

REPORT ON MACHINERY.

Date of writing Report 19 When handed in at Local Office 23. 4. 1912 Port of Glasgow. Received at London Office WED. APR. 24. 1912

No. in Survey held at Glasgow Date, First Survey 2. 8. 10 Last Survey 20. 4. 1912.

Reg. Book. 90. on the S.S. "TAQUARY" (Number of Visits 44) Tons } Gross 1942
 Net 1598

Master T. J. Evangelista Built at Glasgow. By whom built Maecie & Thompson (N° 426) When built 1912

Engines made at Glasgow. By whom made Muir & Houston (N° 641) when made 1912.

Boilers made at Glasgow By whom made Muir & Houston (N° 641) when made 1912.

Registered Horse Power 243.4 Owners Cia Comercio e Navegacao Port belonging to Rio de Janeiro

Nom. Horse Power as per Section 28 243.4 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Twin screw Triple Surf. Cond? No. of Cylinders 6 No. of Cranks 6

Dia. of Cylinders 15" - 25" - 40" Length of Stroke 24" Revs. per minute 110 Dia. of Screw shaft as per rule 4.9 Material of Iron
 as fitted 8 1/8" screw shaft

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 ✓ 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 Yes If two liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 2'-8 1/2"

Dia. of Tunnel shaft as per rule 4.4 Dia. of Crank shaft journals as per rule 4.8 Dia. of Crank pin 8" Size of Crank webs 5" x 11" Dia. of thrust shaft under collars 8" Dia. of screw 9'-0" Pitch of Screw 12'-3" No. of Blades 4 State whether moveable No Total surface 35 #

No. of Feed pumps 4 Diameter of ditto 2 3/4" Stroke 13 1/2" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 4 Diameter of ditto 2 3/4" Stroke 13 1/2" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 4 Sizes of Pumps 1 Kent duplex 8x8x8 Ballad No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room 5-2 3/4" E.R. (P. & S.) 2 3/4" E. R. (P. & S.) 2 3/4" In Holds, &c. 7-2 3/4" thru. N° 1 Hold (S. & P) 2 3/4"; N° 2 Hold (S. & P) 2 3/4"; N° 3 Hold (S. & P) 2 3/4"; N° 4 Hold + Tunnel well 2 3/4"

No. of Bilge Injections 2 sizes 3 1/2" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine room & size Yes - 3"

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 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 For hold bilge suction How are they protected Wood casings

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

Dates of examination of completion of fitting of Sea Connections 15-1-12 of Stern Tube 14-1-12 Screw shaft and Propeller 17-1-12
15-1-12
23-1-12

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Top platform in E.R.

BOILERS, &c.—(Letter for record (S)) Manufacturers of Steel Glasgow Iron Works, Stewart & Lloyd, Steel Co. of Scotland.

Total Heating Surface of Boilers 4620 # Forced Draft fitted No. No. and Description of Boilers 2-Single ended

Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 24-11-1911 No. of Certificate 11299

Can each boiler be worked separately Yes Area of fire grate in each boiler 52 1/2 # No. and Description of Safety Valves to each boiler 2-2 3/4" spring loaded Area of each valve 5.93 # 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 13" Mean dia. of boilers 14'-6" Length 10'-6" Material of shell plates Steel

Thickness 1 3/16" Range of tensile strength 28/32 Are the shell plates welded or flanged Yes Descrip. of riveting: cir. seams D.R. long. seams T.R. D.B.S. Diameter of rivet holes in long. seams 1 3/16" Pitch of rivets 8" Lap of plates or width of butt straps 1'-5 1/2"

Per centages of strength of longitudinal joint rivets 84 Working pressure of shell by rules 182 lbs. Size of manhole in shell 16" x 12" plate 85

Size of compensating ring 24 x 31 x 1 1/16" No. and Description of Furnaces in each boiler 3 Thomson suspension Material Steel Outside diameter 3'-9 1/2"

Length of plain part top ✓ Thickness of plates crown 5 9/16" Description of longitudinal joint Weld No. of strengthening rings Nil bottom ✓

Working pressure of furnace by the rules 193 lbs. Combustion chamber plates: Material Steel Thickness: Sides 4 1/4" Back 4 1/4" Top 4 1/4" Bottom 1 3/16"

Pitch of stays to ditto: Sides 8 1/2 x 9" Back 8 x 9 1/2" Top 8 1/2 x 9" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 185 lbs.

Material of stays Steel Diameter at smallest part 1.43 # Area supported by each stay 46.5 # Working pressure by rules 181 lbs. End plates in steam space: Material Steel Thickness 1 1/32" Pitch of stays 18 x 19 1/2" How are stays secured D.N. Working pressure by rules 186 lbs. Material of stays Steel Diameter at smallest part 6.1 # Area supported by each stay 351 # Working pressure by rules 180 Material of Front plates at bottom Steel

Thickness 13/16" Material of Lower back plate Steel Thickness 1/2" Greatest pitch of stays 14" x 14" Working pressure of plate by rules 185 lbs.

