

REPORT ON MACHINERY.

No. 7558

MON. AUG. 9-1915

Received at London Office

Date of writing Report *4th Aug. 1915* at *London Office* 10 Port of *Belfast*

No. in Survey held at *Belfast* Date, First Survey *7th Oct. 1914* Last Survey *1st Aug. 1915*

Reg. Book. on the *S.S. Orbita* (Number of Visits *124*) Gross Tons *Not*

Description of Safe Master Built at *Belfast* By whom built *Harland & Wolff Ltd* When built *1915*

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

Boilers made at *-* By whom made *-* when made *-*

Registered Horse Power Owners *Pacific Steam Nav Coy* Port 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 Engine *Twin Screw 4 Cyl. Triple Expansion* of Cylinders *8* No. of Cranks *8*

Dia. of Cylinder *26 1/2 - 42 - 47 1/2 - 47 1/2* Length of Stroke *51* Revs. per minute *80* Dia. of Screw shaft as per rule *15.08* 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

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 webs *2 5/8 x 11 1/2* of thrust shaft under

collars *15 1/2* 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 *None* Diameter of ditto *None* Stroke *Engine* 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 *See other sheet* No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room *6 - 3 1/2 + 6 - 2 1/2* Emergency *3 - 6"* In Holds, &c. *13 - 3 1/2 + 12 - 2 1/2* Emergency *12 - 6"*

+ *1 - 4 1/2"*

No. of Bilge Injections *2* sizes *13 1/2* Connected to condenser, or to circulating pump *Pumps* a separate Donkey Suction fitted in Engine room & size *3 - 4 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 *✓*

Rods Are all connections with the sea direct on the skin of the ship *Yes* Are they Valves or Cocks *Both*

Propeller 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*

bolts 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 *24 - 6 - 14* of Stern Tube *25 - 6 - 14* Screw shaft and Propeller *4 - 7 - 14*

Is the Screw Shaft Tunnel watertight *Yes* Is it fitted with a watertight door *Yes* worked from *Bridge & Upper E. Room*

OILERS, &c.—(Letter for record *S*) Manufacturers of Steel *D. Colville & Son Ltd*

Total Heating Surface of Boilers *28410 sq ft.* Forced Draft fitted *No* No. and Description of Boilers *6 - Double End Cylinders*

Working Pressure *215 lbs* Tested by hydraulic pressure to *430 lbs* Date of test *24 - 6 - 14* No. of Certificates *462 & 464*

Can each boiler be worked separately *Yes* Area of fire grate in each boiler *1184 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 *1 ft 0 in* Mean dia. of boilers *15' - 0"* Length *9' - 6"* Material of shell plates *Steel*

Thickness *1 3/4* Range of tensile strength *29-33 tons* Are the shell plates welded or flanged *No* Descrip. of riveting: cir. sea *lap & S.*

long. seams *Mutt & Co* Diameter of rivet holes in long. seams *1 3/4* Pitch of rivets *10 1/2* Lap of plates or width of butt straps *22 1/2*

Per centages of strength of longitudinal joint rivets *88.6* Working pressure of shell by rules *250 lbs* Size of manhole in shell *16" x 12"*

Size of compensating ring *M. Nails* No. and Description of Furnaces in each boiler *6 - Morrison* Material *Steel* Outside diameter *47 5/8*

Length of plain part top *✓* Thickness of plates crown *3/16* Description of longitudinal joint *Weld* No. of strengthening rings *5*

Working pressure of furnace by the rules *238 lbs* Combustion chamber plates: Material *Steel* Thickness: Sides *3/16* Back *✓* Top *3/16* Bottom *3/16*

Pitch of stays to ditto: Sides *8 1/2 x 8* Back *✓* Top *8 1/2 x 7 1/4* stays are fitted with nuts or riveted heads *Nuts inside* Working pressure by rules *228 lbs*

Material of stay *Steel* Diameter at smallest part *1 1/2* Area supported by each stay *65 sq* Working pressure by rules *243 lbs* End plates in steam space

Material *Steel* Thickness *1 3/4* Pitch of stays *16 1/2 x 15* How are stays secured *Screwed into plates & Single Nuts* Working pressure by rules *218 lbs* Material of stays *Steel*

Diameter at smallest part *2 1/16* Area supported by each stay *260 sq* Working pressure by rules *258 lbs* Material of Front plates at bottom *Steel*

Thickness *7/8* Material of Lower back plate *✓* Thickness *✓* Greatest pitch of stays *✓* Working pressure of plate by rules *✓*

Diameter of tubes *2 1/2* Pitch of tubes *4' x 4'* Material of tube plates *Steel* Thickness: Front *7/8* Back *13/16* Mean pitch of stays *8' x 8'*

Pitch across wide water spaces *14'* Working pressures by rules *291 lbs* to *16 Double* Girders to 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 8 1/2* Number and pitch of stays in each *6 - 7 1/2*

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

holes *✓* Pitch of rivets *✓* Working pressure of shell by rules *✓* Diameter of flue *✓* Material of flue plates *✓* Thickness *✓*

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 now forwarded? *✓*

SPARE GEAR. State the articles supplied: *See other sheet.*

The foregoing is a correct description,
For HARLAND & WOLFF Ltd

George Cummins

Manufacturer.

Dates of Survey while building { During progress of work in shops - - 1912 - Oct 27 1913 - Apr 17-22, 24, 28. June 3, 10, 17, 23.
During erection on board vessel - - - and up till 1st Aug 1915
Total No. of visits 124

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

" " " donkey " " "

Dates of Examination of principal parts—Cylinders 3 Slides 9-13 Covers Pistons *To* Rods

Connecting rods 1-6-14 Crank shaft 24 Thrust shaft 18 Tunnel shafts *To* Screw shaft 5-7-14 Propeller 5-6-1

Stern tube 11-6-14 Steam pipes tested 4-11-13 Engine and boiler seatings 10-8-14 Engines holding down bolts 13-8-14

Completion of pumping arrangements 9-7-15 Boilers fixed 13-8-14 Engines tried under steam 31-7-15

Main boiler safety valves adjusted 31-7-15 Thickness of adjusting washers 10-15-32

Material of Crank shaft *Steel* Identification Mark on Do. *LLOYDS* 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 & Iron* Test pressure 650 lb. 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 *Yes* If so, state name of vessel *T.B. "Orduna"*

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, with the exception that the Emergency Bilge pump is not connected to the Emergency Electric Switch board at after end of vessel, addition to its connection to the Main Electric Installation in the main engine room. As the Diesel oil engine which drives the Emergency Dynamo is situated in an exposed position, the Admiralty decided not to use it, for tactical reasons.

On trial in Belfast Lough, the machinery worked satisfactorily and in event of this vessel being returned to the Merchant Service I am of opinion it will be eligible for record + L.M.C. 8-15 provided the Emergency Bilge pump motor is connected to the Emergency Electric Switch board, or hand pumps be fitted in the holds. It is recommended, in the meantime, that the certificate issued, subject to this endorsement.

The amount of Entry Fee ... £ 3 : - : When applied for, 13-7-1915
Special ... £ 86 : 1-6 :
Donkey Boiler Fee ... £ : : When received, 16/3/1915
Travelling Expenses (if any) £ : : 17/8/15

Committee's Minute
Assigned *+ L.M.C. 8-15*

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