

Port of Greenock.Received at London Office UES. MAR 12 1907No. in Survey held at Port Glasgow  
Reg. Book.Date, first Survey 22<sup>nd</sup> June 1906 Last Survey 25<sup>th</sup> Febry 1907(Number of Visits 59.)on the **SCREW STEAMER "DOUGLAS."**Gross  
Tons  
NetMaster 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 224 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 ThreeDia. of Cylinders 21"-35"-58" Length of Stroke 36" Revs. per minute 100 Dia. of Screw shaft 11" Material of screw shaft SteelIs 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 tightin the propeller boss Yes. If the liner is in more than one length are the joints burned Rejoint If the liner does not fit tightly at the partbetween the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive Yes If twoliners are fitted, is the shaft lapped or protected between the liners Yes Length of stern bush 4' 3"Dia. of Tunnel shaft 10.3" as per rule 10.3" Dia. of Crank shaft journals 10.8" as per rule 10.8" Dia. of Crank pin 11" Size of Crank webs 7 1/2 x 21 1/2 Dia. of thrust shaft undercollars 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 YesNo. of Bilge pumps 2 Diameter of ditto 3 1/4" Stroke 20" Can one be overhauled while the other is at work YesNo. of Donkey Engines Three Sizes of Pumps 7 x 7 x 8 (5 x 5 x 6) (6 x 4 1/2 x 6) No. and size of Suctions connected to both Bilge and Donkey pumps YesIn 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 YesAre all connections with the sea direct on the skin of the ship Yes. Are they Valves or Cocks BothAre 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 AwashAre 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 YesWhat pipes are carried through the bunkers None How are they protected YesAre all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times YesAre the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges YesDates of examination of completion of fitting of Sea Connections 31/1/07 of Stern Tube 31/1/07 Screw shaft and Propeller 20/2/07Is 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 ScotlandTotal Heating Surface of Boilers 3620 <sup>sq. ft.</sup> Is Forced Draft fitted No. No. and Description of Boilers Two: Cylindrical: Single End.Working Pressure 180 lb. Tested by hydraulic pressure to 360 lb. Date of test 22/1/07 No. of Certificate 809Can each boiler be worked separately Yes. Area of fire grate in each boiler 64 Sq. ft. No. and Description of Safety Valves toeach boiler 2: Direct Spring Area of each valve 7.06 <sup>sq. in.</sup> Pressure to which they are adjusted 185 lb. Are they fitted with easing gear YesSmallest distance between boilers or uptakes and bunkers or woodwork About 6 ft. Mean dia. of boilers 13' 6 1/4" Length 12' 0" Material of shell plates SteelThickness 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 Doublelong. seams Double Strap Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 8 1/4" 4' 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 lb. 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 bottom 32 Description of longitudinal joint Weld No. of strengthening rings NoneWorking pressure of furnace by the rules 185 lb. Combustion chamber plates: Material Steel Thickness: Sides 32 Back 32 Top 32 Bottom 32Pitch 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 lb.Material of stays Steel Diameter at smallest part 1 1/2' x 1 5/8" Area supported by each stay 76 <sup>sq. in.</sup> Working pressure by rules 184 lb. 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 lb. Material of stays SteelDiameter at smallest part Area supported by each stay 391 <sup>sq. in.</sup> Working pressure by rules Material of Front plates at bottom SteelThickness 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 lb.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 17" Back 3/4" Mean pitch of stays 9 1/2"Pitch across wide water spaces 14 1/4" Working pressures by rules 182 lb. 223 lb. Girders to Chamber tops: Material Steel Depth andthickness 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 lb. Superheater or Steam chest; how connected to boiler None. Can the superheater be shut off and the boiler workedseparately Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivetholes Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates ThicknessIf stiffened with rings Distance between rings Working pressure by rules End plates: Thickness How stayedWorking pressure of end plates Area of safety valves to superheater Are they fitted with easing gear



# 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 shafts 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 gravers 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*.

Dates of Examination of principal parts—Cylinders 22/2/07 Slides 22/1/07 Covers 22/2/07 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 22/2/07 Boilers fixed 22/3/07 Engines tried under steam 22/2/07 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 & 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*  
**LMC 2, 07** marked in the Society's Register Book.

It is submitted that this vessel is eligible for

**THE RECORD LMC 2.07 ELEC. LIGHT.**  
REF: MCHY.

*13.3.07*

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

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

Committee's Minute *Glasgow 11 MAR 1907*

Assigned *+ LMC 2, 07.*

MACHINERY CERTIFICATE  
WRITTEN 14/3 dated 12/3



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