

# REPORT ON MACHINERY.

8590

No. 8590

No. in Survey held at  
Reg. Book.

Glasgow

Date, first Survey 12<sup>th</sup> Sept. 1884 Last Survey June 13<sup>th</sup> 1888

Received at London Office  
(Number of Visits 57) 2412.44  
Tons 1358.66

on the

S.S. Saitio Maru

Master Wilson Walker Built at Glasgow By whom built The London & Glasgow Co. Ltd When built 1888

Engines made at Glasgow By whom made The London & Glasgow Co. Ltd when made 1888

Boilers made at Do By whom made Do when made 1888

Registered Horse Power 4400 Horses Owners Nippon Yusen Kaisha Port belonging to Yokohama

## ENGINES, &c.

Description of Engines Imported Direct Acting Triple Expansion Surface Condensing  
Diameter of Cylinders 33 1/2, 54, 87 Length of Stroke 15 1/2 No. of Rev. per minute 66 Point of Cut off, High Pressure 75.8 Low Pressure 7  
Diameter of Screw shaft 16 1/2 Diam. of Tunnel shaft 15 1/2 Diam. of Crank shaft journals 16 1/2 Diam. of Crank pin 16 1/2 size of Crank webs 12 x 23  
Diameter of screw 17-0 Pitch of screw 26-9 No. of blades Four state whether moveable Yes total surface 95 1/2 sq. ft.  
No. of Feed pumps Two diameter of ditto 5 Stroke 30 Can one be overhauled while the other is at work Yes  
No. of Bilge pumps Two diameter of ditto 5 1/2 Stroke 30 Can one be overhauled while the other is at work Yes  
Where do they pump from Holds & Bilges  
No. of Donkey Engines Two Size of Pumps Bagley 1 1/2 x 12 pump 12 1/2 Where do they pump from Ballast engine from Sea, bilge, holds, condenser, & tanks Northampton from Sea, Condenser & Hotwell Ballast engine also from Hotwell  
Are all the bilge suction pipes fitted with roses Yes Are the roses always accessible Yes Are the sluices on Engine room bulkheads always accessible Yes  
No. of bilge injections Three and sizes 10 dia Are they connected to condenser, or to circulating pump Circulating pump  
How are the pumps worked Air pump, also Feed & Bilge from cross head of L.P. engine Two 14" centrifugal pumps for circulating  
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  
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 Hold suction How are they protected Wood casing  
Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times Yes  
Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges Yes  
When were stern tube, propeller, screw shaft, and all connections examined in dry dock Before launching  
Is the screw shaft tunnel watertight Yes and fitted with a sluice door Yes worked from Engine room platform at deck

## BOILERS, &c.

Number of Boilers Four Description Cyl. Mult. Two Triple & Two double ended Whether Steel or Iron Steel  
Working Pressure 160 lb. Tested by hydraulic pressure to 320 lb. Date of test  
Description of superheating apparatus or steam chest None  
Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately  
No. of square feet of fire grate surface in each boiler 1256 sq. ft. Description of safety valves Direct springs No. to each boiler Two  
Area of each valve 7.5 Are they fitted with easing gear Yes No. of safety valves to superheater area of each valve  
Are they fitted with easing gear Yes Smallest distance between boilers and bunkers or woodwork No bunkers at side Diameter of boilers 13-6  
Length of boilers 10-0 description of riveting of shell long. seams Butt Three rows circum. seams Lap. Ends double Thickness of shell plates 1 1/4  
Diameter of rivet holes 1 1/8 whether punched or drilled Drilled pitch of rivets 7 1/8 or 3 1/2 Lap of plating 1-8 3/4  
Per centage of strength of longitudinal joint 81.4 working pressure of shell by rules 163 lb. size of manholes in shell 16 x 12  
Size of compensating rings Double riveted doubling plate 1 1/8 thick No. of Furnaces in each boiler 3  
Outside diameter 39 length, top 7-0 bottom thickness of plates 1 1/2 description of joint Weld if rings are fitted Annular  
Greatest length between rings 9 working pressure of furnace by the rules 160 lb. combustion chamber plating, thickness, sides 9/16 back 9/16 top 9/16  
Pitch of stays to ditto, sides 7 1/2 x 7 1/2 back 7 1/2 top 7 1/2 If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 173 lb. Diameter of stays at smallest part 1 1/2 x 1 3/4 working pressure of ditto by rules 190 lb. end plates in steam space, thickness 15/16 10" riveted ships  
Pitch of stays to ditto 15 x 15 how stays are secured Nuts working pressure by rules 160 lb. diameter of stays at smallest part 2 1/2 x 2 1/2 working pressure by rules 160 lb. Front plates at bottom, thickness 1 3/8 Back plates, thickness 1 3/8  
Greatest pitch of stays 12 x 7 1/2 doubling plate working pressure by rules 160 lb. Diameter of tubes 3 1/2 (trans) pitch of tubes 5 1/8 x 4 3/4 thickness of tube plates, front 7/8 back 29/32 how stayed Steel tubes pitch of stays 14 1/2 x 9 1/2 width of water spaces 5 1/6  
Diameter of Superheater or Steam chest None length thickness of plates description of longitudinal joint diam. of rivet holes  
Pitch of rivets working pressure of shell by rules diameter of flue thickness of plates If stiffened with rings  
Distance between rings working pressure by rules end plates of superheater, or steam chest; thickness how stayed  
Superheater or steam chest; how connected to boiler

