks and valves*
 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 *Two bilge suction pipes* How are they protected *by running under bilge stringers*
 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 by non return valves & open bottom cocks*
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock *on 4th January 1886 before launching*
 Is the screw shaft tunnel watertight *yes* and fitted with a sluice door *yes* worked from *upper decks*

BOILERS, &c.—

Number of Boilers *Three* Description *Fired from both ends* Whether Steel or Iron *Steel*
 Working Pressure *160 lbs* Tested by hydraulic pressure to *320 lbs* Date of test *8th January 1886*
 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 *215.6* Description of safety valves *Cockburne* No. to each boiler *Two 3 3/4"*
 Area of each valve *8.3 sq ft* 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 *9"* Diameter of boilers *11-4*
 Length of boilers *19-0* description of riveting of shell long. seams *dble butt straps* circum. seams *lap, butt joint* Thickness of shell plates *1 1/16*
 Diameter of rivet holes *1 1/8* whether punched or drilled *drilled* pitch of rivets *6.288 x 3.144* Lap of plating *butt straps 18" wide*
 Per centage of strength of longitudinal joint *82.1* working pressure of shell by rules *166.7 lbs* size of manholes in shell *15 x 11*
 Size of compensating rings *rectangular plate 27" x 24" x 1 1/4"* No. of Furnaces in each boiler *Four*
 Outside diameter *3-4* length, top *6-9 1/2* bottom *6-9 1/2* thickness of plates *7/32* description of joint *Corrugated* if rings are fitted *✓*
 Greatest length between rings *✓* working pressure of furnace by the rules *162.5 lbs* combustion chamber plating, thickness, sides *9/16* back *✓* top *9/16*
 Pitch of stays to ditto, sides *8 1/4 x 8* back *✓* top *8 x 8* If stays are fitted with nuts or riveted heads *nuts* working pressure of plating by rules *152 x 143* Diameter of stays at smallest part *1 1/4 x 1 1/8* working pressure of ditto by rules *154* end plates in steam space, thickness *13/16*
 Pitch of stays to ditto *16 x 14* how stays are secured *dble nuts & pins* working pressure by rules *158.4 lbs* diameter of stays at smallest part *3 1/8* Iron working pressure by rules *205.4 lbs* Front plates at bottom, thickness *13/16* Back plates, thickness *✓*
 Greatest pitch of stays *✓* working pressure by rules *✓* Diameter of tubes *3 1/4* Iron pitch of tubes *4 1/2 x 4 1/16* thickness of tube plates, front *7/8* back *25/32* how stayed *Stay tubes* pitch of stays *9" x 9 1/8* width of water spaces *1 1/4 1 1/2* thickness of tubes *3" bottom tubes*
 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 *2019*
 Superheater or steam chest; how connected to boiler *✓*

See also data on p. 10 to 12 to Barrow Engineering Co.

DONKEY BOILER— Description *for particulars of this boiler see sheet attached herewith.*

Made at _____ by whom made _____ when made _____ where fixed _____
Working pressure _____ tested by hydraulic pressure to _____ No. of Certificate _____ fire grate area _____ description of safety
valves _____ No. of safety valves _____ area of each _____ if fitted with easing gear _____ if steam from main boilers can
enter the donkey boiler _____ diameter of donkey boiler _____ length _____ description of riveting _____
Thickness of shell plates _____ diameter of rivet holes _____ whether punched or drilled _____ pitch of rivets _____ lap of plating _____
per centage of strength of joint _____ thickness of crown plates _____ stayed by _____
Diameter of furnace, top _____ bottom _____ length of furnace _____ thickness of plates _____ description of joint _____
Thickness of furnace crown plates _____ stayed by _____ working pressure of shell by rules _____
Working pressure of furnace by rules _____ diameter of uptake _____ thickness of plates _____ thickness of water tubes _____

SPARE GEAR. State the articles supplied:— *2 propeller blades; After length of crank shaft. 2 pairs of brasses for top end of connecting rod. 1 pair of crank pin brasses. 6 shaft coupling bolts. one set of water spindles; one circulating pump rod; 2 nuts and glands and one set of valves for Circ. pump; 3 set of "paper tissue" valves for air pump; 1 set of ball bearings for Cyl. & Pist. pumps. 2 main bearing bolts, one set of connecting bolts. 15 Cond. tubes; 25 boiler*
The foregoing is a correct description, *An assorted quantity of bolts & nuts with iron of various sizes.*
W. H. M. & Co. Manufacturer.

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

At the underrated stage in the progress of the work upon the engine and boiler of this vessel the survey of the machinery was transferred to Mr. Maxton. Red-plate machined Columns and Condenser Cast cylinders bored Pistons finished all shafts turned Piston & Connecting rods forged and details of work in hand. Boiler shells drilled and part riveted, Combustion Chambers built—furnaces riveted, tube plates flanged and part drilled, and plates being fitted together. The material and workmanship is good and satisfactory so far as the same has been surveyed by me. D. Ritchie.

The machinery of this vessel has been built in accordance with enclosed tracing approved by Committee and in accordance with or equal to Rules for Special Survey (New Machinery): the material and workmanship throughout are good and satisfactory, the Boilers have been tested under hydraulic pressure and the machinery under steam, giving entire satisfaction and is in my opinion eligible for the notification and distinguishing mark. "L.M.C." entered in the Society's Register Book with a date attached.

The enclosed record of tests of steel for these boilers made by B.O.I. have been verified by selected samples, and the minimum on plates checked; bend tests were made from 8 plates.

Dates of Letters having reference to this machinery. 20. 21. 27 130 Nov. 85

The amount of Entry Fee .. £ 3 : 0 : 0 received by me,
Special .. £ 40 : :
Donkey Boiler Fee .. £ : :
Certificate (if required) .. £ : : 15.3.1886
To be sent as per margin.
(Travelling Expenses, if any, £ 4-4-0)

Committee's Minute

It is submitted that this vessel is eligible to have the notification recorded.
W. H. M. & Co.
18/3/86.
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.