

REPORT ON MACHINERY.

Port of Sunderland

THUR. 18 JUN 1903

Received at London Office

No. in Survey held at Sunderland
Reg. Book.

Date, first Survey March 3

Last Survey 12th June 1903

(Number of Visits 25)

on the S.S. HARALD

Tons { Gross 2995
Net 1932

Master A. Andersen Built at Sunderland By whom built J. L. Thompson & Co Ltd When built 1903

Engines made at Southwick By whom made Messrs George Clark & Co when made 1903

Boilers made at Southwick By whom made Messrs George Clark & Co when made 1903

Registered Horse Power _____ Owners Brusgaard Kjoerud & Co Port belonging to Drammen

Nom. Horse Power as per Section 28 287.8 Is Refrigerating Machinery fitted No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Tri Compound No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 24-39-65 Length of Stroke 42 Revs. per minute 70 Dia. of Screw shaft 12.59 as per rule 12.59 as fitted 13 3/8 Lgth. of stern bush 4-5/8

Dia. of Tunnel shaft 11.77 as per rule 11.77 as fitted 11 7/8 Dia. of Crank shaft journals 12.36 as per rule 12.36 as fitted 12 1/2 Dia. of Crank pin 12 1/2 Size of Crank webs 17 1/2 x 8 1/2 Dia. of thrust shaft under collars 12 7/8 Dia. of screw 16-3 Pitch of screw 17.0 No. of blades 4 State whether moveable No Total surface 77 sq

No. of Feed pumps Two Diameter of ditto 3 Stroke 26 Can one be overhauled while the other is at work Yes

No. of Bilge pumps Two Diameter of ditto 4 1/4 Stroke 26 Can one be overhauled while the other is at work Yes

No. of Donkey Engines Two Sizes of Pumps Ballast 6x4x6 Duplex No. and size of Suctions connected to both Bilge and Donkey pumps Ballast 9x11x10 Double ending

In Engine Room Two 3' diam One 3 1/2' diam In Holds, &c. Two in each hold 3' diam

No. of bilge injections one sizes 5 1/2 Connected to circulating pump Yes Is a separate donkey suction fitted in Engine room & size Yes 4' diam

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 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 Nov 1902 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 4230 sq Is forced draft fitted No

No. and Description of Boilers Two Single Ended Cylindrical Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs

Date of test 9.5.03 Can each boiler be worked separately Yes Area of fire grate in each boiler 63.57 sq No. and Description of safety valves to each boiler Two Spring loaded Area of each valve 8.94 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 20" Mean dia. of boilers 15-5/8" Length 10.6" Material of shell plates Steel

Thickness 1 5/8" Range of tensile strength 28 1/2-32 Are they welded or flanged No Descrip. of riveting: cir. seams D.P. & J long. seams F.P. D.B. S

Diameter of rivet holes in long. seams 1 1/4" Pitch of rivets 8 5/16" Lap of plates or width of butt straps 19"

Per centages of strength of longitudinal joint rivets 88.5 Working pressure of shell by rules 182 Size of manhole in shell 16" x 13" plate 84.9

Size of compensating ring 9" x 1 1/4" No. and Description of Furnaces in each boiler 4 Plain Material Steel Outside diameter 3-4 1/2"

Length of plain part top 6.2 1/4" Thickness of plates crown 3/4" Description of longitudinal joint Welded No. of strengthening rings One bottom 6.2 1/4"

Working pressure of furnace by the rules 186 Combustion chamber plates: Material Steel Thickness: Sides 1/8" Back 3/4" + 1/16" Top 1/16" Bottom 1"

Pitch of stays to ditto: Sides 9 x 10" Back 11 1/4 x 9 1/2" Top 10 1/2 x 8" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 180 lbs

Material of stays Steel Diameter at smallest part 1 5/8" Area supported by each stay 90 sq Working pressure by rules 193 lbs End plates in steam space:

Material Steel Thickness 1 1/32" Pitch of stays 22 1/4 x 19 1/4" How are stays secured Double nuts Working pressure by rules 180 lbs Material of stays Steel

Diameter at smallest part 3 3/8" Area supported by each stay 370 sq Working pressure by rules 190 Material of Front plates at bottom Steel

Thickness 1 1/16" Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 14 1/4 x 9 3/8" Working pressure of plate by rules 182 lbs

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2 x 4 3/8" Material of tube plates S Thickness: Front 1 1/16" Back 4 9/16" Mean pitch of stays 9 x 10 1/16"

