

REPORT ON MACHINERY.

Port of Newcastle on Tyne

Received at London Office 18 Feb 96
Date, first Survey 20 Feb 96 Last Survey Nov. 22 1896
(Number of Visits 34)

No. in Survey held at Newcastle
Reg. Book.

60 on the S. S. "Narving"

Gross 3098.08
Net 3178.70

Master J. E. Elberg Built at Sunderland By whom built Sunderland S. B. Co. When built 1896

Engines made at Newcastle By whom made Wigham Richardson & Co. when made 1896

Boilers made at D. By whom made D. when made 1896

Registered Horse Power 600 Owners W Lund Port belonging to London

Nom. Horse Power as per Section 28 516

ENGINES, &c.— Description of Engines Quadruple Expansion No. of Cylinders 4
as per rule 13 3/4

Diameter of Cylinders 25 1/2 - 36 1/2 - 52 - 78 Length of Stroke 54 Revolutions per minute 65 Diameter of Screw shaft 15
as fitted 15

Diameter of Tunnel shaft 13 3/4 Diameter of Crank shaft journals 14 1/2 Diameter of Crank pin 14 1/2 Size of Crank webs 9 1/2
as fitted 13 3/4

Diameter of screw 18-6 Pitch of screw 21-0 No. of blades 4 State whether moveable ye Total surface 92

No. of Feed pumps Duplex Diameter of ditto 8 Stroke 21 Can one be overhauled while the other is at work ye

No. of Bilge pumps 2 Diameter of ditto 4 1/2 Stroke 28 Can one be overhauled while the other is at work ye

No. of Donkey Engines Two Sizes of Pumps 4 1/2 5 x 10 5 - 10 0 x 10 5 No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Five 3 1/2 In Holds, &c. No 1-2+3 hold. Two 3 1/2

after hold one 3 1/2 funnel well two 2 1/2

No. of bilge injections 1 sizes 6" Connected to condenser, or to circulating pump C.P. Is a separate donkey suction fitted in Engine room & size ye 3 1/2

Are all the bilge suction pipes fitted with roses ye Are the roses in Engine room always accessible ye Are the sluices on Engine room bulkheads always accessible none

Are all connections with the sea direct on the skin of the ship ye Are they Valves or Cocks both

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates ye 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 ye Are the blow off cocks fitted with a spigot and brass covering plate ye

What pipes are carried through the bunkers fore & main bilge pipes How are they protected strong Wood Casings

Are all pipes, cocks, valves, and pumps in connection with the machinery and all boiler mountings accessible at all times ye

Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges ye

When were stern tube, propeller, screw shaft, and all connections examined in dry dock while building Is the screw shaft tunnel watertight ye

Is it fitted with a watertight door ye worked from top platform.

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 6404

No. and Description of Boilers 3 Cylindrical Single End Working Pressure 200 Tested by hydraulic pressure to 400

Date of test 18-6-96 Can each boiler be worked separately ye Area of fire grate in each boiler 55 No. and Description of safety valves to

each boiler two Spring Area of each valve 9-6 Pressure to which they are adjusted 205 Are they fitted

with easing gear ye Smallest distance between boilers or uptakes and bunkers or woodwork 4 feet Mean diameter of boilers 14-0 1/2

Length 12-0 Material of shell plates Steel Thickness 1 15/32 Description of riveting: circum. seams d lap long. seams d shape

Diameter of rivet holes in long. seams 1 1/2 Pitch of rivets 4 3/4 x 9 1/2 Lap of plates or width of butt straps 21 7/8

Per centages of strength of longitudinal joint 94 Working pressure of shell by rules 215 Size of manhole in shell 16 x 12

Size of compensating ring 7 1/2 x 1 7/8 No. and Description of Furnaces in each boiler 3 Morrison Material S Outside diameter 46 1/8

Length of plain part top 2 1/2 Thickness of plates bottom 2 1/2 Description of longitudinal joint welded No. of strengthening rings ✓

Working pressure of furnace by the rules 232 Combustion chamber plates: Material Steel Thickness: Sides 5/8 Back 1/2 Top 5/8 Bottom 5/8

Pitch of stays to ditto: Sides 8 x 8 1/2 Back 9 x 8 1/2 Top 7 1/4 x 8 3/8 If stays are fitted with nuts or riveted heads nut Working pressure by rules 202

Material of stays Steel Diameter at smallest part 1-69 Area supported by each stay 77-6 Working pressure by rules 208 End plates in steam space:

Material Steel Thickness 1 1/8 Pitch of stays 16 1/2 x 14 How are stays secured dn & w Working pressure by rules 220 Material of stays Steel

Diameter at smallest part 5-55 Area supported by each stay 231 Working pressure by rules 216 Material of Front plates at bottom Steel

