

REPORT ON MACHINERY.

Date of writing Report **22 JUN. 1914** When handed in at Local Office **23 JUN. 1914** Received at London Office **WED. JUN. 24 1914.**

No. in Survey held at **Sunderland.** Date, First Survey **6-3-14** Last Survey **22-6-1914**
Reg. Book. on the **New Steel S.S. Ladoga.** (Number of Visits **39**)

Master **A. W. Reid** Built at **Sunderland.** By whom built **S. P. Austin & Son Ltd. (213)** Tons } Gross **1917**
Engines made at **Sunderland** By whom made **North Eastern Marine Eng. Coy. Ltd. 2161** when made **1914** } Net **1154**
Boilers made at **Sunderland.** By whom made **North Eastern Marine Eng. Coy. Ltd.** when made **1914** } When built **1914**

Registered Horse Power _____ Owners **W. Thomson & Co.** Port belonging to **Leith.**
Nom. Horse Power as per Section 28 **1914** Is Refrigerating Machinery fitted for cargo purposes **no** Is Electric Light fitted **no**

ENGINES, &c.—Description of Engines **Triple Expansion** No. of Cylinders **Three** No. of Cranks **Three**
Dia. of Cylinders **20" x 33" x 54"** Length of Stroke **36"** Revs. per minute **120** Dia. of Screw shaft as per rule **11.5"** 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 **yes** Length of stern bush **4'-3"**
Dia. of Tunnel shaft as per rule **10"** Dia. of Crank shaft journals as per rule **10.43"** Dia. of Crank pin **10.2"** Size of Crank webs **16" x 6"** Dia. of thrust shaft under collars **11"** Dia. of screw **14'-6"** Pitch of Screw **14'-6"** No. of Blades **4** State whether moveable **no** Total surface **65 sq ft**
No. of Feed pumps **Two** Diameter of ditto **3"** Stroke **18"** Can one be overhauled while the other is at work **yes**
No. of Bilge pumps **Two** Diameter of ditto **3.5"** Stroke **18"** Can one be overhauled while the other is at work **yes**
No. of Donkey Engines **Two** Sizes of Pumps **10" x 11" x 10", 6" x 4" x 6"** No. and size of Suctions connected to both Bilge and Donkey pumps **Two @ 3" dia**
In Engine Room **Two @ 3" dia** In Holds, &c. **Two @ 3.5" dia**
No. of Bilge Injections **One** sizes **4"** Connected to condenser, or to circulating pump **yes** Is a separate Donkey Suction fitted in Engine room & size **Two @ 3.5" dia**
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 **yes**
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 **21-5-14** of Stern Tube **21-5-14** Screw shaft and Propeller **21-5-14**
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 **J. Spence & Sons Ltd. Newburn Steel Works.**
Total Heating Surface of Boilers **30,000 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 **15-5-14** No. of Certificate **3216**
Can each boiler be worked separately **yes** Area of fire grate in each boiler **50 sq ft** No. and Description of Safety Valves to each boiler **Two spring loaded** Area of each valve **4.91 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 **18"** Mean dia. of boilers **13'-1.6"** Length **10'-6"** Material of shell plates **Steel**
Thickness **1.6"** Range of tensile strength **28 to 32 tons** 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"** Pitch of rivets **9.3/8"** ~~Top of plates or~~ width of butt straps **18.2"**
Per centages of strength of longitudinal joint rivets **86.3** plate **84.3** Working pressure of shell by rules **180 lbs** Size of manhole in shell **16" x 12"**
Size of compensating ring **dished** No. and Description of Furnaces in each boiler **Three daylight** Material **Steel** Outside diameter **3'-2.74"**
Length of plain part top _____ bottom _____ Thickness of plates crown _____ bottom _____ Description of longitudinal joint **weld.** No. of strengthening rings _____
Working pressure of furnace by the rules **195 lbs** Combustion chamber plates: Material **Steel** Thickness: Sides **3/4"** Back **25/32"** Top **3/4"** Bottom **3/4"**
Pitch of stays to ditto: Sides **12.8" x 8.4"** Back **11.9" x 10"** Top **12.8" x 8.4"** If stays are fitted with nuts or riveted heads **nuts** Working pressure by rules **180 lbs**
Material of stays **Steel** Area at smallest part **2.1 sq ft** Area supported by each stay **100 lbs** Working pressure by rules **189 lbs** End plates in steam space: Material **Steel** Thickness **1.3"** Pitch of stays **22" x 15.5"** How are stays secured **D.N. Wash** Working pressure by rules **183 lbs** Material of stays **Steel**
Area at smallest part **5.9 sq ft** Area supported by each stay **344 sq ft** Working pressure by rules **180 lbs** Material of Front plates at bottom **Steel**
Thickness **3/4"** Material of Lower back plate **Steel** Thickness **2.9"** Greatest pitch of stays **14.2" x 10"** Working pressure of plate by rules **183 lbs**
Diameter of tubes **3.4"** Pitch of tubes **4.5" x 4.2"** Material of tube plates **Steel** Thickness: Front **3/4"** Back **3/4"** Mean pitch of stays **10.56"**
Pitch across wide water spaces **14.2"** Working pressures by rules **192 lbs** Girders to Chamber tops: Material **Steel** Depth and thickness of girder at centre **8.8" x 2" x 1.2"** Length as per rule **2.5"** Distance apart **9" x 12.8"** Number and pitch of stays in each **2 @ 8.4"**
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 _____
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 _____



