

REPORT ON MACHINERY.

No. 11144 Port of *Glasgow*
 No. in Survey held at *Dumbarton* Date, first Survey *4th March* Last Survey *14th Dec^r 91*
 Reg. Book. on the *S.S. "Ruahine"* (Number of Visits *26*)
 Master *H. E. Greenstreet* Built at *Dumbarton* By whom built *Wm. Denny & Co.* When built *1891*
 Engines made at *Dumbarton* By whom made *Denny & Co.* when made *1891*
 Boilers made at *"* By whom made *"* when made *1891*
 Registered Horse Power *624* Owners *New Zealand Shipping Co. Ltd.* Port belonging to *Plymouth*
402 as per rule

ENGINES, &c.

Description of Engines *Quadruple (2 cranks)* No. of Cylinders *4*
 Diam. of Cylinders *32" 64"* Length of Stroke *60"* Rev. per minute *"* Point of Cut off, High Pressure *variable* Low Pressure *"*
 Diameter of Screw shaft *18"* Diam. of Tunnel shaft *16 1/2"* Diam. of Crank shaft journals *18"* Diam. of Crank pin *18"* size of Crank webs *13"x26"*
 Diameter of screw *19 1/4"* Pitch of screw *25"* No. of blades *4* state whether moveable *Yes* total surface *103 ft²*
 No. of Feed pumps *Two* diameter of ditto *5 1/2"* Stroke *24"* Can one be overhauled while the other is at work *Yes*
 No. of Bilge pumps *Two* diameter of ditto *5 1/2"* Stroke *24"* Can one be overhauled while the other is at work *Yes*
 Where do they pump from *All Compartments*
 No. of Donkey Engines *Three* Size of Pumps *(2) 11 1/2" x 9" x 18" (Weirs)* Where do they pump from *Sea, Bilges, Hotwell & Ballast Tanks*
(2) 7 1/2" x 5" x 6" (Worthington)
 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 *1 1/2"* Are they connected to condenser, or to circulating pump *To circulating*
 How are the pumps worked *By Levers*
 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 *Near to*
 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 *Pipes to forward Combs* How are they protected *By broad 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 *On Slip before launching*
 Is the screw shaft tunnel watertight *Yes* and fitted with a sluice door *Yes* worked from *Upper platform*

BOILERS, &c.

No. of Boilers *Three* Description *Horizontal multitubular* Material *Steel* Letter (for record) *S*
 Working Pressure *180 lbs* Tested by hydraulic pressure to *360 lbs* Date of test *15th Oct 1891*
 Description of superheating apparatus or steam chest *None*
 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 *90 ft²* Description of safety valves *Direct Spring* No. to each boiler *Two*
 Area of each valve *11"* 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 *"* Diameter of boilers *13' 9 9/16"*
 Length of boilers *18' 1 1/2"* description of riveting of shell long. seams *Double straps* circum. seams *Double* Thickness of shell plates *1 3/8"*
 Diameter of rivet holes *1 3/8"* whether punched or drilled *Drilled* pitch of rivets *8 7/16"* Lap of plating *Straps*
 Percentage of strength of longitudinal joint *83 3/4%* working pressure of shell by rules *183 lbs* size of manholes in shell *14" x 13"*
 No. of compensating rings *Doubling plate* No. of Furnaces in each boiler *Six* Description of Furnaces *Cocks Comb fitted*
 Inside diameter *3' 5"* length *8 1/4 ft* thickness of plates *7/16"* description of joint *Welded* if rings are fitted *"*
 Greatest length between rings *23 1/2 ft* working pressure of furnace by the rules *197 lbs* combustion chamber plating, thickness, sides *7/16"* back *"* top *7/16"*
 Each of stays to ditto, sides *7/4" x 7/4"* back *"* top *7/4" x 7/4"* stays are fitted with nuts or riveted heads *Nuts* working pressure of plating by rules *184 lbs*
 Diameter of stays at smallest part *1 3/8"* working pressure of ditto by rules *190 lbs* plates in steam space, thickness *1 1/4" doubling*
 Each of stays to ditto *16" x 15"* how stays are secured *By double nuts* working pressure by rules *210 lbs* diameter of stays at smallest part *3" x 2 3/4"*
 working pressure by rules *210 lbs* Front plates at bottom, thickness *1 1/4"* Back plates, thickness *"*
 Greatest pitch of stays *"* working pressure by rules *"* Diameter of tubes *2 1/4"* pitch of tubes *3 1/2" x 3 1/2"* thickness of tube plates, front *12/16"* back *12/16"* how stayed *By tubes* pitch of stay *10 1/2" x 4"* width of water spaces *about 4"*
 Diameter of Superheater or Steam chest *None* length *"* thickness of plates *"* description of longitudinal joint *"* diam. of rivet holes *"*
 rivets *"* working pressure of shell by rules *"* diameter of flue *"* thickness of plates *"* If stiffened with rings *"*
 between rings *"* working pressure by rules *"* end plates of superheater, or steam chest; thickness *"* how stayed *"*
 Superheater or steam chest; how connected to boiler *"*

