

REPORT ON MACHINERY.

Port of Leith

Received at London Office

No. in Survey held at Leith Date, first Survey 20th March Last Survey 18th Oct 1901
Reg. Book. (Number of Visits 22.)

on the S.S. "Rajah of Sarawak"

Tons { Gross 1451.83
Net 892.03

Master Alfred Baker Built at Leith By whom built Ramage & Ferguson Ltd. When built 1901

Engines made at Leith By whom made do when made 1901

Boilers made at do By whom made do when made 1901

Registered Horse Power 175 Owners Bolmer Co Ltd Port belonging to Sarawak

Nom. Horse Power as per Section 28 175 Is Refrigerating Machinery fitted No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple expansion No. of Cylinders 3 No. of Cranks 3
 Dia. of Cylinders 19" - 31" - 50" Length of Stroke 36" Revs. per minute 85 Dia. of Screw shaft as per rule 10.94" Lgth. of stern bush 48"
 Dia. of Tunnel shaft as per rule 9.39" Dia. of Crank shaft journals as per rule 9.85" Dia. of Crank pin 10 1/4" Size of Crank webs 16" x 7" Dia. of thrust shaft under collars 10" Dia. of screw 12' 6" Pitch of screw 14' 6" No. of blades 4 State whether moveable No Total surface 50 sq
 No. of Feed pumps 2 Diameter of ditto 3" Stroke 15 1/2" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 3 1/2" Stroke 15 1/2" Can one be overhauled while the other is at work Yes
 No. of Donkey Engines 2 Sizes of Pumps 6 x 4 x 6 & 7 1/2 x 5 1/2 x 15" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room one centre 2 1/4" two wing 2" In Holds, &c. Fore hold two 2 1/2" After hold one 2 1/2" Tunnel well one 2 1/4"
 No. of bilge injections 1 sizes 4 3/4" Connected to condenser or to circulating pump Yes Is a separate donkey suction fitted in Engine room & size Yes 2 1/4"
 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 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 Suctions to fore hold How are they protected Wood 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 Nov 1901 Is the screw shaft tunnel watertight Yes
 Is it fitted with a watertight door Yes worked from Top platform.

