

# REPORT ON MACHINERY.

No. 9159

29 JUNE 1886

No. in Survey held at *Port Glasgow* Date, first Survey *8<sup>th</sup> March 1886* Last Survey *25<sup>th</sup> June 1886*  
 Reg. Book. on the *S.S. "Danube"* (Number of Visits *33*) Tons *93.2*  
 Master *C. Smith* Built at *Port Glasgow* By whom built *D. J. Dunlop & Co.* When built *1886*  
 Engines made at *Port Glasgow* By whom made *D. J. Dunlop & Co.* when made *1886*  
 Boilers made at *do* By whom made *do* when made *1886*  
 Registered Horse Power *70* Owners *London & Tilbury Lighterage Co., Ltd.* Port belonging to *London*

## ENGINES, &c.—

Description of Engines *Compound Inverted Direct Acting, Triple Expansion, 3 Cylinders.*  
 Diameter of Cylinders *15", 23", & 38"* Length of Stroke *24"* No. of Rev. per minute *100* Point of Cut off, High Pressure *1/4"* Low Pressure *1 1/4"*  
 Diameter of Screw shaft *7 1/2"* Diam. of Tunnel shaft *7 1/4"* Diam. of Crank shaft journals *7 1/4"* Diam. of Crank pin *7 1/4"* size of Crank webs *7 3/4" x 5 1/2"*  
 Diameter of screw *8" x 2"* Pitch of screw *12" x 6"* No. of blades *Four* state whether moveable *no* total surface *30 sq feet*  
 No. of Feed pumps *Two* diameter of ditto *2 3/4"* Stroke *12"* Can one be overhauled while the other is at work *yes*  
 No. of Bilge pumps *Two* diameter of ditto *3"* Stroke *12"* Can one be overhauled while the other is at work *yes*  
 Where do they pump from *Engine room, under after end of main boiler, & fore & aft compartments.*  
 No. of Donkey Engines *one* Size of Pumps *3 1/4" x 4" stroke* Where do they pump from *Sea, bilges, Fresh water tank & Hot well.*  
 Are all the bilge suction pipes fitted with roses *yes* Are the roses always accessible *yes* Are the sluices on Engine room bulkheads always accessible *yes*  
 No. of bilge injections *one* and sizes *3"* Are they connected to condenser, or to circulating pump *Circulating pump.*  
 How are the pumps worked *By levers.*  
 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 accessible at all times *yes*  
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges *yes*  
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock *on slip before vessel was launched.*  
 Is the screw shaft tunnel watertight *no tunnel* and fitted with a sluice door *yes* worked from *Deck.*

