

REPORT ON MACHINERY.

Port of Newcastle-on-Tyne Received at London Office SAT 29 JUN 1895
 No. in Survey held at Newcastle-on-Tyne Date, first Survey Nov. 14th 1894 Last Survey June 30th 1895
 Reg. Book. (Number of Visits 28)
 on the Screw Steamer "Rakaia" Tonnage { Gross 5629.34
 Net 3660.40
 Master J. Wilson Built at Newcastle By whom built R. & H. Hawthorn, Leslie & Co. When built 1895
 Engines made at Newcastle By whom made R. & H. Hawthorn, Leslie & Co. when made 1895
 Boilers made at Newcastle By whom made R. & H. Hawthorn, Leslie & Co. when made 1895
 Registered Horse Power 600 Owners Les Jeune's Shipping Co. Port belonging to Plymouth
 Nom. Horse Power as per Section 28 436

ENGINES, &c.— Description of Engines Inverted, Triple Expansion, 3 Cylinders No. of Cylinders 3
 Diameter of Cylinders 30" 48" 78" Length of Stroke 54" Revolutions per minute 65 Diameter of Screw shaft as per rule 14 1/2"
 Diameter of Tunnel shaft as fitted 14" Diameter of Crank shaft journals 14 1/2" Diameter of Crank pin 15" Size of Crank webs 21 1/2" x 10"
 Diameter of screw 18.6" Pitch of screw 21.0" No. of blades 4 State whether moveable yes Total surface 110 sq. ft.
 No. of Feed pumps 2 Diameter of ditto 4 1/2" Stroke 27" Can one be overhauled while the other is at work yes
 No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 27" Can one be overhauled while the other is at work yes
 No. of Donkey Engines Two Sizes of Pumps 4" x 6", 12" x 10" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 3, one 4" dia., 2 of 3 1/2" dia. In Holds, &c. 10, 2 in Foremost hold, 2 in 1st hold, 2 in 2nd hold, 2 in after hold, 1 in Aftermost hold, and 1 in after well, all 3 1/2" dia.
 No. of bilge injections one size 7 1/2" dia. Connected to condenser, or to circulating pump is a separate donkey suction fitted in Engine room & size 4" dia.
 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 yes
 Are all connections with the sea direct on the skin of the ship a few valve chests fitted Are they Valves or Cocks Valves & 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 yes
 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 None How are they protected ✓
 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 29.5.95 Is the screw shaft tunnel watertight yes
 Is it fitted with a watertight door yes worked from upper platform

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 6415 sq. ft.
 No. and Description of Boilers 3, Cyl. built, Single Ended Working Pressure 160 lb. Tested by hydraulic pressure to 320 lb.
 Date of test 22.4.95 Can each boiler be worked separately yes Area of fire grate in each boiler 58 1/2 No. and Description of safety valves to
 each boiler 2 Spring valves Area of each valve 9.62" Pressure to which they are adjusted 160 lbs Are they fitted
 with easing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork way of boiler Mean diameter of boilers 14.3"
 Length 11.6" Material of shell plates Steel Thickness 1 1/2" Description of riveting: circum. seams double butt strap long. seams double butt strap
 Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 1 1/2" or 8 1/2" 5 1/2" of plates or width of butt straps outside 14 1/2", inside 22 1/2"
 Per centages of strength of longitudinal joint 94.1 Working pressure of shell by rules 160 lb. Size of manhole in shell 16" x 12"
 Size of compensating ring 7" x 4 1/2" No. and Description of Furnaces in each boiler 3, 15" dia. Material Steel Outside diameter 9.12, 9.10 1/4"
 Length of plain part top 3" Thickness of plates crown 1 1/2", S.C.B. 1 1/2" Description of longitudinal joint welded No. of strengthening rings none
 bottom 4" Working pressure of furnace by the rules 161 lb. Combustion chamber plates: Material Steel Thickness: Sides 9/16" Back 5/8" Top 9/16" Bottom 7/8"
 Pitch of stays to ditto: Sides 8 1/4" x 8" Back 9" x 8 1/2" Top 8" x 8" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 161 lb.
 Material of stays Steel Diameter at smallest part 1.75" Area supported by each stay 76.5" Working pressure by rules 180 lb. End plates in steam space:
 Material Steel Thickness 1 1/16" Pitch of stays 18 1/8" x 14" How are stays secured by nuts Working pressure by rules 162 lb. Material of stays Steel
 Diameter at smallest part 5.64" Area supported by each stay 253.65" Working pressure by rules 200 lb. Material of Front plates at bottom Steel
 Thickness 1 1/16" Material of Lower back plate Steel Thickness 3/32" Greatest pitch of stays 11 1/8" Working pressure of plate by rules 162 lb.
 Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" x 3 1/2" Material of tube plates Steel Thickness: Front 1 1/16" Back 3/4" Mean pitch of stays 9 1/4"
 Pitch across wide water spaces 12 5/8" Working pressures by rules 240 lb. Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 9 3/4" x 1 1/8" Length as per rule 2.8" Distance apart 8" Number and pitch of Stays in each 3 — 8"
 Working pressure by rules 172 lb. Superheater or Steam chest; how connected to boiler none 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 —
 If 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 —

