

# REPORT ON MACHINERY.

Port of Glasgow

MON. 30 APR 1900

Received at London Office 18

No. in Survey held at Glasgow  
Reg. Book.

Date, first Survey 8 August 99 Last Survey 19 April 1900  
(Number of Visits 13)

on the SS. Cambian

Tons { Gross 933.77  
Net 439.34

Master Matthews Built at Glasgow By whom built MacKie & Thomson When built 1900

Engines made at Glasgow By whom made A. Stephen & Sons when made 1900

Boilers made at Glasgow By whom made A. Stephen & Sons when made 1900

Registered Horse Power Owners Hawthorn Brothers & Co. Ltd. Port belonging to London

Horse Power as per Section 28 108 Is Refrigerating Machinery fitted no Is Electric Light fitted no

**ENGINES, &c.**—Description of Engines Triple expansion No. of Cylinders three No. of Cranks 3

Cylinders 18, 29, 48 Length of Stroke 35" Revs. per minute 105 Dia. of Screw shaft as per rule 9.2 Lgth. of stern bush 38"  
as fitted 8.3 Dia. of Crank shaft journals as per rule 8.76 Dia. of Crank pin 9" Size of Crank webs 11 1/2 x 6" Dia. of thrust shaft under  
of Tunnel shaft as fitted 8 1/2 Dia. of screw 11-0" Pitch of screw 12-6" No. of blades 4 State whether moveable no Total surface 37.5

Blades 9" Dia. of screw 11-0" Pitch of screw 12-6" No. of blades 4 State whether moveable no Total surface 37.5

No. of Feed pumps two Diameter of ditto 3" Stroke 17" Can one be overhauled while the other is at work yes

No. of Bilge pumps two Diameter of ditto 3" Stroke 17" Can one be overhauled while the other is at work yes

No. of Donkey Engines one Sizes of Pumps duplex 3 1/2 x 6" plate No. and size of Suctions connected to both Bilge and Donkey pumps  
in Engine Room three 2 1/4" In Holds, &c. one 2 1/4" aft two 2" fore

No. of bilge injections one sizes 4" Connected to condenser, or to circulating pump pump Is a separate donkey suction fitted in Engine room & size yes 2 1/4"

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 no

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

When were stern tube, propeller, screw shaft, and all connections examined in dry dock by our launch Is the screw shaft tunnel watertight yes

Is it fitted with a watertight door yes worked from top platform

**BOILERS, &c.**— (Letter for record S) Total Heating Surface of Boilers 2586 sq ft Is forced draft fitted no

No. and Description of Boilers two cylindrical return tube Working Pressure 170 lbs Tested by hydraulic pressure to 340

Date of test 19/9/99 Can each boiler be worked separately yes Area of fire grate in each boiler 35 1/2 sq ft No. and Description of safety valves to  
each boiler one pair direct spring Area of each valve 4.43 sq in Pressure to which they are adjusted 175 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 12" Mean dia. of boilers 12-0 Length 9-10 1/2 Material of shell plates steel

Thickness 15/16" Range of tensile strength 29,32 Are they welded or flanged no Descrip. of riveting: cir. seams double top long. seams triple butt

Diameter of rivet holes in long. seams 1" Pitch of rivets 7 1/4 Lap of plates or width of butt straps 15"

Per centages of strength of longitudinal joint rivets 87.5 Working pressure of shell by rules 175 Size of manhole in shell 16 x 12"  
plate 86.2

Size of compensating ring flanged No. and Description of Furnaces in each boiler 2 Deighton Material steel Outside diameter 46"

Length of plain part top 1 1/2 Thickness of plates crowd 35" Description of longitudinal joint welded No. of strengthening rings —  
bottom 1 1/2 34"

Working pressure of furnace by the rules 175 Combustion chamber plates: Material steel Thickness: Sides 5/8 Back 19/32 Top 5/8 Bottom 7/8

Pitch of stays to ditto: Sides 8 x 8 1/2 Back 8 x 8 1/2 Top 8 x 8 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 158, 170

Material of stays steel Diameter at smallest part 1.78" Area supported by each stay 71 sq in Working pressure by rules 170 lbs End plates in steam space:

Material steel Thickness 1" Pitch of stays 16 x 16 How are stays secured 2 nuts Working pressure by rules 175 lbs Material of stays steel

Diameter at smallest part 4.36 Area supported by each stay 256 Working pressure by rules 170 Material of front plates at bottom steel

Thickness 13/16" Material of Lower back plate steel Thickness 3/4" Greatest pitch of stays 14" Working pressure of plate by rules 415 lbs

Diameter of tubes 3 1/2 Pitch of tubes 4 1/2 x 4 1/2 Material of tube plates steel Thickness: Front 13/16 Back 13/16 Mean pitch of stays 9"

Pitch across wide water spaces 4 1/2 Working pressures by rules 292 Girders to Chamber tops: Material steel Depth and  
thickness of girder at centre 6 3/8 x 3/4 Length as per rule 25 1/2" Distance apart 8" Number and pitch of Stays in each (2) 8 7/8"

Working pressure by rules 177 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



**DONKEY BOILER**— No. \_\_\_\_\_ Description *man*

Made at \_\_\_\_\_ By whom made \_\_\_\_\_ When made \_\_\_\_\_ Where fixed \_\_\_\_\_

Working pressure tested by hydraulic pressure to \_\_\_\_\_ No. of Certificate \_\_\_\_\_ Fire grate area \_\_\_\_\_ Description of safety 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 \_\_\_\_\_ Per centage of strength of joint \_\_\_\_\_ Rivets \_\_\_\_\_ 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 \_\_\_\_\_

Thickness of furnace crown plates \_\_\_\_\_ Stayed by \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_

Working pressure of furnace by rules \_\_\_\_\_ Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_

SPARE GEAR. State the articles supplied:— *As required by the rules, and in addition one spare propeller*

The foregoing is a correct description,  
*Also Stephensons* Manufacturer.

Dates of Survey while building

During progress of work in shops—	} 1899:—	Aug. 8. 24. 31.	Sep. 18. 19.	Oct. 19. 30.	Nov. 22.	
		During erection on board vessel—	Feb. 28.	Mar. 27.	Apr. 4. 10. 19.	
			Total No. of visits	13.		

Is the approved plan of main boiler forwarded herewith \_\_\_\_\_  
 " " " donkey " " "

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

*These engines and 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 **LMC 4. 1900** in the Register Book*

Glasgow.

It is submitted that this vessel is eligible for THE RECORD **LMC 4.00**

*30. 4. 00*  
*30. 4. 00*

The amount of Entry Fee..	£ 2	:	:	When applied for,	30. 4. 00
Special .. .. .	£ 23	:	14	:	30. 4. 00
Donkey Boiler Fee .. .	£	:	:	When received,	30. 4. 00
Travelling Expenses (if any) £	:	:	:		

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

Committee's Minute  
 Assigned

TUES. 1 MAY 1900  
 + L.M.C. 4.00

MACHINERY CERTIFICATE WRITTEN.

