

# REPORT ON MACHINERY.

No. 14141  
Leth. 8047

Port of Glasgow

Received at London Office THUR, FEB 20 1896

No. in Survey held at Glasgow & Leith & Grangemouth Date, first Survey 19<sup>th</sup> June 1895 Last Survey 14<sup>th</sup> Feb 1896  
Reg. Book. S. S. Nanshan (Number of Visits 39)

on the S. S. Nanshan Tons { Gross 2199.97  
Net 1344.18

Master                      Built at Grangemouth By whom built Grangemouth Dockyard Co When built 1895

Engines made at Glasgow By whom made Hutson & Son when made 1895

Boilers made at Glasgow By whom made Hutson & Son when made 1895

Registered Horse Power 190 Owners J. W. Richardson Port belonging to London

Nom. Horse Power as per Section 28 232

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

Diameter of Cylinders 23, 38 & 61" Length of Stroke 42" Revolutions per minute 70 Diameter of Screw shaft as per rule 11"  
as fitted 12 1/2"

Diameter of Tunnel shaft as per rule 10.5" Diameter of Crank shaft journals 11 3/4" Diameter of Crank pin 12" Size of Crank webs built  
as fitted 11"

Diameter of screw 15'-0" Pitch of screw 16'-0" No. of blades 4 State whether moveable Yes Total surface 68 sq. ft

No. of Feed pumps 2 Diameter of ditto 3 1/2" 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 9" x 9" x 10" & 6" x 4" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Three 3" dia. In Holds, &c. one to fore hold 3" dia., one to main hold 3" dia., one to after hold 2 1/2" dia., one to tunnel well 3" dia.

No. of bilge injections 1 sizes 4 3/4" Connected to condenser, or to circulating pump Yes Is a separate donkey suction fitted in Engine room & size Yes 3 1/2"

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 None

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 Suctions to fore hold How are they protected Wood casings

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 12-2-96 Is the screw shaft tunnel watertight Yes

Is it fitted with a watertight door Yes worked from Top platform

BOILERS, &c.— (Letter for record (a)) Total Heating Surface of Boilers 3385.6 sq. ft

No. and Description of Boilers 2. S.E. Multitubular Working Pressure 160 lbs Tested by hydraulic pressure to 320 lbs

Date of test 30.11.95 Can each boiler be worked separately Yes Area of fire grate in each boiler 61.5 sq. ft No. and Description of safety valves to each boiler 2. direct spring Area of each valve 4" Pressure to which they are adjusted 160 lbs Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers on woodwork 12" Mean diameter of boilers 14'-6"

Length 10'-6" Material of shell plates Steel Thickness 1 7/32" Description of riveting: circum. seams d.x. lap long. seams d. butt str.

Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9/4" Lap of plates or width of butt straps 20 5/8"

Per centages of strength of longitudinal joint 97% Working pressure of shell by rules 169 lbs Size of manhole in shell 13.8 end 12" x 16"

Size of compensating ring No. Rivets No. and Description of Furnaces in each boiler 3. Morrison's Material Steel Outside diameter 45 1/2"

Length of main part top 6'-11" Thickness of plates 9/16" Description of longitudinal joint welded No. of strengthening rings —

Working pressure of furnace by the rules 192 lbs Combustion chamber plates: Material steel Thickness: Sides 17/32" Back 17/32" Top 9/16" Bottom 7/8"

Pitch of stays to ditto: Sides 7" Back 7" Top 7 1/2" x 7" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 177 lbs

Material of stays iron Diameter at smallest part 1 1/2" & 1 3/4" Area supported by each stay 49 sq. ft Working pressure by rules 181 lbs End plates in steam space: Material Steel Thickness 25 & 25 32 & 32 Straps Pitch of stays 15" How are stays secured d. Nuts Working pressure by rules 164 lbs Material of stays iron

Diameter at smallest part 2 7/8" Area supported by each stay 225 sq. ft Working pressure by rules 168 lbs Material of Front plates at bottom Steel

Thickness 3/4" Material of Lower back plate Steel Thickness 3/4" Greatest pitch of stays doubled Working pressure of plate by rules 321 lbs

