

REPORT ON MACHINERY.

Port of Glasgow

Received at London Office 11th Sept 1901

Date, first Survey 25 March 1901 Last Survey 12th Sept 1900

No. in Survey held at Covan

Reg. Book.

on the Twin Screw Steel Steamship Cronos

(Number of Visits 62)

Tons { Gross 9023.4
Net 4621.7

Master J. F. Ruthven Built at Covan By whom built Fairfield S.B. & Co. Ltd When built 1902

Engines made at Covan By whom made Fairfield S.B. & Co. Ltd when made 1902

Boilers made at Covan By whom made do do when made 1902

Registered Horse Power _____ Owners Orient Steam Navigation Co. Ltd Port belonging to Glasgow

Nom. Horse Power as per Section 28 1700 Is Refrigerating Machinery fitted Yes Is Electric Light fitted Yes

ENGINES, &c. — Description of Engines Twin Screw Triple Expansion No. of Cylinders Eight No. of Cranks 8

Dia. of Cylinders 27 1/4, 39, 56, 80 Length of Stroke 60 Revs. per minute 80 Dia. of Screw shaft 16.26 Lgth. of stern bush 36.3

Dia. of Tunnel shaft 16 Dia. of Crank shaft journals 16 3/4 Dia. of Crank pin 17 1/2 Size of Crank webs 32 x 11 1/8 Dia. of thrust shaft under collars 16 1/2

No. of blades 4 State whether moveable Yes Total surface 91 sq ft

No. of Feed pumps one each engine Diameter of ditto 7 1/2 Stroke 30 Can one be overhauled while the other is at work Yes

No. of Bilge pumps one each engine Diameter of ditto 7 1/2 Stroke 30 Can one be overhauled while the other is at work Yes

No. of Donkey Engines two Sizes of Pumps one 10 x 7 x 14 Duplex No. and size of Suctions connected to both Bilge and Donkey pumps one 7 x 7 x 7

In Engine Room & boiler space 6 3 1/2 diameter In Holds, &c. 6 forward and 6 abaft engine & boiler rooms.

No. of bilge injections 2 sizes 16 Connected to condenser or circulating pump Yes Is a separate donkey suction fitted in Engine room & size 2 3/4

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 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 Bilge pipes to forward holds How are they protected wood boxing

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 2nd Sept 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 26142 sq ft Is forced draft fitted Yes How driven Horizontal

No. and Description of Boilers 2 Double Ended & 4 Single Ended Working Pressure 215 lb Tested by hydraulic pressure to 430 lb

Date of test 27/11/01 Can each boiler be worked separately Yes Area of fire grate in each boiler 43.59 sq ft No. and Description of safety valves 5 DE

each boiler triple Area of each valve 11.79 sq ft Pressure to which they are adjusted 220 lb Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 18 Mean dia. of boilers 16.6 Length 19.8 Material of shell plates Steel

Thickness 1 3/32 Range of tensile strength 31/34 Are they welded or flanged No Descrip. of riveting: air, sea, duplex seams 5 rivets

Diameter of rivet holes in long. seams 1 21/32 Pitch of rivets 10 Lap of plates or width of butt straps 22

Per centages of strength of longitudinal joint: rivets 83.4 plate 97.0 Working pressure of shell by rules 253 lb Size of manhole in shell 16 x 12

Size of compensating ring Hanger ring No. and Description of Furnaces in each boiler 5 Brown's DE Material Steel Outside diameter 4 ft

Length of plain part top Thickness of plates bottom 3 5/8 Description of longitudinal joint Welded No. of strengthening rings None on SE

Working pressure of furnace by the rules 228 Combustion chamber plates: Material Steel Thickness: Sides 19/32 Back 19/32 Top 19/32 Bottom 7/8

Pitch of stays to ditto: Sides 7 1/2 x 7 1/2 Back 7 1/2 x 7 1/2 Top 7 1/2 x 7 1/2 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 212

Material of stays Steel Diameter at smallest part 1 3/8 Area supported by each stay 56 sq ft Working pressure by rules 212 End plates in steam space: Material Steel

Thickness 1 1/4 Pitch of stays 15 1/2 x 15 1/2 How are stays secured Double nuts Working pressure by rules 295 Material of stays Steel

Diameter at smallest part 2 1/16 Area supported by each stay 238 sq ft Working pressure by rules 246 Material of Front plates at bottom Steel

Thickness 13/16 Material of Lower back plate Steel Thickness 1/2 SE Greatest pitch of stays 12 1/2 Working pressure of plate by rules 340

Diameter of tubes 2 1/2 Pitch of tubes 3 3/4 Material of tube plates Steel Thickness: Front 23/32 Back 23/32 Mean pitch of stays 9.6

Pitch across wide water spaces 13 1/2 Working pressures by rules 215 lb Girders to Chamber tops: Material Iron Depth and thickness of girder at centre 8 1/2 x 1 1/2 SE Length as per rule 29 1/2 Distance apart 7 3/4 Number and pitch of Stays in each Three, 7 1/2 SE

Working pressure by rules 217 lb Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked separately Yes

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 _____

If not, state whether, and when, one will be sent? Is a Report also sent on the Hull of the Ship?

