

REPORT ON MACHINERY.

No. 34135

THU. 20. SEP. 1917

Received at London Office

Site of writing Report 19 When handed in at Local Office 19 Port of Glasgow
 Date, First Survey 2nd Apr. 1914 Last Survey 4th Sept. 1914
 Reg. Book. Dumbarton on the T.S.S. Nairana
 Master Built at Dumbarton By whom built Wm Senny & Bros (1016) When built 1915
 Engines made at Dumbarton By whom made Senny & Co (499) when made 1917
 Boilers made at do By whom made do when made 1915
 Registered Horse Power 1490 Owners Huddart Parker & Co Port belonging to
 Shaft Horse Power at Full Power 6700 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

URBINE ENGINES, &c.—Description of Engines Compound geared turbines—2 sets Parsons type No. of Turbines 2 HP. 2 LP. Astern

Diameter of Rotor Shaft Journals, H.P. 5" L.P. 6" Diameter of Pinion Shaft 6"
 Diameter of Journals 6" Distance between Centres of Bearings Diameter of Pitch Circle
 Diameter of Wheel Shaft 12" Distance between Centres of Bearings Diameter of Pitch Circle of Wheel
 Width of Face Diameter of Thrust Shaft under Collar 11 1/2" 10 3/8 in body Diameter of Tunnel Shaft as per rule 10 7/8
 No. of Screw Shafts two Diameter of same as per rule 11 7/8 CL see Els. bk 3/12/19 Diameter of Propeller 10 3/8" Pitch of Propeller 11 8"
 No. of Blades 3 State whether Moveable no Total Surface 33 sq ft Diameter of Rotor Drum, H.P. L.P. Astern
 Thickness at Bottom of Groove, H.P. L.P. Astern Revs. per Minute at Full Power, Turbine 2400 Propeller 200

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		16 $\frac{3}{4}$			3'-0 $\frac{5}{8}$ "	✓		Impulse	
2ND "		16 $\frac{3}{4}$	✓		3'-1 $\frac{5}{8}$ "	✓		2'-1 $\frac{7}{8}$ "	✓
3RD "		17 $\frac{3}{8}$	✓		3'-3 $\frac{3}{8}$ "	✓		2'-3 $\frac{3}{4}$ "	✓
4TH "		18 $\frac{1}{4}$	✓		3'-5"	✓		2'-Y	✓
5TH "		21 $\frac{1}{2}$	✓		3'-Y	✓		2'-Y	✓
6TH "		22 $\frac{1}{4}$	✓		3'-8 $\frac{3}{4}$ "	✓			
7TH "		23 $\frac{1}{4}$	✓		3'-10 $\frac{3}{4}$ "	✓			
8TH "		24 $\frac{5}{8}$	✓		4'-1"	✓			

No. and size of Feed pumps 3 Weirs 13"-9" x 21"
 No. and size of Bilge pumps 2 Duplex 9"-10" x 10"
 No. and size of Bilge suction in Engine Room 2 of 2 1/2" Forward boiler room 3 of 2 1/2" Aft boiler room 3 of 2 1/2"
 In Holds, &c. Forward 12 of 2 1/2" Aft 1 of 2 1/2"

No. of Bilge Injections 2 sizes 9" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine Room & size 2 of 3 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
 Are they sized 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 above
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel yes Are the Blow Off Cocks fitted with galvanised iron covering plate yes
 What pipes are carried through the bunkers bilge & ballast How are they protected Iron 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 main deck

BOILERS, &c.—(Letter for record 5) Manufacturers of Steel Wm Beardmore & Co - Stewarts & Lloyd

Total Heating Surface of Boilers 20604 sq ft Is Forced Draft fitted yes No. and Description of Boilers 2 of Water Tube Babcock & Wilcox
 Working Pressure 200 lbs Tested by hydraulic pressure to 400 lbs Date of test 21.4.15. 27.4.15 No. of Certificate 13104 type 13117
 Can each boiler be worked separately yes Area of fire grate in each boiler 108 sq ft 133 sq ft No. and Description of Safety Valves to each boiler 24 suction 2 direct spring 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 2'-0" Mean dia. of boilers 3'-0" Length 15'-9 1/4" Material of shell plates steel
 Thickness 7/16 Range of tensile strength 26/30 tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams DR lap
 long. seams DBS-DR Diameter of rivet holes in long. seams 32 Pitch of rivets 3'-0 3/4" Lap of plates or width of butt straps 8 1/2"

Per centages of strength of longitudinal joint rivets 90.5 Working pressure of shell by rules 217 Size of manhole in shell 19 x 13 1/2

Size of compensating ring 27 1/2 x 22 1/4 x 8 No. and Description of Furnaces in each Boiler — Material — Outside diameter —

Length of plain part — Thickness of plates — Description of longitudinal joint — No. of strengthening rings —

Working pressure of furnace by the rules — Combustion chamber plates: Material — Thickness: Sides — Back — Top — Bottom —

Pitch of stays to ditto: Sides — Back — Top — If stays are fitted with nuts or riveted heads — Working pressure by rules — End plates in steam space

Material of stays — Diameter at smallest part — Area supported by each stay — Working pressure by rules — Material of stays —

Material steel Thickness 3/4 Pitch of stays dished How are stays secured — Working pressure by rules — Material of Front plates at bottom —

