

# REPORT ON MACHINERY.

No. 9702  
 Mbro No 1494

Port of **WEST HARTLEPOOL.**

Received at London Office **TUES 4 JUN 1895**

No. in Survey held at **WEST HARTLEPOOL.**  
 Reg. Book. **S. S. Nordhvalen**  
 on the **S. S. Nordhvalen**  
 Master **J. Brunnich** Built at **Trøkken** By whom built **Richardson Duck & Co**  
 Engines made at **Hartlepool** By whom made **J. Richardson & Son Ltd.** when made **1895**  
 Boilers made at **do** By whom made **do** when made **1895**  
 Registered Horse Power **220** Owners **Pampskits Selskabet Norden** Port belonging to **Kjøbenhavn**  
 Date, first Survey **28<sup>th</sup> Decr 1894** Last Survey **9<sup>th</sup> May 1895**  
 (Number of Visits **48**) **29<sup>th</sup> May 1895** Tons Gross **3291** Net **2118**

**ENGINES, &c.**— Description of Engines **Triple expansion** No. of Cylinders **3**  
 Diameter of Cylinders **24, 38, 64** Length of Stroke **42** Revolutions per minute **60** Diameter of Screw shaft as per rule **11.26**  
 Diameter of Tunnel shaft as per rule **10.7** Diameter of Crank shaft journals **11.3** Diameter of Crank pin **12** Size of Crank webs **17.4 x 7.5**  
 Diameter of screw **16.0** Pitch of screw **16.0** No. of blades **4** State whether moveable **No** Total surface **70 sq**  
 No. of Feed pumps **2** Diameter of ditto **2.75** Stroke **27** Can one be overhauled while the other is at work **Yes**  
 No. of Bilge pumps **2** Diameter of ditto **3.4** Stroke **37** Can one be overhauled while the other is at work **Yes**  
 No. of Donkey Engines **2** Sizes of Pumps **3.5 x 7, 8.2 x 7** No. and size of Suctions connected to both Bilge and Donkey pumps  
 Engine Room **Iron 3.5 dia** In Holds, &c. **Forward Hold: 2-3.5 dia. Main**  
 No. of bilge injections **1 size 6** Connected to condenser, or to circulating pump **Deep Tank: 2-4 dia. After Hold: 2-3.5 dia. Tunnel Well: 1-2.5 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**  
 Are all pipes 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**  
 Were stern tube, propeller, screw shaft, and all connections examined in dry dock **Revised** Is the screw shaft tunnel watertight **Yes**  
 Is it fitted with a watertight door **Yes** worked from **Top platform in Engine room.**

**BOILERS, &c.**— (Letter for record **(S)**) Total Heating Surface of Boilers **4016**  
 Description of Boilers **Two Single ended Steel** Working Pressure **160** Tested by hydraulic pressure to **320**  
 Date of test **24.4.95** Can each boiler be worked separately **Yes** Area of fire grate in each boiler **47.3** No. and Description of safety valves to  
 boiler **Two Spring** Area of each valve **8.29** Pressure to which they are adjusted **165** Are they fitted  
 with gearing **Yes** Smallest distance between boilers or uptakes and bunkers or woodwork **14"** Mean diameter of boilers **15.3"**  
**10.3** Material of shell plates **Steel** Thickness **1.32** Description of riveting: circum. seams **Lap double long. seams B.P. Straps**  
 Diameter of rivet holes in long. seams **1.4"** Pitch of rivets **8.2"** Lap of plates or width of butt straps **19.3"**  
 Stages of strength of longitudinal joint rivets **88.09** Working pressure of shell by rules **163** Size of manhole in shell **16 x 12"**  
 plate **85.29** No. and Description of Furnaces in each boiler **3 Morrison** Material **Steel** Outside diameter **3.104**  
 Diameter of compensating ring **6.3** Thickness of plates **1.32** Description of longitudinal joint **Welded** No. of strengthening rings **—**  
 of plain part top **7.0** bottom **3.2** pressure of furnace by the rules **177** Combustion chamber plates: Material **Steel** Thickness: Sides **1.32** Back **1.32** Top **1.32** Bottom **1.32**  
 Stays to ditto: Sides **8.2"** Back **8.4"** Top **8.4"** If stays are fitted with nuts or riveted heads **Nuts** Working pressure by rules **169**  
 Diameter of stays **Steel** Diameter at smallest part **1.38"** Area supported by each stay **720** Working pressure by rules **164.5** End plates in steam space:  
**Steel** Thickness **1.32** Pitch of stays **18.5, 16.5** How are stays secured **By nuts** Working pressure by rules **161** Material of stays **Steel**  
 at smallest part **2.7** Area supported by each stay **3000** Working pressure by rules **162.55** Material of Front plates at bottom **Steel**  
**1.6** Material of Lower back plate **Steel** Thickness **1.32** Greatest pitch of stays **12"** Working pressure of plate by rules **170**  
 Diameter of tubes **3.5"** Pitch of tubes **24.4"** Material of tube plates **Steel** Thickness: Front **1.32** Back **1.32** Mean pitch of stays **9.5"**  
 Cross wide water spaces **14.4"** Working pressures by rules **165** Girders to Chamber tops: Material **Steel** Depth and  
 of girder at centre **7.5 x 1.3"** Length as per rule **2.3** Distance apart **8.4"** Number and pitch of Stays in each **Two 8.4"**  
 Working pressure by rules **185** Superheater or Steam chest; how connected to boiler **None** Can the superheater be shut off and the boiler worked

