

REPORT ON MACHINERY.

Port of Glasgow

Received at London Office **TUES. APL 23 1907**

No. in Survey held at
Reg. Book. on the

Glasgow
s/s "Chikuzen Maru"

Date, first Survey 10th May 06 Last Survey 19 April 1907

(Number of Visits)

Master Glasgow Built at Glasgow By whom built D. & W. Henderson ^{Tons} Gross 160 Net 1907 When built

Engines made at Glasgow By whom made D. & W. Henderson when made 1907

Boilers made at Glasgow By whom made D. & W. Henderson when made

Registered Horse Power 386 Owners Nippon Yusen Kaisha Port belonging to

Nom. Horse Power as per Section 28 386 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple expansion—Screw No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 35", 41", 68" Length of Stroke 48" Revs. per minute 76 Dia. of Screw shaft ^{as per rule} 13.69" Material of iron _{as fitted} 14 3/8" screw shaft

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 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 If two liners are fitted, is the shaft lapped or protected between the liners Length of stern bush 4" 10 3/4"

Dia. of Tunnel shaft ^{as per rule} 12.8" Dia. of Crank shaft journals ^{as per rule} 13.44" Dia. of Crank pin 13 3/4" Size of Crank webs 9 1/4" Dia. of thrust shaft under collars 13 3/4" Dia. of screw 15.6" Pitch of Screw 21.0" No. of Blades 4 State whether moveable yes Total surface 86 sq. ft.

No. of Feed pumps 2 Diameter of ditto 3 3/4" Stroke 24" Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 24" Can one be overhauled while the other is at work yes

No. of Donkey Engines 5 Sizes of Pumps 3 1/2" x 2 3/4" x 4" - 9 1/2" x 7" x 8" No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room 4 - 3" dia. 10" x 12" x 10" - 11 Centrifugal In Holds, &c. 8 - 3" dia.

No. of Bilge Injections 1 sizes 7 1/2" Connected to condenser, or to circulating pump pump 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

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 pipes How are they protected wooden boxing

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 16/2/07 of Stern Tube 16/2/07 Screw shaft and Propeller 16/2/07

Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Eng. room at Spar deck.

BOILERS, &c.—(Letter for record (S)) Manufacturers of Steel Messrs. J. & Co. Calderbank

Total Heating Surface of Boilers 5130 Is Forced Draft fitted yes No. and Description of Boilers 2 Single ended.

Working Pressure 185 lbs Tested by hydraulic pressure to 370 lbs Date of test 28/12/06 No. of Certificate 8672

Can each boiler be worked separately yes Area of fire grate in each boiler 61.875 ^{sq. ft.} No. and Description of Safety Valves to each boiler 2 Patent spring Area of each valve 9.6" Pressure to which they are adjusted 185 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 7" Mean dia. of boilers 15.6" Length 11.6" Material of shell plates steel

Thickness 1 5/16" Range of tensile strength 28 to 32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams d. lap

long. seams treble Diameter of rivet holes in long. seams 1 5/16" Pitch of rivets 9" Lap of plates on width of butt straps 19 1/2"

Per centages of strength of longitudinal joint rivets 85.18 Working pressure of shell by rules 194 lbs Size of manhole in shell 16" x 12" plate 85.4

Size of compensating ring 32" x 28" x 1 3/8" No. and Description of Furnaces in each boiler 3 Watson Material steel Outside diameter 49 7/16"

Length of plain part ^{top} 19" Thickness of plates ^{around} 1 1/32" Description of longitudinal joint welded No. of strengthening rings

Working pressure of furnace by the rules 191 lbs Combustion chamber plates: Material steel Thickness: Sides 19" Back 19" Top 19" Bottom 15"

Pitch of stays to ditto: Sides 8" x 8" Back 8" x 8" Top 8" x 8" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 190 lbs

Material of stays steel ^{area} Diameter at smallest part 1.69" Area supported by each stay 64" Working pressure by rules 210 End plates in steam space:

Material steel Thickness 1" Pitch of stays 16" x 16" How are stays secured Nuts & W. Working pressure by rules 185 Material of stays steel

^{area} Diameter at smallest part 5.27" Area supported by each stay 256" Working pressure by rules 205 Material of Front plates at bottom steel

Thickness 1" Material of Lower back plate steel Thickness 3/32" Greatest pitch of stays 13 1/4" x 8" Working pressure of plate by rules 224

Diameter of tubes 3 1/2" Pitch of tubes 3 3/4" x 3 3/4" Material of tube plates steel Thickness: Front 1" Back 3/4" Mean pitch of stays 7 1/2"

