

REPORT ON MACHINERY.

Port of Belfast

WED. 19 SEP 1894

Received at London Office

No. in Survey held at Belfast
Reg. Book.

Date, first Survey Febr. 22nd Last Survey Sept 13th 1894

(Number of Visits 38)

on the Steel screw steamer "Ching Wo"

Tons } Gross 3883
Net 2517

Master W. N. Shaw Built at Belfast By whom built Workman Clark & Co. Ltd When built 1894

Engines made at Belfast By whom made Workman Clark & Co. Ltd when made 1894

Boilers made at Belfast By whom made Workman Clark & Co. Ltd when made 1894

Registered Horse Power 500 Owners China Mutual Str. Nav. Co. Ltd Port belonging to London

Nom. Horse Power as per Section 28 345

ENGINES, &c.— Description of Engines Triple Expansion No. of Cylinders Three

Diameter of Cylinders 26; 42; 71 Length of Stroke 48 Revolutions per minute 70 Diameter of Screw shaft as per rule 13. ins
as fitted 12.35

Diameter of Tunnel shaft as fitted 12.3/4 Diameter of Crank shaft journals 13 1/2 Diameter of Crank pin 13 1/2 Size of Crank webs 9 1/4 x 18 3/4

Diameter of screw 17" 6" Pitch of screw 19" 0" No. of blades 4 State whether moveable yes Total surface 84

No. of Feed pumps 2 Diameter of ditto 4 Stroke 27" Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2 Stroke 27" Can one be overhauled while the other is at work yes

No. of Donkey Engines Three Sizes of Pumps Weir duplex 7 x 9 x 21 Feed
Pearn 4 1/2 x 6 x 6 E.R. 9 No. and size of Suctions connected to both Bilge and Donkey pumps
In Engine Room Three 3 1/2" 7 x 9 x 9 Ballast In Holds, &c. No 1 hold, two 3 1/2" No 2 hold, two 3 1/2"

No. of bilge injections 1 sizes 7 1/4" Connected to condenser, or to circulating pump ex. p. Is a separate donkey suction fitted in Engine room & size yes 3 1/2"

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 Larger valves. Smaller, cocks.

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 before launch Is the screw shaft tunnel watertight yes

Is it fitted with a watertight door yes worked from upper engine platform.

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 5112

No. and Description of Boilers Two single ended Working Pressure 180 lb Tested by hydraulic pressure to 360

Date of test 31-7-94 Can each boiler be worked separately yes Area of fire grate in each boiler 61.8 No. and Description of safety valves to each boiler Two Adams patent Area of each valve 12.56 Pressure to which they are adjusted 185 Are they fitted with easing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 9 ins Mean diameter of boilers 15.0"

Length 11.6" Material of shell plates steel Thickness 1 7/16 Description of riveting: circum. seams ends double middle treble long. seams double straps

Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" Lap of plates or width of butt straps 21 3/4 x 1 1/8

Per centages of strength of longitudinal joint rivets 91.6 Working pressure of shell by rules 198 Size of manhole in shell 16 x 12 plate 85.0

Size of compensating ring 2' 4" x 2' 0" x 1 7/16 No. and Description of Furnaces in each boiler 3 "Morison" Material steel Outside diameter 49"

Length of plain part top - bottom - Thickness of plates top 5/8" bottom - Description of longitudinal joint welded No. of strengthening rings -

Working pressure of furnace by the rules 205 Combustion chamber plates: Material Steel Thickness: Sides 9/16 Back 9/16 Top 9/16 Bottom 3/4

Pitch of stays to ditto: Sides 7 3/4" Back 7 3/4" Top 7 3/4" If stays are fitted with nuts or riveted heads nuts inside Working pressure by rules 182

Material of stays steel Diameter at smallest part 1 3/8" Area supported by each stay 60" Working pressure by rules 197 End plates in steam space: Material steel Thickness 1 1/8" Pitch of stays 15 7/8 x 16 How are stays secured doub. nuts & washers Working pressure by rules 234 Material of stays steel

Diameter at smallest part 2 1/2" Area supported by each stay 256 Working pressure by rules 177 Material of Front plates at bottom steel Thickness 7/8" Material of Lower back plate steel Thickness 1/16 Greatest pitch of stays as appr. Working pressure of plate by rules 180

