

# REPORT ON MACHINERY.

No. 20

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No. 7923  
No. 5323

Port of Dundee

Received at London Office

JAN 23 1890

No. in Survey held at  
Reg. Book.

Arbroath

Date, first Survey 15 July

Last Survey 8 January 1890

Number of Visits 7

Tons 749.04

on the Screw Steamer "Croydon"

Master Built at Middlebro By whom built W. Harkness & Son

When built 1890

Engines made at Arbroath By whom made A. Shaver & Son

when made 1890

Boilers made at Newcastl By whom made James B. & Co. Ltd.

when made 1890

Registered Horse Power 128 Owners W. F. Commins & Co.

Port belonging to London.

## ENGINES, &c.—

Description of Engines Triple expansion, Surface Condensing.

Diameter of Cylinders 17" x 28" x 47" Length of Stroke 33" No. of Rev. per minute 80 Point of Cut off, High Pressure  $\frac{1}{2}$  Low Pressure  $\frac{1}{2}$

Diameter of Screw shaft 9" Diam. of Tunnel shaft 8 1/4" Diam. of Crank shaft journals 9" Diam. of Crank pin 9" size of Crank webs 6 1/2" x 18"

Diameter of screw 13" Pitch of screw 14 1/2" No. of blades 4 state whether moveable  total surface 48 sq ft

No. of Feed pumps 2 diameter of ditto 2 1/2" Stroke 18" Can one be overhauled while the other is at work

No. of Bilge pumps 2 diameter of ditto 3" Stroke 18" Can one be overhauled while the other is at work

Where do they pump from Engine Room (P. S. & Cond.) after well, sea.

No. of Donkey Engines 2 Size of Pumps 6" x 4" x 12" + 8" x 8" x 12" Where do they pump from Two Donkeys - Sea, Hotwell.

All bilges all tanks. Ballast Donkey for No. 2 R. Tank, after Tank, sea & R. bilge.

Are all the bilge suction pipes fitted with roses  Are the roses always accessible  Are the sluices on Engine room bulkheads always accessible

No. of bilge injections 1 and sizes 5" Are they connected to condenser, or to circulating pump Circulating Pump.

How are the pumps worked By means of overhead of centre engine.

Are all connections with the sea direct on the skin of the ship  Are they Valves or Cocks both.

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates  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  Are the blow off cocks fitted with a spigot and brass covering plate

What pipes are carried through the bunkers none How are they protected

Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times

Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges

When were stern tube, propeller, screw shaft, and all connections examined in dry dock

Is the screw shaft tunnel watertight  and fitted with a sluice door  worked from Top platform.

## BOILERS, &c.—

Number of Boilers 1 Description Cylindrical Single End Whether Steel or Iron Steel

Working Pressure 160 Tested by hydraulic pressure to 320 Date of test 14.1.90 No. of Cu. 3094

Description of superheating apparatus or steam chest none

Can each boiler be worked separately  Can the superheater be shut off and the boiler worked separately

No. of square feet of fire grate surface in each boiler 55 sq ft Description of safety valves Spring loaded No. to each boiler 2

Area of each valve 7.07 Are they fitted with easing gear  No. of safety valves to superheater  area of each valve

Are they fitted with easing gear  Smallest distance between boilers and bunkers or woodwork 9 1/2" Diameter of boilers 14.0"

Length of boilers 10.0" description of riveting of shell long. seams Lap to bow & stern circum. seams Lap double Thickness of shell plates 1 1/2"

Diameter of rivet holes 1 1/8 whether punched or drilled Drilled pitch of rivets 7 3/4 Lap of plating 13 1/2

Percentage of strength of longitudinal joint 82.06 working pressure of shell by rules 160 size of manholes in shell 16" x 18"

Size of compensating rings 2 No. of Furnaces in each boiler 3

Outside diameter 3.5" length, top 6.3" bottom 6.9" thickness of plates 9/16" description of joint Welded if rings are fitted Ribs

Greatest length between rings 9" working pressure of furnace by the rules 190 combustion chamber plating, thickness, sides 5/8" back 5/8" top 5/8"

