

REPORT ON MACHINERY.

No. 25098
WED. 20 1911

Received at London Office

Date of writing Report 19 When handed in at Local Office 12 Dec 11 Port of Sunderland
 No. in Survey held at Reg. Book. Sunderland Date, First Survey June 30/11 Last Survey Dec 6. 1911
 on the "Wabana" (Number of Visits 57)
 Master Reide Built at Sunderland By whom built Short Bros Ltd. 369 Tons { Gross 4804
 Engines made at Sunderland By whom made G. Clark Ltd No 934 when made 1911 Net 2676
 Boilers made at Sunderland By whom made G. Clark Ltd No 934 when made 1911
 Registered Horse Power _____ Owners W. Lowden & Co Port belonging to Liverpool
 Nom. Horse Power as per Section 28 480 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" x 44" x 43" Length of Stroke 48" Revs. per minute 65 Dia. of Screw shaft 14.5" 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 yes 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 5'-1"
 Dia. of Tunnel shaft 13.12" Dia. of Crank shaft journals 13.48" Dia. of Crank pin 14.4" Size of Crank webs 21 1/4 x 9 3/4 Dia. of thrust shaft under collars 14 1/8" Dia. of screw 1 1/2" Pitch of Screw 18'-6" No. of Blades 4 State whether moveable no Total surface 100 sq ft
 No. of Feed pumps Two Diameter of ditto 9 1/2" Stroke 21" Can one be overhauled while the other is at work yes
 No. of Bilge pumps Two Diameter of ditto 4 1/2" Stroke 30" Can one be overhauled while the other is at work yes
 No. of Donkey Engines Three Sizes of Pumps 4" x 10" x 10" No. and size of Suctions connected to both Bilge and Donkey pumps See below
 In Engine Room Three @ 3 1/2" dia In Holds, &c. One in No 1 Hold well 3 1/2" dia
No 2 one @ 3 1/2" in hold well, No 3 one @ 3 1/2" in hold well, No 4 one @ 3 1/2" dia in hold well.
 No. of Bilge Injections 1 sizes 6 1/2" Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size yes 3 1/2"
 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 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 Side tank pipes 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
 Dates of examination of completion of fitting of Sea Connections 5-10-11 of Stern Tube 5-10-11 Screw shaft and Propeller 31-10-11
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Top platform

BOILERS, &c.—(Letter for record \$1) Manufacturers of Steel Spence & Sons
 Total Heating Surface of Boilers 6491 sq ft Is Forced Draft fitted yes No. and Description of Boilers Three single ended
 Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 25-10-10 No. of Certificate 2870
 Can each boiler be worked separately yes Area of fire grate in each boiler 53.4 sq ft No. and Description of Safety Valves to each boiler Two spring loaded Area of each valve 9.62 sq in 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 18" Mean dia. of boilers 14' 3 23/32" Length 11'6" Material of shell plates Steel
 Thickness 1 9/16" Range of tensile strength 28 3/4 to 32 1/2 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 3/16" Pitch of rivets 8'8" Lap of plates or width of butt straps 14 1/8"
 Per centages of strength of longitudinal joint rivets 88.9 Working pressure of shell by rules 182.5 lbs Size of manhole in shell 16" x 13"
 Size of compensating ring Dished No. and Description of Furnaces in each boiler Three Cor. Material Steel Outside diameter 40"
 Length of plain part top _____ bottom _____ Thickness of plates crown 3/16" Description of longitudinal joint weld No. of strengthening rings _____
 Working pressure of furnace by the rules 220 lbs Combustion chamber plates: Material Steel Thickness: Sides 1/16" Back 1/16" Top 1/16" Bottom 1/8"
 Pitch of stays to ditto: Sides 9 1/4 x 9 3/4 Back 10 x 9 Top 9 x 9 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 180-7 lbs
 Material of stays Steel Diameter at smallest part 1 1/2" Area supported by each stay 90 sq in Working pressure by rules 203 lbs End plates in steam space: _____
 Material Steel Thickness 1 5/16" Pitch of stays 20 1/16 x 20 1/2 How are stays secured D. Nuts Working pressure by rules 185 lbs Material of stays Steel
 Diameter at smallest part 3" Area supported by each stay 199.5 sq in Working pressure by rules 188 lbs Material of Front plates at bottom Steel
 Thickness 1/16" Material of Lower back plate Steel Thickness 3/32" Greatest pitch of stays 14 1/4 x 19 1/2 Working pressure of plate by rules 183 lbs
 Diameter of tubes 2 1/2" Pitch of tubes 3 3/4 x 3 5/8 Material of tube plates Steel Thickness: Front 15/16" Back 3/4" Mean pitch of stays 9.45
 Pitch across wide water spaces 13 1/2" Working pressures by rules 185 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9 3/4 x 1 3/4 Length as per rule 36 13/16 Distance apart 9 1/2" Number and pitch of stays in each 3 @ 9"
 Working pressure by rules 182 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 _____

