

# REPORT ON MACHINERY.

No. 14989

Port of Greenock

Received at London Office WES. MAR 12 1907

No. in Survey held at Port Glasgow

Date, first Survey 22<sup>nd</sup> June 1906 Last Survey 25<sup>th</sup> Febry 1907

Reg. Book.

(Number of Visits 59)

on the **SCREW STEAMER "DOUGLAS."**

Master \_\_\_\_\_ Built at Port Glasgow By whom built Byde & Eng. 6<sup>th</sup> Lin. When built 1904

Engines made at Port Glasgow By whom made Byde & Eng. 6<sup>th</sup> Lin. when made 1904

Boilers made at Port Glasgow By whom made Byde & Eng. 6<sup>th</sup> Lin. when made 1904

Registered Horse Power \_\_\_\_\_ Owners Lancashire & Yorkshire Ry. Co. Port belonging to Goole

Nom. Horse Power as per Section 28 224 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders Three No. of Cranks Three

Dia. of Cylinders 21"-35"-58" Length of Stroke 36" Revs. per minute 100 Dia. of Screw shaft 11" Material of screw shaft Steel

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 Re-joint 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 Yes Length of stern bush 4' 3"

Dia. of Tunnel shaft 10.3" Dia. of Crank shaft journals 10.8" Dia. of Crank pin 11" Size of Crank webs 7 1/2 x 21 1/2 Dia. of thrust shaft under

collars 11" Dia. of screw 12.9" Pitch of Screw 14' 0" No. of Blades 4 State whether moveable No Total surface 58 Sq. ft.

No. of Feed pumps 2 Diameter of ditto 3 1/4" Stroke 20" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 3 1/4" Stroke 20" Can one be overhauled while the other is at work Yes

No. of Donkey Engines Three Sizes of Pumps 7x7x8 (5x5x6) (6x4x6) No. and size of Suctions connected to both Bilge and Donkey pumps Yes

In Engine Room Three — one — 2 1/4" dia & two — 2" dia In Holds, &c. 4° 1 Hold: one — 3" dia. 4° 2 Hold: Two — 2" dia.

After Hold: Two — 2" dia: Tunnel Well: one — 2 1/2" dia.

No. of Bilge Injections 1 sizes 5" Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size Yes: 2 1/2" dia.

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 Awash

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 Yes

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 3/1/07 of Stern Tube 3/1/07 Screw shaft and Propeller 20/2/07

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper platform

BOILERS, &c.—(Letter for record £) Manufacturers of Steel Steel Co. of Scotland

Total Heating Surface of Boilers 3620 Is Forced Draft fitted No No. and Description of Boilers Two: Cylinder Multi Single End

Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 22/1/07 No. of Certificate 809

Can each boiler be worked separately Yes Area of fire grate in each boiler 64 Sq. ft. No. and Description of Safety Valves to

each boiler 2: Direct Spring Area of each valve 7.06 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 About 6ft. Mean dia. of boilers 13' 6 3/4" Length 12' 0" Material of shell plates Steel

Thickness 1 1/8" Range of tensile strength 28 to 32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap Double

long. seams Butt Strap Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 8 1/4", 4 1/8" Lap of plates or width of butt straps 14 5/8"

Per centages of strength of longitudinal joint rivets 88.5 Working pressure of shell by rules 181 lbs Size of manhole in shell 16" x 12"

Size of compensating ring 33 x 27 x 1 1/8" No. and Description of Furnaces in each boiler 3: Morrison's Material Steel Outside diameter 44 1/4"

Length of plain part top 7' 6" Thickness of plates crown 1 1/4" Description of longitudinal joint Weld No. of strengthening rings None

Working pressure of furnace by the rules 185 lbs Combustion chamber plates: Material Steel Thickness: Sides 32 Back 32 Top 32 Bottom 32

Pitch of stays to ditto: Sides 9 x 8 1/4" Back 9 x 9" Top 9 1/2 x 8 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 184 lbs

Material of stays Steel Diameter at smallest part 1 1/2" x 1 5/8" Area supported by each stay 76 Working pressure by rules 184 lbs End plates in steam space:

Material Steel Thickness 1 3/32" Pitch of stays 19" x 21" How are stays secured Double Nuts Working pressure by rules 189 lbs Material of stays Steel

Diameter at smallest part \_\_\_\_\_ Area supported by each stay 391 Working pressure by rules \_\_\_\_\_ Material of Front plates at bottom Steel