Diameter — Length — Thickness of shell plates — Material — Description of longitudinal joint — Diam. of rivet  
 Pitch of rivets — Working pressure of shell by rules — Diameter of flue — Material of flue plates — Thickness —  
 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**— Description *Cylindrical multitubular with 2 plain furnaces.*  
 Made at *Shekton* By whom made *F. Seaton & Co Ltd* When made *1895*—Where fixed *In Stokes old*  
 Working pressure *90 lbs* tested by hydraulic pressure to *180 lbs* No. of Certificate *1030* Fire grate area *28 ft<sup>2</sup>* Description of safety valves *Direct Spring*  
 No. of safety valves *2* Area of each *5.4* Pressure to which they are adjusted *90 lbs* If fitted with casing gear *Yes*. If steam from main boilers  
 enter the donkey boiler *No* Diameter of donkey boiler *9'0"* Length *9'0"* Material of shell plates *Steel* Thickness *1 1/2"*  
 Description of riveting long. seams *D.T.B. Shap Double* Diameter of rivet holes *1 3/16"* Whether punched or drilled *punched* Pitch of rivets *3 1/2"*  
*D.T.B. Shap* Lap of plating *8"* Per centage of strength of joint *83* Rivets *83* Thickness of shell *2nd* plates *1 3/16"* Radius of do. *pitch* No. of Stays to do. *17 1/2 x 13*  
 Dia. of stays *2" Eff* Diameter of furnace *Top 3 1/4"* Bottom *2 1/4"* Length of furnace *6ft* Thickness of furnace plates *3/32 + 3/32* Description of  
 joint *D.T.B. Shap* Thickness of *Corner Cur* furnace *2"* plates *9"* Stays by *1 1/4" Sp. Screw Stay* hulled. *pitch* Working pressure of shell by rules *92 lbs*  
 Working pressure of furnace by rules *96 lbs* Diameter of *tubes* *3"* Thickness of *tube* plates *5/32* Thickness of water tubes

**SPARE GEAR.** State the articles supplied:— *Propeller, propeller shaft, 3rd part crank shaft, 2 main bearing bolts & nuts, 2 top end bolts & nuts, 2 bottom end bolts & nuts, 1 set of shaft coupling bolts & nuts, 6 each air circulating pump valves. Feed & relief pump valves. Sprung for each piston. Bolt nuts & iron.*

The foregoing is a correct description,  
 For THOMAS RICHARDSON & SONS, LIMITED, Manufacturer.

*T. M. Austin*  
 General Remarks (State quality of workmanship, opinions as to class, &c) *The machinery has been specially surveyed during construction the materials and workmanship good and renders the vessel eligible in our opinion to have the Record L.M.C. 5, 95 in the Register Book of the Society.*

*The vessel returned to the yard of the Builders for completion the Middlesex Surveyors were advised of the requirements to complete the survey.*

*The survey has now been satisfactorily completed.*

*T. M. Austin  
 Middlesex 'on Fees.*

*It is submitted that this vessel is eligible for THE RECORD, + LMC 5, 95*

*ARRR  
 4.6.95*

*[Large blue scribble]*

MACHINERY CERTIFICATE WRITTEN.

Certificate (if required) to be sent to			
The amount of Entry Fee..	£ 2:	When applied for,	
Special .. .. .	£ 33: 6	29.5.18.95	
Donkey Boiler Fee .. .	£ :	When received,	
Travelling Expenses (if any) £	:	31/5/95	

*Richard Austin  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping*

Committee's Minute *TUES 4 JUN 1895*  
 Assigned *+ LMC 5, 95*



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