BOILERS, &c.— (Letter for record S.) Total Heating Surface of Boilers 2930.8 Is forced draft fitted No
 No. and Description of Boilers Two, multitubular jingle-ended Working Pressure 170 lbs Tested by hydraulic pressure to 340 lbs
 Date of test 21/8/01 Can each boiler be worked separately Yes Area of fire grate in each boiler 45 sq No. and Description of safety valves to each boiler Two, Spring Area of each valve 5.94 sq Pressure to which they are adjusted 175 lbs Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 12" Mean dia. of boilers 12' 6" Length 10' 3" Material of shell plates Steel
 Thickness 1 1/8" Range of tensile strength 29/32 Are they welded or flanged No Descrip. of riveting: cir. seams Top & Riv long. seams S.B.S.L Riv
 Diameter of rivet holes in long. seams 1 3/16" Pitch of rivets 8 3/8" Lap of plates or width of butt straps 18 1/2"
 Per centages of strength of longitudinal joint rivets 87.3 Working pressure of shell by rules 196 lbs Size of manhole in shell 16" x 14"
 Size of compensating ring McKeils No. and Description of Furnaces in each boiler 2 Brighton's Material Steel Outside diameter 49"
 Length of plain part top Thickness of plates crown 19/32 Description of longitudinal joint Welded No. of strengthening rings —
 Working pressure of furnace by the rules 192 lbs Combustion chamber plates: Material Steel Thickness: Sides 5/8" Back 2/32" Top 5/8" Bottom 5/8"
 Pitch of stays to ditto: Sides 8" Back 9" x 8" Top 8" x 7 3/4" If stays are fitted with nuts or rivet heads Nuts Working pressure by rules 184 lbs
 Material of stays Steel Diameter at smallest part 1.45" Area supported by each stay 64 sq Working pressure by rules 181 lbs End plates in steam space:
 Material Steel Thickness 1 1/32" Pitch of stays 15" x 15" How are stays secured S.N. & W. Working pressure by rules 223 lbs Material of stays Steel
 Diameter at smallest part 4.57" Area supported by each stay 225 sq Working pressure by rules 183 lbs Material of Front plates at bottom Steel
 Thickness 15/16" Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 13 1/2" Working pressure of plate by rules 202 lbs
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 3/8" Material of tube plates Steel Thickness: Front 15/16" Back 13/16" Mean pitch of stays 9"
 Pitch across wide water spaces 14 1/2" 3/4" doubling Working pressures by rules 192 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 7 1/4" x 1 3/4" Length as per rule 28" Distance apart 7 3/4" Number and pitch of Stays in each 2 - 8"
 Working pressure by rules 209 lbs 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— No. 1 Description *vertical with x tubes*
 Made at *Stockton* By whom made *Riley Bros* When made *18/6/01* Where fixed *Stokehold*
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *2503* Fire grate area *16 sq* Description of safety valves *Spring*
 No. of safety valves *2* Area of each *4.91 sq* Pressure to which they are adjusted *80 lbs* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Dia. of donkey boiler *5' 6"* Length *11' 0"* Material of shell plates *steel* Thickness *13/32"* Range of tensile strength *27/32* Descrip. of riveting long. seams *Lap & Rivd.* Dia. of rivet holes *13/16"* Whether punched or drilled *punched* Pitch of rivets *2 1/2"*
 Lap of plating *4 1/4"* Per centage of strength of joint Rivets *80.9* Thickness of shell crown plates *17/32"* Radius of do. *5 ft* No. of Stays to do. *6*
 Dia. of stays. *1 1/2" eff.* Diameter of furnace Top *4' 3"* Bottom *4' 11 1/4"* Length of furnace *4' 8"* Thickness of furnace plates *21/32"* Description of joint *Lap & Rivd.* Thickness of furnace crown plates *5/8"* Stayed by *as above* Working pressure of shell by rules *93 lbs*
 Working pressure of furnace by rules *117 lbs* Diameter of uptake *13"* Thickness of uptake plates *7/16" iron* Thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *2 top-end 2 bottom-end & 2 main bearing bolts & nuts, 1 set of coupling bolts, 1 set feed & bilge pump valves, a quantity of assorted bolts nuts & iron. A solid propeller, a screw shaft, 1/3" crank shaft, H.P. piston rings, 1 air & 1 circulating pump rods, 2 main 1 donkey safety valve springs, 12 condensers & 6 boiler tubes.*
 The foregoing is a correct description.

RAMAGE & FERGUSON, Limited. Manufacturer.

John I. Ramage
 Dates of Survey { During progress of work in shops - - - 1901 *Mar 26* Apr. 1. 12. 25. 26. May 10. 17. 23. 24. 29. 30. Jun. 18. 24. while board vessel - - - July 10. 18. Aug 2. 15. 21. 27. 29. Sept 10. 25. Oct 1. 2. 7. 10. 18. building Total No. of visits 27. }
 Is the approved plan of main boiler forwarded herewith *yes*
 " " " donkey " " " *yes*

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

Material of screw shaft *steel iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *no*
 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 *no*
 If the liner does not fit tightly at the part between the bearings on the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive *no* If two liners are fitted, is the shaft lapped or protected between the liners *no*

The engines & boilers of this vessel have been constructed under special survey & the materials & workmanship are found to be good. The engines have been tried under steam & the safety valves of main & donkey boilers adjusted at the working pressures. The machinery is now in good order & safe working condition & eligible in my opinion to have the notation of + LMC 10,01. A report on the electric installation will be forwarded when received from the electricians.

It is submitted that this vessel is eligible for THE RECORD. + LMC 10.01. Elec light

The amount of Entry Fee. . . £ 2 : - +
 Special . . . £ 26 5 : -
 Donkey Boiler Fee . . . £ - : -
 Travelling Expenses (if any) £ - : -

Thos. Field
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
 21.10.01

Committee's Minute

FRI. OCT 25 1901

FRI. 28 OCT 1932
 TUE. 24 JAN 1933

Assigned

+ LMC 10,01

MACHINERY CERTIFICATE WRITTEN.



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