Diameter at smallest part — Area supported by each stay — Working pressure by rules — Material of Front plates at bottom —

Thickness — Material of Lower back plate — Thickness — Greatest pitch of stays — Working pressure of plate by rules —

Diameter of tubes 3 1/2 - 1 1/2 Pitch of tubes — Material of tube plates steel Thickness: Front 1/2 Back 1/2 Mean pitch of stays —

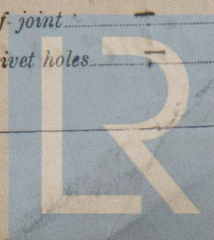
Pitch across wide water spaces — Working pressures by rules — Girders to Chamber tops: Material — Depth and

thickness of girder at centre — Length as per rule — Distance apart — Number and pitch of stays in each —

Working pressure by rules — 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 —



Lloyd's Register
Foundation

W1081-0347

SUPERHEATER. Type none 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? no If so, is a report now forwarded? —

SPARE GEAR. State the articles supplied:— Set of coupling bolts. Set of feed & bilge pump valves. Assorted iron, bolts, nuts, and the following turbine bearings:— 2 halves for HP rotor, 2 halves for LP rotor, 4 halves for pinion shafts, 2 halves for main gear shaft. Also other spares as required by Admiralty & Owners.

The foregoing is a correct description.

W. J. J. J. J. Manufacturers

Dates of Survey while building { During progress of work in shops 1914 Apr. 21, Aug. 13, 24, Sep. 23, 24, Oct. 28, 12, 20, 26, Nov. 2, 10, 19, 30, Dec. 9, 18, 28, 1915, Jan. 6, 18, 28, Feb. 18, 11, 12, Mar. 28, 11, 16, Apr. 1, 21, 24, May 19, 19, June 3, July 11, Aug. 20, Sep. 14, Oct. 14, Nov. 14, 1916, Dec. 24, 1917, Jan. 25, 1918, Feb. 15, 26, Apr. 11, 13, 25, 27, May 28, June 28, 22, July 4, 14, 18, 28, 1919, Aug. 19, 1919
During erection on board vessel 129 Sept. 14
Total No. of visits 62
Is the approved plan of main boiler forwarded herewith yes

Dates of Examination of principal parts—Casings 2-10-14 6-18-12-14 Rotors 12-10-14 Blading 6-1-15 6-20-9-15 Gearing 4-10-15

Rotor shaft 9-12-14 Thrust shaft 2-11-14 Tunnel shafts 24-9-14 Screw shaft 18-2-15 Propeller 18-2-15

Stern tube 18-2-15 Steam pipes tested 11-4-15 Engine and boiler seatings 3-6-15-14-7-15 Engines holding down bolts 27-7-14

Completion of pumping arrangements 4-9-14 Boilers fired 14-7-15 Engines tried under steam 4-9-14

Main boiler safety valves adjusted 21-8-14 Thickness of adjusting washers FPBPV $\frac{5}{16}$ SV $\frac{19}{64}$ FSBPV $\frac{5}{16}$ SV $\frac{3}{8}$ FCBPV $\frac{5}{16}$ SV $\frac{3}{8}$ AV $\frac{23}{64}$ AV $\frac{3}{8}$ AV $\frac{29}{64}$

Material and tensile strength of Rotor shaft 34/38 tons steel Identification Mark on Do. Y99 AC

Material and tensile strength of Pinion shaft 40 tons steel Identification Mark on Do. Y99 AC

Material of Wheel shaft steel Identification Mark on Do. Y99 AC Material of Thrust shaft steel Identification Mark on Do. Y99 AC

Material of Tunnel shafts steel Identification Marks on Do. Y99 AC Material of Screw shafts steel Identification Marks on Do. Y99 AC

Material of Steam Pipes Iron & steel Test pressure 600 lbs

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 —

Safety valve adjusting washers—contd. ACBPV $\frac{3}{8}$ CV $\frac{5}{16}$ AV $\frac{3}{8}$ APBPV $\frac{31}{64}$ AV $\frac{13}{32}$ ASBPV $\frac{23}{64}$ AV $\frac{13}{32}$

Is this machinery a 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 in accordance with the rules, and has been seen working satisfactorily under steam. Materials & workmanship are good. Vessel has been chartered by the Admiralty. The installation consists of two sets of compound turbines—Parsons type—each consisting of one HP and one combined LP and astern turbines, single geared to propeller shafting—ratio 12 to 1. Total SHP 6400 at 200 revs of propellers. This machinery is eligible in my opinion to be classed + LMC 9-14. Water Tube Boilers. Forced draught. Electric light.

4 Steam Turbines geared to 2 screw shafts. — Water Tube boilers, subject to Annual Survey.
The amount of Entry Fee ... £ 3 : 0 :
Special ... £ 82 : 5 :
Donkey Boiler Fee ... £ - : - :
Travelling Expenses (if any) £ - : - :
When applied for, 15/9/1914
When received, 19/9/1914
Harry Clarke Engineer Surveyor to Lloyd's Register of Shipping. 24/9/19

Committee's Minute GLASGOW 19 SEP. 1917
Assigned + LMC 9.17
Fd
Water Tube Boilers
FRI. 24 DEC. 1920

