

REPORT ON MACHINERY.

No. 14999

Port of Greenock

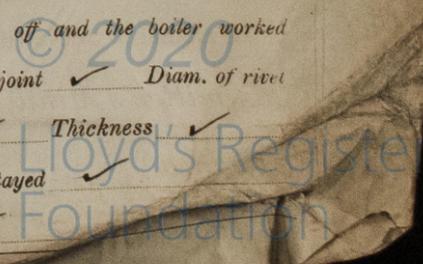
Received at London Office TUES. MAR 26 1907

No. in Survey held at Greenock Date, first Survey 18th July 1906 Last Survey 15th March 1907
 Reg. Book. 119 Supplement on the Steel S.S. "Strathavon" (Grangemouth & Greenock Dockyard Co. No. 285) (Number of Visits 97)
 Master A. G. Hutchinson Built at Greenock By whom built Grang. & Gk. Dockyard Co. Gross 4402.86 Tons
 Engines made at Greenock By whom made J. G. Kincaid & Co. Lim. when made 1907 Net 2830.19
 Boilers made at Do. By whom made Do. when made 1907
 Registered Horse Power _____ Owners Burrell & Son Port belonging to Glasgow
 Nom. Horse Power as per Section 28 353 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted No.

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3
 Dia. of Cylinders 25"-41"-68" Length of Stroke 48" Revs. per minute 40 Dia. of Screw shaft 14 3/8" Material of screw shaft Iron
 Is 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 tight in the propeller boss Yes
 If the liner is in more than one length are the joints burned Yes If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive Yes
 If two liners are fitted, is the shaft lapped or protected between the liners Yes Length of stern bush 58 1/2"
 Dia. of Tunnel shaft 12.695" Dia. of Crank shaft journals 13.33" Dia. of Crank pin 13 5/8" Size of Crank webs 20x8 3/4" Dia. of thrust shaft under collars 13 5/8" Dia. of screw 14-6" Pitch of Screw 14-9" No. of Blades 4 State whether moveable No. Total surface 95 sq. ft.
 No. of Feed pumps 2 Diameter of ditto 3 1/2" Stroke 30" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 4" Stroke 30" Can one be overhauled while the other is at work Yes
 No. of Donkey Engines 2 Sizes of Pumps 12x10" & 8x5 1/2x8" Duplex No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Four-3 1/2" In Holds, &c. Forehold, two-3 1/2"; Main hold two-3 1/2";
Deep tank, two-3 1/2"; No. 4 hold, two-3 1/2"; No. 5 hold, two-3 1/2" and Tunnel well, one-3 1/2".
 No. of Bilge Injections one size 6" Connected to condenser, or to circulating pump Cir. p. 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 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
 Dates of examination of completion of fitting of Sea Connections 13/2/07 of Stern Tube 13/2/07 Screw shaft and Propeller 13/2/07
 Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from upper deck.

BOILERS, &c.—(Letter for record S) Manufacturers of Steel Clydebridge Steel Co. & Messrs D. Colville & Sons
 Total Heating Surface of Boilers 5509 sq. ft. Is Forced Draft fitted No. No. and Description of Boilers 3 S.S. Multitubular
 Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs. Date of test 22/1/07 No. of Certificate 810
 Can each boiler be worked separately Yes Area of fire grate in each boiler 55 sq. ft. No. and Description of Safety Valves to each boiler Two, spring loaded Area of each valve 5.94 sq. in. Pressure to which they are adjusted 184 lbs. Are they fitted with easing gear Yes
 Smallest distance between boilers or stays and bunkers or woodwork 3-6" Mean dia. of boilers 14 ft. Length 11 ft. Material of shell plates Steel
 Thickness 1 1/4" Range of tensile strength 28532 tons Are the shell plates welded or flanged No. Descrip. of riveting: cir. seams D.R.
 long. seams D.B.S. & A. Diameter of rivet holes in long. seams 1 3/16" Pitch of rivets 8 1/4" Lap of plates or width of butt straps 17 5/16"
 Per centages of strength of longitudinal joint rivets 87.5 Working pressure of shell by rules 180 lbs. Size of manhole in shell 16x12"
 plate 85.6 Size of compensating ring 32x28 oval No. and Description of Furnaces in each boiler 3-Dighton Material Steel Outside diameter 3'-8 1/4"
 Length of plain part top 12 1/2" Thickness of plates crown 1 1/2" Description of longitudinal joint welded No. of strengthening rings Yes
 bottom 3/32" Working pressure of furnace by the rules 185 lbs. Combustion chamber plates: Material Steel Thickness: Sides 19/32" Back 21/32" Top 19/32" Bottom 7/8"
 Pitch of stays to ditto: Sides 8 3/4x7 1/4" Back 9x9" Top 9x7 1/4" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 183-189
 Material of stays Steel Diameter at smallest part 2.106 in. Area supported by each stay 81 sq. in. Working pressure by rules 234 lbs. End plates in steam space:
 Material Steel Thickness 1 1/8" Pitch of stays 18 1/2x17 3/8" How are stays secured D. nuts & washers Working pressure by rules 181 lbs. Material of stays Steel
 Diameter at smallest part 6.92 in. Area supported by each stay 330.7 sq. in. Working pressure by rules 209 lbs. Material of Front plates at bottom Steel
 Thickness 1" Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 13 1/4x9" Working pressure of plate by rules 222 lbs.
 Diameter of tubes 3 1/2" ext. Pitch of tubes 4 1/2x4 3/8" Material of tube plates Steel Thickness: Front 1" Back 3/4" Mean pitch of stays 8 3/4"
 Pitch across wide water spaces 13 1/4" Working pressures by rules 204 lbs. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9 3/8x1 3/8" Length as per rule 2'-8 1/2" Distance apart 9" Number and pitch of stays in each 3-7 1/4"
 Working pressure by rules 185 lbs. Superheater or Steam chest; how connected to boiler Yes Can the superheater be shut off and the boiler worked separately Yes Diameter Yes Length Yes Thickness of shell plates Yes Material Yes Description of longitudinal joint Yes Diam. of rivet holes Yes Pitch of rivets Yes Working pressure of shell by rules Yes Diameter of flue Yes Material of flue plates Yes Thickness Yes
 If stiffened with rings Yes Distance between rings Yes Working pressure by rules Yes End plates: Thickness Yes How stayed Yes
 Working pressure of end plates Yes Area of safety valves to superheater Yes Are they fitted with easing gear Yes