Pitch of stays to ditto, sides 8 7/8" back 8 7/8" top 8 1/2" If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 191 Diameter of stays at smallest part 1 5/8" working pressure of ditto by rules 300 end plates in steam space, thickness 1 1/8"

Pitch of stays to ditto 16 7/8" x 14 1/2" how stays are secured On washers working pressure by rules 160 diameter of stays at smallest part 2 1/2" working pressure by rules 160 Front plates at bottom, thickness 9/16" Back plates, thickness 3/4"

Greatest pitch of stays 13 1/2" working pressure by rules 160 Diameter of tubes 3 1/2" pitch of tubes 4 3/8" x 4 1/2" thickness of tube plates, front 3/4" back 3/4" how stayed Tubes pitch of stays 9" width of water spaces 5"

Diameter of Superheater or Steam chest none length  thickness of plates  description of longitudinal joint  diam. of rivet holes 2019

Pitch of rivets  working pressure of shell by rules  diameter of flue  thickness of plates  If stiffened with rings

Distance between rings  working pressure by rules  end plates of superheater, or steam chest; thickness  how stayed

Superheater or steam chest; how connected to boiler



**DONKEY BOILER**— Description *Cylindrical Vertical Fine cross water tubes.*  
 Made at *Grindalton* by whom made *J. Turner & Co* when made *1889* where fixed *Stokehold.*  
 Working pressure *98 lbs* tested by hydraulic pressure to *200 lbs* No. of Certificate *2030* fire grate area *17 Sq. ft.* description of safety valves *Spring loaded* No. of safety valves *1* area of each *9.62* if fitted with easing gear *yes* if steam from main boilers can enter the donkey boiler *no* diameter of donkey boiler *5'-9"* length *11'-6"* description of riveting *Lap double riv.*  
 Thickness of shell plates *7/16* diameter of rivet holes *13/16* whether punched or drilled *punched* pitch of rivets *2 1/4* *2 1/4* pitch of plating *1 1/4*  
 per centage of strength of joint *71.0%* thickness of crown plates *5/8"* stayed by *6 stays 1 1/2" dia.*  
 Diameter of furnace, top *4'-6"* bottom *5'-2"* length of furnace *6'-0"* thickness of plates *5/8"* description of joint *Lap single riv.*  
 Thickness of furnace crown plates *5/8"* stayed by *Same as crown of boiler.* working pressure of shell by rules *97 lbs.*  
 Working pressure of furnace by rules *98 lbs.* diameter of uptake *12"* thickness of plates *7/16* thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *2 pistons & nuts, 1 set of coupling bolts, 6 packing bolts, Condenser tubes, 2 connecting rods, 1 set of air pump valves, 1 set of feed pump valves, 2 main bearings, 1 set of circulating pump valves, 1 set of bilge pump valves, 1 safety valve spring. Iron of various sizes.*

The foregoing is a correct description,

Manufacturer.

*A. Thorns & Son*

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

*The machinery of this vessel has been built under special survey; the workmanship and material are good.*

*The boiler of this vessel has been built under special survey the material and workmanship good, tested by hydraulic pressure to 200 lbs found satisfactory.*

*Heating Surface 1964 sq ft  
 H.P. 128 H.P.*

*The main and donkey boilers of this vessel have been examined under steam and found satisfactory, and their safety valves adjusted under steam to 164 lbs & 98 lbs respectively.*

*The engines have been examined under steam and found to work satisfactorily and are now in a safe and efficient working condition, and eligible in my opinion to have the certificate ~~L.M.C. 3.90~~ recorded in the Register Book.*

*It is submitted that this vessel is eligible to have + L.M.C. 3.90 recorded*  
*W.A. 29.3.90*

*Fee for Survey of Boiler (Proc.) £5.5.0 not yet received. Applied for*  
*paid at Reg. 18/3/90*

The amount of Entry Fee £ 2 : 0 : received by me,  
 Special £ 9 : 12 :  
 Donkey Boiler Fee £ : :  
 Certificate (if required) .. £ : : 20 Jan. 1890  
 To be sent as per margin.

(Travelling Expenses, if any, £ - 4/-)

Committee's Minute

TUES 1 APRIL 1890

+ L.M.C. 3/90

*Herbert M. Rogers*  
*Richard H. King*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



Lloyd's Register Foundation