Thickness 7/8 Material of Lower back plate Steel Thickness 1 Greatest pitch of stays as per plan Working pressure of plate by rules app 4

Diameter of tubes 2 1/2 Pitch of tubes 33 1/4 Material of tube plates Steel Thickness: Front 7/8 Back 7/8 Mean pitch of stays 7 1/2

Pitch across wide water spaces 13 Working pressures by rules 204 Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 10 5/8 x 1 1/2 Length as per rule 34 1/2 Distance apart 8 5/8 Number and pitch of Stays in each 3- 7 3/4

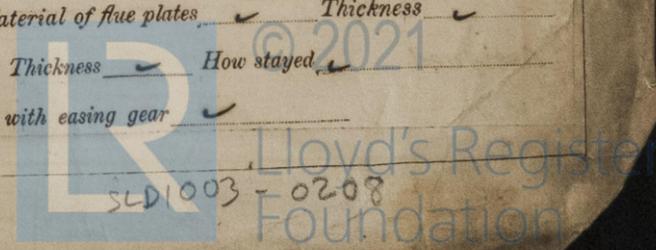
Working pressure by rules 224 Superheater or Steam chest; how connected to boiler ✓ Can the superheater be shut off and the boiler worked

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 ✓



Auxiliary DONKEY BOILER— Description *Cylindrical, Multitubular Single End*
 Made at *Newcastle* By whom made *H^e Eastern M^e 83 Co* When made *10-6-96* Where fixed *Shakehole*
 Working pressure *200* tested by hydraulic pressure to *400* No. of Certificate *4849* Fire grate area *47* Description of safety valves *spring*
 No. of safety valves *2* Area of each *3.98* Pressure to which they are adjusted *205* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *Yes*
 Diameter of donkey boiler *12. 3 5/8* Length *10. 6* Material of shell plates *Steel* Thickness *1 1/2*
 Description of riveting long seams *d shape* Diameter of rivet holes *1 1/2* Whether punched or drilled *drilled* Pitch of rivets *9 5/8*
 Lap of plating *19 1/2* Per centage of strength of joint *86* Thickness of shell plates *1 1/2* Radius of do. *Pitch* No. of Stays to do. *19 1/2 x 18 1/2*
 Dia. of stays *8-48* Diameter of furnace Top *37* Bottom *✓* Length of furnace *✓* Thickness of furnace plates *1/2* Description of joint *Welded - main*
 Thickness of furnace chamber plates *1 1/8* Stayed by *as per plan* Working pressure of shell by rules *216*
 Working pressure of furnace by rules *204* Diameter of tubes *3 1/2* Thickness of tube plates *7/8* Thickness of water tubes *✓*

SPARE GEAR. State the articles supplied:— *Two propeller blades, Air Pump bucket & rod, Air pump bucket & rod, One pair Crank pin brasses, Two top ends, Two bottom ends, Two main bearings & One set coupling bolts, piston springs, feed & bilge pump valves, assorted bolts & nuts & a few bars of iron & other small tools*
 The foregoing is a correct description, of the Engines, Boilers (main) & Spare gear }
McGowan & Milwardons Manufacturers of the same

General Remarks (State quality of workmanship, opinions as to class, &c. *The photo-prints of main & donkey boilers are forwarded herewith.*)

Dates of survey while building	During progress of work in shops - -	- 1896 - Jan 29. Feb 6. Mar 16. Apr 10. 13. 17. 29. May 5. 12. 14. 18. 21. 27. 28. June 2. 10. 17. 18. 29. July 6. 8. 13. 30. Aug 5. 7. 12. 17. 20. 21. 22.
	During erection on board vessel - -	31. Sep 18
	Total No. of visits	37

The material & workmanship is good
 The engine & safety valves have been tested under steam
 The vessel is fitted with the electric light & the boiler are worked with forced draught on Howden's system.
 The Mach: has been built under special survey & is eligible in my opinion for classification & the word **I.M.C. 9-96**

It is submitted that this vessel is eligible for **THE RECORD + I.M.C. 9-96. F.D. Elec. Light.**

J.H.
 24. 9. 96

Certificate (if required) to be sent to *Switzerland*
 The amount of Entry Fee. . . £ *3 : 0* : 0 When applied for,
 Special £ *45 : 16* : 0
 Donkey Boiler Fee £ *2 : 2* : 0 When received,
 Travelling Expenses (if any) £ *20 : 2 : 0*
 3. Sept. 1896
 10. Sept. 18. 1896

John H. Heck.
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute
 Assigned *+ I.M.C. 9-96 F.D. Elec. Light.*

WRITTEN. **FRI, SEP 25 1896**