111776

DONKEY BOILER—

Description

Round multitubular

Made at *Lumbarton*

by whom made

Denny & Co

when made

1891

where fixed *Leek House*

Working pressure *180 lbs*

tested by hydraulic pressure to *360 lbs*

No. of Certificate *3090*

fire grate area *30 sq ft*

description of safety

valves *Direct Spring*

No. of safety valves *Two*

area of each *4"*

if fitted with easing gear *Yes*

if steam from main boiler's can enter the donkey boiler *No*

diameter of donkey boiler *10' 7 1/4"*

length *8' 0 3/8"*

description of riveting *Double butt*

Thickness of shell plates *1 1/16"*

diameter of rivet holes *1 1/16"*

whether punched or drilled *Drilled*

pitch of rivets *7"*

lap of plating *Double*

per centage of strength of joint *84.8%*

thickness of *End* plates *16/16"*

stayed by *Bar Stays*

2 3/8" dia 14 1/4" x 12 1/2"

description of joint *Double butt*

Comb joints

Diameter of furnace *3' 2 1/2"*

bottom *—*

length of furnace *5 ft*

thickness of plates *9/16"*

description of joint *Double butt*

Comb joints

Thickness of *Comb* plates *9/16"*

stayed by *1 3/8" Stays*

4 1/4" pitch

working pressure of shell by rules *186 lbs*

thickness of *tube* plates *13/16"*

thickness of *—* tubes *3" dia*

working pressure of furnace by rules *182 lbs*

diameter of uptake *—*

thickness of *—* plates *13/16"*

thickness of *—* tubes *3" dia*

working pressure of shell by rules *186 lbs*

working pressure of furnace by rules *182 lbs*

SPARE GEAR.

State the articles supplied:—

1 Half crank shaft. 1 Propeller shaft. 16 Coupling bolts. 2 Propeller blades.

1 Thomsons coupling. 1 Air & 1 Cir: pump rod. 1 Air pump bucket. 1 Head & 1 Foot valve. 1 set valves for air pumps. 1 do. Cir: pump.

1 do. Feed. 1 do. Bilge. 2 Main bearing bolts. 1 Pair crank pin bushes. 2 Conn: rod top end bolts & nuts. 2 do. bott end.

3 Valve spindles. 1 Quadrant bush. 2 Springs for safety valves. 1 do. Feed escape. 2 do. Cyl. escape. Springs for all pistons & piston rods.

The foregoing is a correct description.

20 Cond: tubes. 43 Boiler tubes. A large assortment of bolts & nuts.

Denny & Co

Manufacturers.

General Remarks

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

These Engines & Boilers

are of good materials & workmanship and are in good order & safe working condition and in our opinion to be noted in the Register.

M.C. 12/91

The Boilers in this vessel are fitted with a range of Force draught. And the Electric lighting is fitted by the Builders firm.

It is submitted that this vessel is in good order & safe working condition and in our opinion to be noted in the Register.

(Certificate (if required) to be sent to)

The amount of Entry Fee

£ *3* : : :

received by me.

Special

£ *55* : *2* : :

Donkey Boiler Fee

£ : : :

19/12/1891

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

(Travelling Expenses, if any, &c.)

Committee's Minutes

24 DEC 1891

Dec. 9 FEB 1892

Clyde District

Rule 12/91

Lloyd's Register Foundation