

REPORT ON MACHINERY.

No. 2853

Received at London Office
 Date of writing Report 6th Aug 1917 When handed in at Local Office 10 Port of Belfast MON SEP 10 1917
 No. in Survey held at Belfast Date, First Survey 4th March 1915 Last Survey 29th Aug 1917
 Reg. Book. on the S.S. Mahia (Number of Visits) 162

Master Shaw Savill & Albion Coy L^d Built at Belfast By whom built Wickman Clark & Coy L^d Tons Gross 10835 Net 6965
 Engines made at Belfast By whom made - when made -
 Boilers made at - By whom made - when made -

Registered Horse Power 1006 Owners Shaw Savill & Albion Coy L^d Port belonging to Southampton
 Nom. Horse Power as per Section 28 997 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

ENGINES, &c.—Description of Engine Twin Screw Quadruple Expansion of Cylinders 8 No. of Cranks 8
 No. of Cylinders 22 - 3 1/2 - 45 1/2 - 65 Length of Stroke 48 Revs. per minute 1385 Dia. of Screw shaft 15.25 Material of S. Steel
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes Is the after end of the liner made water tight Yes
 Is the propeller boss Yes If the liner is in more than one length are the joints burned Yes 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 Yes If two liners are fitted, is the shaft lapped or protected between the liners Yes Length of stern bush 61

Dia. of Tunnel shaft 12.36 Dia. of Crank shaft journals 12.97 Dia. of Crank pin 13.75 Size of Crank webs 19 1/2 x 9 1/2 Dia. of thrust shaft under collars 13 3/4 Dia. of screw 17 - 0 Pitch of Screw 17 - 9 No. of Blades 3 State whether moveable Yes Total surface 85 sq. ft.
 No. of Feed pumps 1 Diameter of ditto 5 1/2 Stroke 24 Can one be overhauled while the other is at work Yes
 No. of Bilge pumps - Diameter of ditto 5 1/2 Stroke - Can one be overhauled while the other is at work Yes
 No. of Donkey Engines See separate sheet No. and size of Suctions connected to both Bilge and Donkey pumps 6 - 3 1/2 & 1 - 2 1/2
 In Engine Room 6 - 3 1/2 & 1 - 2 1/2 In Holds, &c. 10 - 3 1/2 & 4 - 2 1/2

No. of Bilge Injections 2 sizes 10 Connected to condenser, or to circulating pump 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 Both
 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 Fore hold suction How are they protected Wood Casings
 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

Dates of examination of completion of fitting of Sea Connections 26-8-16 of Stern Tube 17-1-17 Screw shaft and Propeller 17-1-17
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from E. Room cylinder platform
 BOILERS, &c.—(Letter for record S) Manufacturers of Steel Bevermore & Coy L^d
 Total Heating Surface of Boilers 10094 Forced Draft fitted Yes No. and Description of Boilers 2 Double End Cylinders
 Working Pressure 220 lbs Tested by hydraulic pressure to 440 lbs Date of test 31-1-17 No. of Certificate 499

Can each boiler be worked separately Yes Area of fire grate in each boiler 118 1/2 sq. ft. No. and Description of Safety Valves to each boiler 3 - Direct Spring of each valve 11.04 sq. in. Pressure to which they are adjusted 225 lbs Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 15 Mean dia. of boilers 41 - 7 1/2 Length 21 - 6 Material of shell plates Steel
 Thickness 27/64 Range of tensile strength 28 - 32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seam Lap Rivet
 Long. seam Butt. J. Diameter of rivet holes in long. seams 1 1/2 Pitch of rivets 10 1/2 Lap of plates or width of butt straps 21 5/8
 Percentages of strength of longitudinal joint 87.4 Working pressure of shell by rules 223 lbs Size of manhole in shell 16 - x 12
 Size of compensating ring McNeil No. and Description of Furnaces in each boiler 6 - Morrison Material Steel Outside diameter 47 1/2
 Length of plain part 2 Thickness of plates 43/64 Description of longitudinal joint Weld No. of strengthening rings 1
 Working pressure of furnace by the rules 232 lbs Combustion chamber plates: Material Steel Thickness: Sides 3/2 Back 1/2 Top 2 1/2 Bottom 1/8
 Pitch of stays to ditto: Sides 8 3/8 x 8 Back 8 1/2 x 7 Top 8 1/2 x 7 If stays are fitted with nuts or riveted heads Nuts used Working pressure by rules 225 lbs
 Material of stay Steel Diameter at smallest part 2.06 Area supported by each stay 67 sq. in. Working pressure by rules 275 lbs Material of stays Steel
 Thickness 1/4 Pitch of stays 16 1/2 x 20 How are stays secured Nuts & Washers Working pressure by rules 220 lbs Material of stays Steel
 Diameter at smallest part 1.8 Area supported by each stay 330 sq. in. Working pressure by rules 267 lbs Material of Front plates at bottom Steel
 Thickness 1/2 Material of Lower back plate Steel Thickness 1/2 Greatest pitch of stays 1/4 Working pressure of plate by rules 224 lbs
 Diameter of tubes 2 1/2 Pitch of tubes 3 3/4 x 3 5/8 Material of tube plate Steel Thickness: Front 1/32 Back 1/16 Mean pitch of stays 1 1/4 x 7 1/4
 Pitch across wide water spaces 1 3/2 Working pressures by rules 224 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 8 x (3/2 x 2) Length as per rule 52 1/2 Distance apart 8 1/2 x 8 Number and pitch of stays in each 3 - 7 x 8
 Working pressure by rules 309 lbs Superheater or Steam chest; how connected to boiler - Can the superheater be shut off and the boiler worked separately Yes
 Diameter - Length - Thickness of shell plates - Material - Description of longitudinal joint - Diam. of rivet holes - 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 -