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 _____

SEE ATTACHED REPORT.

SPARE GEAR. State the articles supplied:— Two each bolts & nuts for top & bottom ends and main bearings. One set coupling bolts. One set each valves for all pumps. Assorted bolts, nuts & washers. One propeller. One air pump rod. One circulating pump rod. One set pins & springs for each piston. Two main check valves. One safety valve spring & sundries etc.

The foregoing is a correct description, NORTH EASTERN MARINE ENGINEERING CO LTD
 Manufacturer. **S. J. Harrison, Secy**

Dates of Survey while building	During progress of work in shops --	1914 Mar. 6. 10. 13. 19. 20. 24. 26.	Apr. 2. 3. 4. 8. 9. 17. 21. 23. 30.	May 5. 8. 11. 13. 14.
	During erection on board vessel ---	15. 16. 19. 20. 21. 22. 25. 27. 28. 29.	Jun. 3. 4. 5. 8. 10. 11. 16. 22.	
	Total No. of visits	39.		

Is the approved plan of main boiler forwarded herewith yes
 " " " donkey " " " yes

Dates of Examination of principal parts— Cylinders 23-4-14 Slides 13-5-14 Covers 30-4-14 Pistons 13-5-14 Rods 8-5-14

Connecting rods 30-4-14 Crank shaft 8-5-14 Thrust shaft 23-4-14 Tunnel shafts 13-5-14 Screw shaft 25-5-14 Propeller 20-5-14

Stern tube 20-5-14 Steam pipes tested 24-5-14, 4-6-14. Engine and boiler seatings 21-5-14. Engines holding down bolts 8-6-14

Completion of pumping arrangements 16-6-14 Boilers fixed 5-6-14 Engines tried under steam 11-6-14

Main boiler safety valves adjusted 11-6-14 Thickness of adjusting washers Port Bl. F 1/2" A 3/32", Star Bl. F 1/2" A 3/32"

Material of Crank shaft **Steel** Identification Mark on Do. 3840-1 M.B. Material of Thrust shaft **Steel** Identification Mark on Do. 3839 M.B.

Material of Tunnel shafts **Steel** Identification Marks on Do. 323-4 A.L. Material of Screw shafts **Steel** Identification Marks on Do. 288 A.L.

Material of Steam Pipes **Solid drawn steel** 1/2" dia x 1/4" thick Test pressure 540 lbs per sq inch

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 hydraulic tests of the boiler proved satisfactory. The whole of the machinery has been securely fixed in place & tried under steam & is in good & safe working condition & eligible in my opinion to be classed & have record **LMC 6-14** in the Register Books.

It is submitted that this vessel is eligible for **THE RECORD. + LMC 6.14.**

JWR
26/6/14
JWR

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

The amount of Entry Fee .. £ 2 : -	When applied for, 23 JUN 1914
Special £ 29 . 2	
Donkey Boiler Fee £ :	When received, 3/7/14
Travelling Expenses (if any) £ :	

Committee's Minute FRI. JUN 26. 1914
 Assigned + L.M.C. 6.14.



MACHINERY CERTIFICATE WRITTEN

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