

REPORT ON MACHINERY.

No. 7328

Date of writing Report 28th Jan^y 1914 When handed in at Local Office 30th Jan^y 1914 Port of Belfast
 No. in Survey held at Belfast Date, First Survey 23rd Aug^r 1912 Last Survey 22nd Jan^y 1914
 Reg. Book. on the Y.S.S. Orduna (Number of Visits 120)

Master J. M. C. Taylor built at Belfast By whom built Harland & Wolff L^{td} Tons { Gross 15499
 Net 9548
 When built 1914

Engines made at Belfast By whom made - when made -
 Boilers made at - By whom made - when made -

Registered Horse Power - Not for Reg. Bk. Owners Pacific Steam Navigation Co. Ltd. Belonging to Liverpool
 Nom. Horse Power as per Section 28 1643 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Twin Screw 4 cyl. Triple Expansion and L.P. Turbine No. of Cranks 8
 Dia. of Cylinders 26½-42-47½-47½ Length of Stroke 51 Revs. per minute 80 Dia. of Screw shaft as per rule 15.08 Material of I. Steel
 as fitted 16.0 screw shaft

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 ✓ 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 5-6 ✓
 Dia. of Tunnel shaft as per rule 14.13 ✓ Dia. of Crank shaft journals as per rule 14.84 ✓ Dia. of Crank pin 16 ✓ Size of Crank web 29½ x 11½ ✓ Dia. of thrust shaft under
 collars 15½ ✓ Dia. of screw 17-6 ✓ Pitch of Screw 21-3 ✓ No. of Blades 3 ✓ State whether moveable Yes Total surface 80 sq. ft.

No. of Feed pumps 1 ✓ Can one be overhauled while the other is at work ✓
 No. of Bilge pumps - Diameter of ditto - Stroke - Can one be overhauled while the other is at work ✓

No. of Donkey Engines 2 ✓ Sizes of Boilers - No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room Ordinary 6-3½ x 6-2½ ✓ In Holds, &c. Ordinary 13-3½ x 12-2½ ✓
 Emergency 3-6 ✓ Emergency 12-6 x 1-4½ ✓

No. of Bilge Injections 2 ✓ sizes 13½ ✓ Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine room & size 3-4½ ✓
 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 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 ✓
 That 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 28-6-13 ✓ of Stern Tube 13/8/13 ✓ Screw shaft and Propeller 19/9/13 ✓
 the Screw Shaft Tunnel watertight State to be Is it fitted with a watertight door Yes ✓ worked from Bridge & Upper E. Room

MANUFACTURERS, &c.—(Letter for record S ✓) Manufacturers of Steel W. Colville & Sons L^{td} ✓

Total Heating Surface of Boilers 28410 sq. ft. of Draft fitted No No. and Description of Boilers 6-W End. Cylindrical
 Working Pressure 215 lbs Tested by hydraulic pressure to 430 lbs Date of test 5-9-13 No. of Certificate 454

Can each boiler be worked separately Yes ✓ Area of fire grate in each boiler 118½ sq. ft. No. and Description of Safety Valves to
 each boiler 3-Direct Spring Area of each valve 9.62 sq. 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 About 22 Mean dia. of boilers 15-0 Length 19-6 Material of shell plates Steel ✓
 Thickness 1¾ Range of tensile strength 29-33 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap & S. ✓
 Butt Seams Diameter of rivet holes in long. seams 1¾ Pitch of rivets 10½ Lap of plates or width of butt straps 22½ ✓

Percentages of strength of longitudinal joint rivets 88.6 Working pressure of shell by rules 250 lbs Size of manhole in shell 16 x 12 ✓
 plate 84.9

No. of compensating ring 1 ✓ No. and Description of Furnaces in each boiler 6-Morris Material Steel Outside diameter 47½ ✓
 Length of plain part top ✓ Thickness of plates crown ¾ Description of longitudinal joint Weld ✓ No. of strengthening rings ✓
 Working pressure of furnace by the rules 238 lbs Combustion chamber plates: Material Steel Thickness: Sides ¾ Back ✓ Top ¾ Bottom ¾ ✓
 No. of stays to ditto: Sides 8 x 8 Back ✓ Top 8 x 8 ✓ If stays are fitted with nuts or riveted heads Nuts inside Working pressure by rules 228 lbs ✓

Material of stay Steel Diameter at smallest part 1½ x 1½ Area supported by each stay 65 sq. Working pressure by rules 243 lbs ✓
 Material Steel Thickness 1½ Pitch of stays 17½ x 15 How are stays secured Bolted into plate Working pressure by rules 218 lbs ✓ Material of stays Steel ✓
 Diameter at smallest part 2¼ Area supported by each stay 260 sq. Working pressure by rules 258 lbs ✓ Material of Front plates at bottom Steel ✓
 Thickness ¾ Material of Lower back plate ✓ Thickness ✓ Greatest pitch of stays ✓ Working pressure of plate by rules ✓
 Diameter of tubes 2½ Pitch of tubes 4 x 4 Material of tube plates Steel Thickness: Front ¾ Back 1¾ Mean pitch of stays 8 x 8 ✓
 Pitch across wide water spaces 4 ✓ Working pressures by rules 291 lbs with 4 Double ✓ Chamber tops: Material Iron Depth and
 Thickness of girder at centre 9 x (7 x 2) Length as per rule 51 ✓ Distance apart 8 x 8½ Number and pitch of stays in each 6-7½ ✓
 Working pressure by rules 342 lbs 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

VERTICAL DONKEY BOILER—

Manufacturers of Steel

No.	Description	When made	Where fixed
Made at	By whom made		
Working pressure	tested by hydraulic pressure to	Date of test	No. of Certificate
Valves	No. of Safety Valves	Area of each	Pressure to which they are adjusted
If fitted with easing 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
Working pressure of shell by rules	Thickness of shell crown plates	Radius of do.	No. of stays to do.
Diameter of furnace Top	Bottom	Length of furnace	Thickness of furnace plates
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 other sheet

The foregoing is a correct description,
For Harland & Wolff, Ltd.,

Manufacturer.

