

REPORT ON MACHINERY.

No. *Glas 13035*
Lth 7505

Port of *Glasgow*

Received at London Office *MO. 30 JUL 1894*

No. in Survey held at *Glasgow* Date, first Survey *3rd March 1892* Last Survey *July 25th 1894*
 Reg. Book. *434* on the *S. S. Dunblane* (Number of Visits *86*)
 Master *A. J. J. J. J.* Built at *Grangemouth* By whom built *The Grangemouth Dry Dock Co* When built *1894*
 Engines made at *Glasgow* By whom made *Nutson & Son* when made *1894*
 Boilers made at *Glasgow* By whom made *Nutson & Son* when made *1894*
 Registered Horse Power *202* Owners *Manasseh Angel* Port belonging to *Cardiff*
 Nom. Horse Power as per Section 28 *200*

ENGINES, &c.— Description of Engines *Triple Expansion* No. of Cylinders *Three*
 Diameter of Cylinders *21", 33 1/2" & 57 1/2"* Length of Stroke *39"* Revolutions per minute *80* Diameter of Screw shaft *as per rule 10"*
 Diameter of Tunnel shaft *as per rule 9 5/8"* Diameter of Crank shaft journals *10 1/8"* Diameter of Crank pin *10 1/8"* Size of Crank webs *built*
 Diameter of screw *14'-3"* Pitch of screw *13 to 16 feet* No. of blades *4*. State whether moveable *Yes* Total surface *58 sq. ft.*
 No. of Feed pumps *2*. Diameter of ditto *3"* Stroke *24"* Can one be overhauled while the other is at work *Yes*
 No. of Bilge pumps *2*. Diameter of ditto *3 1/2"* Stroke *24"* Can one be overhauled while the other is at work *Yes*
 No. of Donkey Engines *2*. Sizes of Pumps *Feed Sup. 3 1/2" x 5"* No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room *4 - 2 3/4"* *Ball 8" x 10"* In Holds, &c. *No 1 hold 2-2 3/4" No 2 hold 2-2 3/4"*
No 3 hold 2-2 3/4" No 4 hold 1-3"
 No. of bilge injections *1*. sizes *4 1/2"* Connected to condenser, or to circulating pump *Yes* Is a separate donkey suction fitted in Engine room & size *Yes 3"*
 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 *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 *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*
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock *Feb 23rd 94* Is the screw shaft tunnel watertight *Yes*
 Is it fitted with a watertight door *Yes* worked from *The deck*

BOILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *2934*.
 No. and Description of Boilers *Two Single Ended* Working Pressure *160 lbs* Tested by hydraulic pressure to *320 lbs*
 Date of test *17.3.94* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *51.5 sq ft* No. and Description of safety valves to
 each boiler *two direct Spring* Area of each valve *5.94 sq in* Pressure to which they are adjusted *16.3 lbs* Are they fitted
 with easing gear *Yes* Smallest distance between boilers or uptakes and bunkers or woodwork *12"* Mean diameter of boilers *19'-3"*
 Length *10'-6"* Material of shell plates *Steel* Thickness *1 1/16"* Description of riveting: circum. seams *d. riv. lap* long. seams *d. butt str.*
 Diameter of rivet holes in long. seams *1 3/16"* Pitch of rivets *8 1/2" & 4 1/4"* Lap of plates *4"* width of butt straps *5 3/4" & 16 5/8"*
 Per centages of strength of longitudinal joint *rivets 90* Working pressure of shell by rules *162 lbs* Size of manhole in shell *12" x 16"*
 plate *86*
 Size of compensating ring *6" x 1 1/8" d. riv.* No. and Description of Furnaces in each boiler *Three plain* Material *Steel* Outside diameter *38"*
 Length of plain part *top 37'-0"* Thickness of plates *crown 3 23/32"* Description of longitudinal joint *welded* No. of strengthening rings *—*
 bottom *32"*
 Working pressure of furnace by the rules *162 lbs* Combustion chamber plates: Material *Steel* Thickness: Sides *3 3/64"* Back *3 3/64"* Top *3 3/64"* Bottom *3 1/4"*
 Pitch of stays to ditto: Sides *7"* Back *7"* Top *7"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *164 lbs*
 Material of stays *iron* Diameter at smallest part *1 1/2" & 1 3/8"* Area supported by each stay *49 sq in* Working pressure by rules *171 lbs* End plates in steam space:
 Material *steel* Thickness *53/64"* Pitch of stays *14" x 14"* How are stays secured *d. nuts & riv.* Working pressure by rules *160 lbs* Material of stays *iron*
 Diameter at smallest part *2 7/8"* Area supported by each stay *196 sq in* Working pressure by rules *169 lbs* Material of Front plates at bottom *steel*
 Thickness *3/4"* Material of Lower back plate *steel* Thickness *3/4"* Greatest pitch of stays *11 1/2"* Working pressure of plate by rules *160 lbs*
 Diameter of tubes *3 1/2"* Pitch of tubes *4 3/4"* Material of tube plates *steel* Thickness: Front *7/8"* Back *1 3/16"* Mean pitch of stays *9 1/2"*
 Pitch across wide water spaces *14"* Working pressures by rules *160 lbs by dbl.* Girders to Chamber tops: Material *iron* Depth and
 thickness of girder at centre *7 1/2" x 7 1/8" d. riv.* length as per rule *32"* Distance apart *7"* Number and pitch of Stays in each *3. 7"*
 Working pressure by rules *161 lbs* Superheater or Steam chest; how connected to boiler *—* 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 *—*

