Rpt. 4.

REPORT ON MACHINERY.

No. 13982.

Port of Greenock

TUES. 5 JUL 1904

No. in Reg. Book. Survey held at Greenock. Date, first Survey 1st Oct/08 Last Survey 25th June 1904 (Number of Visits)

Received at London Office 19

on the Screw Steamer "Indian Monarch".

Master Built at Port Glasgow By whom built Russell & Co. Tons Gross Net

Engines made at Greenock By whom made Rankin & Blackmore when made 1904.

When built 1904.

Boilers made at Greenock. By whom made Rankin & Blackmore when made 1904.

Registered Horse Power Owners Kaelburn & Verel Port belonging to Glasgow

Nom. Horse Power as per Section 28 410. Is Refrigerating Machinery fitted No. Is Electric Light fitted No.

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

Dia. of Cylinders 26"-42"-70". Length of Stroke 48". Revs. per minute 62 Dia. of Screw shaft as per rule 14·6" as fitted 14·75" Material of screw shaft Iron.

Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes. Is the after end of the liner made water tight in the propeller boss Yes. If the liner is in more than one length are the joints burned? Yes. If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive ✓ If two liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 60".

Dia. of Tunnel shaft as per rule 12·9" 13·0 as fitted 13". Dia. of Crank shaft journals as per rule 13 5/8" 13·65 as fitted 13 5/8". Dia. of Crank pin 13 5/8". Size of Crank webs 9"×18½" Dia. of thrust shaft under collars 13 5/8". Dia. of screw 18'.0". Pitch of screw 17'.0". No. of blades 4. State whether moveable No. Total surface 96 sq. ft.

No. of Feed pumps 2 Diameter of ditto 3½" Stroke 24" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4½" Stroke 24" Can one be overhauled while the other is at work Yes.

No. of Donkey Engines Three Sizes of Pumps (Feed 7"×4½"×8") (Ballast 10"×6"×12") (Dry Bilge 4"×2½"×5") No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room Three: 3½" dia.

In Holds, &c. No. 1 Hold: Two-3½" dia. No. 2 Hold: Two-3½" dia. No. 3 (Deep Tank): Two-6" dia & Two-3½" dia. No. 4 Hold: Two-3½" dia. Tunnel Well: One-2½" dia.

No. of bilge injections 1 sizes 5½" Connected to condenser, or to circulating pump C. P. Is a separate donkey suction fitted in Engine room & size Yes: 3½" 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 ✓

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 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 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 New Vessel Is the screw shaft tunnel watertight Yes.

Is it fitted with a watertight door Yes. worked from Upper platform.

BOILERS, &c.— (Letter for record B.) Total Heating Surface of Boilers 5523 sq. ft. Is forced draft fitted Yes. ✓

No. and Description of Boilers Two: Cylinr. Mult. Single Ended. Working Pressure 180 lb. Tested by hydraulic pressure to 360 lb.

Date of test 26/5/04. Can each boiler be worked separately Yes. Area of fire grate in each boiler 59 sq. ft. No. and Description of safety valves to each boiler 2: Direct Spring. Area of each valve 11·04 □". Pressure to which they are adjusted 185 lb. Are they fitted with easing gear Yes.

Smallest distance between boilers or uptakes and bunkers or woodwork About 18". Mean dia. of boilers 15'.6". Length 11'.6". Material of shell plates Steel

Thickness 1 7/32" Range of tensile strength 29-32 tons Are they welded or flanged No. Descrip. of riveting: cir. seams Lap Double long. seams D'ble Butt Straps

Diameter of rivet holes in long. seams 1¼". Pitch of rivets 8¾" (1 row.) 4⅜" (2 rows.) ~~Lap of plates or~~ width of butt straps 18¼".

Per centages of strength of longitudinal joint rivets 85·6 plate 85·7 Working pressure of shell by rules 181 lb. Size of manhole in shell 16"×12".

Size of compensating ring 30×26×1 7/32 No. and Description of Furnaces in each boiler 3: Deightons. Material Steel Outside diameter 49½".

Length ~~of plain part~~ top bottom } 7'.9½". Thickness of plates crown bottom } 9/16". Description of longitudinal joint Weld. No. of strengthening rings None.

Working pressure of furnace by the rules 179 lb. Combustion chamber plates: Material Steel Thickness: Sides 9/16" Back 19/32" Top ⅝" Bottom ¾".

Pitch of stays to ditto: Sides 7¾"×7¾" Back 7⅝"×8½" Top 9"×8⅛" If stays are fitted with nuts or riveted heads Nuts. Working pressure by rules 183 lb.