DONKEY BOILER— Description *Vertical, "Zym" Patent*
Made at *Gateshead* By whom made *Clark Chapman & Co* When made *10/6/95* Where fixed *In Swan Dock*
Working pressure *90* tested by hydraulic pressure to *180 lbs* No. of Certificate *4599* Fire grate area *14 5* Description of safety valves *Spring*
No. of safety valves *2* Area of each *4.91* Pressure to which they are adjusted *90 lbs* If fitted with easing gear *yes* If steam from main boilers enter the donkey boiler *No* Diameter of donkey boiler *5'-0"* Length *11'-0"* Material of shell plates *Steel* Thickness *3/8"*
Description of riveting long. seams *Lap double rivet* Diameter of rivet holes *3/4"* Whether punched or drilled *drill* Pitch of rivets *2*
Lap of plating *3 1/2"* Per centage of strength of joint Rivets *76* Thickness of shell crown plates *9/16"* Radius of do. *5'-0"* No. of Stays to do. *4*
Dia. of stays *1 1/2"* Diameter of furnace Top *25"* Bottom *4'-4 1/2"* Length of furnace *3'-3"* Thickness of furnace plates *9/16"* Description joint *Lap single* Thickness of furnace crown plates *5 1/8"* Stayed by *tubes* Working pressure of shell by rules *102*
Working pressure of furnace by rules *90* Diameter of uptake *14"* Thickness of uptake plates *7/16"* Thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *2 Connecting rod top end & 2 Connecting rod bottom end bolts, 2 Main bearing bolts, 1st coupling bolts, 1st feed & tripe pump valves, assorted bolts & nuts, Iron of various sizes, also, Propeller shaft, 1 Propeller blade, 1 crank, 1 pair connecting rod brasses, 6 holding down bolts & nuts, 1st packing rings, 1 air pump & 1 circulating pump bucket rods etc. 1 air pump head valve etc. etc.*
The foregoing is a correct description,
R. & W. HAWTHORN, LESLIE & CO., LIMITED, Manufacturer.
H. Marshall

General Remarks (State quality of workmanship, opinions as to class, &c.) *The machinery of this vessel has been constructed under special survey, the materials and workmanship are sound and good and render the vessel eligible in our opinion to have the record of + L.M.C. 6. 95 in the Register Book.*

Howdens Forced draught
Electric lifting installation by Scott Mountain & Co particulars of which will be forwarded in due course

A.P. by Rule = 436 491

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 6. 95

J.P.R.
1.7.95

[Large signature]

Certificate (if required) to be sent to *Newcastle office*

The amount of Entry Fee..	£ 3 : -	When applied for,
Special	£ 41 : 16	26.6.1895
Donkey Boiler Fee	£ .. : ..	When received,
Travelling Expenses (if any) £	4 : ..	22.2.1895

Committee's Minute

TUES 2 JUL 1895

Assigned

+ L.M.C. 6. 95

E. Stoddart & G. A. Sturke
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
23/8/95



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Foundation