

REPORT ON MACHINERY

No. 41632

WED. JAN. 11 1922

Received at London Office

Date of writing Report 9. 1. 22 When handed in at Local Office 9. 1. 22 Port of Glasgow
No. in Survey held at Dumbarton Date, First Survey 19. 2. 1919 Last Survey 21/12/21 19
Reg. Book. on the S.S. "Scotia" (Number of Visits 51)

Master Built at Dumbarton By whom built Tom Denny & Sons (1037) When built 1921
Engines made at Dumbarton By whom made Tom Denny & Sons (820) when made 1921
Boilers made at Dumbarton By whom made Tom Denny & Sons (820) when made 1921
Registered Horse Power Owners L. & N.W. Ry. Port belonging to Dublin
Shaft Horse Power at Full Power 14000 Is Refrigerating Machinery fitted for cargo purposes 720 Is Electric Light fitted Yes
T.H.P. 2714 2717

Tons { Gross 3441
Net 1388

TURBINE ENGINES, &c.—Description of Engines Brown Curtis S.R. & Astern Turbines No. of Turbines 2 H.P. 2 L.P.

Diameter of Rotor Shaft Journals, H.P. 5" L.P. 7" Diameter of Pinion Shaft 7"
Diameter of Journals 7" Distance between Centres of Bearings 35 1/2" Diameter of Pitch Circle H.P. 8.37 L.P. 10.128
Diameter of Wheel Shaft 13" Distance between Centres of Bearings 6' 3" Diameter of Pitch Circle of Wheel 78.43
Width of Face 44 Diameter of Thrust Shaft under Collars 12 1/2" Diameter of Tunnel Shaft as per rule 12" (11.69 Rule)
No. of Screw Shafts 2, Centre Lines Diameter of same as per rule 2 1/4" (12.51 Rule) as fitted 1 3/4" Diameter of Propeller 9'-6" Pitch of Propeller 11' 0"
No. of Blades 3 State whether Moveable 720 Total Surface 32 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 H.P. 2522 L.P. 2165 Propeller 280

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									
2ND									
3RD									
4TH									
5TH									
6TH									
7TH									
8TH									

No. and size of Feed pumps (3) 10" x 26"
No. and size of Bilge pumps (2) 8" x 9" x 10"
No. and size of Bilge suction in Engine Room (2) 3" (2) 3 1/2" (2) in each stokehold 3"
In Holds, &c. (1) in each 3"

No. of Bilge Injections 5 sizes 10" Connected to condenser, or to circulating pump pump 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 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 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 a spigot and brass covering plate Yes
What pipes are carried through the bunkers None How are they protected
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 Top platform

BOILERS, &c.—(Letter for record (5) Manufacturers of Steel D. Colville & Son

Total Heating Surface of Boilers 33916 sq ft Is Forced Draft fitted Yes No. and Description of Boilers (2) 23 section wide Babcock & Wilcox W.T.
Working Pressure 200 Tested by hydraulic pressure to 400 Date of test 26/10/20 16/11/20 5/11/20 No. of Certificate 15337, 15336, 15365
Can each boiler be worked separately Yes Area of fire grate in each boiler 23 " 105 " No. and Description of Safety Valves to each boiler 23 " 2 " Area of each valve 23 " 9.62 Pressure to which they are adjusted 205 Are they fitted with easing gear Yes
Smallest distance between boilers or uptakes and bunkers or woodwork Well clear Mean dia. of boilers 3'-0" Length 28.18-17 1/2 Material of shell plates Steel
Thickness No Range of tensile strength 26 to 30 tons Are the shell plates welded or flanged 720 Descrip. of riveting: cir. seams double butt
long. seams double butt Diameter of rivet holes in long. seams 23 / 32 Pitch of rivets 23 " 3.133 Lap of plates or width of butt straps 8 1/2"
Per centages of strength of longitudinal joint rivets 98.0 Working pressure of shell by rules 218 Size of manhole in shell 15" x 11"
plates 77.0
Size of compensating ring flanged No. and Description of Furnaces in each Boiler Material Outside diameter
Length of plain part top bottom Thickness of plates crown bottom 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
Material of stays Diameter at smallest part Area supported by each stay Working pressure by rules End plates in steam space
Material Steel Thickness 3/4 1/2" Pitch of stays None How are stays secured Working pressure by rules Material of stays
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 7" Material of tube plates Steel Thickness: Front 7/8 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

