

REPORT ON MACHINERY.

3685

WED 23 APRIL 1890

No. 3685 Port of Belfast Received at London Office 18
 No. in Survey held at Belfast Date, first Survey 16 April 1889 Last Survey 20 April 1890
 Reg. Book. Sup. (Number of Visits 75) 2721
70 on the Steel Screw Steamer Alexander Elder Tons 403.7
 Master J. Evans Built at Belfast By whom built Harland & Wolff When built 1890
 Engines made at Belfast By whom made Harland & Wolff when made 1890
 Boilers made at do By whom made do when made 1890
 Registered Horse Power 375 Owners A. Lewis Jones Port belonging to Liverpool
380

ENGINES, &c.—

Description of Engines Triple compound 3 cyl. 3 cranks. I.D.A.S.C.
 Diameter of Cylinders 25.2 42 70 Length of Stroke 51 No. of Rev. per minute 65 Point of Cut off, High Pressure .65 Low Pressure .6
 Diameter of Screw shaft 14.5 Diam. of Tunnel shaft 14 Diam. of Crank shaft journals 14.5 Diam. of Crank pin 14.5 size of Crank webs 19.5 10.5
 Diameter of screw 16.6 Pitch of screw 20.6 No. of blades 4 state whether moveable Yes total surface 82 sq. ft.
 No. of Feed pumps 2 diameter of ditto 32 Stroke 32 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 diameter of ditto 4 Stroke 32 Can one be overhauled while the other is at work Yes
 Where do they pump from Bilge from Sea & all holds. 2 1/2 ft. space and after peak.
 No. of Donkey Engines 3 Size of Pumps 10" 10" 10" Where do they pump from Sea, ballast tanks
 Are all the bilge suction pipes fitted with roses Yes Are the roses always accessible Yes Are the sluices on Engine room bulkheads always accessible Yes
 No. of bilge injections One and sizes 5.2 Are they connected to condenser, or to circulating pump Circulating suction
 How are the pumps worked By links & levers from centre engine.
 Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Cocks & Valves
 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 air pump
 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 accessible at all times Yes
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges Yes
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock Before launching
 Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from upper deck.

BOILERS, &c.—

Number of Boilers Two Description Cir. Old Inded. Ret. Tub. Whether Steel or Iron Steel
 Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 11-2-90 N° 68 Cert.
 Description of superheating apparatus or steam chest None fitted
 Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately ✓
 No. of square feet of fire grate surface in each boiler 94.5 Description of safety valves 2. Coeffburns No. to each boiler Two
 Area of each valve 11.07 sq. in. Are they fitted with easing gear Yes No. of safety valves to superheater ✓ area of each valve ✓
 Are they fitted with easing gear ✓ Smallest distance between boilers and bunkers or woodwork 12" Diameter of boilers 13' 0"
 Length of boilers 17' 6" description of riveting of shell long. seams Double butt straps circum. seams inner triple Thickness of shell plates 12
 Diameter of rivet holes 15/16" whether punched or drilled drilled pitch of rivets 8 1/2" Lap of plating 17" x 1" Butt straps 32
 Percentage of strength of longitudinal joint 84 and 92 working pressure of shell by rules 180.6 lbs. size of manholes in shell 15" x 12"
 Size of compensating rings McNils Pt Ring No. of Furnaces in each boiler 6
 Outside diameter 38" length, top 7' 0" bottom 7' 0" thickness of plates 5" description of joint Welded if rings are fitted rolled
 Greatest length between rings 9" working pressure of furnace by the rules 210 lbs. combustion chamber plating, thickness, sides 19 back 5 top 5
 Pitch of stays to ditto, sides 7 1/4" back top 8" 8 1/2" If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 181 lbs. Diameter of stays at smallest part 1 3/8" working pressure of ditto by rules 188 lbs. end plates in steam space, thickness 1 1/8"
 Pitch of stays to ditto 1 7/8" x 16 1/2" how stays are secured Double nuts & washers working pressure by rules 204 lbs. diameter of stays at smallest part 3" Front plates at bottom, thickness 13/16" Back plates, thickness ✓
 Greatest pitch of stays working pressure by rules Diameter of tubes 3 1/4" pitch of tubes 4 1/2" thickness of tube plates, front 2 1/2" back 3/4" how stayed stay tube pitch of stays width of water spaces 5 1/2"
 Diameter of Superheater or Steam chest ✓ length ✓ thickness of plates ✓ description of longitudinal joint ✓ diam. of rivet holes ✓
 Pitch of rivets ✓ working pressure of shell by rules ✓ diameter of flue ✓ thickness of plates ✓ If stiffened with rings ✓
 Distance between rings ✓ working pressure by rules ✓ end plates of superheater, or steam chest; thickness ✓ how stayed ✓
 Superheater or steam chest; how connected to boiler ✓

