

REPORT ON MACHINERY.

No. 21770

14th APR 1904

Port of *Sunderland*

Received at London Office 10

No. in Survey held at *Sunderland* Date, first Survey *9th Decr. '03* Last Survey *13th April, 1904*

Reg. Book. on the *Steel S.S. "Bumholme"* (Number of Visits *30*)

Master *G. Breckon* Built at *Sunderland* By whom built *J. L. Thompson + Sons* When built *1904*

Engines made at *Sunderland* By whom made *J. Dickinson + Sons Ltd* when made *1904*

Boilers made at *Sunderland* By whom made *J. Dickinson + Sons Ltd* when made *1904*

Registered Horse Power Owners *Rowland + Marwood S.S.Co.* Port belonging to *Whitby*

Nom. Horse Power as per Section 28 *321* Is Refrigerating Machinery fitted *No* Is Electric Light fitted *No.*

ENGINES, &c.—Description of Engines *Triple expansion* No. of Cylinders *3* No. of Cranks *3*

Dia. of Cylinders *24-40-66* Length of Stroke *45* Revs. per minute *70* Dia. of Screw shaft *13.74* Material of screw shaft *W.G.*

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 *4-9"*

Dia. of Tunnel shaft *12.1* Dia. of Crank shaft journals *12.72* Dia. of Crank pin *13.4* Size of Crank webs *Palmer* Dia. of thrust shaft under

collars *13.4* Dia. of screw *17-0* Pitch of screw *17-0* No. of blades *4* State whether moveable *No* Total surface *80.4*

No. of Feed pumps *2* Diameter of ditto *3.5* Stroke *22.5* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *2* Diameter of ditto *4.5* Stroke *22.5* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *2* Sizes of Pumps *Ballant. 8x8x10* No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room *3-3.5* In Holds, &c. *2 of 3.5 in each hold.*

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. 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 *—*

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*

When were stern tube, propeller, screw shaft, and all connections examined in dry dock *New vessel.* Is the screw shaft tunnel watertight *Yes.*

Is it fitted with a watertight door *Yes* worked from *Top platform.*

OILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *5000 sq* Is forced draft fitted *No*

No. and Description of Boilers *Two cylindrical multitubular* Working Pressure *180 lbs.* Tested by hydraulic pressure to *360 lbs.*

Date of test *16/3/04* Can each boiler be worked separately *Yes.* Area of fire grate in each boiler *71 sq* No. and Description of safety valves to

each boiler *2 Spring loaded* Area of each valve *8.3 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 *2-0"* Mean dia. of boilers *16-3"* Length *10-6"* Material of shell plates *Steel*

Thickness *1.5"* Range of tensile strength *28-32* Are they welded or flanged *No* Descrip. of riveting: cir. seams *D.R.L.* long. seams *T.R.D.B.S.*

Diameter of rivet holes in long. seams *1.3"* Pitch of rivets *9.5"* Lap of plates or width of butt straps *1-8.5"*

Per centages of strength of longitudinal joint rivets *88.5* Working pressure of shell by rules *183 lbs.* Size of manhole in shell *16" x 12"*

Size of compensating ring *8.3" x 1.5"* No. and Description of Furnaces in each boiler *4 plain* Material *Steel* Outside diameter *3'-4.5"*

Length of plain part top *8.4"* bottom *8.4"* Thickness of plates crown *7.49"* bottom *7.49"* Description of longitudinal joint *Welded* No. of strengthening rings *—*

Working pressure of furnace by the rules *181.5 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 *10x9"* Back *10x9"* Top *10x9"* If stays are fitted with nuts or riveted heads *None* Working pressure by rules *180 lbs.*

Material of stays *Steel* Area at smallest part *2.35 sq* Area supported by each stay *115.6* Working pressure by rules *182 lbs.* End plates in steam space:

Material *Steel* Thickness *1.5"* Pitch of stays *18" x 16.5"* How are stays secured *D.N+W.* Working pressure by rules *181.5 lbs.* Material of stays *Steel*

Area at smallest part *5.57* Area supported by each stay *294.75* Working pressure by rules *189 lbs.* Material of Front plates at bottom *Steel*

