

# REPORT ON MACHINERY.

Port of *Ad' F*

Received at London Office

No. in Survey held at *Ad' F* Date, first Survey *10th Sept, 1901* Last Survey *15th Jan 1902*  
 Reg. Book. *7 Dec 1901* (Number of Visits *14*) *Feb 1902*  
 on the *Steel Screw Steamer "Minas"* Tons Gross *1862.67* Net *1194.36*  
 Master *Thomas* Built at *Thornaby* By whom built *Crang, Taylor & Co* When built *1902*  
 Engines made at *Sunderland* By whom made *A. E. M. E. Coyle* when made *1902*  
 Boilers made at *"* By whom made *"* when made *1902*  
 Registered Horse Power *189* Owners *Sociedad Espanola de Minas* Port belonging to *Bilbao*  
 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 *20"-30"-52"* Length of Stroke *39* Revs. per minute *66* Dia. of Screw shaft *12.06"* Lgth. of stern bush *4-0*  
 Dia. of Tunnel shaft *9.815"* Dia. of Crank shaft journals *10.306"* Dia. of Crank pin *10.308"* Size of Crank webs *6 1/8 x 6 1/8* Dia. of thrust shaft under  
 collars *10 3/8* Dia. of screw *14-9* Pitch of screw *15-0* No. of blades *4* State whether moveable *No* Total surface *66 #*  
 No. of Feed pumps *2* Diameter of ditto *3* Stroke *1-9* Can one be overhauled while the other is at work *Yes*  
 No. of Bilge pumps *2* Diameter of ditto *3 1/2* Stroke *1-9* Can one be overhauled while the other is at work *Yes*  
 No. of Donkey Engines *2* Sizes of Pumps *6" x 7" x 9" & 5 1/2" x 3 1/2" x 5 1/2"* No. and size of Suctions connected to both Bilge and Donkey pumps  
 in Engine Room *3 of 3" & 1 of 3 1/2"* In Holds, &c. *Fore hold two of 3" Main hold*  
*three of 3" Tunnel one of 3"*  
 No. of bilge injections *1* sizes *4"* Connected to condenser, or to circulating pump *CP* Is a separate donkey suction fitted in Engine room & size *Yes 3"*  
 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 *None*  
 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 *See ship report*  
 Is it fitted with a watertight door *yes* worked from *upper grating*

BOILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *2940 #* Is forced draft fitted *No*  
 No. and Description of Boilers *Two Ordinary Marine* Working Pressure *160 lbs* Tested by hydraulic pressure to *320 lbs*  
 Date of test *7/12/01* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *41 #* No. and Description of safety valves to  
 each boiler *2 Spring* Area of each valve *4.9 #* Pressure to which they are adjusted *160 lbs* Are they fitted with easing gear *Yes*  
 Smallest distance between boilers or uptakes and bunkers or woodwork *12"* Mean dia. of boilers *12-11 1/16"* Length *10-0"* Material of shell plates *S*  
 Thickness *5/16"* Range of tensile strength *29-32* 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 *7/8"* Pitch of rivets *7/8"* Lap of plates or width of butt straps *18"*  
 Percentages of strength of longitudinal joint  
 rivets *85.5* Working pressure of shell by rules *161.7 lbs* Size of manhole in shell *end 16" x 12"*  
 plate *84.74*  
 Size of compensating ring *Flanged* No. and Description of Furnaces in each boiler *3 plain* Material *S* Outside diameter *3-0"*  
 Length of plain part *top 6-1 1/4"* Thickness of plates *bottom 1/32"* Description of longitudinal joint *Welded* No. of strengthening rings *✓*  
 Working pressure of furnace by the rules *163 lbs* Combustion chamber plates: Material *S* Thickness: Sides *2 1/32"* Back *2 1/32"* Top *2 1/32"* Bottom *1"*  
 Pitch of stays to ditto: Sides *9 1/2" x 9"* Back *9 1/2" x 9 1/2"* Top *9 1/2" x 9"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *170 lbs*  
 Material of stays *S* Diameter at smallest part *1.49"* Area supported by each stay *90.25"* Working pressure by rules *179 lbs* End plates in steam space:  
 Material *S* Thickness *1/8"* Pitch of stays *2 1/4" x 1 1/4"* How are stays secured *DN & W* Working pressure by rules *162 lbs* Material of stays *S*  
 Diameter at smallest part *6-10"* Area supported by each stay *362.25"* Working pressure by rules *168 lbs* Material of Front plates at bottom *S*  
 Thickness *3/4"* Material of Lower back plate *S* Thickness *25/32"* Greatest pitch of stays *13" x 9 1/2"* Working pressure of plate by rules *162 lbs*  
 Diameter of tubes *3/4"* Pitch of tubes *4 7/16" x 4 1/2"* Material of tube plates *S* Thickness: Front *3/4"* Back *3/4"* Mean pitch of stays *9" x 9 3/8"*  
 Pitch across wide water spaces *14"* Working pressures by rules *206 lbs* Girders to Chamber tops: Material *S* Depth and  
 thickness of girder at centre *20 7/8" x 1"* Length as per rule *2-4 3/8"* Distance apart *9 1/2"* Number and pitch of Stays in each *2 of 9"*  
 Working pressure by rules *81 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  
 Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness  
 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 *Vertical with x tubes*  
 Made at *Stockton* By whom made *Riley Bros* When made *17.9.01* Where fixed *Work hold*  
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *2573* Fire grate area *28* Description of safety valves *d. Spring*  
 No. of safety valves *1* Area of each *14.19* 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 *7'-0"* Length *14'-0"* Material of shell plates *S* Thickness *7/16* Range of tensile strength *27.32* Descrip. of riveting long. seams *d. r. lap* Dia. of rivet holes *15/16* Whether punched or drilled *p.* Pitch of rivets *3/4"*  
 Lap of plating *4 1/2* Per centage of strength of joint Rivets *82.16* Thickness of shell crown plates *9/16* Radius of do. *5 ft* No. of Stays to do. *7*  
 Dia. of stays *1 1/2* Diameter of furnace Top *5'-5"* Bottom *6'-0"* Length of furnace *5'-3"* Thickness of furnace plates *5/8* Description of joint *laps s. r.* Thickness of furnace crown plates *9/16* Stayed by *as above* Working pressure of shell by rules *82.7 lbs*  
 Working pressure of furnace by rules *86.4 lbs* Diameter of uptake *17"* Thickness of uptake plates *7/16* Thickness of water tubes *3/8*

SPARE GEAR. State the articles supplied:— *Two top & bottom end, main bearing feet of coupling bolts & nuts. Set of feed & budge pump valves. 2 safety valves, propeller, assorted bolts nuts & iron*

The foregoing is a correct description, **NORTH EASTERN MARINE ENGINEERING CO. LTD**  
 Manufacturer. *Walter Beattie Secy*

Dates of Survey while building: During progress of work in shops— *1901. Sept 10. 17. 20. Oct 9. 11. 21. 24. Nov 1. 6. 11. 22. Dec 31. 1902. Jan 2. 7. 10. 11. 15.*  
 During erection on board vessel— *Indb Dec 4 / Jan 25 Feb 1*  
 Total No. of visits *17* Indb *3* Is the approved plan of main boiler forwarded herewith *No*  
 " " " donkey " " " *(duplicate)*  
 " " " " " " *duplicate*

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

Material of screw shaft *Wrot Iron* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *No*  
 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 *No* If two liners are fitted, is the shaft lapped or protected between the liners *Lapped & cemented*

*The machinery herein described has been built under Special Survey, the material & workmanship are good & efficient. The boilers & main steam pipes tested by water to double working pressure. The whole examined under steam at full working pressure & found satisfactory. In our opinion this vessel is worthy of the notation in the Register Book of + L.M.C 2/02*

Sunderland

It is submitted that this vessel is eligible for THE BECORD **L.M.C 2.02**

The amount of Entry Fee. £ *2* : : When applied for, *18.2.02*  
 Special £ *28* : *7* : : *18.2.02*  
 Donkey Boiler Fee £ : : :  
 Travelling Expenses (if any) £ : : :  
 When received, *9/3/02*  
*R.D. Shilston* *C.W. F. Moore*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRI. FEB 28 1902**

Assigned *+ L.M.C 2.02*



MACHINERY CERTIFICATE WRITTEN

Certificate (if required) to be sent to the Surveyors and to be written on or behind the space for Committee's Minute.