

REPORT ON MACHINERY.

No. 16374

WED. JAN. -8. 1913

Received at London Office

Date of writing Report 10 When handed in at Local Office 2/1/1913 Port of Greenock

No. in Survey held at Greenock Date, First Survey 19th April 1912 Last Survey 28th Dec. 1912

Reg. Book. on the **SCREW STEAMER "PENANG MARU."** (Number of Visits 54)

Tons { Gross 4966. Net 3145.

Master Built at Port Glasgow By whom built Russell & Co. When built 1912.

Engines made at Greenock By whom made Rankin & Blackmore when made 1912.

Boilers made at Greenock By whom made Rankin & Blackmore when made 1912.

Registered Horse Power Owners Messrs. Yuen Kabushiki Kaisha. Port belonging to Tokio.

Nom. Horse Power as per Section 28 488. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes.

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 66 Dia. of Screw shaft as per rule 14.6" Material of screw shaft Steel as fitted 14.2"

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 one length 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" Dia. of Crank shaft journals as per rule 13.6" Dia. of Crank pin 13.5" Size of Crank webs 19x8.5" Dia. of thrust shaft under collars 13.5" Dia. of screw 18.0" Pitch of Screw 17.6" No. of Blades 4 State whether moveable No Total surface 100 sq. ft.

No. of Feed pumps 1 Diameter of ditto 4.4" Stroke 24" Can one be overhauled while the other is at work WEIR'S FEED PUMPS. 2 9.5 x 4 x 21"

No. of Bilge pumps 2 Diameter of ditto 4.2" Stroke 24" Can one be overhauled while the other is at work Yes.

No. of Donkey Engines Two Sizes of Pumps 9x12x12 8x5x8. No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Four 3.5" dia. In Holds, &c. No. 1 HOLD. 2-3.5" dia. No. 2 HOLD. 2-3.5" dia. No. 3 HOLD. 2-3.5" dia. No. 4. HOLD. 2-3.5" dia. TUNNEL WELL. 1-2.5" dia.

No. of Bilge Injections 1 sizes 6.5" Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size Yes. 3.5"

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.

Dates of examination of completion of fitting of Sea Connections 18/11/12 of Stern Tube 18/11/12 Screw shaft and Propeller 18/11/12.

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.) Manufacturers of Steel Ship Coy of Scotland & Lanarkshire Ship Coy.

Total Heating Surface of Boilers 4348 sq. ft. Is Forced Draft fitted Yes. No. and Description of Boilers 3: Cylindrical: Mull: Single.

Working Pressure 180 lb. Tested by hydraulic pressure to 360 lb. Date of test 14/11/12 No. of Certificate 1085.

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 Loaded Area of each valve 11.04 sq. in. 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 4 feet. Mean dia. of boilers 15.0" Length 11.6" Material of shell plates Steel.

Thickness 1.76" Range of tensile strength 29 to 32 tons Are the shell plates welded or flanged No. Descrip. of riveting: cir. seams Lap Double.

long. seams Butt Straps Diameter of rivet holes in long. seams 1.32" Pitch of rivets 9.5" 4.57" Lap of plates or width of butt straps 1.62"

Per centages of strength of longitudinal joint rivets 88.9" plate 86. Working pressure of shell by rules 180 lb. Size of manhole in shell 16" x 12"

Size of compensating ring Plate flanged. No. and Description of Furnaces in each boiler 3: Daughton's Material Steel. Outside diameter 44.5"

Length of plain part top 4.64" bottom 4.64" Thickness of plates crown 9.16" bottom 9.16" Description of longitudinal joint Weld. No. of strengthening rings None.

Working pressure of furnace by the rules 186 lb. Combustion chamber plates: Material Steel. Thickness: Sides 4.5" Back 5" Top 4.5" Bottom 3.5"

Pitch of stays to ditto: Sides 8.5 x 9.5. Back 8.5 x 8.5. Top 8.5 x 9.5. If stays are fitted with nuts or riveted heads Nuts. Working pressure by rules 187 lb.

Material of stays Steel. Diameter at smallest part 1.5" Area supported by each stay 72 sq. in. Working pressure by rules 222 lb. End plates in steam space:

Material Steel. Thickness 1.74" Pitch of stays 21 x 15.5. How are stays secured Dible Nuts. Working pressure by rules 180 lb. Material of stays Steel.

Diameter at smallest part 2.4" Area supported by each stay 325 sq. in. Working pressure by rules 189 lb. Material of Front plates at bottom Steel.

Thickness 1.6" Material of Lower back plate Steel. Thickness 1.6". Greatest pitch of stays 13.5" Working pressure of plate by rules 184 lb.