Diameter of tubes 3 1/2" Pitch of tubes 4 3/4" Material of tube plates Steel Thickness: Front 7/8" Back 55/64" Mean pitch of stays 9 1/2"

Pitch across wide water spaces 14 1/2" Working pressures by rules 216 lbs Girders to Chamber tops: Material iron Depth and thickness of girder at centre 7 1/2" x 1 1/4" Length as per rule 32" Distance apart 7 1/2" Number and pitch of Stays in each 3. 7"

Working pressure by rules 167 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 —



LTH565-0184

**DONKEY BOILER**— Description *Multitubular.*  
 Made at *Glasgow* By whom made *Hutton & Son* When made *1895* Where fixed *On deck*  
 Working pressure *100 lbs* tested by hydraulic pressure to *200 lbs* No. of Certificate *3971* Fire grate area *95 sq ft* Description of safety valves *direct open*  
 No. of safety valves *2* Area of each *4* Pressure to which they are adjusted *100 lbs* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Diameter of donkey boiler *8'-0"* Length *8'-0"* Material of shell plates *Steel* Thickness *7/16"*  
 Description of riveting long. seams *trub. riv. lap* Diameter of rivet holes *7/8"* Whether punched or drilled *drilled* Pitch of rivets *3"*  
 Lap of plating *6 3/8"* Per centage of strength of joint Rivets *83* Plates *75* Thickness of shell crown plates *1/2"* Radius of do. *Plate* No. of Stays to do. *8*  
 Dia. of stays *1 1/2 x 1 5/8"* Diameter of furnace Top *29"* Bottom — Length of furnace *5'-7 1/2"* Thickness of furnace plates *7/16"* Description of joint *d. butt* Thickness of furnace crown plates *1/16"* Stayed by *2 1/8" stays 13 1/2 x 13" pitch* Working pressure of shell by rules *100*  
 Working pressure of furnace by rules *110 lbs* Diameter of uptake *3"* Thickness of uptake plates *1/16" & 5/8"* Thickness of water tubes —

**SPARE GEAR.** State the articles supplied:— *As per Rule & in addition, one third portion of crank shaft, one screw shaft, 4 propeller blades, one foot for air circulating pumps, one pair crank pin bushes, 1 set safety & escape valve springs, one set of piston rings, 12 boiler & 12 condenser tubes.*  
 The foregoing is a correct description,  
 Manufacturer. *H. Hutton & Son*

**General Remarks** (State quality of workmanship, opinions as to class, &c.) *These engines & boilers have been built under special survey and are of good workmanship and material and have now been sent to Grangemouth where they will be fitted on board the vessel.*  
*When the fitting on board has been favourably reported upon I am of opinion that the machinery will be eligible to the notation: + L.M.C. with date of completion of survey.*  
*This report, along with approved boiler plan and forging report, sent to Leith surveyor for completion.*

*Wm. Sanderson*  
*Glasgow 20/12/95.*

*The engines & boilers of this vessel have been fitted on board in a satisfactory manner, the engines have been tried & the safety valves of main & donkey boilers adjusted under steam at the working pressure. The port main boiler fell on the quay at Leith owing to the crane breaking down & was in consequence examined & tested by water pressure to 320 lbs per square inch & found in good order. The machinery is now in my opinion in good & safe working condition & eligible to have the notation of + L.M.C. 2,96*

It is submitted that this vessel is eligible for  
 Certificate (if required) to be sent to **THE RECORD, + L.M.C. 2,96.**

The amount of Entry Fee	£ 2 : 0	When applied for,	17th Feb 1896
Special	£ 21 : 11		
Donkey Boiler Fee	£ 10 : 11	When received,	20.2.96
Travelling Expenses (if any)	£ 1 : 10		

*Thos. Field*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
 Leith.

Committee's Minute **FRI. FEB 21 1896**  
 Assigned **+ L.M.C. 2,96**  
 MACHINERY WRITTEN.

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 Dated

The Surveyors are requested not to write on or below the space for Committee's Minutes.