Dates of Survey while building
During progress of work in shops— 1912: Aug 23, Sep 4, Oct 10, 22, 28, Nov 6, 8, 12, 14, 19, 21, 27 and
During erection on board vessel— up to Jan 23 1914,
Total No. of visits 120

Is the approved plan of main boiler forwarded herewith

Yes

Dates of Examination of principal parts—Cylinders	4— 8/13	Covers	5	Pistons	Rods
Connecting rods	30-9-13	Crank shaft	8-1-13	Thrust shaft	Tunnel shafts
Stern tube	23-6-13	Steam pipes tested	18-9-13	Engines and boiler seatings	3-1-13
Completion of pumping arrangements	22-1-14	Boilers fixed	24-10-13	Engines tried under steam	22-1-14
Main boiler safety valves adjusted	8-1-14	Thickness of adjusting washers	9-14		
Material of Crank shaft	Steel	Identification Mark on Do.	40758	Material of Thrust shaft	40
Material of Tunnel shafts	40	Identification Marks on Do.	40	Material of Screw shafts	40
Material of Steam Pipes	W. Iron + Solid drawn steel	Test pressure	650 lbs.		

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

The machinery of this vessel has been made 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.

A system of Emergency electrically driven Bilge Pumps has been fitted in this vessel, in lieu of hand pumps in the holds, as approved by the Committee. This is to be completed on arrival at Liverpool, and a copy of a letter to the Surveyors is appended. Provided this is satisfactory reported upon, I am of opinion it will be eligible for record + L.M.C with date, and notification "Electric Light and "Regenerating Machinery".

The amount of Entry Fee .. £ 3 : - : When applied for, 28-1-14

Special .. £ 86 : 1-6 : When received, 2/2/14

Donkey Boiler Fee .. £ : : 2/2/14

Travelling Expenses (if any) £ : : 2/2/14

Committee's Minute

Assigned

+ Lmb 2 14

TUE FEB. 10 1914

R. F. D. Beveridge

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

Rpt. 9a.

Port of Belfast

Continuation of Report No. 732 dated 30 Jan on the

Y.S.S. "Orduna"

List of Pumps. (Independent)

2 Main Feed, Weirs 18" x 13" x 24"	2 Sanitary (Weirs) 8" x 9" x 18"
1 Auxil. - 8" x 6" x 18"	1 Oil Cooler Circulat. 4" x 4" x 15"
1 Emergency - 8" x 6" x 18"	2 Turbine oil (Weirs) 6" x 6" x 12"
2 Main Air - 14" x 24" x 18"	1 Fresh Water - 5" x 5" x 12"
1 Auxil. - 12" x 18" x 10"	1 Heating & Cooking Air - 6" x 12" x 6"
2 Main Circulating H.W. 20" pipe 1 -	1 Circulat. 6 1/2" x 6 1/2" x 15"
1 Auxil. - 8" -	2 Evaporators, 30 tons
1 General Service Duplex 12" x 8" x 12"	1 Distiller
1 Ash Ejector - 12" x 8" x 12"	1 Feed Paster
1 Ballast - 9" x 10" x 12"	2 - Water Filters
2 Emergency Bilge (Electric) 10" x 12"	1 Aux. Condenser
2 Bilge Weirs 8" x 9" x 18"	1 Oil Cooler, etc. etc.

Spare Gear

1 set propeller studs + nuts (1 blade)	2 male + 2 female block stops each section
2 piston rods + nuts	5% dunnop strap
2 crosshead shoes	5% gland strap; block liners etc.
4 Pair top end braces	Pump Gear
2 - bottom -	1 Main Circul. Pump Impeller & spindle
1 valve spindle H.P. or I.P.	1 set piston rings -
1 - - L.P.	1 Main Feed piston + pump rod & chuck
1 set rings for H.P. piston valve	- set suction + delivery valves
1 - - I.P. -	1 - steam valve chest & spindle
1 - - L.P. -	1 - Air pump rod & chuck, head & foot
1 - piston rings H.P. piston	1 - steam valve chest
1 - - I.P. -	1 Bilge, set suction + delivery valves & beats
2 - - L.P. -	1 F. Water, -
1 Eccentric straps + bolts	1 Aux. Feed -
1 Escape Valve spring each size	1 Ballast -
50 Condenser tubes, 100 ferrules	1 Sanitary -
1 set piston rings for 1 Clean up	1 General -
1 - - for Change Valve	1 Ash Ejector -
1 - bolts + nuts for one wing shaft	1 Oil Pump -
1 - - centre -	1 - Cooler -
1 - - Turbine spindle	1 Check for heating -
12 funk ring bolts	1 Cooking
set rubbing rings & springs for	1 Reducing valve diaphragm
piston rods + valve spindle packing	20 ferrules 10 tubes for oil cooler
2 Check valves for boilers	etc. etc. and all gear to
15 plain + 5 stay tubes for boilers	Lloyd's Rules in addition
Turbine Spare Gear	
2 sets gland rings	
1 escape valve spring	
24 blade segments for rotor & cap	

R. F. D. Beveridge

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