

REPORT ON MACHINERY.

TUES MAR 2 1897

Port of Glasgow

No. in Survey held at Glasgow Date, first Survey 4th May 1896 Last Survey 11th Feb^y 1897
 Reg. Book. S. S. Hakata Maru (Number of Visits 4)
 Master R. Ninison Built at Glasgow By whom built D & W Henderson & Co When built 1897
 Engines made at Glasgow By whom made D & W Henderson & Co when made 1897
 Boilers made at Glasgow By whom made D & W Henderson & Co when made 1897
 Registered Horse Power _____ Owners Nippon Yusen Kaisha Port belonging to Tokio
 Nom. Horse Power as per Section 28 550 Is Electric Light fitted yes

Gross 5811
 Net 3694
 Tons

ENGINES, &c.—Description of Engines Four Screw, Triple Expansion No. of Cylinders 6 No. of Cranks 6
 Diameter of Cylinders 20" 33 1/2" 56" Length of Stroke 48" Revolutions per minute 75 Diameter of Screw shaft as per rule 11.4"
 Diameter of Tunnel shaft as per rule 10.8" Diameter of Crank shaft journals 12 1/2" Diameter of Crank pin 12 1/2" Size of Crank webs 8 1/4" x 23 3/4"
 Diameter of screw 15" 0" Pitch of screw 18' 3" No. of blades 4 State whether moveable yes Total surface 684 sq ft each
 No. of Feed pumps 2 Diameter of ditto 5" Stroke 24" Can one be overhauled while the other is at work yes
 No. of Bilge pumps 2 Diameter of ditto 5" Stroke 24" Can one be overhauled while the other is at work yes
 No. of Donkey Engines 4 duplex Sizes of Pumps 10" x 8" x 24" main; 7" x 5" x 6" carbatters No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Three 3 1/2" In Holds, &c. Forward: via 3 1/2" aft
 No. of bilge injections 2 sizes 6 3/4" Connected to condenser, or to circulating pump no. Is a separate donkey suction fitted in Engine room & size 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 both Are they Valves or Cocks yes
 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 below
 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 forward bilge pipes How are they protected cased in
 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 17. 12. 96 Is the screw shaft tunnel watertight apparently
 Is it fitted with a watertight door yes worked from upper deck.

BOILERS, &c.— (Letter for record S.) Total Heating Surface of Boilers 9157 sq ft in 4 boilers forced draft fitted no
 No. and Description of Boilers 2 Double ended, 2 Single ended see attached Report Working Pressure 200 lbs Tested by hydraulic pressure to 400 lbs
 Date of test 12. 11. 96 Can each boiler be worked separately yes Area of fire grate in each boiler 100 sq ft Total grate 5 in 4 boilers 300 sq ft No. and Description of safety valves to
 each boiler two spring loaded Area of each valve 9.62 sq in Pressure to which they are adjusted 205 lbs Are they fitted
 with easing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 21" Mean diameter of boilers 159"
 Length 17' 0" Material of shell plates Steel Thickness 23/16" Description of riveting: circum. seams lap 2 x 3 knots long, seams Double Nutt 5 kinds
 Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 9 5/8" Lap of plates or width of butt straps 21 3/4" x 1 1/16"
 Per centages of strength of longitudinal joint 87.4 Working pressure of shell by rules 225 lbs Size of manhole in shell 12" x 16"
 Size of compensating ring McNeil's No. and Description of Furnaces in each boiler 6 Morrison's (total 18 furnaces) Material Steel Outside diameter 41 1/2"
 Length of plain part top 7' 1" over plates Thickness of plates bottom 9/16" Description of longitudinal joint Weld No. of strengthening rings corrugated
 Working pressure of furnace by the rules 213 lbs Combustion chamber plates: Material Steel Thickness: Sides 45/64" Back none Top 1/16" Bottom 1/8"
 Pitch of stays to ditto: Sides 9" Back none Top 7 1/2" x 9" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 202 lbs
 Material of stays Steel Diameter at smallest part 1.99 sq in Area supported by each stay 81 sq in Working pressure by rules 220 lbs End plates in steam space:
 Material Steel Thickness 1 1/16" Pitch of stays 15 x 17 1/4" How are stays secured Double Nutt Working pressure by rules 214 lbs Material of stays Steel
 Diameter at smallest part 7.5 sq in Area supported by each stay 311 sq in Working pressure by rules 217 lbs Material of Front plates at bottom Steel
 Thickness 7/8" Material of Lower back plate none Thickness — Greatest pitch of stays — Working pressure of plate by rules —
 Diameter of tubes 3 1/4" Pitch of tubes 4 7/8" x 4 3/8" Material of tube plates Steel Thickness: Front 1" Back 25/32" Mean pitch of stays 10' 2"
 Pitch across wide water spaces 14" Working pressures by rules approved. Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 7" x 2 x 1 Length as per rule 36 Distance apart 9" Number and pitch of Stays in each 4 x 8"
 Working pressure by rules approved Superheater or Steam chest; how connected to boiler none 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 _____

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

[1976-5000-24/2/80-Copyable Ink.]

15019 gls.

DONKEY BOILER— Description *None*

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

Working pressure tested by hydraulic pressure to _____ No. of Certificate _____ Fire grate area _____ Description of safety 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 _____

Diameter of donkey boiler _____ Length _____ Material of shell plates _____ Thickness _____

Description of riveting long seams _____ Diameter of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____

Lap of plating _____ Per centage of strength of joint _____ Rivets _____ Thickness of shell crown plates _____ Radius of do. _____ No. of Stays to do. _____

Plates _____

Dia. of stays _____ Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace plates _____ Description of joint _____

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

Working pressure of furnace by rules _____ Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____

SPARE GEAR. State the articles supplied:— *As required by the rules, also one third crank, 2 tail shafts, 4 propeller blades & studs etc. One piston rod., 3 Valve rods, a set of main & connecting rod brasses, 4 Guide shafts, 2 Eccentric rods & straps & one set of Thrust shafts.*

The foregoing is a correct description,
David W. Henderson Manufacturer.

Dates of Survey while building

During progress of work in shops	1896 May 2, 14, 22, 24, 26, 29, July 2, 4, 8, 10, 14, 20, 31, Aug 4, 6, 11, 13, 18, 21, 31, Sept 1, 2, 8, 10, 14, 23, 25, 30, Oct 8, 9, 12, 20, 26, Nov 3, 5, 9, 12, 14, 18, 19, 23, 25, 27, 30, Dec 3, 8, 10, 11, 14, 16, 17, 22, 25, 1897 Jan 6, 9, 13, 14, 18, 20, 25, 27, Feb 2, 4, 9, 12, 14, 19, 20, 24, -
During erection on board vessel	24. Feb 2, 4, 9, 12, 14, 19, 20, 24, -
Total No. of visits	41.

General Remarks (State quality of workmanship, opinions as to class, &c. *These engines & shafts have been built under the conditions of Special Survey. They have been securely fitted on board & satisfactorily tested under steam. The material & workmanship is good.*

It is submitted that this vessel is eligible for the record + L.M.C. 2 97

W.W.

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 2.97. Plec. Light

R.S.
 2. 3. 97

The amount of Entry Fee... £ 3 : " :
 Special £ 44 : 10 :
 Donkey Boiler Fee £ " : " :
 Travelling Expenses (if any) £ : : :

When applied for, 22/2/97
 When received, 26/2/97
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.
C. G. Schromeyer

Committee's Minute TUES MAR 2 1897
 Assigned + L.M.C. 2.97 Plec. Light



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