1500-4-02-Copyable Ink.



KEY BOILER— No. 1 Description Open Ended Multitubular
Cover By whom made Fairfield S. B. & Co. Ltd When made 1902 Where fixed upper deck
 Working pressure 120 tested by hydraulic pressure to 240 lb. No. of Certificate 1168 Fire grate area 357/8 Description of safety valves Direct Spring
 of safety valves 2 Area of each 490 Pressure to which they are adjusted 125 lb. If fitted with easing gear Yes. If steam from main boilers can
 enter the donkey boiler No Dia. of donkey boiler 11-0 Length 9-0 Material of shell plates Steel Thickness 1/16 Range of tensile
 strength 28/32 Descrip. of riveting long seams Double Butt Straps Dia. of rivet holes 1 3/16 Whether punched or drilled Drilled Pitch of rivets 5 3/4
 Lap of plating ✓ Per centage of strength of joint 87.5 Rivets 8 1/2 Thickness of shell cover plates 1 Radius of do. 5 of Stays to do. 16 1/2
 Dia. of stays. 2 1/2 Diameter of furnace 10 1/2 Bottom ✓ Length of furnace 6-6 Thickness of furnace plates 13/32 Description of
 joint Welded Thickness of furnace cover plates 9/16 Stayed by 1 1/2 + 1 3/8 stays See 8 + 9 1/2 Working pressure of shell by rules 123 lb.
 Working pressure of furnace by rules 125 lb. Diameter of tubes 3 1/2 Thickness of tube plates 1/16 Thickness of stay tubes 5/16

SPARE GEAR. State the articles supplied:— As required by the rules also valve spindles, feet and
bilge pump plungers, air pump buckets + rods, eccentric rods, sheaves + straps
guide ches, top + bottom end brasses, propeller shaft + blades. Thrust shoes
circulating pump vanes + shafts &c. &c.

The foregoing is a correct description, **THE FAIRFIELD SHIPBUILDING AND ENGINEERING CO. LIMITED.**
 Manufacturer.

Alfred Grace

Dates of Survey while building
 During progress of work in shops: 1901: Mar. 25, Apr. 12, 17, 30, May 9, 14, 17, 22, 28, 30, Jun. 4, 11, 17, 26, 1702: Apr. 30, Aug. 7, 20, Sep. 6.
 During erection on board vessel: 12, 13, 19, 27, 30, Oct. 4, 11, 21, Nov. 6, 11, 21, 29, Dec. 2, 6, 21, 27, 30, 1902: Jan. 10, 11, 13, 27, Feb. 3, 4, 6, 19, Mar. 12.
 Total No. of visits 62 Apr. 9, 21, May, 20, 30, Jun. 10, 30, Jul. 17, Aug. 5, 14, 27, Sep. 2, 3, 4, 5, 8, 9, 10
 Is the approved plan of main boiler forwarded herewith Yes
 " " " donkey " " " Yes

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

Material of screw shaft Simon Martin 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 Yes.
 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 ✓

The machinery of this vessel has been built under special survey. The materials and workmanship are of good quality, it has been securely fitted on board and a full speed satisfactory trial run.

In our opinion the machinery of this vessel is not eligible for record of L.M.C. 9.02 (in red) in register book.

The speed on trial was slightly over 18 knots.

- Plans forwarded
- 4 Forging reports
- 2 plans main boilers
- 1 plan donkey boiler
- 4 plans main + auxiliary stop valves
- 1 plan of main steam pipes

It is submitted that this vessel is eligible for L.M.C. 9.02
 FD; Elec light; ref: machy.

The amount of Entry Fee. . . £ 3 : :
 Special £ 03 : 5 :
 Donkey Boiler Fee £ 11 : 15 :
 Travelling Expenses (if any) £ : :
 When applied for, 17/9/02
 When received, 23/9/02

George Murdoch & James Morrison
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
 25.9.02

Committee's Minute Glasgow 22 SEP. 1902
 Assigned L.M.C. 9.02.