DONKEY BOILER— Description *Horizontal return tube. Circular with 2 furnaces. Steel*
 Made at *Belfast* by whom made *Harland & Wolff* when made *1890* where fixed *on upper deck*
 Working pressure *60 lbs.* tested by hydraulic pressure to *120 lbs.* No. of Certificate *69* fire grate area *29 sq ft.* description of safety
 valves *6. Cockburn sp1* No. of safety valves *2* area of each *7.07* if fitted with easing gear *Yes* if steam from main boilers can
 enter the donkey boiler *No* diameter of donkey boiler *10-0"* length *8-10 1/2* description of riveting *Lap & double*
 Thickness of shell plates *2"* diameter of rivet holes *7/8"* whether punched or drilled *drilled* pitch of rivets *2.9"* lap of plating *4 1/2*
 per centage of strength of joint *70* thickness of ^{top end} ~~cross~~ plates *3/8"* stayed by *steel stays 2 1/2" dia 16 x 20" pitch double nuts*
 Diameter of furnace, top *2-11 1/2"* bottom *2-0"* length of furnace *6-0"* thickness of plates *1 1/2"* full description of joint *double butt strap 3"*
 Thickness of ~~furnace~~ crown plates *3/8"* stayed by *top by girders & by 1 1/2" W.I. screw stays 9 3/4"* working pressure of shell by rules *62 lbs.*
 Working pressure of furnace by rules *70 lbs.* diameter of uptake *4"* thickness of plates *1/2"* thickness of water tubes *1/2"*

SPARE GEAR. State the articles supplied:— *2 connecting rod bolts top end and two*
bottom end with nuts; 2 main bearing bolts; 1 set of coupling
bolts; 1 set of feed and bilge pump valves, Ramsbottom springs
for all pistons. A quantity of assorted bolts & nuts 4-4"

The foregoing is a correct description,

Harland & Wolff Manufacturer.

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

The Machinery of this Steamer has been constructed in accordance with the approved amended plans of main & auxiliary boilers enclosed, the Secretary's letters dated 5th April & 20th July 1889. the Rules of the Society for First Entry or equal thereto and to the satisfaction of the undersigned

The steel used in the construction of Boilers has been tested as required by the Rules and signed invoices examined.

The main and auxiliary boilers and main steam pipe have been subjected to twice the working pressure by hydraulic and showed no signs of weakness or leakage. and the boilers were tested under steam and the safety valves adjusted to their proper working pressures viz. 180 lbs. on main & 60 lbs. on auxiliary.

The main and auxiliary engines were tried under steam at full speed and worked satisfactorily

The shafting when finished was found sound & free from any visible defect.

Swans System (one wire) of Electric light was fitted throughout vessel by Holmes. Lead safety fuses at main & branch switches.

All the material used in the construction of Engines & Boilers and the workmanship throughout are good & satisfactory. I would therefore respectfully recommend that the Notification *+LMC 4.90* be granted & recorded in the Register Book.

It is submitted that this vessel is eligible to have +LMC 4.90 recorded

The amount of Entry Fee .. £ 3 : 0 : 0 received by me.

Special .. £ 38 : 15 :

Donkey Boiler Fee .. £ :

Certificate (if required) .. £
 To be sent as per margin.

(Travelling Expenses, if any, £)

Committee's Minute

TUES. 22 SEP 1891

FRIDAY 25 APRIL 1890

+ LMC 4/90

James McArthur
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



Lloyd's Register
 Foundation