

REPORT ON MACHINERY.

No. 24695

Port of Sunderland Received at London Office 12 JAN 1911

No. in Survey held at Sunderland Date, first Survey Dec-7-1909 Last Survey 3 Jan 1911

Reg. Book. S.S. "Sir Arthur" (Messrs S.P. Austin & Sons) No. 255 (Number of Visits 110) Tons Gross 2001

Master Street Built at Sunderland By whom built S.P. Austin & Sons Ltd When built 1910

Engines made at Sunderland By whom made Messrs G. Clark Ltd (No 921) when made 1910

Boilers made at do By whom made do do when made do

Registered Horse Power _____ Owners W. Cory & Son Ltd Port belonging to London

Nom. Horse Power as per Section 28 208 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 21 x 34 x 56 Length of Stroke 39 Revs. per minute 65 Dia. of Screw shaft as per rule 11.9 Material of screw shaft Steel

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 ✓ If two liners are fitted, is the shaft lapped or protected between the liners _____ Length of stern bush 4'-0 1/2"

Dia. of Tunnel shaft as per rule 10.5 Dia. of Crank shaft journals as per rule 4.12 Dia. of Crank pin 11 1/8 Size of Crank webs 16 1/2 x 4 1/2 Dia. of thrust shaft under collars 11 3/4 Dia. of screw 11'-9" Pitch of Screw 15'-4 1/4" No. of Blades 4 State whether moveable no Total surface 63 sq ft

No. of Feed pumps 2 Diameter of ditto 2 1/2" Stroke 20 Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 3 1/2" Stroke 20 Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 Sizes of Pumps Ballast tray 9 x 10 x 10" Red tray 6 x 4 x 6" No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room 4 @ 3" In Holds, &c. aft hold 2 @ 3" Funnel well

No. of Bilge Injections 1 sizes 4" Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size yes 5"

Are all the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible _____ 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 8-6-10 of Stern Tube 8-6-10 Screw shaft and Propeller 30-12-10

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) Manufacturers of Steel Spencer & Sons Ltd

Total Heating Surface of Boilers 3140 sq ft Is Forced Draft fitted no No. and Description of Boilers Two single ended

Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 28-4-10 No. of Certificate 2827

Can each boiler be worked separately yes Area of fire grate in each boiler 46.3 sq ft No. and Description of Safety Valves to each boiler Two direct spring Area of each valve 6.49 sq ft 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 12" Mean dia. of boilers 13'-3 1/2" Length 10'-9" Material of shell plates Steel

Thickness 1 3/8" Range of tensile strength 28-32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams D.R.

long. seams T.R.D.B.S 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 5/8"

Per centages of strength of longitudinal joint rivets 90 plate 85 Working pressure of shell by rules 184 lbs Size of manhole in shell end 16" x 13"

Size of compensating ring flanged No. and Description of Furnaces in each boiler 3 Plain Material Steel Outside diameter 40 1/2"

Length of plain part top 4'-2 1/2" bottom _____ Thickness of plates crown 1 1/2" bottom 1 1/4" Description of longitudinal joint weld No. of strengthening rings none

Working pressure of furnace by the rules 182 1/2 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 1/16" Back 2 1/2" Top 1 1/16" Bottom 3 1/2"

Pitch of stays to ditto: Sides 9 x 9 1/2" Back 9 1/2 x 10 1/2" Top 10 x 8 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 182 lbs

Material of stays Steel Diameter at smallest part 1 1/2" Area supported by each stay 94 sq in Working pressure by rules 184 lbs End plates in steam space: Material Steel Thickness 1 1/2" Pitch of stays 22 1/2 x 19 How are stays secured D. nuts Working pressure by rules 184 lbs Material of stays Steel

Diameter at smallest part 2.16 Area supported by each stay 361 sq in Working pressure by rules 191 lbs Material of Front plates at bottom Steel

Thickness 1 1/16" Material of Lower back plate Steel Thickness 3 1/2" Greatest pitch of stays 15" Working pressure of plate by rules 184 lbs

