

REPORT ON MACHINERY.

244

No. *244* *24150* Port of *Newcastle* Received at London Office *SAT 10 MAY 1890*
 No. in Survey held at *Newcastle* Date, first Survey *12th Dec 1889* Last Survey *12th May 1890*
 Reg. Book. on the *twin screw Eliza Cerama* (Number of Visits *14*) Tons *460*
 Master *Mc Nab* Built at *Middlesbrough* By whom built *Harkness & Son* When built *1890*
 Engines made at *Arbroath* By whom made *A. Shanks & Son* when made *1890*
 Boilers made at *Newcastle* By whom made *Lynn Bolton Works Co* when made *1890*
 Registered Horse Power *120* Owners *A. Shanks & Son* Port belonging to *Arbroath*

ENGINES, &c.—

Description of Engines *Twin Triple expansion, Surface Condensing*
 Diameter of Cylinders *13 1/2 x 21 x 35* Length of Stroke *22* No. of Rev. per minute *130* Point of Cut off, High Pressure *12 1/2* Low Pressure *13 3/4*
 Diameter of Screw shaft *6 1/2* Diam. of Tunnel shaft *6 1/2* Diam. of Crank shaft journals *6 1/2* Diam. of Crank pin *6 1/2* size of Crank webs *5 x 8*
 Diameter of screw *6' 0* Pitch of screw *10' 0* No. of blades *3* state whether moveable *No* total surface *13 sq ft.*
 No. of Feed pumps *One* diameter of ditto *2 1/4* Stroke *11* Can one be overhauled while the other is at work *✓*
 No. of Bilge pumps *One* diameter of ditto *2 1/2* Stroke *11* Can one be overhauled while the other is at work *✓*
 Where do they pump from *from all holds and engine room.*
 No. of Donkey Engines *One* Size of Pumps *6' x 12' x 4'* Where do they pump from *from all holds, engine room, to boiler, from sea, from hotwell, on deck and overboard.*
 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 *Two* and sizes *2 1/2* Are they connected to condenser, or to circulating pump *Circulating pumps.*
 How are the pumps worked *by lever of low pressure cylinder.*
 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 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 *22nd May 1890.*
 Is the screw shaft tunnel watertight *No tunnel* and fitted with a sluice door *✓* worked from *✓*

OILERS, &c.—

Number of Boilers *Two* Description *Cyl. Single ended* Whether Steel or Iron *Steel*
 Working Pressure *160 lb* Tested by hydraulic pressure to *320 lb* Date of test *Feb'y 26th 1890* by *3146*
 Description of superheating apparatus or steam chest *none*
 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 *34.5 sq ft.* Description of safety valves *Springs* No. to each boiler *Two*
 Area of each valve *3.98 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 on woodwork *20 in* Diameter of boilers *10.6*
 Length of boilers *10.3* description of riveting of shell long. seams *lap (8 rows) circum. seams lap (2 rows)* Thickness of shell plates *1*
 Diameter of rivet holes *1 3/16* whether punched or drilled *drilled* pitch of rivets *7 1/2* Lap of plating *12 3/8*
 Percentage of strength of longitudinal joint *84.6* working pressure of shell by rules *160* size of manholes in shell *12 x 16*
 Size of compensating rings *6 x 1 1/8* No. of Furnaces in each boiler *two*
 Outside diameter *36* length, top *✓* bottom *✓* thickness of plates *3/8* description of joint *✓* if rings are fitted *✓*
 Greatest length between rings *✓* working pressure of furnace by the rules *160* combustion chamber plating, thickness, sides *3/8* back *3/8* top *3/8*
 Pitch of stays to ditto, sides *8 x 8 1/16* back *8 1/16* top *8 1/16* If stays are fitted with nuts or riveted heads *nut* working pressure of plating by rules *160* Diameter of stays at smallest part *1 1/8* working pressure of ditto by rules *160* end plates in steam space, thickness *3/8*
 Pitch of stays to ditto *13 1/2* how stays are secured *draw* working pressure by rules *161* diameter of stays at smallest part *2* working pressure by rules *156* Front plates at bottom, thickness *3/4* Back plates, thickness *3/4*
 Greatest pitch of stays *12* working pressure by rules *160* Diameter of tubes *3 1/4* pitch of tubes *4 1/2* thickness of tube plates, front *3/4* back *3/4* how stayed *tubes* pitch of stays *as plan* width of water spaces *5 3/4*
 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 *✓*

