

## REPORT ON MACHINERY.

No. 8447

Date of writing Report 23<sup>rd</sup> Nov 20

When handed in at Local Office

10

Port of Belfast

Received at London Office

SAT. NOV. 27. 1920

No. in Survey held at

Reg. Book.

on the

Date, First Survey 4<sup>th</sup> Sep 1919Last Survey 19<sup>th</sup> Nov 1920

(Number of Visits 79)

Gross 5327

Net 3169

Tons

When built 1920

Master C. Bullen

Built at

Belfast

By whom built

Harland & Wolff L<sup>td</sup>

Engines made at

Belfast

By whom made

Boilers made at

By whom made

when made

Registered Horse Power

Owner

Liverpool &amp; Bristol of River Plate

Port belonging to

Liverpool

Shaft Horse Power at Full Power 2900

Is Refrigerating Machinery fitted for cargo purposes

No

Is Electric Light fitted

Yes

TURBINE ENGINES, &c.—Description of Engines Single Screw Double Red<sup>n</sup>. Geared Turbines

Diameter of Rotor Shaft Journals, H.P. 4 $\frac{1}{2}$ " L.P. 4 $\frac{1}{2}$ " Diameter of Pinion Shafts 4 $\frac{1}{2}$ " + 11"  
 Diameter of Journals 4 $\frac{1}{2}$ " + 11" Distance between Centres of Bearings 3 $\frac{1}{2}$ " + 28 $\frac{1}{2}$ " + 48"  
 Diameter of Wheel Shaft 16" Distance between Centres of Bearings 76 $\frac{1}{2}$ " Diameter of Pitch Circle 7' 28 $\frac{1}{2}$ " + 17' 70"  
 Width of Face 14" + 27" Diameter of Thrust Shaft under Collars 15"  
 No. of Screw Shafts 1 (Cont<sup>n</sup> Lion) Diameter of same as per rule 15' 12" as fitted 15' 7 $\frac{1}{2}$ " Diameter of Propeller 18' 0" Pitch of Propeller 16' 0"  
 No. of Blades 4 State whether Movable Yes Total Surface 102 sq ft. Diameter of Rotor Drum, H.P. 26 L.P. 30 + 22 Astern 20"  
 Thickness at Bottom of Groove, H.P. L.P. Astern Revs. per Minute at Full Power, Turbine 2940 Propeller 78

## PARTICULARS OF BLADING.

	H. P.			L. P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION	2 $\frac{1}{2}$ "	2' 4 $\frac{1}{2}$ "	2	2 $\frac{1}{2}$ "	2' 2 $\frac{1}{2}$ "	2	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	2
2ND	2 $\frac{1}{2}$ "	2' 4 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	2' 3 $\frac{1}{2}$ "	2	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	2
3RD	2 $\frac{1}{2}$ "	2' 4 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	2' 4 $\frac{1}{2}$ "	2	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	2
4TH	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	2' 10 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	1
5TH	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	2' 11 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	1
6TH	2 $\frac{1}{2}$ "	2' 6 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	3' 1"	1	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	1
7TH	2 $\frac{1}{2}$ "	2' 6 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	3' 2 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	1
8TH	2 $\frac{1}{2}$ "	2' 6 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	3' 2 $\frac{1}{2}$ "	1	2 $\frac{1}{2}$ "	2' 5 $\frac{1}{2}$ "	1

No. and size of Feed pumps 2 Weirs 11 $\frac{1}{2}$ " x 8" x 24" 4 $\frac{1}{2}$ " x 8" x 24"  
 No. and size of Bilge pumps 1 Lamont 8" x 9" x 18" 4 $\frac{1}{2}$ " x 8" x 24"  
 No. and size of Bilge suction in Engine Room 4-3 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " 4-3 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ "

In Holds, &c. 13-3 $\frac{1}{2}$ " 1-2 $\frac{1}{2}$ "

No. of Bilge Injections 1 sizes 11" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine Room & size 2-4 $\frac{1}{2}$ "  
 Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes  
 Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Both Yes  
 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 Below  
 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 Work 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  
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Engine Room Top.

BOILERS, &c.—(Letter for record 3) Manufacturers of Steel B. Colville & Sons L<sup>td</sup>