006067-006079-0133



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:— *Span gear common to S.S. Cambria & Scotia*
See London letter March 1920. ✓

The foregoing is a correct description,



Dates of Survey while building: During progress of work in shops -- 1919 Feb 19. 24 Mar 12. 20 Jun 23. 28 Jul, 16. 25 Aug 5. 8. 26 Sep 18. 26 Nov 13. 18. 27 Dec 5. 11. 26. 30 (1920) Jan 12. 16
 During erection on board vessel --- 23 Feb 13. 24 Mar 2. 9. 19. 23. Apr 13. 20. 23. 29 May 4. 14. 18. 21. 25 Jun 1. 8. 10. 25. 29 Jul 6. 31 Aug 6. 10. 13 Sep 28
 Dec 16. 22. Total No. of visits *51.* Is the approved plan of main boiler forwarded herewith *✓*
 " " " donkey " " " *✓*

Dates of Examination of principal parts—Casings *25/5/20* Rotors *10/9/20* Blading *10/9/20* Gearing *10/9/20*

Rotor shaft *10/9/20* Thrust shaft *10/9/20* Tunnel shafts *10/9/20* Screw shaft *10/9/21* Propeller *10/9/20*

Stern tube *10/9/20* Steam pipes tested *21/12/20* Engine and boiler seatings *15/10/20* Engines holding down bolts *19/11/21*

Completion of pumping arrangements *21/12/21* Boilers fixed *A 19/11/21* Engines tried under steam *21/12/21*
 G.P. $\frac{1}{16}$ M. $\frac{1}{16}$ S. $\frac{1}{16}$ H.P. $\frac{1}{32}$ M. $\frac{3}{8}$ S. $\frac{1}{32}$ I.P. $\frac{1}{16}$ M. $\frac{1}{2}$ S. $\frac{1}{32}$ Thickness of adjusting washers A $\frac{1}{16}$ B $\frac{3}{16}$ C $\frac{1}{8}$ D $\frac{1}{16}$ E $\frac{1}{8}$ F $\frac{3}{8}$

Main boiler safety valves adjusted *13/12/21* Material and tensile strength of Rotor shaft *5m steel 34 to 38 tons* Identification Mark on Do. *170 AMK*

Material and tensile strength of Pinion shaft *Nickel Steel 40 to 45 tons* Identification Mark on Do. *AMK*

Material of Wheel shaft *Steel* Identification Mark on Do. *2931 AMK* Material of Thrust shaft *Steel* Identification Mark on Do. *197 19*

Material of Tunnel shafts *Steel* Identification Marks on Do. *2931 AMK* Material of Screw shafts *Steel* Identification Marks on Do. *2931 AMK*

Material of Steam Pipes *S.D. steel* Test pressure *600*

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 a duplicate of a previous case *yes* If so, state name of vessel *S.S. "Cambria"*

General Remarks (State quality of workmanship, opinions as to class, &c.) *These engines & boilers have been built under special survey, the materials and workmanship are of good description, they have been well fitted on board and tried under steam.*

In my opinion this machinery is eligible to have notification of + L.M.C 12-21 in the Register Book

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. - 12.21. F.D. C.L. 2717 N.H.P.

4 steam turbines geared to two screw shafts.

The amount of Entry Fee ... £ *6* : : When applied for, *24.12.21.*
 Special ... £ *167* : :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : : *27.12.21. Approved.*

A.M. Keane
 Engineer Surveyor to Lloyd's Register of Shipping.

MACHINERY DEPT.
 WRITTEN 17.1.22
 dated 12/1/22

Committee's Minute *GLASGOW 10 JAN 1922*

Assigned *+ LMC 12.21*
30.

Glasgow

Certificate (if required) to be sent to... below the space for Committee's Minute.
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)