Lloyd's Register Foundation
25098-0184

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 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:— Two cm rods to end & two ditto bottom end bolts & nuts, one set packing bolts & nuts, 2 main bearing bolts & nuts, 1 set feed & bilge pump valves & seats & set check valves, 19 boiler tubes, 19 condenser tubes, one tail shaft, one propeller, one pair crank pin bushes, one valve spindle, assorted bolts, nuts & iron.

The foregoing is a correct description, *as per spec*
FOR GEORGE CLARK LIMITED Manufacturer of main Engines & Boilers

Dates of Survey while building	During progress of work in shops --	1910 Jun 30, Jul 22, 29, Aug 5, 10, 15, 18, 23, 30, Sep 7, 12, 14, 19, 22, Oct 13, 18, 20, 25, Nov 2, 15, 21, 28
	During erection on board vessel --	Dec 15, 21, 1911, Jan 10, 27, Feb 4, Mar 15, 20, Apr 7, 13, 25, May 1, 10, 12, 31, June 7, 15, 26, Jul 19
	Total No. of visits	Apr 20, 24, 5, 10, 16, 19, 22, 31, Nov 3, 4, 9, 10, 15, 18, 24

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

Dates of Examination of principal parts—	Cylinders	2-11-10	Slides	4-6-11	Covers	10-1-11	Pistons	12-9-10	Rods	21-2-10	
Connecting rods	21-2-10	Crank shaft	13-4-11	Thrust shaft	19-4-11	Tunnel shafts	19-4-11	Screw shaft	10-10-11	Propeller	20-9-11
Stern tube	29-9-11	Steam pipes tested	10-11-11 & 14-11-11	Engine and boiler seatings	5-10-11	Engines holding down bolts	9-11-11				
Completion of pumping arrangements	4-12-11		Boilers fixed	15-11-11		Engines tried under steam	18-11-11				
Main boiler safety valves adjusted	18-11-11		Thickness of adjusting washers	5 Bl. S. 3/8" P. 7/16; Cent Bl. P. & S. 3/8" P. Bl. P. & S. 3/8"							
Material of Crank shaft	Steel	Identification Mark on Do.	5641, K.H.		Material of Thrust shaft	Steel	Identification Mark on Do.	4038, P.A. 2761, H.K.			
Material of Tunnel shafts	Steel	Identification Marks on Do.	4039, P.A. 2900, H.K. 2905, H.K. 2909, H.K.		Material of Screw shafts	Steel	Identification Marks on Do.	4037, P.A.			
Material of Steam Pipes	Solid drawn Copper 1 1/4" bore & 1/16" wall; 1 solid Steel Test pressure 400 lbs for Copper pipes, 540 lbs for iron & steel do. 3 wire iron lap welded 1 3/4" bore & 5/16" wall; 5" bore & 3/8" wall.										

General Remarks (State quality of workmanship, opinions as to class, &c.)
 The machinery of this vessel has been built under special survey, the materials and workmanship are of good quality and the hydraulic test of the boilers proved satisfactory. The whole of the machinery has been securely fitted on board & satisfactorily tried under steam & is in good & safe working condition & eligible in my opinion to be classed & have record **LMC 12-11** in the Register's Book.

It is submitted that this vessel is eligible for **THE RECORD + LMC 12.11.**
 F.D. *J.W.D.* 27/12/11

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

The amount of Entry Fee	£ 3 : 0 : 0	When applied for	15.12.1911
Special	£ 14 : 0 : 0	When received	19.12.11
Donkey Boiler Fee	£ :		
Travelling Expenses (if any)	£ :		

Committee's Minute **FRI. DEC. 22. 1911**
 Assigned *Hmc 12.11*



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

MACHINERY CERTIFICATE
 WRITTEN 27/12/11
 431/712