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates Steel Thickness: Front 13/16" Back 13/16" Mean pitch of stays 9"

Pitch across wide water spaces 14 1/4" Working pressures by rules 249 lbs. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 8 1/2" x 1" (double) length as per rule 2'-10" Distance apart 9" Number and pitch of stays in each 3 - 8 1/2"

Working pressure by rules 196 lbs. Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked separately ✓

holes ✓ Diameter ✓ Length ✓ Thickness of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diam. of rivet ✓ 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 ✓

If not, state whether, and when, one will be sent? Is a Report also sent on the Hull of the Ship?

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. _____ Description _____

Made at _____ By whom made _____ When made _____ Where fixed _____

Working pressure tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of Safety Valves _____

No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____

If fitted with easing gear _____ If steam from main boiler can enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____

Material of shell plates _____ Thickness _____ Range of tensile strength _____ Descrip. of riveting long. seams _____

Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____ Lap of plating _____ Per centage of strength of joint _____ Rivets _____ Plates _____

Working pressure of shell by rules _____ Thickness of shell crown plates _____ Radius of do. _____ No. of stays to do. _____ Dia. of stays _____

Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace plates _____ Description of joint _____

Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Radius of do. _____ Stayed by _____

Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— 4 top end bolts nuts, 4 bottom end bolts nuts, 4 main bearing bolts, 1 set coupling bolts, 1 set feed & high pump valves, 2 Propellers (Right & left handed), 1 tail shaft, 1 set top end brasses, 1 valve spindle, 1 air pump rod, 1 live pump rod, 1 eccentric strap, 1 set bottom end brasses, quantity assorted bolts and nuts, boiler & condenser tubes.

The foregoing is a correct description,

Manufacturer. **MUIR & HOUSTON, LIMITED.**

John Mackay SECRETARY

Dates of Survey while building	During progress of work in shops	1911. Aug. 2-10-22-29-30. Sept 8-18-29. Oct. 11-19-24-26. Nov. 9-13-16-21-24-25-29. Dec. 4-11-13-15.
	During erection on board vessel	1912. Jan. 15-17-19-22-23-25-26-30. Feb. 5-9-12-16-17-19-21-23. Mar. 1. April 4-6-20.
	Total No. of visits	44

Is the approved plan of main boiler forwarded herewith *Yes* Advice *no*

Dates of Examination of principal parts—	Cylinders 8-9-11	Slides 19-10-11	Covers 8-9-11	Pistons 19-10-11	Rods 19-10-11
Connecting rods	8-9-11	Crank shaft 30-8-11	Thrust shaft 4-12-11	Tunnel shafts 15-12-11	Screw shaft 23-1-12
Stern tube	14-1-12	Steam pipes tested 12-2-12	Engine and boiler seatings 15-1-12	Engines holding down bolts 5-2-12	
Completion of pumping arrangements	19-2-12	Boilers fixed 21-2-12	Engines tried under steam 20-4-1912		
Main boiler safety valves adjusted	23-2-12	Thickness of adjusting washers	Pnt. Bl. P. $\frac{13}{32}$ S. $\frac{3}{8}$ Stk. Bl. P. $\frac{3}{8}$ S. $\frac{7}{16}$		
Material of Crank shaft	Steel	Identification Mark on Do.	2828 W.D.H.	Material of Thrust shaft	Iron
Material of Tunnel shafts	Iron	Identification Marks on Do.	N ^o 641 15-2-12 P.T.B.	Material of Screw shafts	Iron
Material of Steam Pipes	Copper	Test pressure	360lbs.		

General Remarks (State quality of workmanship, opinions as to class, &c. The materials and workmanship are good. The machinery and boilers of this vessel have been built under special survey in accordance with the rules and approved plans, securely fitted on board and satisfactorily tried under steam and is, in my opinion, eligible for classification with record + L.M.C. 4, 12.

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 4, 12

Ref made

9/28/12
24/4/12

P. J. Brown

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



The amount of Entry Fee	£ 2-0-0	When applied for,	23-4-12
Special	£ 32-3-0		
Donkey Boiler Fee	£ :	When received,	1-5-12
Travelling Expenses (if any)	£ :		

Committee's Minute **GLASGOW 23 APR. 1912**

Assigned + L.M.C. 4, 12.

MACHINERY CERTIFICATE WRITTEN 29/4/12

Glasgow

Certificate (if required) to be sent to

The Surveyors are requested not to write on or below the space for Committee's Minute.

Write "Bridge Sheer Strake" and "Upper Deck Sheerstrake" opposite the corresponding letter.