

REPORT ON MACHINERY.

No. 8228 (Received in London Office 20/7/82)
 No. in Survey held at Greenock Date, first Survey 6th January Last Survey 4th July 1882
 Reg. Book. on the "S. S. Torridale" Tons 1349 84
 Master C. Houston Built at Greenock When built 1882
 Engines made at Greenock By whom made R. Steele & Coy. when made 1882
 Boilers made at " By whom made " when made 1882
 Registered Horse Power 165 Owners Robt. Mac Miller & Co Port belonging to Glasgow

ENGINES, &c.—
 Description of Engines Compound Inverted Direct Acting
 Diameter of Cylinders 32 & 60 Length of Stroke 42 No. of Rev. per minute 68 Point of Cut off, High Pressure 2.7 Low Pressure 2.3
 Diameter of Screw shaft 11 1/4 Diameter of Tunnel shaft 10 1/4 Diameter of Crank shaft journals 11 1/4 Diameter of Crank pin 11 1/4 size of Crank webs 12.4 x 8
 Diameter of screw 15.9 Pitch of screw 16.6 to 18.6 No. of blades 4 state whether moveable yes total surface 60 sq feet
 No. of Feed pumps Two diameter of ditto 4 1/2 Stroke 21 Can one be overhauled while the other is at work yes
 No. of Bilge pumps Two diameter of ditto 4 1/2 Stroke 21 Can one be overhauled while the other is at work yes
 Where do they pump from Engine Room & Cargo Holds
 No. of Donkey Engines Two Size of Pumps 5 1/2 x 9 & 4 Cent Where do they pump from Donkey pumps from Sea
Hot well & Bilges Centrifugal from Sea & Ballast tanks.
 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 6 Are they connected to condenser, or to circulating pump to 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 Bilge & Ballast Tank pipes How are they protected wood casement.
 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 Ship before vessel was launched on 1st June
 Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from E. R. top platform.

BOILERS, &c.—
 Number of Boilers Two Description Round Horizontal Multitubular (all Steel except tubes & stays)
 Working Pressure 80 lbs Tested by hydraulic pressure to 160 lbs per sq in Date of test 24.5.82.
 Description of superheating apparatus or steam chest Round Horizontal Receiver
 Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately no Superheater
 No. of square feet of fire grate surface in each boiler 60 sq feet Description of safety valves Direct spring
 No. to each boiler Two area of each valve 15.9 sq in 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 6 1/2
 Diameter of boilers 13.0 Length of boilers 10.7 description of riveting of shell long. seams double butt strap circum. seams double
 thickness of shell plates 7/16 diameter of rivet holes 15/16 whether punched or drilled punched pitch of rivets 3 1/2
 Gap of plating 13 1/2 Straps per centage of strength of longitudinal joint 73 working pressure of shell by rules 80 lbs.
 Size of manholes in shell 12 1/2 x 16 size of compensating rings 4 x 7/16
 No. of Furnaces in each boiler Three outside diameter 42 3/4 length, top 7.3 bottom 9.6
 thickness of plates 7/16 description of joint double butt strap if rings are fitted yes greatest length between rings 4.0 to 5.0 feet
 Working pressure of furnace by the rules 81 lbs
 Combustion chamber plating, thickness, sides 7/16 back 7/16 top 7/16
 Pitch of stays to ditto sides 8 x 8 back 8 x 7 3/8 top 7 x 7 1/2
 Are stays fitted with nuts or riveted heads Nuts inside & out working pressure of plating by rules 84 lbs
 Diameter of stays at smallest part 1 1/8 & 1 1/4 working pressure of ditto by rules 92 lbs
 End plates in steam space, thickness 7/16 pitch of stays to ditto 14 x 14 how stays are secured double nuts
 Working pressure by rules 86 lbs diameter of stays at smallest part 2 3/8 working pressure by rules 138 lbs
 Front plates at bottom, thickness 5/8 Back plates, thickness 9/16 & 5/8 greatest pitch of stays 13 1/2 with working pressure by rules

Diameter of tubes $3\frac{3}{4}$ pitch of tubes 5×5 thickness of tube plates, front $\frac{1}{16}$ back $\frac{1}{16}$
 How stayed *Stay Tubes* pitch of stays 10×10 width of water spaces $6\frac{1}{2}$
 Diameter of Superheater or Steam chest 36 length 4.0
 Thickness of plates $\frac{3}{8}$ description of longitudinal joint *lap double* diameter of rivet holes $\frac{3}{4}$ pitch of rivets
 Working pressure of shell by rules 145 lbs 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 $\frac{1}{2}$ How stayed *one bar stay*
 Superheater or steam chest; how connected to boiler *by neck piece*

DONKEY BOILER— Description *Round upright (Steel)*
 Made at *Greenock* By whom made *R. Steele & Co* when made *1882*
 Where fixed *in Atchale* working pressure 70 lbs Tested by hydraulic pressure to 140 lbs No. of Certificate 108
 Fire grate area 16 sq feet Description of safety valves *Direct spring* No. of safety valves *one* area of each 8.3 sq
 If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no*
 Diameter of donkey boiler 5.6 length *height 18.6* description of riveting *double & single*
 thickness of shell plates $\frac{7}{16}$ diameter of rivet holes $\frac{13}{16}$ whether punched or drilled *punched*
 pitch of rivets $2\frac{1}{2}$ lap of plating 5 per centage of strength of joint 67
 thickness of crown plates $\frac{1}{2}$ stayed by *four 1 7/8 bar stays*
 Diameter of furnace, top 4.1 bottom 4.10 length of furnace 6.9
 thickness of plates $\frac{1}{2}$ description of joint *Lap single*
 thickness of furnace crown plates $\frac{1}{2}$ stayed by *four 1 7/8 bar stays*
 Working pressure of shell by rules 95 lbs working pressure of furnace by rules 80 lbs
 diameter of uptake 18 thickness of plates $\frac{1}{2}$ thickness of water tubes $\frac{7}{16}$ *Three tubes 9" diam.*

The foregoing is a correct description,
R. Steele & Co. Greenock Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c. *The Engines & Boilers have been*
Specially surveyed by me during construction. the quality of workmanship
is good, & the Machinery & Boilers are now in good order and safe working
condition, and are in my opinion eligible to be noted in the Register.
 ✠ LLOYD'S M.C. 7.82.

This submitted that the vessel is eligible to have the registration of Lloyd's Register.
recorded M 20/7/82

The amount of Entry Fee .. £ 3 : : : received by me,
 Special £ 24. 15 : :
 Certificate (if required) .. £ *Gratis 18th July 1882*
 To be sent as per margin.
 (Travelling Expenses, if any, £)

Andrew C. McLean
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
 Clyde District.

Committee's Minute *Friday, 21st July, 1882,*
R. Steele & Co.