Total Heating Surface of Boilers 7668 sq ft Forced Draft fitted Yes No. and Description of Boilers 3 Single End Cylind<sup>r</sup>.  
 Working Pressure 200 lbs Tested by hydraulic pressure to 400 lbs Date of test 4-3-20 No. of Certificate 562  
 Can each boiler be worked separately Yes Area of fire grate in each boiler Oil fired No. and Description of Safety Valves to  
 each boiler 2-Discharge Spring Area of each valve 11' 0" 4 sq ft Pressure to which they are adjusted 205 lbs Are they fitted with easing gear Yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 3' 4" diam dia. of boilers 15' 6" Length 11' 6" Material of shell plates Steel  
 Thickness 1 $\frac{1}{2}$ " Range of tensile strength 28-32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap double  
 ing. seams 1 Butt Lake Diameter of rivet holes in long. seams 1 $\frac{1}{2}$ " Pitch of rivets 9 $\frac{1}{2}$ " Lap of plates or width of butt straps 20 $\frac{1}{2}$ "  
 Percentages of strength of longitudinal joint rivets 91' 0 plates 84' 5 Working pressure of shell by rules 205 lbs Size of manhole in shell 16" x 12"  
 Size of compensating ring 10" No. and Description of Furnaces in each Boiler 3 Repton Material Steel Outside diameter 50 $\frac{3}{8}$ "  
 Length of plain part top 8" bottom 8" Thickness of plates crown 5" bottom 5" Description of longitudinal joint Weld No. of strengthening rings 278 in C/L  
 Working pressure of furnace by the rules 200 lbs Combustion chamber plates: Material Steel Thickness: Sides 3 $\frac{1}{2}$ " Back 4 $\frac{1}{2}$ " Top 23" Bottom 23"  
 Length of stays to ditto: Sides 9 $\frac{1}{2}$ " x 9 $\frac{1}{2}$ " Back 9 $\frac{1}{2}$ " x 8 $\frac{1}{2}$ " Top 10 $\frac{1}{2}$ " x 8 $\frac{1}{2}$ " If stays are fitted with nuts or riveted head Nuts Working pressure by rules 200 lbs  
 Material of stays Steel Diameter at smallest part 2 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " supported by each stay 8 $\frac{1}{2}$ " Working pressure by rules 205 lbs End plates in steam space  
 Material Steel Thickness 1 $\frac{1}{2}$ " Pitch of stays 22" x 15" How are stays secured 1 Nut + Wash Working pressure by rules 200 lbs Material of stays Steel  
 Material at smallest part 1 $\frac{1}{2}$ " x 8 $\frac{1}{2}$ " supported by each stay 352 sq Working pressure by rules 209 lbs Material of Front plates at bottom Steel  
 Thickness 3 $\frac{1}{2}$ " Material of Lower back plate Steel Thickness 3 $\frac{1}{2}$ " Greatest pitch of stays 13 $\frac{1}{2}$ " Working pressure of plate by rules 224 lbs  
 Diameter of tubes 2 $\frac{1}{2}$ " Pitch of tubes 4" x 3 $\frac{1}{2}$ " Material of tube plates Steel Thickness: Front 3 $\frac{1}{2}$ " Back 3 $\frac{1}{2}$ " Mean pitch of stays 12" x 7 $\frac{1}{2}$ "  
 Distance across wide water spaces 13 $\frac{1}{2}$ " Working pressures by rules 285 lbs with 1 $\frac{1}{2}$ " Girders to Chamber tops: Material Steel Depth and  
 Thickness of girder at centre 10" x 8" x 2 Length as per rule 32" Distance apart 10 $\frac{1}{2}$ " Number and pitch of stays in each 3-8 $\frac{1}{2}$ "  
 Working pressure by rules 212 lbs Steam dome: description of joint to shell % of strength of joint Diameter  
 Thickness of shell plates Material Description of longitudinal joint Diameter of rivet holes Pitch of rivets  
 Working pressure of shell by rules Crown plates: Thickness How stayed

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SUPERHEATER.

Type

Date of Approval of Plan

Tested by Hydraulic Pressure to

Date of Test

Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler

Diameter of Safety Valve

Pressure to which each is adjusted

Is Easing Gear fitted

IS A DONKEY BOILER FITTED?

Yes

If so, is a report now forwarded?

Yes

SPARE GEAR.

State the articles supplied:-

See other sheet

The foregoing is a correct description

For HARLAND & WOLFF Ltd.

J. E. Kebleck

Manufacturer.

Dates of Survey while building

During progress of work in shops - -

During erection on board vessel - - -

Total No. of visits

4<sup>th</sup> Sep<sup>r</sup> 1919 to 19<sup>th</sup> Nov<sup>r</sup> 1920

79

Is the approved plan of main boiler forwarded herewith

Yes

" " " donkey " " "

Yes

Dates of Examination of principal parts-Casings

29-10-19

Rotors

Blading

Gearing

Rotor shaft

23-9-20

Thrust shaft

6-9-20

Tunnel shafts

6-9-20

Screw shaft

6-9-20

Propeller

21-5-20

Stern tube

21-5-20

Steam pipes tested

4-6-20

Engine and boiler seatings

23-7-20

Engines holding down bolts

7-10-20

Completion of pumping arrangements

8-11-20

Boilers fixed

23-7-20

Engines tried under steam

9-11-20

Main boiler safety valves adjusted

9-11-20

Thickness of adjusting washers

11-16  
32

Material and tensile strength of Rotor shaft

Superior Steel

35.8 to 26.0

Identification Mark on Do.

95-75 95-75

Material and tensile strength of Pinion shaft

46.8

24.0

Identification Mark on Do.

46.8 24.0

Material of Wheel shaft

Superior Steel

Identification Mark on Do.

46.8

Material of Thrust shaft

Superior Steel

Identification Mark on Do.

46.8

Material of Tunnel shafts

Do

Identification Marks on Do.

6-9-20

Material of Screw shafts

Do

Identification Marks on Do.

Do

Material of Steam Pipes

Solid drawn Steel

Test pressure 600 lbs.

Is an installation fitted for burning oil fuel

Yes

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

Yes

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

Yes

Is this machinery a duplicate of a previous case

Yes

If so, state name of vessel

S.S. "Bonheur"

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 our opinion it is eligible for record + L.M.C. 11-20, with notation "Forced Draft & Electric Light; also "Fitted for Oil Fuel 11-20, F.P. above 150°F."

The amount of Entry Fee ... £ 3 :

Special ... £ 49 : 10 :

Donkey Boiler Fee ... £ :

Travelling Expenses (if any) £ :

When applied for,

24.11.20

When received,

24.12.20

FRI. DEC. 23 1920

Committee's Minute

Assigned

+ L.M.C. 11.20 F.D.

Issued for oil fuel 11.20

F.P. above 150°F.

R. F. Beveridge

Engineer Surveyor to Lloyd's Register of Shipping.

H. J. Humphreys



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