

REPORT ON MACHINERY.

Received at London Office **MONDAY, 1 FEB 1886**

No. 4294
 No. in Survey held at Glasgow Date, first Survey 9th May 1883 Last Survey Jan. 24th 1886
 Reg. Book. " (Number of Visits 61) 4491.61
 on the " Tons 2938.43
 Master Anderson Built at Belfast By whom built Messrs Workman, Clark & Co When built 1885
 Engines made at Glasgow By whom made Messrs J & G Thomson when made 1885
 Boilers made at " By whom made " when made 1885
 Registered Horse Power 650 Owners Messrs G. Smith & Sons Port belonging to Glasgow

ENGINES, &c.—

Description of Engines Compound Inverted direct acting
 Diameter of Cylinders 50" x 96" Length of Stroke 60" No. of Rev. per minute 60 Point of Cut off, High Pressure 4² Low Pressure 3⁷
 Diameter of Screw shaft 14" Diam. of Tunnel shaft 16" Diam. of Crank shaft journals 14¹/₂" Diam. of Crank pin 14¹/₂" size of Crank webs 13⁸/₈ x 24⁴/₄"
 Diameter of screw 19ft Pitch of screw 25ft No. of blades 4 state whether moveable yes total surface 106 sq ft
 No. of Feed pumps two diameter of ditto 5" Stroke 30" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps two diameter of ditto 6" Stroke 30" Can one be overhauled while the other is at work Yes
 do they pump from Each compartment
 Engines One Size of Pumps 5²/₂, 10 cyl 11 stroke Where do they pump from Sea, hotwell and
 of each compartment

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 two and sizes 6 dia Are they connected to condensers or to circulating pump circulating pump
 How are the pumps worked By levers, centrifugal pump driven by separate engine
 Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks both Valves and 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 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 forward suction How are they protected wood casing
 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, 2. Ritchie
 Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from the top platform

BOILERS, &c.—

Number of Boilers three Description Cyl. Mult double ended Whether Steel or Iron Steel
 Working Pressure 90 lbs Tested by hydraulic pressure to 180 lbs Date of test August 28th 1885
 Description of superheating apparatus or steam chest horizontal dome
 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 126 sq ft Description of safety valves direct spring No. to each boiler two
 Area of each valve 21.64 sq ft Are they fitted with easing gear Yes No. of safety valves to superheater 1 area of each valve ✓
 Are they fitted with easing gear ✓ Smallest distance between boilers and bunkers or woodwork 3⁶/₈ from deck Diameter of boilers 14⁴/₄"
 Length of boilers 18ft description of riveting of shell long. seams dbl riv butt circum. seams dbl riv lap Thickness of shell plates 2¹/₃₂"
 Diameter of rivet holes 1³/₁₆" whether punched or drilled drilled pitch of rivets 4³/₄" Lap of plating skapes 13⁸/₈ x 3⁷/₄"
 Per centage of strength of longitudinal joint 45% working pressure of shell by rules 95 lbs size of manholes in shell 15¹/₂ x 12
 Size of compensating rings 3 x 3 x 1/2 No. of Furnaces in each boiler Six
 Outside diameter 44" length, top 4ft bottom ✓ thickness of plates 1/2" description of joint welded, Adams if rings are fitted Yes
 Greatest length between rings 3-8" working pressure of furnace by the rules 90 lbs combustion chamber plating, thickness, sides 1/2" back ✓ top 1/2"
 Pitch of stays to ditto, sides 8" x 8" back ✓ top 8" x 8" If stays are fitted with nuts or riveted heads nuts & riv at shell working pressure of plating by rules 120 Diameter of stays at smallest part 1³/₈ screw working pressure of ditto by rules 157 lbs end plates in steam space, thickness 1³/₁₆"
 Pitch of stays to ditto 15" x 16" how stays are secured dbl nuts & washers working pressure by rules 105 lbs diameter of stays at smallest part 2" screw working pressure by rules 90 lbs Front plates at bottom, thickness 1/2" Back plates, thickness ✓
 Greatest pitch of stays ✓ working pressure by rules ✓ Diameter of tubes 3³/₄" pitch of tubes 5" thickness of tube plates, front 12¹/₁₆" back 12¹/₁₆" how stayed stay tubes pitch of stays 15" width of water spaces 5"
 Diameter of Superheater or Steam chest 4ft length 18ft thickness of plates 1/2" description of longitudinal joint dbl riv lap diam. of rivet holes 15¹/₁₆"
 Pitch of rivets 3¹/₄" working pressure of shell by rules 159 lbs 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 5⁵/₈" how stayed 3-2 stays
 Superheater or steam chest; how connected to boiler con. pipes 16" x 18 dia

Form No. 8-2000-14/16-Transfer Ink.

7297 gls

DONKEY BOILER— Description *Multitubular*
 Made at *Glasgow* by whom made *Messrs J & J Thomson* when made *1885* where fixed *On deck*
 Working pressure *150 lbs* tested by hydraulic pressure to *150 lbs* No of Certificate *1144* fire grate area *25 sq ft* description of safety valves *direct spring* No. of safety valves *two* area of each *7.07 sq* if fitted with easing gear *Yes* if steam from main boilers can enter the donkey boiler *No* diameter of donkey boiler *8.6* length *8.0* description of riveting *Sheb. riv. lap. cir. dbl*
 Thickness of shell plates *5/8* diameter of rivet holes *7/8* whether punched or drilled *drill* pitch of rivets *3 1/4* lap of plating *6*
 per centage of strength of joint *73%* thickness of ~~end~~ *end* plates *5/8* stayed by *1 3/4" stays dbl nuts 13 3/4 x 13 3/4*
 Diameter of furnace, top *2.9* bottom *✓* length of furnace *5.6* thickness of plates *9/16 & 7/16* description of joint *lap S. Riv. 2 1/4" pitch*
 Thickness of furnace crown plates *9/16* stayed by *stay tubes* working pressure of shell by rules *102 lbs*
 Working pressure of furnace by rules *80 lbs* diameter of uptake *✓* thickness of ~~comb. cham~~ *plates* *7/16* thickness of water tubes *percu stays 1 1/4" 19 x 9*

SPARE GEAR. State the articles supplied:— *1 propeller shaft 1 crank shaft (single throw) 1 pair of crank pin brasses, 1 Valve spindle (common to both engines), 1 air pump rod, 2 propeller blades, 1 set of studs for same, 3 Safety Valve springs for Main Boilers 2 ditto for donk Boiler 2 Top & 2 bottom end bolts & nuts 2 Main bearing bolts 1 set of coupling bolts 1 set of feed and bilge pump valves & seats assorted bolts, iron &c*
 The foregoing is a correct description,
John Thomson Manufacturer

General Remarks (State quality of workmanship, opinions as to class, &c.)
The Engines and Boilers of the above named vessel have been constructed under Special Survey they are of good material and workmanship and are now in good order and safe working condition and eligible in our opinion to be noted in the Register Book L.M. 1-86
The shafting was examined while being rough turned, and afterwards and found to be satisfactory.

It is submitted that this vessel is eligible to have a certificate M. 1/2/86

[Large blue scribble]

The amount of Entry Fee .. £ *3* : : : received by me,
 Special .. £ *52* : *10* :
 Donkey Boiler Fee .. £ : : :
 Certificate (if required) .. £ : : : *30/1/1886*
 To be sent as per margin.
 (Travelling Expenses, if any, £ *1-11-6*.)

J. L. Hindmarsh & James Morrison
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **TUESDAY 2 FEB 1886**
+ L.M.

Clyde District
 Lloyd's Register Foundation