Thickness 3/4" Material of Lower back plate Steel Thickness 1/8" Greatest pitch of stays 14 1/4" Working pressure of plate by rules 186 lbs

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

Pitch across wide water spaces 14 1/4" Working pressures by rules 182 lbs 22.3 lbs Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 11" x 1 1/2" Length as per rule 39" Distance apart 9 1/2" Number and pitch of stays in each 3: 8 1/2"

Working pressure by rules 185 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 \_\_\_\_\_

W281-0100

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



VERTICAL DONKEY BOILER— Manufacturers of Steel

No. *None* 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 Safety 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 \_\_\_\_\_ Plates \_\_\_\_\_

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 \_\_\_\_\_ Stayed by \_\_\_\_\_

Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_ Dates of survey \_\_\_\_\_

SPARE GEAR. State the articles supplied:— *3 Crank shaft, one propeller shaft 18 Boiler tubes, 1 set Air pump valves, 1 set circulating pump valves, 2 main Bearing Bolts, 2 Crank pin Bolts, 2 Crosshead Bolts, 1 set coupling Bolts, 1 set Feed & Bilge pump valves, Bolts & nuts & Iron gratings sizes.*

THE CLYDE SHIPBUILDING & ENGINEERING CO. LIMITED,

The foregoing is a correct description,

Manufacturer.

*John S. Dunlop* Secretary.

Dates of Survey while building	During progress of work in shops—	1906. June 22, 25. July 27, 30. Aug 14, 20, 21, 27. Sep 3, 12, 18, 21, 26, 27, 28. Oct 2, 4, 8, 11, 15.
	During erection on board vessel—	22, 24, 30. Nov 7, 12, 15, 19, 23, 27, 29. Dec 3, 4, 6, 7, 11, 14, 19, 20, 26, 28. 1907. Jan 11, 14, 16, 18, 22, 30, 31. Feb 6, 12.
	Total No. of visits	13, 14, 15, 18, 19, 20, 21, 22, 23, 25. 59.

Is the approved plan of main boiler forwarded herewith *Yes*.  
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Dates of Examination of principal parts—Cylinders *23/2/07* Slides *22/1/07* Covers *23/2/07* Pistons *22/1/07* Rods *22/1/07*  
 Connecting rods *22/1/07* Crank shaft *22/1/07* Thrust shaft *22/1/07* Tunnel shafts *22/1/07* Screw shaft *22/1/07* Propeller *20/2/07*  
 Stern tube *20/2/07* Steam pipes tested *18/2/07* Engine and boiler seatings *19/2/07* Engines holding down bolts *19/2/07*  
 Completion of pumping arrangements *23/2/07* Boilers fixed *22/3/07* Engines tried under steam *23/2/07*  
 Main boiler safety valves adjusted *19/2/07* Thickness of adjusting washers *Port: A.V. 5/16 F.V. 5/16 Starb: A.V. 3/8 F.V. 5/16*  
 Material of Crank shaft *Steel* Identification Mark on Do. *425* Material of Thrust shaft *Steel* Identification Mark on Do. *428*  
 Material of Tunnel shafts *Steel* Identification Marks on Do. *429 & 432* Material of Screw shafts *Steel* Identification Marks on Do. *426 & 7*  
 Material of Steam Pipes *Copper S.W.G.* Test pressure *400 lbs.*

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

*The Engines and Boilers of this vessel have been built under Special Survey and the materials and workmanship are good. When completed they were examined under steam and found to work satisfactorily. The machinery throughout is now in good and efficient condition and eligible in my opinion to have the record of L.M.C. 2, 07 marked in the Society's Register Book.*

It is submitted that this vessel is eligible for THE RECORD. L.M.C. 2.07 ELEC. LIGHT. REF: MCHY.

*J.S. Dunlop* 13.3.07

The amount of Entry Fee..	£ 2 : . . . .	When applied for,	<i>4/3/1907</i>
Special .. .. .	£ 31 : 7 : . . . .	When received,	<i>5/3/1907</i>
Donkey Boiler Fee .. . . .	£ . . . . .		
Travelling Expenses (if any) £ . . . . .			

*Wm. Auster* Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *Glasgow 11 MAR 1907*

Assigned *L.M.C. 2, 07.*

MACHINERY CERTIFICATE WRITTEN 14/3 dated 12/3



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