Description of furnaces

DONKEY BOILER—

Description

Vertical tubular steel

Made at Arbroath by whom made A. Shanks & Son when made 1890 where fixed In storehold
 Working pressure 80 lb tested by hydraulic pressure to 160 lb No. of Certificate 566 fire grate area 3 1/2 sq ft description of safety
 valves Spring No. of safety valves One area of each 3.98 sq in if fitted with easing gear Yes if steam from main boilers can
 enter the donkey boiler No diameter of donkey boiler 2' 9" length 5' 1 1/2" description of riveting Lap joint
 Thickness of shell plates 5/16" diameter of rivet holes 1/16" whether punched or drilled Drilled pitch of rivets 1 7/8" lap of plating 2 1/4"
 per centage of strength of joint 63 + 53% thickness of crown plates 17/32" stayed by four screw stays
 Diameter of furnace, top 2' 4" bottom 2' 4" length of furnace 2' 0" thickness of plates 5/16" description of joint Lap joint
 Thickness of furnace crown plates 17/32" stayed by four screw stays working pressure of shell by rules 100 lb
 Working pressure of furnace by rules 155 lb diameter of uptake ✓ thickness of plates ✓ thickness of water tubes ✓

SPARE GEAR.

State the articles supplied:—

2 propellers; 2 connecting rod bolts and nuts;
 2 main bearing bolts; 1 set of coupling bolts; 1/2 set of feed pump valves;
 1 eccentric strap camplate; 6 journaling bolts; 1/2 " " bridge pins "
 6 condenser tubes; 100 ferrules; 10 boiler tubes; 1/2 " " donkey pump "

The foregoing is a correct description,

of Boiler.

Manufacturer.

Manufacturer of Engines Shanks & Son
A. Shanks & Son

General Remarks

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

The main boilers of this vessel have been built under special survey the materials and workmanship are sound and good and satisfactorily tested in completion to 320 lb per sq. inch.

The tubes were placed on board & vessel proceeded to Scotland & have engines fitted on board & fitting & firing completed.

John F. Walker
 Surveyor to Lloyd's Register

The engines and donkey boiler have been built under special survey according to sketch annexed. The safety valves of the main boilers and donkey boiler have been seen under steam. Those of the main boilers are blowing off at 160 lb p. sq. inch, and that of the donkey boiler at 50 lb p. sq. inch. The material and workmanship are good. The machinery is in good condition and well working order and this vessel is in my opinion eligible to be classed in the Registerbook with the Notification **L.M.O. 6. 90.**

It is submitted that this report be considered satisfactory, and should be forwarded to the Surveyor at Dundee for his guidance.

It is submitted that this vessel is eligible to have " + L.M.O. 6. 90 recorded "

Heating surface as per rule 1150 sq ft

$$\frac{1}{2} \left\{ \frac{35^2 \times \sqrt{22}}{100} + \frac{1150}{15} \right\} = 67. \text{ Both engines} = 134 \text{ H.P. } 19.6.90$$

The amount of Entry Fee .. £ 2 : 0 : received by me, £ 17. 15. 4 due to Dundee

Special .. £ 6 : 6 : received by me

Donkey Boiler Fee .. £ 13 : 10 : Three months

Certificate (if required) .. £ 18

To be sent as per margin.

(Travelling Expenses, if any, £ 1. 19. 4)

Committee's Minute **FRI 20 JUNE 1890**

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

+ L.M.O. 6. 90

Rep. 8 Dec 1890

MD87391290