Pitch across wide water spaces 14 1/4" Working pressures by rules 183 lbs Girders to Chamber tops: Material S Depth and thickness of girder at centre 9 1/4" x 8 1/4" Length as per rule 32" Distance apart 10 1/2 x 9" Number and pitch of Stays in each 2 x 3 8" pitch

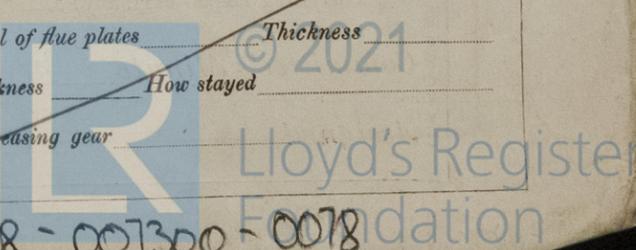
Working pressure by rules 185 lbs Superheater or Steam chest; how connected to boiler _____ Can the superheater be shut off and the boiler worked separately _____

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 _____

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DONKEY BOILER— No. *One* Description *Horizontal Marine Type*
 Made at *Sunderland* By whom made *J. Dickinson & Sons* When made *1903* Where fixed *upper deck*
 Working pressure *90 lbs* tested by hydraulic pressure to *180 lbs* No. of Certificate *2150* Fire grate area *22 1/2* Description of safety valves *Spring loaded*
 No. of safety valves *2* Area of each *4.9* 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 *8.6"* Length *9.0"* Material of shell plates *Steel* Thickness *1/2"* Range of tensile strength *28-37* Descrip. of riveting long-seams *Lap T. R.* Dia. of rivet holes *3/16"* Whether punched or drilled *Dilled* Pitch of rivets *3 7/16"*
 Lap of plating *5 1/16"* Per centage of strength of joint Rivets *77%* end *but* Thickness of shell crown plates *1 1/16"* Radius of do. *15"* No. of Stays to do. *4*
 Dia. of stays *1 7/8 x 1 3/4* Diameter of furnace Top *2.6* Bottom *7/16 - 5.1* Length of furnace *5.11* Thickness of furnace plates *7/16* Description of joint *welded* Thickness of furnace crown plates *9/16* Stayed by *1 1/2 days 9" pitch* Working pressure of shell by rules *91 lbs*
 Working pressure of furnace by rules *96 lbs* Diameter of uptake *3 1/4* Thickness of uptake plates *1/4* Thickness of water tubes *7/16 9/16 1 1/16"*

SPARE GEAR. State the articles supplied:— *Two Top end bolts & nuts, two bottom end bolts & nuts, Two main Bearing bolts & nuts, 1 set coupling bolts & nuts, fuel & bilge pump valves, iron, bolts & nuts assorted*

The foregoing is a correct description,
 FOR GEORGE CLARK LIMITED,
James C. Clark Manufacturer of main engine & boiler work.

Dates of Survey while building
 During progress of work in shops - *1903. Mch. 2, 12, 18, 24, 26, 31. Apl. 8, 15, 24, 27, 29. May. 4, 6, 8, 9, 12, 14, 18, 19, 21, 22, 23. June. 4, 5, 12*
 During erection on board vessel -
 Total No. of visits *24 25*

Is the approved plan of main boiler forwarded herewith *Duplicate S.S. Home*
 " " " donkey " " " *Yes*

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

Material of screw shaft *Iron (Scrap)* 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 *One length*
 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 *Fitting* If two liners are fitted, is the shaft lapped or protected between the liners *✓*

The machinery of this vessel has been constructed under special survey the material being good & efficient & the engines when tried under steam worked satisfactorily.
 The pumps, watertight doors & steam steering gear are in efficient working order & the main steam pipes have been tested by hydraulic pressure to 400 lbs. per square inch.

In my opinion this vessel is eligible for the notification of
L.M.C. 4.03

It is submitted that this vessel is eligible for THE RECORD. - L.M.C 6.03

Bal
 18.6.03

Ed
 19.6.03

The amount of Entry Fee.	£ 2	When applied for,
Special	£ 34	15 June 1903
Donkey Boiler Fee	£	When received,
Travelling Expenses (if any)	£	17 June 1903

G. A. Dryden Joyne
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRI. 19 JUN 1903**
 Assigned **+ L.M.C. 6.03**



Certificate (if required) to be sent to Sunderland

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