Diameter of tubes 3". Pitch of tubes 4.52 x 4.52. Material of tube plates Steel. Thickness: Front 1.6 with 1/2" Back 1.4" Mean pitch of stays 8.31".

Pitch across wide water spaces 14". Working pressures by rules 207 lb. 227 lb. Girders to Chamber tops: Material Steel. Depth and thickness of girder at centre 10" x 1.5". Length as per rule 34.6". Distance apart 9.5". Number and pitch of stays in each 3: 8.5"

Working pressure by rules 182 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

006067-006079-0170

VERTICAL DONKEY BOILER— Manufacturers of Steel.

No. *None* 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 boilers 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:— *Low Press Piston Packing Ring & Spring, 1 set H.P. Piston Rings, 1 set L.P. Piston Rings, 1 set Crank pin bushes, 2 Eccentric Straps, 2 Eccentric Rods, 3 Slide Spindles, 1 Air Pump Rod, 1 Air Pump Rod, 50 Condenser tubes, 1 Propeller shaft & Propeller, 3 Crank shaft, 2 main Bearing Bolts, 2 Crank pin bolts, 2 Crosshead Bolts, 1 capst. valve seat & Springs, 1 set Air Pump valves, 1 set Crosshead bushes, 1 set Feed Pump valves, 1 set Relief pump valves, 11 Piston Stoppers, 6 Joint Ring Bolts, 12 main Boiler tubes, 1 set Circulating pump valves, 3 Cylinder Escape valve springs, 12 Coupling Bolts, 6 Holding down Bolts, 4 Lumber cover*

The foregoing is a correct description, _____

Rankin & Blackmore Manufacturer. *Stair Bolts (that) and 1 ton of various sizes.*

Dates of Survey while building

During progress of work in shops ---	1912. April 19. May 8. 15. 17. 20. 24. 25. June 5. 10. 14. 19. 26. July 1. 23. 30. Aug. 5. 14. 20. 22. 26. Sept. 4. 10.
	During erection on board vessel ---
	16. 19. 24. Oct. 1. 3. 10. 11. 16. 19. 23. 29. Nov. 5. 7. 8. 14. 18. 19. 22. 25. 28. Dec. 4. 5. 6. 7. 9. 10. 11. 13. 14. 23. 24. 28.

Total No. of visits **54** Is the approved plan of main boiler forwarded herewith **Yes**

" " " donkey " " " **Yes**

Dates of Examination of principal parts—Cylinders *11/10/12* Slides *10/9/12* Covers *11/10/12* Pistons *11/10/12* Rods *20/5/12*

Connecting rods *20/5/12* Crank shaft *See Report* Thrust shaft *5/11/12* Tunnel shafts *11/10/12* Screw shaft *3/10/12* Propeller *5/11/12*

Stern tube *5/11/12* Steam pipes tested *See Gls. Report* Engine and boiler seatings *15/11/12* Engines holding down bolts *11/12/12*

Completion of pumping arrangements *11/12/12* Boilers fixed *24/12/12* Engines tried under steam *28/12/12*

Main boiler safety valves adjusted *23/12/12* Thickness of adjusting washers *P.B. 5 7/16, P.V. 5 3/16, C.B. 5 1/2, P.V. 5, S.B. 5 1/2, P.V. 1 1/4*

Material of Crank shaft *Steel* Identification Mark on Do. *2641* Material of Thrust shaft *Steel* Identification Mark on Do. *1140*

Material of Tunnel shafts *Steel* Identification Marks on Do. *1141* Material of Screw shafts *Steel* Identification Marks on Do. *1142*

Material of Steam Pipes *Wrot. Iron* Test pressure *See Glasgow Report, 540 lbs*

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

The Engines and Boilers of this vessel were built under Special Survey and the materials and workmanship are good. When completed they were scanned under steam, when working at full power, and found to run satisfactorily.

The machinery throughout is now in good and efficient condition and will be eligible in my opinion to have the record of **LMC**, with date marked in the Society's Register Book, when the Starboard Boiler Safety valves (which are not carrying the full pressure) have been readjusted, and two manhole doors on the Centre Boiler have been renewed on account of leaky studs.

For Endorsement see Lon. Rpt. No. 75278

The amount of Entry Fee .. £ 3	When applied for, .. 2/11/1913
Special .. £ 44	8
Donkey Boiler Fee .. £	
Travelling Expenses (if any) £	When received, .. 3/11/1913

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

Committee's Minute **GLASGOW** 7-JAN. 1913

Assigned *Deferred for comple*

TUE. JAN. 14. 1913

+ *L.M.C. 1/13*

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Certificate (if required) to be sent to Greenock

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