

REPORT ON MACHINERY.

No. 21.364

Port of Hull Received at London Office WED. 30 JUN 1909
 No. in Survey held at Hull Date, first Survey Sep. 28/08 Last Survey Jun 11th 1909
 Reg. Book. on the Screw Steamer "Sun II" (Number of Visits 51)
 Master Hull Built at Hull By whom built Messrs Earles & Co Ltd Tons { Gross 199
 Engines made at } Hull By whom made } Messrs Earles & Co Ltd when made 1909
 Boilers made at } Hull By whom made } Messrs Earles & Co Ltd when made 1909
 Registered Horse Power 98.69 Owners W. H. J. Alexander Port belonging to London
 Nom. Horse Power as per Section 28 98.69 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3
 Dia. of Cylinders 15" ~ 24" ~ 40" Length of Stroke 24" Revs. per minute 115 Dia. of Screw shaft as per rule 2.66 Material of Steel
 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 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 50"
 Dia. of Tunnel shaft as per rule 7.39 Dia. of Crank shaft journals as per rule 7.76 Dia. of Crank pin 7 1/2" Size of Crank webs 15" x 5 1/2" Dia. of thrust shaft under
 collars 4 1/2" Dia. of screw 10" 0' Pitch of Screw 12' ~ 0" No. of Blades 3 State whether moveable No Total surface 36 sq
 No. of Feed pumps 2 Diameter of ditto 2 1/4" Stroke 18" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 2 1/4" Stroke 18" Can one be overhauled while the other is at work Yes
 No. of Donkey Engines One Sizes of Pumps 6" x 4" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Two 2", one 2" under blr. In Holds, &c. One 2" to each, the aft cabin,
fore cabin, fore peak, and aft peak.
 No. of Bilge Injections one sizes 3 1/2" Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine room & size Yes 2"
 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 0
 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 Yes
 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 24.4.09 of Stern Tube 24.4.09 Screw shaft and Propeller 24.4.09
 Is the Screw Shaft Tunnel watertight No Is it fitted with a watertight door Yes worked from Yes

BOILERS, &c.—(Letter for record S) Manufacturers of Steel Phoenix Act. Ges. fur. Berg. Hoerder. Dusseldorf.
 Total Heating Surface of Boilers 1636 sq Is Forced Draft fitted No No. and Description of Boilers One Cyl. Multi Single Ended
 Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 21.4.09 No. of Certificate 1699
 Can each boiler be worked separately Area of fire grate in each boiler 50 sq No. and Description of Safety Valves to
 each boiler Two Spring Area of each valve 4.9 sq 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 5' Mean dia. of boilers 13' 0" Length 11' 0" Material of shell plates Steel
 Thickness 1 1/2" Range of tensile strength 28-32 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams L.D.
 long. seams D.A.B.Y.C. Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 4 1/2" Lap of plates or width of butt straps 16 1/2"
 Per centages of strength of longitudinal joint 86.6 Working pressure of shell by rules 181 lbs Size of manhole in shell 16" x 12"
 Size of compensating ring 28" x 31" x 1 1/2" No. and Description of Furnaces in each boiler 2 Deightons Material Steel Outside diameter 50 1/2"
 Length of plain part top 19" Thickness of plates bottom 32" Description of longitudinal joint Welded No. of strengthening rings 0
 Working pressure of furnace by the rules 187 lbs Combustion chamber plates: Material Steel Thickness: Sides 3/32" Back 21/32" Top 1/16" Bottom 32"
 Pitch of stays to ditto: Sides 8" x 9 1/2" Back 8 1/4" x 9 1/4" Top 9 1/2" x 9 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 188 lbs
 Material of stays Steel Diameter at smallest part 1 1/2" Area supported by each stay 76.3 sq Working pressure by rules 185 lbs End plates in steam space:
 Material Steel Thickness 1 1/8" Pitch of stays 18" x 17" How are stays secured D.N. Working pressure by rules 185 lbs Material of stays Steel
 Diameter at smallest part 2 1/2" Area supported by each stay 306 sq Working pressure by rules 211 lbs Material of Front plates at bottom Steel
 Thickness 31" Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 14 3/4" x 8 1/4" Working pressure of plate by rules 185 lbs
 Diameter of tubes 3 3/4" Pitch of tubes 5" x 5" Material of tube plates Steel Thickness: Front 3/32" Back 1/16" Mean pitch of stays 10"
 Pitch across wide water spaces 14 3/4" Working pressures by rules 187 lbs Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 8 1/2" x 17 1/4" Length as per rule 2' ~ 6 1/2" Distance apart 9 1/2" Number and pitch of stays in each Two 9 1/2"
 Working pressure by rules 217 lbs Superheater or Steam chest; how connected to boiler 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

