

Date of writing Report 12th April 1917. Where transmitted to at Local Office 10 Port of Belfast
 No. in Survey held at Belfast Date, First Survey 8th Aug 1912 Last Survey 7th April 1917
 Reg. Book. on the S.S.S. Justicia (Number of Visits 214) Gross 32120
 Master Hamilton Built at Belfast By whom built Harland & Wolff Ltd Tons Net 19738
 Engines made at Belfast By whom made when made
 Boilers made at By whom made when made
 Registered Horse Power Owners Oceanic Steam Navigation Co. Ltd. Belonging to Liverpool
 Nom. Horse Power as per Section 28 (4012) Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c. Description of Engines Triple Screw, 4 Cylinder Triple Expansion and 1 L.P. Cylinder
 Dia. of Cylinders 55 $\frac{1}{2}$ " - 56" - 64" - 64" Length of Stroke 60" Revs. per minute 80 Dia. of Screw shaft as per rule 19 $\frac{3}{4}$ " Material of 2nd 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
 in 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 7' - 9'
 Dia. of Tunnel shaft as per rule 18 $\frac{1}{2}$ " Dia. of Crank shaft journals as per rule 19 $\frac{1}{2}$ " Dia. of Crank pin 20 $\frac{1}{2}$ " Size of Crank web 37 $\frac{1}{2}$ " x 4 $\frac{1}{2}$ " of thrust shaft under
 collars 19 $\frac{1}{2}$ " Dia. of screw 20" - 0 Pitch of Screw 24' - 6" No. of Blades 3 State whether mooseable Yes Total surface 115.28 sq. ft.
 No. of Feed pumps } Diameter of ditto } Can one be overhauled while the other is at work
 No. of Bilge pumps } Diameter of ditto } Can one be overhauled while the other is at work
 No. of Donkey Engines See others of Sheet No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 18" - 3 $\frac{1}{2}$ " - 7" - 2 $\frac{1}{2}$ " - 4" - 3" (Emergency 8" - 6") In Holds, &c. 21" - 3 $\frac{1}{2}$ " - 7" - 2 $\frac{1}{2}$ " (Emergency 9" - 6")
 No. of Bilge Injections 4 sizes 18" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine room of size 2" - 5"
 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 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 None How are they protected Yes
 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 22-5-14 of Stern Tube 7-5-14 Screw shaft and Propeller 28-2-17
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper deck

BOILERS, &c. (Letter for record S) Manufacturers of Steel G. Colville & Sons Ltd
 Total Heating Surface of Boilers 62288 sq. ft. Forced Draft fitted Yes No. and Description of Boilers 12-19, End by line
 Working Pressure 215 lbs Tested by hydraulic pressure to 430 lbs Date of test 19-5-14 No. of Certificate 461
 Can each boiler be worked separately Yes Area of fire grate in each boiler 118 sq. ft. No. and Description of Safety Valves to
 each boiler 4 - Direct Spring Area of each valve 10.322 sq. in. Pressure to which they are adjusted 215 lbs Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 15' - 4" Length 20' - 0" Material of shell plates Steel
 Thickness 1 $\frac{3}{4}$ " Range of tensile strength 31-36 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seam Lap or Butt S.
 long. seams Auto Drilled Rivet rivet holes in long. seams 1 $\frac{1}{2}$ " Pitch of rivets 10 $\frac{1}{2}$ " Lap of plates or width of butt straps 22 $\frac{1}{2}$ "
 Per centages of strength of longitudinal joint rivets 91.8 Working pressure of shell by rules 243 lbs Size of manhole in shell 16" x 12"
 Size of compensating ring No. No. and Description of Furnaces in each boiler 6 - Morison Material Steel Outside diameter 49 $\frac{1}{2}$ "
 Length of plain part top 2" Thickness of plates crown 3 $\frac{3}{8}$ " Description of longitudinal joint Weld No. of strengthening rings
 bottom 6" Working pressure of furnace by the rules 242 lbs Combustion chamber plates: Material Steel Thickness: Sides 5" Back 5" Top 5" Bottom 4 $\frac{1}{2}$ "
 Pitch of stays to ditto: Sides 8 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ " Back 8 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ " Top 8 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ " Are stays fitted with nuts or riveted heads Nuts inside Working pressure by rules 218 lbs
 Material of stays Steel Diameter at smallest part 1 $\frac{1}{2}$ " - 1 $\frac{3}{4}$ " Area supported by each stay 6 $\frac{1}{2}$ " x 5 $\frac{1}{2}$ " Working pressure by rules 228 lbs End plates in steam space
 Material Steel Thickness 1 $\frac{1}{2}$ " Pitch of stays 17 $\frac{1}{2}$ " - 15" How are stays secured Braced in Working pressure by rules 221 lbs Material of stays Steel
 Diameter at smallest part 1 $\frac{1}{2}$ " Area supported by each stay 226 $\frac{1}{2}$ " sq. in. Working pressure by rules 252 lbs Material of Front plates at bottom Steel
 Thickness 7 $\frac{1}{2}$ " Material of Lower back plate Thickness Greatest pitch of stays Working pressure of plate by rules
 Diameter of tubes 2 $\frac{1}{2}$ " Pitch of tubes 4" x 4" Material of tube plates Steel Thickness: Front 7 $\frac{1}{2}$ " Back 4 $\frac{1}{2}$ " Mean pitch of stays 8" x 8"
 Pitch across wide water spaces 14" Working pressures by rules 289 lbs with 4" Baffles to Chamber tops: Material Iron Depth and
 thickness of girder at centre 9" (8" x 2) Length as per rule 52 $\frac{1}{2}$ " Distance apart 8 $\frac{1}{2}$ " - 8 $\frac{1}{2}$ " Number and pitch of stays in each 6" - 7 $\frac{1}{2}$ "
 Working pressure by rules 302 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
 Is 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