If not, state whether, and when, one will be sent? Is a Report also sent on the hull of the ship?



VERTICAL DONKEY BOILER— Manufacturers of Steel

No.	Description		
Made at	By whom made	When made	Where fixed
Working pressure	tested by hydraulic pressure to	Date of test	No. of Certificate
Valves	No. of Safety Valves	Area of each	Pressure to which they are adjusted
If fitted with easing gear	If steam from main boilers can enter the donkey boiler		Date of adjustment
Material of shell plates	Thickness	Range of tensile strength	Di. of donkey boiler
Di. of rivet holes	Whether punched or drilled	Pitch of rivets	Length
Working pressure of shell by rules	Thickness of shell crown plates	Radius of do.	Descrip. of riveting long. seams
Diameter of furnace Top	Bottom	Length of furnace	Per centage of strength of joint
Working pressure of furnace by rules	Thickness of furnace crown plates	Stayed by	Rivets
Diameter of uptake	Thickness of uptake plates	Thickness of water tubes	Plates
		Dates of survey	

SPARE GEAR. State the articles supplied:— 1 set of air p. + 1 set of Cir. p. valves, 2 valves + seats for feed pumps + also 2 valves + seats for bilge pumps, 2 main bearings, 4 top end, 4 bottom end, 1 set of coupling, 6 junk ring, 6 cyl. cover, and six valve casing cover, bolts + nuts, 100 bolts + nuts + washers, assorted, 15 valve spring, 1 escape valve spring for each cyl., 1 relief valve + spring for feed pumps, 8 boiler plain + 2 stay tubes, 12 condenser tubes + 24 fernules, 1/2 set fire bars, one cast iron propeller, 1 tail end shaft complete, 3 check valves + 3 crank shaft coupling bolts + nuts.

The foregoing is a correct description,
John G. Macrae & Co Ltd Manufacturer.

Dates of Survey while building	During progress of work in shops -	1906 July 18, 19, 23, 27, 30, 31, Aug 2, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 17, 19, 20, 21, 24, 26, 27, 28, Oct 2, 4, 5, 9, 10, 11, 12, 15, 18, 20, 22
	During erection on board vessel -	5, 6, 7, 8, 10, 11, 14, 15, 1907 Jan 25, 28, 30, 31, Feb 1, 4, 5, 6, 7, 8, 11, 12, 13, 14, 15, 18, 21, 27, 28, March 1, 4, 5, 6, 7
	Total No. of visits	8, 9, 11, 12, 13, 15

97. Is the approved plan of main boiler forwarded herewith *in London office for S.S. Strathclyde*

Dates of Examination of principal parts—Cylinders 25/1/07 Slides 1/2/07 Covers 4/2/07 Pistons 28/1/07 Rods 28/1/07

Connecting rods 28/1/07 Crank shaft 21/1/07 Thrust shaft 8/3/07 Tunnel shafts 8/3/07 Screw shaft 7/2/07 Propeller 13/2/07

Stern tube 13/2/07 Steam pipes tested 5/3/07 + 9/3/07 Engine and boiler seatings 8/3/07 Engines holding down bolts 7/3/07

Completion of pumping arrangements 13/3/07 Boilers fixed 8/3/07 Engines tried under steam 15/3/07

Main boiler safety valves adjusted 13/3/07 Thickness of adjusting washers *Starb B. 5 1/4 P 3/4 Centre B. 5 3/8 P 1/4 Port B. 5 5/16 P 5/16*

Material of Crank shaft *Steel* Identification Mark on Do. *h^o651 S.06.A.T.P.* Material of Thrust shaft *Steel* Identification Mark on Do. *h^o652 S.06.A.T.P.*

Material of Tunnel shafts *Steel* Identification Marks on Do. *h^o653-8 S.06.A.T.P.* Material of Screw shafts *Iron* Identification Marks on Do. *h^o808.A.T.G.*

Material of Steam Pipes *Copper* Test pressure *400 lbs.*

General Remarks (State quality of workmanship, opinions as to class, &c. *Workmanship and material good.*)

The Engines and Boilers have been built under special survey and have been efficiently fitted on board, tried under a full pressure of steam and found to work satisfactory. They are now in safe working condition and eligible, in my opinion, to be classed with notation **+L.M.C.3.07.**

Marks on Main B^o

h^o810
 Lloyds Test.
 360 lbs.
 22/1/07 R.E.

It is submitted that this vessel is eligible for THE RECORD

+ LMC 3.07.

J.S.M.
 28/3/07

The amount of Entry Fee..	£ 3:	When applied for,	19/3/1907
Special	£ 37: 13:	When received,	22/3/1907
Donkey Boiler Fee	£ : :		
Travelling Expenses (if any) £	: :		

R. Elliott
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute
 Assigned

Glasgow 25 MAR 1907

+ LMC. 3.07.

Certificate (if required) to be sent to
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)