VERTICAL DONKEY BOILER—

Manufacturers of Steel *Woul* ✓

No. _____ Description _____

Made at _____ By whom made _____ When made _____ Where fired _____

Working pressure tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of _____

Valves _____ No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____

If fitted with casing gear _____ If steam from main boilers can enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____

Material of shell plates _____ Thickness _____ Range of tensile strength _____ Descrip. of riveting long. seams _____

Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____ Lap of plating _____ Per centage of strength of joint _____ Rivets _____ Plates _____

Working pressure of shell by rules _____ Thickness of shell crown plates _____ Radius of do. _____ No. of stays to do. _____ Dia. of stays _____

Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace plates _____ Description of joint _____

Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Radius of do. _____ Stayed by _____

Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— *See separate sheet* ✓

The foregoing is a correct description,
FOR WORKMAN, CLARK & CO., LIMITED

M. H. Bell Manufacturer.

Dates of Survey while building { During progress of work in shops - - } *1915: - March 4-11-15; 22, 26, 30 May 4, 7 up till 29th Augth 1915*
 { During erection on board vessel - - - }
 Total No. of visits *162*

Is the approved plan of main boiler forwarded herewith *Y*

Dates of Examination of principal parts—Cylinders *7* - Slides *5* - *15* Covers *8* Rods _____

Connecting rods *13-1-17* Crank shaft *18* Thrust Shaft *16* Tunnel shafts _____ Screw shaft *1-1-17* Propeller *13-1-17*

Stern tube *19-9-16* Steam pipes tested *12-1-17* Engines and boiler seatings *26-2-17* Engines holding down bolts *26-2-17*

Completion of pumping arrangements *14-8-17* Boilers fixed *2-3-17* Engines tried under steam *28-8-17*

Main boiler safety valves adjusted *14-8-17* Thickness of adjusting washers *6-11-17*

Material of Crank shaft *W-Iron* Identification Mark on Do. *W. J. B. 27-9-16* Material of Thrust shaft *do* Identification Mark on Do. *15-1-17*

Material of Tunnel shafts *do* Identification Marks on Do. *9-1-17* Material of Screw shafts *do* Identification Marks on Do. *15-1-17*

Material of Steam Pipes *W-Iron* ✓ Test pressure *660 lbs sq. in.*

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

The machinery of this vessel has been constructed under Special Survey, and in accordance with the Rules. The workmanship and the materials are of good description and on trial in Belfast Lough the machinery worked satisfactorily. In my opinion, it is eligible for record L.M.C. 8-17, with notation "Forced Draft" "Electric Light" & "Refrig. Machinery"

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 8.17. F.D.

The amount of Entry Fee .. £ *3* : - : When applied for, *4-9-17*

Special .. £ *70-3* : - : When received, *11/9/17*

Donkey Boiler Fee .. £ : : *12/9/17*

Travelling Expenses (if any) £ : : _____

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

Committee's Minute
Assigned
TUE. 18 SEP. 1917
+ L.M.C. 8.17
F.D.
MACHINERY CERTIFICATE
WRITTEN



Certificate (if required) to be sent to
(The Surveyors are requested not to write on or below the space for Committee's Minute.)