Pitch across wide water spaces 14" Working pressures by rules 194 lbs Girders to Chamber tops: Material steel Depth and thickness of girder at centre 7 1/4" x 2-1" Length as per rule 31 1/8" Distance apart 8" Number and pitch of stays in each 3 - 8"

Working pressure by rules 185 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

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. Description *See separate report.*

Made at _____ By whom made _____ When made _____ Where fixed _____

Working pressure tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of Safety _____

Valves _____ No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____

If fitted with easing gear _____ If steam from main boilers can enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____

Material of shell plates _____ Thickness _____ Range of tensile strength _____ Descrip. of riveting long. seams _____

Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____ Lap of plating _____ Per centage of strength of joint _____ Rivets _____ Plates _____

Working pressure of shell by rules _____ Thickness of shell crown plates _____ Radius of do. _____ No. of stays to do. _____ Dia. of stays _____

Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace plates _____ Description of joint _____

Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Stayed by _____

Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— *Two top end & two bottom end connecting rod bolts, two main bearing bolts, one set of coupling bolts, one set of feed & bilge pump valves. Etc. etc.*

The foregoing is a correct description,
 For DAVID & WILLIAM HENDERSON & CO., LIMITED.
David Henderson Manufacturer.

Dates of Survey while building	During progress of work in shops - -	1906: May 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 31, July 25, Aug 1, 8, 29, Sep 3, 10, Oct 15, Nov 2, 10, Dec 3, 15
	During erection on board vessel - -	18, 20, 27, 28, 1907: Jan 10, 24, 29, Feb 7, 9, 12, 15, 16, 18, 25, 26, Mar 1, 12, 16, 18, 19, 26, Apr 11, 19
	Total No. of visits	44

Is the approved plan of main boiler forwarded herewith *yes*

Dates of Examination of principal parts—Cylinders *3/12/06* Slides *3/12/06* Covers *3/12/06* Pistons *3/12/06* Rods *3/12/06*

Connecting rods *3/12/07* Crank shaft *10/11/06* Thrust shaft *10/11/06* Tunnel shafts *10/11/06* Screw shaft *18/2/07* Propeller *18/2/07*

Stern tube *18/2/07* Steam pipes tested *16/3/07* Engine and boiler seatings *18/2/07* Engines holding down bolts *12/3/07*

Completion of pumping arrangements *26/3/07* Boilers fixed *26/3/07* Engines tried under steam *11/4/07*

Main boiler safety valves adjusted *26/3/07* Thickness of adjusting washers *all 1/4" donkey boiler 3/8*

Material of Crank shaft *steel* Identification Mark on Do. *A.M.C.K.* Material of Thrust shaft *steel* Identification Mark on Do. *A.M.C.K.*

Material of Tunnel shafts *steel* Identification Marks on Do. *A.M.C.K.* Material of Screw shafts *iron* Identification Marks on Do. *J.M.*

Material of Steam Pipes *copper* Test pressure *400 lbs*

General Remarks (State quality of workmanship, opinions as to class, &c. *The Machinery of this vessel has been constructed under Special Survey, the materials & workmanship are of good quality, it has been securely fitted on board tried under steam & found satisfactory.*

In our opinion it is eligible to be classed in the Register Book, & to have the notation of L.M.C. 4.07.

It is submitted that this vessel is eligible for THE RECORD. L.M.C. 4.07

Elec light

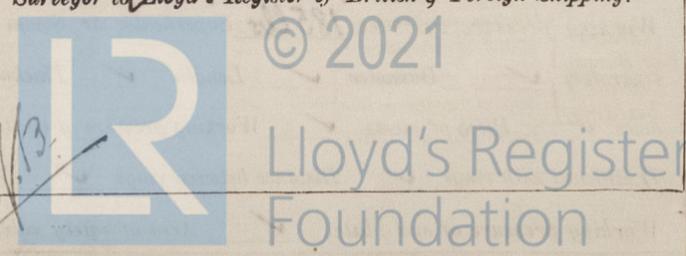
The amount of Entry Fee..	£ 3 :	When applied for,
Special	£ 39 6 :	12 APR 1907
Donkey Boiler Fee .. .	£ :	When received,
Travelling Expenses (if any) £	:	21 5 10

A. McKendrick & James Hollison
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *Glasgow 22 APR 1907*

Assigned *L.M.C. 4.07*

MACHINERY CERTIFICATE WRITTEN 23.4.07



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