

## REPORT ON MACHINERY.

No. 34127

Received at London Office  
Date of writing Report 10. 6. 1914 When handed in at Local Office 13. 6. 1914 Port of Glasgow WED. JUN. 17. 1914  
No. in Survey held at Glasgow Date, First Survey 17. 12. 13 Last Survey 9. 6. 1914  
Reg. Book. 26 Sup. on the S.S. "CATO" ex "Glio" (Number of Visits 22) Tons Gross 403 Net 633  
Master A. Poole Built at Campbelltown By whom built Campbelltown S.B. Co. (No. 99) When built 1914  
Engines made at Glasgow By whom made Ross & Duncan (No. 965) when made 1914  
Boilers made at do. By whom made do. (Nos. 1456-7) when made 1914  
Registered Horse Power Owners Bristol Steam Navigation Co. Ltd. Port belonging to Bristol  
Nom. Horse Power as per Section 28 129 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted No.

ENGINES, &c.—Description of Engines Triple expansion S.S. Condag No. of Cylinders 3 No. of Cranks 3  
Dia. of Cylinders 15" 25½" 41" Length of Stroke 30" Revs. per minute 111 Dia. of Screw shaft as per rule 8 1/8" Material of screw shaft iron  
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 Yes If two  
liners are fitted, is the shaft lapped or protected between the liners Length of stern bush 2'-10"  
Dia. of Tunnel shaft as per rule 4 1/8" Dia. of Crank shaft journals as per rule 8 1/8" Dia. of Crank pin 8 1/2" Size of Crank webs 5 1/8" x 6 1/2" Dia. of thrust shaft under  
collars 8 1/2" Dia. of screw 10'-0" Pitch of Screw 12'-0" No. of Blades 4 State whether moveable No Total surface 36 1/2 sq. ft.  
No. of Feed pumps 2 Diameter of ditto 2 1/2" Stroke 15" Can one be overhauled while the other is at work Yes  
No. of Bilge pumps 2 Diameter of ditto 2 1/2" Stroke 15" Can one be overhauled while the other is at work Yes  
No. of Donkey Engines 2 Sizes of Pumps 5" x 3 1/2" x 6" Duplex Gen. Service No. and size of Suctions connected to both Bilge and Donkey pumps  
In Engine Room 4 - 2" ; 1 - 2 1/2" special In Holds, &c. 2 - 2" for, 1 - 2 1/2" aft, 1 - 2 1/2" tunnel well.  
No. of Bilge Injections 1 sizes 3 1/2" Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine room & size 4" - 2 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 none  
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 for high steam pipes 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 See Greenock Report of shaft and Propeller  
Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from E. R. Upper deck level

BOILERS, &c.—(Letter for record) Manufacturers of Steel David Colville & Sons Ltd.  
Total Heating Surface of Boilers 2386 sq. ft. Forced Draft fitted No. No. and Description of Boilers 2 - S.E. Marine  
Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 4. 5. 1914 No. of Certificate 12695.  
Can each boiler be worked separately Yes Area of fire grate in each boiler 39 1/2 sq. ft. No. and Description of Safety Valves to  
each boiler Pair spring loaded. Area of each valve 3.94 sq. in. Pressure to which they are adjusted 185 lbs. Are they fitted with easing gear Yes  
Smallest distance between boilers or uptakes and bunkers or woodwork 3'-3" Mean dia. of boilers 11'-6" Length 10'-6" Material of shell plates steel  
Thickness 3 1/2" Range of tensile strength 28/32 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams D.R.  
long. seams T.R.D.B.S. Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 6 7/8" Lap of plates or width of butt straps 1'-5 1/2"  
Per centages of strength of longitudinal joint rivets 88.5 Working pressure of shell by rules 180 lbs. Size of manhole in shell 16" x 12"  
plate 83.6 Size of compensating ring 4" x 3 1/2" No. and Description of Furnaces in each boiler 2 - Duglin Material steel Outside diameter 3'-10 1/4"  
Length of plain part top 9" Thickness of plates crown 9" Description of longitudinal joint weld. No. of strengthening rings  
bottom 7 1/2" Working pressure of furnace by the rules 190 lbs. Combustion chamber plates: Material steel Thickness: Sides 5" Back 5" Top 5" Bottom 1 1/2"  
Pitch of stays to ditto: Sides 8 1/4" x 4 1/4" Back 8 1/4" x 8 1/4" Top 4 1/2" x 8 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 186 lbs  
Material of stays steel Diameter at smallest part 1.46 Area supported by each stay 1/2 Working pressure by rules 187 lbs. End plates in steam space:  
Material steel Thickness 3 1/2" Pitch of stays 15 1/2" x 15 1/2" How are stays secured D.N.G.W. Working pressure by rules 180 lbs. Material of stays steel  
Diameter at smallest part 4.43 Area supported by each stay 246 Working pressure by rules 186 lbs. Material of Front plates at bottom steel  
Thickness 2 1/2" Material of Lower back plate steel Thickness 2 1/2" Greatest pitch of stays 12" x 14" Working pressure of plate by rules 350 lbs.  
Diameter of tubes 3 1/2" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates steel Thickness: Front 3 1/2" Back 3 1/4" Mean pitch of stays 8 1/4" x 8 1/2"  
Pitch across wide water spaces 1'-2" Working pressures by rules 187 lbs. Girders to Chamber tops: Material iron Depth and  
thickness of girder at centre 4 1/2" x 2 1/2" Length as per rule 2'-6 1/8" Distance apart 8 1/2" Number and pitch of stays in each 3 - 4 1/2" x 8 1/2"  
Working pressure by rules 209 lbs. Superheater or Steam chest; how connected to boiler None 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  
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  
Made at By whom made When made Where fixed  
Working pressure tested by hydraulic pressure to Date of test No. of Certificate Fire grate area Description of Sc  
Valves No. of Safety Valves Area of each Pressure to which they are adjusted Date of adjustment  
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 Per centage of strength of joint Rivets  
Working pressure of shell by rules Thickness of shell crown plates Radius of do. No. of stays to do. Dia. of stays  
Diameter of furnace Top Bottom Length of furnace Thickness of furnace plates Description of joint  
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:— 2 top end bolts & nuts, 2 bottom end bolts & nuts, 2 main beam bolts & nuts, 1 set coupling bolts, 1 set feed and high pump valves, 1 propeller, 12 joint ring studs, quantity assorted bolts & nuts and rim of various sizes.

