

REPORT ON MACHINERY.

Received at London Office JUL 17 1917

Date of writing Report 5-7-17 Where handed in at Local Office Belfast Port of Belfast
 Date, First Survey 29 Feb. 1916 Last Survey 4 July 1917
 No. in Survey held at Belfast (Number of Visits) 121 Gross 71790
 Reg. Book 140 on the S.S. Mahana Net 7458
 Master F. Greene Built at Belfast By whom built Workman Clark & Co. Ltd. When built 1917
 Engines made at Newcastle By whom made Parsons Marine Steam Turbine Works 1916-17
 Boilers made at Belfast By whom made Workman Clark & Co. Ltd. when made 1917
 Registered Horse Power 1109 Owners Chaw Savill & Albion Coy. Ltd. Port belonging to Southampton
 Net Horse Power as per Section 28 1119 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

ENGINES, &c. — Description of Engines See other sheet No. of Cylinders 2 No. of Cranks 2
 No. of Cylinders 2 Length of Stroke 13.6" Revs. per minute 12.25 Dia. of Screw shaft 1.25" Material of 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
 Is the propeller boss Yes If the liner is in more than one length are the joints burned ✓ 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 ✓ If two
 liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 4'-10"
 Dia. of Tunnel shaft 13.2" Dia. of Crank shaft journals 12.62" Dia. of Crank pin 3 Size of Crank webs 80 sq ft
 Dia. of screw 16'-6" Pitch of Screw 15'-0" No. of Blades 3 State whether moveable Yes Total surface 80 sq ft
 Dia. of Feed pumps } Diameter of ditto See separate sheet Stroke See separate sheet Can one be overhauled while the other is at work
 Dia. of Bilge pumps } Diameter of ditto See separate sheet Stroke See separate sheet Can one be overhauled while the other is at work
 No. of Donkey Engines 20 Sizes of Pumps do No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room 5'-3 1/2" In Holds, &c. 10'-3 1/2" & 5'-2 1/2"

No. of Bilge Injections 2 sizes 10" Connected to condenser, or to circulating pump Yes 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 ✓
 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
 Are the pipes 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

Date of examination of completion of fitting of Sea Connections 22-11-16 of Stern Tube 24-11-16 Screw shaft and Propeller 24-11-16
 Is Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper deck level
VALVES, &c. — (Letter for record) S Manufacturers of Steel Beardmore & Co. Ltd.
 Heating Surface of Boilers 10382 sq ft Forced Draft fitted Yes No. and Description of Boilers 2 - D. End, Cylinders
 Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 16-11-16 No. of Certificate 497
 Can each boiler be worked separately Yes Area of fire grate in each boiler 133 sq ft No. and Description of Safety Valves to
 each boiler 3 Direct Spring Area of each valve 14.19 sq in Pressure to which they are adjusted 180 lbs Are they fitted with easing gear Yes

Distance between boilers or uptakes and bunkers or woodwork 10" Mean dia. of boilers 15'-4 1/2" Length 20'-6" Material of shell plates Steel
 Range of tensile strength 28-32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seam Lap & Butt
 Size of rivets 1 1/2" Pitch of rivets 9 1/2" Top of plates or width of butt straps 20 1/2"
 Working pressure of longitudinal joint 203 lbs Size of manhole in shell 18" No. of rivets 16 x 12"
 Working pressure of shell by rules 203 lbs No. and Description of Furnaces in each boiler 8 - Morrison's Material Steel Outside diameter 42 1/2"

Plain part top 9" Thickness of plates crown 1 1/2" Description of longitudinal joint Weld No. of strengthening rings 27 in
 bottom 9" bottom 3 1/2" pressure of furnace by the rules 193 lbs Combustion chamber plates: Material Steel Thickness: Sides 4 1/4" Back 4 1/4" Top 4 1/4" Bottom 1 3/4"
 Stays to ditto: Sides 8 1/2" x 8 1/2" Back 8 1/2" x 8 1/2" Top 8 1/2" x 8 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 191 lbs
 Material of stays Steel Diameter at smallest part 1 1/2" x 1 1/8" Area supported by each stay 73 1/2 sq in Working pressure by rules 205 lbs End plates in steam space:
 Thickness 1 1/4" Pitch of stays 21 1/2" x 15" How are stays secured Nuts Working pressure by rules 183 lbs Material of stays Steel
 Diameter at smallest part 3 3/16" Area supported by each stay 408 sq in Working pressure by rules 216 lbs Material of Front plates at bottom Steel