Material of stays Steel Diameter at smallest part 1⅜". Area supported by each stay 65 □". Working pressure by rules 181 lb. End plates in steam space:

Material Steel Thickness 1". Pitch of stays 16"×15¼". How are stays secured D'ble Nuts. Working pressure by rules 183 lb Material of stays Steel

Diameter at smallest part 2 7/16" fact. Area supported by each stay 244 □". Working pressure by rules 194 lb Material of Front plates at bottom Steel

Thickness 13/16". Material of Lower back plate Steel Thickness 13/16". Greatest pitch of stays 12½". Working pressure of plate by rules 181 lb.

Diameter of tubes 2½". Pitch of tubes 3 23/32"×3 23/32" Material of tube plates Steel Thickness: Front ¾" Back ¾" (with ½" Outside Water Space.) Mean pitch of stays 9·3".

Pitch across wide water spaces 13¼". Working pressures by rules 207 lb (Front.) 231 lb (Back.) Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9½"×1¼". Length as per rule 31 11/16". Distance apart 8⅛". Number and pitch of Stays in each 2: 9".

Working pressure by rules 200 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

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DONKEY BOILER— No. One. Description Cylind.r Multr. with 2 plain furnaces.

Made at Greenock. By whom made Rankin & Blackmore. When made 24/5/04. Where fixed In Stokehold.

Working pressure 100 lbs tested by hydraulic pressure to 200 lbs No. of Certificate 637. Fire grate area 20 sq.ft. Description of safety valves Direct Spring

No. of safety valves 2 Area of each 5·9" Pressure to which they are adjusted 105 lbs If fitted with easing gear Yes. If steam from main boilers can enter the donkey boiler No. Dia. of donkey boiler 10'.0" Length 9'.0". Material of shell plates Steel Thickness 19/32". Range of tensile strength 29-32 tons Descrip. of riveting long. seams Lap: Treble. Dia. of rivet holes 1". Whether punched or drilled Drilled Pitch of rivets 4¼".

Lap of plating 4". Per centage of strength of joint Rivets 79 Plates 76·4. Thickness of shell ~~crown~~ top and plates 7/8". ~~Radius of do.~~ plates No. of Stays to do. 17½ & 19½.

Dia. of stays. 2 1/16" full. Diameter of furnace ~~Top~~ 36". ~~Bottom~~ Length of furnace 5'.9". Thickness of furnace plates ½". Description of joint Weld Thickness of ~~furnace crown~~ Corner Cor plates 9/16". Top 19/32". Back & sides Stayed by 1⅛" Stays Sides 8½x7½ Back 8½x7½ Top 8½x11 Working pressure of shell by rules 100 lbs.

Working pressure of furnace by rules 108 lbs. Diameter of ~~uptake~~ tubes 3½". Thickness of ~~uptake~~ tube plates 11/16". Thickness of ~~water~~ Stay tubes ¼ " Front 11/16 " B. Back 9/16.

SPARE GEAR. State the articles supplied :— 2 Crank pin Bolts & nuts. 2 Cross head Bolts & nuts 2 main Bearing Bolts & nuts. 1 set Coupling Bolts & nuts. set Feed & Bilge pump valves. Ramsbottom Rings for I.P. & H.P. pistons. 12 Boiler tubes 1 set crank pin bushes.

The foregoing is a correct description,

Rankin & Blackmore *Manufacturer.*

Dates of Survey while building — During progress of work in shops — 1903 Oct. 1.13. Nov: 3.5.10.13.17.20.26 Dec: 1.6.9.11.15.18.23.28.31. 1904 Jan 13.15.22.25.28. Feb. 9.4.17.18.24.

During erection on board vessel — Mar: 1.4.8.18.22.24.28.31. April 6.7.12.16.18.22.26.27. May 3.10.24.26.27. June 2.6.8.9.10.13.16.19.22.24.25.

Total No. of visits 60. Is the approved plan of main boiler forwarded herewith Yes.

" " " donkey " " " Yes.

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

The Engines and Boilers of this vessel have been built under Special Survey and the materials and workmanship are good. When completed they were examined while running full power trials in the Firth and found to work satisfactorily.

The Machinery throughout is now in good and efficient condition and eligible in my opinion to have the record of ✠LMC 6, 04 marked in the Society's Register Book.

It is submitted that this vessel is eligible for THE RECORD. + LMC 6.04. F.D.

H.S. 5.7.04 C.M. 5.7.04

(The Surveyors are requested not to write on or below the space for Committee's Minute.) Certificate (if required) to be sent to

The amount of Entry Fee	£ 3 : :	When applied for, 28.6.1904
Special	£ 40 : 10 :	
Donkey Boiler Fee	£ : :	When received, 30.6.1904
Travelling Expenses (if any)	£ : :	

Wm. R. Austin. Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute Glasgow - 2 JUL 1904

Assigned + LMC 6.04.

MACHINERY CERTIFICATE WRITTEN. 3.7.04

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