

REPORT ON MACHINERY.

No. Received at London Office 13
 No. in Survey held at London Date, first Survey Dec: 10/84 Last Survey Feb. 19th 1885
 Reg. Book. (Number of Visits 8) Tons
37 on the S. S. Rainbow
 Master Built at Dundee By whom built Gourlay Bros. When built 1871
 Engines made at Dundee By whom made Gourlay Bros. when made 1871
 Boilers made at Deptford By whom made Gen. St. Nav. Co. when made 1884
 Registered Horse Power 250 Owners Gen. St. Nav. Co. Port belonging to London

ENGINES, &c.—

Description of Engines

Diameter of Cylinders	Length of Stroke	No. of Rev. per minute	Point of Cut off, High Pressure	Low Pressure
Diameter of Screw shaft	Diam. of Tunnel shaft	Diam. of Crank shaft journals	Diam. of Crank pin	size of Crank webs
Diameter of screw	Pitch of screw	No. of blades	state whether moveable	total surface
No. of Feed pumps	diameter of ditto	Stroke	Can one be overhauled while the other is at work	
No. of Bilge pumps	diameter of ditto	Stroke	Can one be overhauled while the other is at work	
Where do they pump from				
No. of Donkey Engines	Size of Pumps	Where do they pump from		

Are all the bilge suction pipes fitted with roses Are the roses always accessible Are the sluices on Engine room bulkheads always accessible

No. of bilge injections and sizes Are they connected to condenser, or to circulating pump

How are the pumps worked

Are all connections with the sea direct on the skin of the ship Are they Valves or Cocks

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the discharge pipes above or below the deep water line

Are they each fitted with a discharge valve always accessible on the plating of the vessel Are the blow off cocks fitted with a spigot and brass covering plate

What pipes are carried through the bunkers How are they protected

Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times

Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges

When were stern tube, propeller, screw shaft, and all connections examined in dry dock

Is the screw shaft tunnel watertight and fitted with a sluice door worked from

BOILERS, &c.—

Number of Boilers Two Description Multitubular Whether Steel or Iron Iron

Working Pressure 65 lbs. Tested by hydraulic pressure to 130 lbs. Date of test Dec: 19th 1884

Description of superheating apparatus or steam chest Cylindrical

Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately yes

No. of square feet of fire grate surface in each boiler 49.5 Description of safety valves Direct spring No. to each boiler 2

Area of each valve 14.19 Are they fitted with easing gear yes No. of safety valves to superheater one area of each valve 3.14

Are they fitted with easing gear no Smallest distance between boilers and bunkers or woodwork 12" Diameter of boilers 12.7

Length of boilers 11.1 description of riveting of shell long. seams double lap circum. seams double Thickness of shell plates 3/8"

Diameter of rivet holes 1 1/8" whether punched or drilled punched pitch of rivets 3 3/4" Lap of plating 7/8"

Per centage of strength of longitudinal joint 70% working pressure of shell by rules 69 lbs. size of manholes in shell 15" x 12"

Size of compensating rings 4 x 4 x 5/8 angles No. of Furnaces in each boiler 3

Outside diameter 3.1 1/2 length, top 7.6 3/8 bottom 10.5 1/8 thickness of plates 7/16" description of joint welded if rings are fitted yes

Greatest length between rings 3.9 working pressure of furnace by the rules 122 lbs. combustion chamber plating, thickness, sides 7/16" back 7/16" top 7/16"

Pitch of stays to ditto, sides 9 x 8 back 10 x 7 top If stays are fitted with nuts or riveted heads nuts working pressure of plating by rules 67 lbs.

Diameter of stays at smallest part 1 1/8" working pressure of ditto by rules 73 lbs. end plates in steam space, thickness 3/4"

Pitch of stays to ditto 1.5 3/4 how stays are secured double nuts working pressure by rules 67 lbs. diameter of stays at smallest part 2 1/4"

working pressure by rules 74 lbs. Front plates at bottom, thickness 5/8" Back plates, thickness 5/8"

Greatest pitch of stays 10" working pressure by rules 120 lbs. Diameter of tubes 3 1/2" pitch of tubes 14 3/4" thickness of tube plates, front 11/16" back 11/16"

how stayed stay tubes pitch of stays 14" width of water spaces 5 1/4" diam. of rivet holes 7/8"

Diameter of Superheater or Steam chest 5.5 length 14.1 1/2 thickness of plates 5/8" description of longitudinal joint double lap

Pitch of rivets 2 1/16" working pressure of shell by rules 68 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 3/4" how stayed 8 chys. 2 1/2 dia

Superheater or steam chest; how connected to boiler Independent of boiler, connected by steam pipes

44726

DONKEY BOILER— Description *Upright Gallways tubes*
 Made at *Deptford* by whom made *L. S. N. Co.* when made *1884* where fixed *Shorehold*
 Working pressure *50 lbs.* tested by hydraulic pressure to *100* No. of Certificate *—* fire grate area *21 sq. ft.* description of safety
 valves *direct dead weight* No. of safety valves *2* area of each *7* if fitted with easing gear *yes* if steam from main boilers can
 enter the donkey boiler *yes* diameter of donkey boiler *5.10* length *9.10* description of riveting *double lap*
 Thickness of shell plates *1/2* diameter of rivet holes *3/4* whether punched or drilled *punched* pitch of rivets *2* lap of plating *4 3/4*
 per centage of strength of joint thickness of crown plates *5/8* stayed by *diag stays 1 1/2 dia.*
 Diameter of furnace, top *5.2 1/2* bottom *3.5* length of furnace *3.5* thickness of plates *1/2* description of joint *single lap*
 Thickness of furnace crown plates *5/8* stayed by *fire 1 1/2 dia. stays* working pressure of shell by rules *68 lbs.*
 Working pressure of furnace by rules *77 lbs.* diameter of uptake *1.2 1/2* thickness of plates *1/2* thickness of water tubes *3/8*

SPARE GEAR. State the articles supplied:—

The foregoing is a correct description,

Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c. *A new pair of boilers have been fitted also new donkey boiler. These boilers have not been surveyed during construction, the material & workmanship appear to be good & were satisfactorily tested with water to double their working pressure.*

Examined cylinders, high pressure found to be in good condition, the low pressure cylr. has been lined out & a cast iron liner together with a new piston fitted. Slides & cylinder faces in good condition. Examined, Air, Circulating, feed & bilge pumps & valves & pumping arrangements all in good condition. Crank, thrust & tunnel shafts in good condition.

Vessel placed in dry dock sea connections examined, found good donkey suction, & water service cocks have been fitted above stroke hold plates as per rules. Propeller disconnected, tail shaft drawn examined found in good condition, stern bush renewed & the whole refitted.

The vessel is eligible in my opinion to be marked L.M.C. 2.85.

The amount of Entry Fee .. £ — ; — : — received by me,
 Special .. *9/3/85* £ 3 : 3 : —
 Donkey Boiler Fee .. £ : :
 Certificate (if required) .. £ : : *3/2 1885*
 To be sent as per margin.

(Travelling Expenses, if any, £)

Committee's Minute

TUESDAY 10 MARCH 1885

Submitted for the vessel L.M.C. 2-85
eligible to have and N.B. 85
6.3.85
 Geo. E. McMillan
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.