The foregoing is a correct description,  
Ross Duncan Manufacturer.

Dates of Survey while building  
During progress of work in shops -- 1913 Dec 17-27 1914 Jan 7-21-27 Feb 10-23 March 5-12-23-31 Apr 7-17  
During erection on board vessel -- May 4-11-13-18-21-22-26-28 June 9  
Total No. of visits 22  
Is the approved plan of main boiler forwarded herewith Yes

Dates of Examination of principal parts—Cylinders 23. 3. 14 Slides 31. 3. 14 Covers 31. 3. 14 Pistons 31. 3. 14 Rods 31. 3. 14  
Connecting rods 31. 3. 14 Crank shaft 31. 3. 14 Thrust shaft 31. 3. 14 Tunnel shafts 31. 3. 14 Screw shaft 4. 4. 14 Propeller 4. 4. 14  
Stern tube 4. 4. 14 Steam pipes tested 21. 5. 14 Engine and boiler seatings 22. 5. 14 Engines holding down bolts 22. 5. 14  
Completion of pumping arrangements 28. 5. 14 Boilers fixed 22. 5. 14 Engines tried under steam 9. 6. 14  
Main boiler safety valves adjusted 28. 5. 14 Thickness of adjusting washers Port  $p \frac{5}{16} s \frac{9}{32}$ ; Star  $p \frac{5}{16} s \frac{9}{32}$   
Material of Crank shaft Steel Identification Mark on Do. No 6860 F.A.F. Material of Thrust shaft Iron Identification Mark on Do. No 6883 F.A.F.  
Material of Tunnel shafts Iron Identification Marks on Do. F.A.F. Material of Screw shafts Iron Identification Marks on Do. F.A.F.  
Material of Steam Pipes Copper Test pressure 360 lbs.

General Remarks (State quality of workmanship, opinions as to class, &c.) The materials and workmanship are good. The machinery and boilers of this vessel have been constructed under special survey in accordance with the Rules and approved plans, securely fitted aboard and tried, with satisfactory results under steam and are, in my opinion, suitable for classification with second + L.M.C. 6, 14.

It is submitted that  
this vessel is eligible for  
THE RECORD + L.M.C. 6, 14.

The amount of Entry Fee .. £ 2-0-0 When applied for, 15/6/14  
Special .. £ 19-4-0  
Donkey Boiler Fee .. £ : :  
Travelling Expenses (if any) £ : :  
When received, 17.6.14

Committee's Minute GLASGOW 16 JUN. 1914

Assigned + L.M.C. 6, 14

J.W.D. 18/6/14  
P.J. Brimm  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

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

These  
Signal Le  
Office  
1 3 4  
No., Date, a  
Whether Br  
Foreign E  
British  
Number of  
Number of  
Rigged  
Stern  
Build  
Galleries  
Head  
Framework  
vessel  
Number of  
Number of  
and their  
Total to quarter  
to bottom o  
No. of  
sets of  
Engines.  
De  
One  
No. of  
Shafts.  
Descri  
Num  
Iron  
Load  
Under Tonn  
Space or spa  
Turret or T  
Forecastle  
Bridge space  
Poop  
Side Houses  
Deck House  
Chart House  
Spaces for m  
Section 78  
1894  
Excess of H  
Gr  
Deductions,  
Re  
NOTE 1.—The  
Dec  
NOTE 2.—The  
Nam  
No. of Own  
Name, Resi  
The B  
princi  
Count  
ma  
Dated B  
(830) (5/862) V  
(81762)  
If stiffened with  
Working pressu