Lloyd's Register
 Foundation
 LTH564-0063

DONKEY BOILER— Description *Vertical with cross tubes*
 Made at *Glasgow* By whom made *Nutson & Son* When made *1892* Where fixed *In the stowage*
 Working pressure *80 lbs* tested by hydraulic pressure to *160 lbs* No. of Certificate *3228* Fire grate area *19* Description of safety valves *direct*
 No. of safety valves *1*. Area of each *11* Pressure to which they are adjusted *80* If fitted with easing gear *yes* If steam from main boilers *no*
 enter the donkey boiler *no* Diameter of donkey boiler *6'-0"* Length *15'-6"* Material of shell plates *steel* Thickness *1 3/32"*
 Description of riveting long seams *d. riv. lap* Diameter of rivet holes *13/16"* Whether punched or drilled *drilled* Pitch of rivets *3"*
 Lap of plating *4 1/2"* Per centage of strength of joint Rivets *72.3* Thickness of shell crown plates *1 1/16"* Radius of do. *flat* No. of Stays to do. *8*
 Dia. of stays *2 1/4"* Diameter of furnace Top *5'* Bottom *5'-6"* Length of furnace *6'-0"* Thickness of furnace plates *9/16"* Description
 joint *lap* Thickness of furnace crown plates *5/8"* Stayed by *uptake stays* Working pressure of shell by rules *80 lbs*
 Working pressure of furnace by rules *80 lbs by rules* Diameter of uptake *16"* Thickness of uptake plates *7/16"* Thickness of water tubes *3/8"* iron

SPARE GEAR. State the articles supplied:—
as per rule only.

The foregoing is a correct description,
Nutson & Son Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c.) *The engines and boilers above mentioned have been built under special survey and are of good workmanship & material. They have been forwarded to Grangemouth where they will be fitted on board the vessel. When the fitting on board has been satisfactorily reported upon I am of opinion that the machinery is eligible for the notation: +L.M.C. with date of completion of survey.*

This Report along with approved boiler print and Report on forgings forwarded to Leith Surveyors for completion.
J. M. Sanderson
Glasgow 21/6/94

This vessel's machinery has been seen running under steam with satisfactory result. All safety valves have been adjusted under the same conditions. — She is therefore eligible in my opinion to have the notation of +L.M.C. 7.94 recorded.

It is submitted that
 this vessel is eligible for
 THE RECORD +L.M.C. 7.94

Certificate (if required) to be sent to
 MACHINERY CERTIFICATE WRITTEN
 The amount of Entry Fee { £ 2 : 0 : When applied for
Credited to ship office { £ 30 : 0 : *July 26 1894*
 Special £ 10 Fee. { £ 17-0 : 0 :
 Donkey Boiler Fee £ : :
 Travelling Expenses (if any) £ : 17-0 : *July 28 1894*

Maurice Palmer
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *TUES. 31 JUL 1894*
 Assigned *+ L.M.C. 7.94*