IS A DONKEY BOILER FITTED? *No* ✓

If so, is a report note forwarded? ✓

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

The foregoing is a correct description,

for Sayward & Wolff Ltd.

W. B. Munn

Manufacturer.

Dates of Survey while building
During progress of work in shops
During erection on board vessel
Total No. of visits

1912-1-18-23 Sep 24 and Feb 7th April 1917

2/4

Is the approved plan of main boiler forwarded herewith

Yes ✓

Dates of Examination of principal parts—Cylinders

12-2 Slides 3

Covers

Donkey

Pistons

Rods

Connecting rods *8-8-14* Crank shaft *17-18-14*

Thrust shaft

Tunnel shafts

Screw shaft *30-5-14*

Propeller *3-4-14*

Stern tube *3-4-14* Steam pipes tested *28-8-14*

Engines and boiler seatings *12-9-14*

Engines holding down bolts *5-10-14*

Completion of pumping arrangements *16-3-17*

Boilers fixed *5-10-14*

Engines tried under steam *12-1-17*

Main boiler safety valves adjusted *12-1-17*

Thickness of adjusting washers *7-17 32*

Material of Crank shaft *Steel* Identification Mark on Do. *40423*

Material of Thrust shaft *Do* Identification Mark on Do. *Do*

Material of Tunnel shafts *Do* Identification Marks on Do. *Do*

Material of Screw shafts *Do* Identification Marks on Do. *Do*

Material of Steam Pipes *Steel* ✓

Test pressure *645 lbs sq. in.*

Is an installation fitted for burning oil fuel *No* ✓

Is the flash point of the oil to be used over 150°F. ✓

Have the requirements of Section 49 of the Rules been complied with ✓

Is this machinery duplicate of a previous case *No* ✓ If so, state name of vessel ✓

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 throughout, and on trial in Belfast Lough the machinery worked satisfactorily. In my opinion it is eligible for record + L.M.C. 4-17, with notation "Fore and Aft" "Electric Light"

The signs of the shafting for the Reciprocating and Turbine Engines are as per Secretary's Letter 10-7-12

It is submitted that
this vessel is eligible for
THE RECORD + L.M.C. 4-17. E.D.

T. 8 Cy. (2) 35", (2) 56" (4) 64" - 60". I.L.P. Turbine

12 D.B. 72 cf. 65 14/16 HS 6/344. 215 lb. (5)

The amount of Entry Fee ... £ 3 : 0 :
Special ... £ 132-13
Donkey Boiler Fee ... £
Travelling Expenses (if any) £

When applied for,
11-4-17

When received,
8/5/17

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

Committee's Minute

Assigned

+ L.M.C. 4-17

MACHINERY CERTIFICATE
WRITTEN

W819/14

pt. 4a.

Date of writing
No. in Survey
Reg. Book.
on the

Master *Ha*
Engines made
Boilers made
Registered Ho
Shaft Horse P

TURBINE

Diameter of Rotor
Diameter of Jour
Diameter of Wheel
Width of Face
No. of Screw Sha
No. of Blades
Thickness at Botto

ARTICUL

1ST EXPANSION

2ND
3RD
4TH
5TH
6TH
7TH
8TH

No. and size of
No. and size of B
No. and size of B

No. of Bilge Injecti

Are all the bilge su
Are all connections
Are they sized suffi
Are they each fitte
What pipes are car
Are all Pipes, Cock
Are the Bilge Suct
Is the Screw Shaft

BOILERS, &

Total Heating
Working Pressu
Can each boiler be
each boiler
Smallest distance b
Thickness
long, seams

Per centages of stre

Size of compensatin
Length of plain par

Working pressure
Pitch of stays to di
Material of stays
Material

Diameter at smalles
Thickness
Diameter of tubes
Pitch across wide

thickness of girder
Working pressure
Thickness of shell p
Working pressure o



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