VERTICAL DONKEY BOILER—

Manufacturers of Steel

No.	Description	By whom made	When made	Where fixed
Made at	tested by hydraulic pressure to	Date of test	No. of Certificate	Fire grate area
Valves	No. of Safety Valves	Area of each	Pressure to which they are adjusted	Description of Safety
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
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	Stayed by	Dates of survey	
Diameter of uptake	Thickness of uptake plates	Thickness of water tubes		

SPARE GEAR. State the articles supplied:—Two each top and bottom end connecting rod bolts and nuts, two main bearing bolts and nuts, one set coupling bolts and nuts, one set each feed and bilge pump valves, and a quantity of assorted bolts nuts etc

The foregoing is a correct description,

F. J. Falthorpe Manufacturer.

Dates of Survey while building: During progress of work in shops—1908—Sep 28, Nov 17, 20, 25, Dec 4, 7, 9, 16, 17, 22, 23, 1909—Jan 8, 11, 19, 22, 29, 30, Feb 3, 9, 13, 15, 24, 25, 26, Mar 3, 12, 19, 26, 27, 31, Apr 5, 7, 14, 21, 23, 24, 26, 30, May 1, 5, 6, 7, 11, 13, 15, 17, 18, 20, 21, 25, Jun 11. Total No. of visits 51.

Is the approved plan of main boiler forwarded herewith Yes

Dates of Examination of principal parts—Cylinders 27.3.09 Slides 5.4.09 Covers 14.4.09 Pistons 5.4.09 Rods 19.3.09 Connecting rods 19.3.09 Crank shaft 24.2.09 Thrust shaft 27.3.09 Tunnel shafts 27.3.09 Screw shaft 23.4.09 Propeller 26.4.09 Stern tube 23.4.09 Steam pipes tested 6.5.09 Engine and boiler seatings 26.4.09 Engines holding down bolts 25.5.09 Completion of pumping arrangements 11.6.09 Boilers fixed 25.5.09 Engines tried under steam 25.5.09 Main boiler safety valves adjusted 25.5.09 Thickness of adjusting washers $\frac{3}{8}$ " - $\frac{5}{16}$ "

Material of Crank shaft Steel Identification Mark on Do. 2186 ATG Material of Thrust shaft Steel Identification Mark on Do. 3013 PA
Material of Tunnel shafts Steel Identification Marks on Do. 4264 KH Material of Screw shafts Steel Identification Marks on Do. 3015 PA
Material of Steam Pipes Solid drawn Copper Test pressure 360 lbs

General Remarks (State quality of workmanship, opinions as to class, &c. The Machinery of this vessel has been constructed under special survey in general conformity with the Rules. The boiler built in accordance with the approved plan, and the Secretary's letter of the 23.10.08. The material and workmanship are sound and good. The boiler tested by hydraulic pressure found satisfactory, and with the engines secured on board and tried under steam. They are now in good order and safe working condition, and respectfully submitted as being eligible in my opinion to be classed with the notation of $\frac{1}{2}$ L.M.C. 6.09. in the Register Book.

It is submitted that this vessel is eligible for THE RECORD. + LMC 6.09.

J.W.D. ARR 1.7.09

The amount of Entry Fee. £ 1 : : : When applied for, 29.6.09
Special £ 14 : 17 : : : When received, 24.7.09
Donkey Boiler Fee £ : : :
Travelling Expenses (if any) £ : : :
Committee's Minute FRI. 2 JUL 1909
Assigned + Lmb 6.09

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