

REPORT ON MACHINERY.

Port of Belfast

THUR 5 NOV 1896

Received at London Office

No. in Survey held at Belfast
of Book.

Date, first Survey July 28th

Last Survey 30th October 1896

(Number of Visits 25)

on the Steel Screw Steamer "Magician"

Tons { Gross 5065
Net 3271

Master Robert H. Jones Built at Belfast

By whom built Messrs Workman Clark & Co Ltd When built 1896

Engines made at Belfast

By whom made Messrs Workman Clark & Co Ltd when made 1896

Boilers made at "

By whom made " when made 1896

Registered Horse Power 500

Owners Messrs J & J Harrison

Port belonging to Liverpool

Tom. Horse Power as per Section 28 424

ENGINES, &c.— Description of Engines Triple Expansion No. of Cylinders Three

Diameter of Cylinders 25" 41" 68" Length of Stroke 54" Revolutions per minute 65 Diameter of Screw shaft as per rule 13.25" as fitted 14 1/2"

Diameter of Tunnel shaft as per rule 12.55" as fitted 13 1/2" Diameter of Crank shaft journals 14 1/4" Diameter of Crank pin 14 1/2" Size of Crank webs 19 1/2" x 10"

Diameter of screw 17' 6" Pitch of screw 19' 0" No. of blades 4 State whether moveable Yes Total surface 90°

No. of Feed pumps 2 Diameter of ditto 4" Stroke 24" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 24" Can one be overhauled while the other is at work Yes

No. of Donkey Engines Three Sizes of Pumps win dupl. feed 10" x 8" x 18" Corliss 2 R. feed 7" x 4" x 6" Ballast 4" x 9" x 9" No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room Three 3 1/2" In Holds, &c. No 1 hold, two 3 1/2" No 2 hold, & No 3

Header hold - Two 3 1/2" No 4 hold two 3 1/2" After hold well, one 3 1/2" Tunnel well, one 3"

No. of bilge injections 1 sizes 4" Connected to condenser, or to circulating pump Cir. p. Is a separate donkey suction fitted in Engine room & size Yes 3 1/2"

Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are the sluices on Engine room bulkheads always accessible None

Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Larger valves, smaller 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 bilge suction pipes How are they protected Strong wooden casing

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

Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges Yes

When were stern tube, propeller, screw shaft, and all connections examined in dry dock Before launch Is the screw shaft tunnel watertight Yes

Is it fitted with a watertight door Yes worked from Deck level

BOILERS, &c.— (Letter for record 3) Total Heating Surface of Boilers 7294 sq ft

No. and Description of Boilers Two double ended Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs

Date of test 23.7.96 Can each boiler be worked separately Yes Area of fire grate in each boiler 110 sq ft No. and Description of safety valves to each boiler Two Cockburn's Area of each valve 11.04 Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear Yes Smallest distance between boilers or uptakes and bunkers or woodwork 11" (3" air casing) Mean diameter of boilers 15' 0"

Length 14' 0" Material of shell plates Steel Thickness 1 1/16" Description of riveting: circum. seams ends double, long seams Other treble Yoke riveted but straps

Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" x 5" Lap of plates or width of butt straps 2 1/4" x 1 3/32"

Percentages of strength of longitudinal joint rivets 91.5 Working pressure of shell by rules 198 lbs Size of manhole in shell 16" x 12" plate 85.0

Size of compensating ring 27" x 23" x 1 1/16" No. and Description of Furnaces in each boiler Six Morrison Material Steel Outside diameter 44 1/8"

Length of plain part top 9 1/16" Thickness of plates crown 9 1/16" Description of longitudinal joint Welded No. of strengthening rings - bottom 9 1/16"

Working pressure of furnace by the rules 200 lbs Combustion chamber plates: Material Steel Thickness: Sides 9 1/16" Back 9 1/16" Top 9 1/16" Bottom 1 1/16"

Pitch of stays to ditto: Sides 7 7/8" x 7 3/4" Back - Top 7 7/8" x 7 7/8" If stays are fitted with nuts or riveted heads Nuts inside Working pressure by rules 182 lbs

Material of stays Steel Diameter at smallest part 1 3/8" Area supported by each stay 59" Working pressure by rules 200 lbs End plates in steam space: Material Steel Thickness 1 1/8" Pitch of stays 15 3/4" max How are stays secured As per rule Working pressure by rules 241 Material of stays Steel

Diameter at smallest part 2 1/2" Area supported by each stay 244" Working pressure by rules 186 lbs Material of Front plates at bottom Steel

Thickness 1 1/8" Material of Lower back plate - Thickness - Greatest pitch of stays As appx Working pressure of plate by rules 180 lbs

Diameter of tubes 3 1/4" Pitch of tubes 4 7/8" Material of tube plates Steel Thickness: Front 7/8" Back 7/8" Mean pitch of stays 9 1/4"

Pitch across wide water spaces 14 1/4" Working pressures by rules 180 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 7 1/2" x 1 1/2" dupl Length as per rule 40 1/4" Distance apart 7 3/4" x 7" Number and pitch of Stays in each 4 at 7 3/8"