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates Steel Thickness: Front 1 1/16" Back 2 1/2" Mean pitch of stays 10.2

Pitch across wide water spaces 14" x 14" Working pressures by rules 267 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9 1/2" x 13 1/4" Length as per rule 25 1/16" Distance apart 10" Number and pitch of stays in each 3 @ 8 1/8"

Working pressure by rules 180 lbs Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked separately _____ 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 _____

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

Lloyd's Register
w 542-0256
Foundation

VERTICAL DONKEY BOILER

Manufacturers of Steel

No. _____ Description *See separate report.*

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 _____ Stayed by _____

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

SPARE GEAR. State the articles supplied: *Propeller, 2 Gun rods top end bolts & nuts, 2 Gun rod bottom end bolts & nuts, 1 set coupling bolts, 2 Main Bearing bolts & nuts, 1 set of valves for Air, Circulating, Feed & Bilge Pumps, 2 safety valve springs, Assorted bolts, nuts & iron*

The foregoing is a correct description, **FOR GEORGE CLARK LIMITED.**

Manufacturers

James C. Clark

Dates of Survey while building	During progress of work in shops - -	1899 Dec. 7.25	1910 Jan. 11	Feb. 8.14	Mar. 4.9	15.16	18.21.31	Apr. 6.12.18	22.28	May 3.14.24
	During erection on board vessel - -	June 2.6.8	Aug. 10.15.16.23	Sept. 7	Oct. 4.20	Nov. 8.16.17	22.25	Dec. 2.6.10.22	1911 Jan. 3	
	Total No. of visits	140								

Is the approved plan of main boiler forwarded herewith *Yes*

" " " donkey " " " *Yes*

Dates of Examination of principal parts—Cylinders *22-4-10* Slides *24-5-10* Covers *6-4-10* Pistons *6-4-10* Rods *6-4-10*

Connecting rods *6-4-10* Crank shaft *6-4-10* Thrust shaft *25-8-10* Tunnel shafts *23-8-10* Screw shaft *23-8-10* Propeller *23-8-10*

Stern tube *24-5-10* Steam pipes tested *14-11-10* Engine and boiler seatings *8-6-10* Engines holding down bolts *25-11-10*

Completion of pumping arrangements *22-11-10* Boilers fixed *22-11-10* Engines tried under steam *25-11-10*

Main boiler safety valves adjusted *25-11-10* Thickness of adjusting washers *Port 9/16" both 5/16" Stand 1/2" P 3/8"*

Material of Crank shaft *Steel* Identification Mark on Do. *6 H.K. J.M.* Material of Thrust shaft *Steel* Identification Mark on Do. *1949 H.K.*

Material of Tunnel shafts *Steel* Identification Marks on Do. *5455 K.H. 2043 H.K. 2006 H.K. 2009 H.K.* Material of Screw shafts *Steel* Identification Marks on Do. *2039 H.K.*

Material of Steam Pipes *2 solid drawn copper 4 dia x 6 W.G.* Test pressure *400 lbs*

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

The Machinery of this vessel has been built under special survey, the materials & workmanship are of good quality, the boilers were tested by hydraulic pressure and the whole fitted securely on board & tried under steam.

*The Machinery of this vessel is in good and safe working condition & eligible in my opinion to be classed & have record **LMC 1-11** in the Register Books.*

It is submitted that this vessel is eligible for THE RECORD + LMC 1-11.

Certificates (if required) to be sent to Committee's Minute.

The amount of Entry Fee..	£ 2 : 0	When applied for,	9.1.1911
Special	£ 30 : 8	When received,	14.1.1911
Donkey Boiler Fee .. .	£ :		
Travelling Expenses (if any)	£ :		

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

Committee's Minute **FRI. 13 JAN 1911**
Assigned *+ L.M.C. 1-11.*

MACHINERY CERTIFICATE WRITTEN.