## BOILERS, &c.—

Number of Boilers *One* Description *Round Horizontal Multitubular* Whether Steel or Iron *Steel*  
 Working Pressure *150 lbs* Tested by hydraulic pressure to *300 lbs per sq. in.* Date of test *12<sup>th</sup> June 1886.*  
 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 *40* Description of safety valves *Direct Spring* No. to each boiler *Two*  
 Area of each valve *10" sq* Are they fitted with easing gear *yes* No. of safety valves to superheater *—* area of each valve *—*  
 Are they fitted with easing gear *—* Smallest distance between boilers and bunkers or woodwork *8"* Diameter of boiler *11" 8"*  
 Length of boiler *9' 9"* description of riveting of shell long. seams *Double butt strap* circum. seams *Double* Thickness of shell plates *1 3/32"*  
 Diameter of rivet holes *1 3/16"* whether punched or drilled *Drilled* pitch of rivets *5" 1/2"* Lap of plating *17" straps.*  
 Per centage of strength of longitudinal joint *78.4* working pressure of shell by rules *159 lbs* size of manholes in shell *19 1/2" x 16"*  
 Size of compensating rings *3 7/2" x 3 2" x 1 7/8"* No. of Furnaces in each boiler *Three (Corrugated)*  
 Outside diameter *35"* length, top *6' 6"* bottom *9' 2"* thickness of plates *1 5/32"* description of joint *Welded.* if rings are fitted *no*  
 Greatest length between rings *—* working pressure of furnace by the rules *157 1/2 lbs* combustion chamber plating, thickness, sides *1 1/2"* back *1 1/2"* top *1 1/2"*  
 Pitch of stays to ditto, sides *7 1/2" x 7 1/2"* back *7 1/2" x 7 1/2"* top *7 1/4" x 7 1/4"* If stays are fitted with nuts or riveted heads *nuts.* working pressure of plating by rules *156 1/2 lbs*  
 Diameter of stays at smallest part *1 1/4" & 1 3/8"* working pressure of ditto by rules *173 1/2 lbs* end plates in steam space, thickness *2 9/32"*  
 Pitch of stays to ditto *14" x 13 1/2"* how stays are secured *Double nuts* working pressure by rules *150 lbs* diameter of stays at smallest part *2 1/8"* working pressure by rules *—* Front plates at bottom, thickness *1 3/16"* Back plates, thickness *7/8"*  
 Greatest pitch of stays *12 1/2"* working pressure by rules *150 lbs* Diameter of tubes *3 3/4"* pitch of tubes *4 1/2" x 4 1/2"* thickness of tube plates, front *1 3/16" & 1 1/8" doubling plate back 1 3/16"* how stayed *Stay tubes* pitch of stays *9" x 9"* width of water spaces *6"*  
 Diameter of Superheater or Steam chest *—* length *—* thickness of plates *—* description of longitudinal joint *—* diam. of rivet holes *—*  
 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 *None fitted*

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 \_\_\_\_\_ if fitted with easing gear \_\_\_\_\_ if steam from main boilers can  
 enter the donkey boiler \_\_\_\_\_ diameter of donkey boiler \_\_\_\_\_ length \_\_\_\_\_ description of riveting \_\_\_\_\_  
 Thickness of shell plates \_\_\_\_\_ diameter of rivet holes \_\_\_\_\_ whether punched or drilled \_\_\_\_\_ pitch of rivets \_\_\_\_\_ lap of plating \_\_\_\_\_  
 per centage of strength of joint \_\_\_\_\_ thickness of crown plates \_\_\_\_\_ stayed by \_\_\_\_\_  
 Diameter of furnace, top \_\_\_\_\_ bottom \_\_\_\_\_ length of furnace \_\_\_\_\_ thickness of 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 plates \_\_\_\_\_ thickness of water tubes \_\_\_\_\_

**SPARE GEAR.** State the articles supplied:— *2 top & 2 bottom end bolts & nuts for connecting rods. 2 main bearing bolts & nuts. a set of coupling bolts. a set of bilge & feed pump valves. a spare spring for safety valves. a set of valves for circulating pump. a quantity of bolts, nuts & iron assorted.*

*The foregoing is a correct description,*  
*David S. Munro* Manufacturer.

**General Remarks** (State quality of workmanship, opinions as to class, &c. *The Engines & main boiler have been specially surveyed during construction. quality of workmanship good. Shafts examined when being rough turned, and found satisfactory. Engines and main boiler satisfactorily tested under full steam. and are now in good order and safe working condition and eligible in my opinion to be noted in the Register Book. LMC. 6.86.*

*This submitted that this  
 is eligible to have  
 LMC recorded  
 DM 1/7/86*

The amount of Entry Fee .. £ 1 : 0 : 0 received by me.  
 Special .. £ 10 : 10 : 0  
 Donkey Boiler Fee .. £ .. : .. : ..  
 Certificate (if required) .. £ *gratis 28/6/1886*  
 (To be sent as per margin.)  
 (Travelling Expenses, if any, £ *nil*)

Committee's Minute

FRIDAY 2 JULY 1886

*A. S. Heron*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
 Greenock District.