State if the ship is also surveyed on the Hull of the Ship

Lloyd's Register Foundation

GLS155-0356



**DONKEY BOILER—** Description *Cylindrical. Multitubular.*  
 Made at *Glasgow* by whom made *The London & Glasgow Co.* when made *1888* where fixed *Main Deck.*  
 Working pressure *100 lbs.* tested by hydraulic pressure to *200 lbs.* No. of Certificate *162* fire grate area *16 1/2 sq ft* description of safety  
 valves *Direct spring* No. of safety valves *4* area of each *3.14 sq ft* if fitted with easing gear *Yes* if steam from main boilers can  
 enter the donkey boiler *No.* diameter of donkey boiler *7-7"* length *7-6"* description of riveting *Butt. Double riveted*  
 Thickness of shell plates *9/16"* diameter of rivet holes *7/8"* whether punched or drilled *Drilled.* pitch of rivets *3"* lap of plating *8"*  
 per centage of strength of joint *71* thickness of ~~main~~ plates *25/32"* stayed by *Steel stay. 2 rows. pitch 14 1/2 + 11*  
 Diameter of furnace, top *43"* bottom *—* length of furnace *5-3"* thickness of plates *17/32"* description of joint *Weld*  
 Thickness of ~~furnace~~ *comb. cham.* plates *1/2"* stayed by *1 3/8" stay. 8x8 pitch. sub. = 120 lbs.* working pressure of shell by rules *100 lbs.*  
 Working pressure of furnace by rules *100 lbs.* diameter of ~~water~~ *uptake* *3 1/2 in.* thickness of plates *25/32 + 5/8"* thickness of water tubes *—*

**SPARE GEAR.** State the articles supplied:— *As per requirements, also according to list appended hereto.*

The foregoing is a correct description,

*Wm. J. Davidson* Manufacturer

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

*These Engines & boilers have been constructed under special survey. They are of good material & workmanship. They have been well fitted on board. Satisfactorily tested under steam and I am of opinion they are eligible to be classed **L.M.C. 6-88** in the Register Book.*

*Since the completion of the work by the Engineers the owners have fitted in the engine room a double acting pair of Worthington pumps, 5 1/4" cylinders & 4" pumps. The suction to the sea is taken from a cock on the side of the main injection valve, fitted when the vessel was in Dry Dock on the 14<sup>th</sup> inst. The discharge is connected to Main & donkey boilers and Deck. These alterations & additions are satisfactory.*

*The ballast engine discharges into Main & donkey boilers, tanks, sanitary tank, hydrant pipes for fire overboard & on deck.*

*Appended hereto are the photo tracings approved for main boilers also amended tracings of same. ~~Highly~~ ~~Three~~ Reports on Steel tests and one Report on Forgings and full list of spare gear.*

*Spare gear list will be forwarded tomorrow*

*It is submitted that this vessel is eligible to have the notation **L.M.C. 6-88** recorded. WJ 14/6/88*

The amount of Entry Fee *£ 3: - -* received by me,  
 Special *£ 142: - -*  
 Donkey Boiler *£ - : - -*  
 Certificate (if required) *£ - : - -* 13/6/1888  
 To be sent as per margin.  
 (Travelling Expenses, if any, £ )

Committee's Minute

FRIDAY 15 JUNE 1888

*+ dml 6/88*

*Walter E. Robson* 2019  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.