Diameter of tubes 2 1/2" Pitch of tubes 3 5/8 x 3 7/8 Material of tube plates steel Thickness: Front 13/16 Back 3/4 Mean pitch of stays 7 1/2"

Pitch across wide water spaces 13 1/2" Working pressures by rules 180 Girders to Chamber tops: Material steel Depth and thickness of girder at centre doubtless 10 x 7/8" Length as per rule 27" Distance apart 7 3/4" Number and pitch of Stays in each two at 7 3/4"

Working pressure by rules 180 Superheater or Steam chest; how connected to boiler - 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 -

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 -

X 100



DONKEY BOILER— Description *Horizontal multitubular. Two flues.*
 Made at *Belfast* By whom made *Workman Clark & Co. Lim* When made *1894* Where fixed *On deck amidships*
 Working pressure *180* tested by hydraulic pressure to *360* No. of Certificate *194* Fire grate area *24 3/4* Description of safety valves *Adami's patent*
 No. of safety valves *two* Area of each *3.14* Pressure to which they are adjusted *180* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Diameter of donkey boiler *9" 0"* Length *8" 0"* Material of shell plates *Steel* Thickness *15/16*
 Description of riveting long seams *double butt straps* Diameter of rivet holes *1"* Whether punched or drilled *drilled* Pitch of rivets *7 1/4*
 Straps *15" x 2 3/32* Per centage of strength of joint Rivets *8.5:9* Thickness of shell *end* plates *29 3/4* Radius of do. *Pitch* of Stays to do. *13 1/4*
 Lap of plating *15" x 2 3/32* Plates *8.6:2* Thickness of shell *end* plates *29 3/4* Radius of do. *Pitch* of Stays to do. *13 1/4*
 Dia. of stays *2 1/4* area *3.43* Diameter of furnace Top *34"* Bottom *34"* Length of furnace *5' 9"* Thickness of furnace-plates *19/32* Description of joint *comb. ch.*
 joint *comb. ch.* Thickness of furnace-plates *9/16* Stayed by *1 1/2" stays 7 3/4" pitch* Working pressure of shell by rules *206*
 Working pressure of furnace by rules *181* Diameter of uptake tubes *3 1/4* Thickness of uptake tubes plates *front 29/32 back 3/4* Pitch stay *7 3/4"* Thickness of water tubes *0" x 8 1/2"*

SPARE GEAR. State the articles supplied:— *Propeller shaft. 1/2 crank shaft. Thrust shaft. 2 blades. 2 top end & 2 bot. end connecting rod bolts. 2 main bearing bolts. 2 ecc. shp. bolts. 6 coupling bolts. 6 propeller studs. Air & circ. pump rod. Pair crank pin braces. Pair top end braces. 2 slide valve spindles. 2 Fed & 2 bilge pump valves. 2 cir pump guards & studs. 2 air p. d. t. The foregoing is a correct description, 15 Condenser tubes. Assorted iron bolts & nuts etc.*
WORKMAN, CLARK & CO., LIMITED. Manufacturer.

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

The machinery has been constructed under special survey throughout, & the workmanship is good.
 On the 13th inst the vessel ran a satisfactory trial & the safety valves were found correctly adjusted.
 The boilers are fitted with Howden's arrangement for forced draught, the fan being driven by Chandler's patent vertical engines, one engine being in reserve.
 M^o Coll & Maxton's patent short steam tube is fitted.
 The electric lighting installation is by Messrs Paterson & Cooper. A report on the usual form will be forwarded.
 Photoprints of the main & donkey boilers & engine room pumping plan, and a tracing of the pipe arrangements in the holds are forwarded with this report. It is requested that these be returned for reference in dealing with the sister vessel, the S.S. "Oopack" (Yard No 112).
 The forging certificates for the shafting are also enclosed.
 The machinery in my opinion renders the vessel eligible for the notification + L.M.C. 9.94 in the Register Book.

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 9.94
 W.A. 19-9-94

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

Certificate (if required) to be sent to		MACHINERY CERTIFICATE WRITTEN.	
The amount of Entry Fee..	£ 3 : 0 :	When applied for,	15.10.1894
Special	£ 37 : 5 :	When received,	18/9/94
Donkey Boiler Fee	£ :		
Travelling Expenses (if any) £	:		

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

Committee's Minute
 Assigned
 FRIDAY 21 SEP 1894
 + L.M.C. 9.94