Thickness *2.5"* Material of Lower back plate *Steel* Thickness *3/4"* Greatest pitch of stays *14.5"* Working pressure of plate by rules *260 lbs.*

Diameter of tubes *3.4"* Pitch of tubes *4.5" x 4.5"* Material of tube plates *Steel* Thickness: Front *1"* Back *3/8"* Mean pitch of stays *9"*

Pitch across wide water spaces *14.5"* Working pressures by rules *180 lbs.* Girders to Chamber tops: Material *Steel* Depth and

thickness of girder at centre *6.5" x 1 x 2* Length as per rule *29.5"* Distance apart *9"* Number and pitch of Stays in each *2 of 10"*

Working pressure by rules *184 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

stays 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. *One* Description *Cylindrical Multitubular, 2 plain furnace.*
 Made at *Sunderland* By whom made *J. Dickinson & Sons Ltd* When made *1904* Where fixed *Main deck*
 Working pressure *180 lbs* tested by hydraulic pressure to *360 lbs.* No. of Certificate *2244* Fire grate area *236* Description of safety valves *Spring loaded*
 No. of safety valves *2* Area of each *4.9* Pressure to which they are adjusted *185 lbs.* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No* Dia. of donkey boiler *9'-6"* Length *9'-0"* Material of shell plates *Steel* Thickness *7/8"* Range of tensile strength *29-32* Descrip. of riveting long. seams *D.R.D.B.S.* Dia. of rivet holes *1 1/8"* Whether punched or drilled *drilled* Pitch of rivets *5 1/8"*
 Rivets *90* Thickness of shell plates *7/8"* Pitch of stay *5 1/8" x 1 1/2"* No. of Stays to do. *8*
 Dia. of stays. *2 1/4"* Diameter of furnace *Top 2'-9" Bottom* Length of furnace *6'-0"* Thickness of furnace plates *4 1/4"* Description of joint *Welded* Thickness of furnace plates *4 1/16"* Stayed by *1 3/4" clamp 10 x 9"* Working pressure of shell by rules *180 lbs.*
 Working pressure of furnace by rules *182 lbs.* Diameter of *tubes* *3 1/2"* Thickness of *tubes* plates *F 7/8" B. 13/16"* Thickness of *plates* tubes *1/4"*

SPARE GEAR. State the articles supplied:— *Propeller, two top end + two bottom end bolts + nuts, two main bearing bolts + nuts, set of coupling bolts, set of feed + bilge pump valves + assorted bolts, nuts + iron.*

The foregoing is a correct description,
JOHN DICKINSON & SONS, LIMITED. Manufacturer.
John G. Great

Dates of Survey while building
 During progress of work in shops - - - **SECRETARY** *1903:- Dec. 9 - 1904:- Jan 20, 22, 27, 29, Feb 2, 3, 5, 10, 16, 18, 23, 25, Mar. 2, 5, 8, 9, 11, 16, 18, 21, 23, 24, 28, 30, 31, Apr*
 During erection on board vessel - - -
 Total No. of s *30.* Is the approved plan of main boiler forwarded herewith *Yes*
 " " " donkey " " " *Yes*

General Remarks (State quality of workmanship, opinions as to class, &c.)
The machinery of this vessel has been constructed under special survey, the materials + workmanship all good + efficient. Boilers + main steam pipes tested by hydraulic pressure to double the working pressure. The whole examined under steam + safety valves adjusted as stated above.

In my opinion this vessel is eligible for the registration in the Register Book of **L.M.C. 4.04.**

It is submitted that this vessel is eligible for **THE RECORD.** - L.M.C. 4.04.

Sal.
21.4.04

The amount of Entry Fee.. £ *3* : : When applied for,
 Special £ *36* : *1* : *20.4.1904*
 Donkey Boiler Fee £ *2* : *2* : When received, *23.5.04*
 Travelling Expenses (if any) £ : :

E. Williamson
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *APR 22 1904* TUES. 26 APL 1904
 Assigned *+ L.M.C. 4.04*

MACHINERY CERTIFICATE
 WRITTEN



Sunderland.

Certificate (if required) to be sent to

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

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