Material of Lower back plate ✓ Thickness ✓ Greatest pitch of stays ✓ Working pressure of plate by rules ✓
 Pitch of tubes 3 1/2" x 3 1/8" Material of tube plates Steel Thickness: Front 4 1/2" Back 4 1/2" Mean pitch of stays 1 1/4" x 7 1/4"
 Working pressures by rules 184 lbs Girders to Chamber tops: Material Steel Depth and
 Distance apart 8 1/2" Number and pitch of stays in each 6 - 7" x 8"
 Superheater or Steam chest: how connected to boiler from Steam pipe superheater, to shut off, and the boiler worked
 Diameter See separate sheet Length See separate sheet Thickness of shell plates See separate sheet Material See separate sheet Description of longitudinal joint See separate sheet Diam. of rivets See separate sheet

Pitch of rivets as per approved plans enclosed Working pressure of shell by rules See separate sheet Diameter of flue See separate sheet Material of flue plates See separate sheet Thickness See separate sheet
 Distance between rings See separate sheet Working pressure by rules 180 lbs End plates: Thickness See separate sheet How stayed See separate sheet
 Working pressure of end plates See separate sheet Area of safety valves to superheater 7.07 sq in Are they fitted with easing gear Yes

IS A DONKEY BOILER FITTED? *No*

If so, is a report now forwarded? *✓*

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 - - - } *1916: Feb 29 March 1-10-15-23 April 13-21 May 4-8-9-10-12-19-23*
{ During erection on board vessel - - - } *sup till June 4th 1917*
Total No. of visits *121*

Is the approved plan of main boiler forwarded herewith? *✓*

Dates of Examination of principal parts—Cylinders *✓* Slides *✓* Covers *✓* Pistons *✓* Rods *✓*
Connecting rods *✓* Crank shaft *✓* Thrust shaft *1-12-16* Tunnel shafts *6-11-16* Screw shaft *1-12-16* Propeller *15*
Stern tube *15-11-16* Steam pipes tested *20-4-17* Engine and boiler seatings *25-1-17* Engines holding down bolts *27-1-17*
Completion of pumping arrangements *1-6-17* Boilers fixed *25-1-17* Engines tried under steam *12-6-17*
Main boiler safety valves adjusted *1-6-17* Thickness of adjusting washers *7-11-17*
Material of Crank shaft *✓* Identification Mark on Do. *✓* Material of Thrust shaft *S. Steel* Identification Mark on Do. *✓*
Material of Tunnel shafts *S. Steel* Identification Marks on Do. *LLOYD'S R. J. B. 6-11-16* Material of Screw shafts *S. Steel* Identification Marks on Do. *✓*
Material of Steam Pipes *W. Iron* Test pressure *600 lbs sq*

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, it has been securely fitted on board, and on trial under steam, Belfast Lough it worked satisfactorily.

In my opinion, it is eligible for record + L.M.C. 7 with notation "Forced Draft Electric Light, Regenerative Machinery"

The Newcastle Report No 69111 on the Turbines; and a letter from W. Hartlepool Surveyors advising the survey of the Crown Superheater, along with Forging Reports etc, are enclosed

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 7. 17. F.D.

4 Steam Turbines geared to 2 screw shafts.

The amount of Entry Fee ... £ 8 : - : When applied for,
Special ... £ 72 : 19-6 : 27-6-1917
Donkey Boiler Fee *24* ... £ 48 : 19 : - : When received,
Travelling Expenses (if any) £ 48 : 19 : - : 27-6-1917

R. J. Bennett
Engineer Surveyor to Lloyd's Register of British & Foreign Ships

Committee's Minute

Assigned

+ L.M.C. 7. 17

MACHINERY CERTIFICATE
WRITTEN



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