Working pressure by rules 180 lbs Superheater or Steam chest; how connected to boiler - Can the superheater be shut off and the boiler worked separately - Diameter - Length - Thickness of shell plates - Material - Description of longitudinal joint - Diam. of rivet holes - Pitch of rivets - Working pressure of shell by rules - Diameter of flue - Material of flue plates - Thickness -

Is it stiffened with rings - Distance between rings - Working pressure by rules - End plates: Thickness - How stayed -

Working pressure of end plates - Area of safety valves to superheater - Are they fitted with easing gear -



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DONKEY BOILER— Description *Horizontal multitubular two flues.*
 Made at *Belfast* By whom made *Meyer Workman Clark & Co. Ltd.* When made *1896* Where fixed *Under bridge deck*
 Working pressure *90 lb.* tested by hydraulic pressure to *180 lb.* No. of Certificate *243* Fire grate area *28.17* Description of safety valves *Cockburn's*
 No. of safety valves *Two* Area of each *5.94* Pressure to which they are adjusted *90 lb.* If fitted with easing gear *Yes* If steam from main boilers enter the donkey boiler *No* Diameter of donkey boiler *10' 0"* Length *9' 0"* Material of shell plates *Steel* Thickness *5/8"*
 Description of riveting long seams *Lat. riv. lap* Diameter of rivet holes *7/8"* Whether punched or drilled *Drilled* Pitch of rivets *4"*
 Lap of plating *6 5/8"* Per centage of strength of joint Rivets *81.6* Thickness of shell plates *5/8"* *end* *1 1/2" for front & back plates* Radius of do. *No. of Stays to do. 18*
 Dia. of stays *1 3/4" (10 rods)* Diameter of furnace Top *3 1/2"* Bottom *3 1/2"* Length of furnace *6' 3"* Thickness of furnace plates *1/2"* Description *front 1 1/2" back 3/4"*
 joint *Double strap* Thickness of furnace plates *1 1/2" for top & bottom* Stayed by *1 1/2" stay 9" pitch* Working pressure of shell by rules *96*
 Working pressure of furnace by rules *105 lb.* Diameter of tubes *3"* Thickness of water tubes *1/4" - 1 1/2" for tubes*

SPARE GEAR. State the articles supplied:— *Pinn crank shafts. Sail shafts. Propeller box & blades. Set top & bottom end brasses & bolts. Air & circulating pump buckets rods & valves complete. Two feed & bilge pump valves & seals. H.P. piston packing. Springs for other pistons. Slide valve gear. H.P. eccentric & trap complete. Two main bearing bolts & nuts. Three sets coupling bolts. 50 Condenser tubes. Escape valve springs. Set main & donkey escape valve springs. Fire bars. Bolts. Tube stoppers. Lubricated iron etc.*
 The foregoing is a correct description,
MEYER WORKMAN, CLARK & CO., LIMITED, Manufacturer.
M. & C.

General Remarks (State quality of workmanship, opinions as to class, &c.)
 Dates of Survey while building } *Feb 28. March 16 April 13. 15. 23. May 6. 11. 28 June 9. 18. July 2. 9. 23*
 During erection on board vessel } *August 14. 24. 28. Sept. 3. Oct. 1. 5. 9. 15. 21. 23. 28. 30*
 Total No. of visits *25*

These engines & boilers have been constructed & fitted under special survey, in accordance with the Rules & with the approved tracings of boilers & pumping arrangements. The workmanship is good throughout. Each length of main steam pipe has been tested to double the working pressure by water & found good.

The engines had been erected in the works when the when the erecting shop was burnt down in July & it was thought that they might have sustained damage. The engines were accordingly taken apart & each part carefully examined. The piston rods, connecting rods, valve rods & spindles, & all the shafting were tried in the lathe found true & cleaned up where they had been discoloured. The cylinders were tested by steam pressure, & the condenser by water pressure & all the castings & other parts carefully examined; & the shafting was rebedded in the white metal bearings. The machinery worked well during a long test under steam at the moorings, & afterwards on the trial trip.

The electric lighting of the vessel has been carried out by Meyer W & Allen & Co & the report will be forwarded very shortly.

The approved tracings of main & donkey boilers & of pumping arrangements in engine room & holds, and the forging certificate for the shafting are enclosed.

The machinery in my opinion renders the vessel eligible for the certificate + **L.M.C. 10.96** to be entered in the Register Book.

Certificate (if required) to be sent to *Belfast*
 The amount of Entry Fee.. £ 3 : 0 : 0
 Special £ 41 : 4 : 0
 Donkey Boiler Fee £ **MACHINERY CERTIFICATE** When received,
 Travelling Expenses (if any) £ **WRITTEN.** 7-11-96
 It is submitted that this vessel is eligible for **THE RECORD.** + **L.M.C. 10.96**
A. L. Jones 5.11.96 R. 8.5
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute
 Assigned *+ L.M.C. 10.96*
TUES 10 NOV 1896
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