

REPORT ON MACHINERY.

No. 1075.

Port of NAGASAKI.

SAT. AUG. 12. 1916

Received at London Office.

No. in Survey held at NAGASAKI Date, first Survey 19th June, 1915 Last Survey 8th July 1916
 Reg. Book. on the S.S. Yamagata Maru (Number of Visits 103)

Master Built at Nagasaki By whom built Mitsubishi S. S. Works When built 1916

Engines made at Nagasaki By whom made Mitsubishi Dockyard & Engine Works when made 1916

Boilers made at Nagasaki By whom made Do. when made 1916

Registered Horse Power 342 Owners Nippon Yusen Kaisha Port belonging to Tokio

Nom. Horse Power as per Section 28 342 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

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

Dia. of Cylinders 23" 38" 64" Length of Stroke 48" Revs. per minute 87 Dia. of Screw shaft 14.5" Material of Steel
 as per rule 14.5" as fitted 15" screw shaft

Is the screw shaft fitted with a continuous liner the whole length of the stern tube No liner fitted Is the after end of the liner made water tight in the propeller boss ✓ 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 5' 1 1/8"

Dia. of Tunnel shaft 12.49" as per rule 12.49" as fitted 12.4" Dia. of Crank shaft journals 13.116" as per rule 13.116" as fitted 13.2" Dia. of Crank pin 14" Size of Crank webs 8 3/4" x 19 5/8" Dia. of thrust shaft under collars 13 1/2" Dia. of screw 16.6" Pitch of Screw 17.3" No. of Blades 4 State whether moveable Yes Total surface 84.4 sq. ft.

No. of Feed pumps 2 Diameter of ditto 4 1/2" 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 3 Sizes of Pumps 9 x 12 x 10 No. and size of Suctions connected to both Bilge and Donkey pumps 9 x 5 x 7
9 1/2 x 7 x 2 1/2

In Engine Room 3 @ 3 1/2" In Holds, &c. No. 1 Hold 2 @ 3 1/2" No. 2 Hold 2 @ 3 1/2"

No. 3 Hold 2 @ 3 1/2" No. 4 Hold 2 @ 3 1/2" Tunnel 1 @ 2 1/2"

No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump Yes Is a separate Donkey Suction fitted in Engine room & size Yes, 5"

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 Bilge pipes How are they protected With steel plates

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 2. 5. 16 of Stern Tube 25. 4. 16 Screw shaft and Propeller 2. 5. 16

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 Stewart & Lloyds Ltd.

Total Heating Surface of Boilers 4394 sq. ft. Is Forced Draft fitted Yes No. and Description of Boilers 2 Single ended, Scotch

Working Pressure 200 lbs. Tested by hydraulic pressure to 400 lbs. Date of test 28. 4. 16 No. of Certificate 67

Can each boiler be worked separately Yes Area of fire grate in each boiler 52.31 sq. ft. No. and Description of Safety Valves to each boiler 2 Spring loaded Area of each valve 9.6 sq. ins. 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 16 1/2" Mean dia. of boilers 14' 0" Length 11' 6" Material of shell plates Steel

Thickness 1 3/16" Range of tensile strength 28 to 32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Double lap

long. seams 2 straps Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9 1/2" 4 1/2" Lap of plates or width of butt straps 20 1/2"

Per centages of strength of longitudinal joint rivets 88.6 Working pressure of shell by rules 212 lbs. Size of manhole in shell 16" x 12"

Size of compensating ring 37" x 33" No. and Description of Furnaces in each boiler 3 Morrison's Material Steel Outside diameter 31' 9 1/2"
(3-4' 7 1/2")

Length of plain part top bottom Thickness of plates crown 1 1/2" Description of longitudinal joint Welded No. of strengthening rings 15

Working pressure of furnace by the rules 217 lbs. Combustion chamber plates: Material Steel Thickness: Sides 3/4" Back 3/4" Top 3/4" Bottom 1 1/2"

Pitch of stays to ditto: Sides 11" x 8" Back 9 1/2" x 9" Top 9 1/2" x 7" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 233 lbs.

Material of stays Steel Diameter at smallest part 1.73 Area supported by each stay 91 sq. ins. Working pressure by rules 212 lbs. End plates in steam space: Double nuts

Material Steel Thickness 1 3/32" Pitch of stays 20" x 18" How are stays secured and washers Working pressure by rules 214 lbs. Material of stays Steel

Diameter at smallest part 3 3/8" Area supported by each stay 360 sq. ins. Working pressure by rules 221 lbs. Material of Front plates at bottom Steel

Thickness 31/32" Material of Lower back plate Steel Thickness 31/32" Greatest pitch of stays 1' 1 1/2" Working pressure of plate by rules 221 lbs.

Diameter of tubes 3 1/2" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates Steel Thickness: Front 31/32" Back 27/32" Mean pitch of stays 10 1/8"

Pitch across wide water spaces 1' 1 1/2" Working pressures by rules 216 lbs. Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10 1/2" x 7 1/2" Length as per rule 31.9 Distance apart 9 1/2" Number and pitch of stays in each 3 @ 7"

Working pressure by rules 214 lbs. Superheater or Steam chest; how connected to boiler By pipe Can the superheater be shut off and the boiler worked separately Yes Diameter 1 1/2" Length 1 1/2" Thickness of shell plates ✓ Material Steel 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 3.14 sq. ins. Are they fitted with easing gear No

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	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:— as per Rule, and in addition 1 crank shaft, 1 Propeller shaft, 2 Propeller blades, 1 Valve spindle, 2 Eccentric rods, 1 pair of connecting rod brasses, 1 pair of crosshead brasses, 13 Junk ring bolts, 45 Condenser tubes, 12 Boiler tubes, 1 set of valves or seats for check valves, 1 set of air pump valves, 1 set of valves for Aux. pumps, 1 air pump rod, 1 centrifugal pump spindle.

The foregoing is a correct description,
General Manager.
General Manager.

Dates of Survey while building	During progress of work in shops—	June 19. 20. July 29. 31. Aug. 4. 7. 18. 20. 24. 28. Sept. 6. 21. 22. 24. 29. 30. Oct. 1. 4. 5. 11. 12. 15. 16. 19. 20. 29.
	During erection on board vessel—	Nov. 1. 2. 3. 4. 6. 8. 12. 13. 17. 18. 22. 24. 29. 30. Dec. 3. 7. 8. 10. 13. 15. 20. 22. 24. 28. 29.
	Total No. of visits	103
	Is the approved plan of main boiler forwarded herewith	yes.

Dates of Examination of principal parts—	Cylinders 3. 5. 16	Slides 6. 6. 16	Covers 3. 5. 16	Pistons 6. 6. 16	Rods 8. 5. 16
Connecting rods 8. 5. 16	Crank shaft 7. 12. 15	Thrust shaft 3. 12. 15	Tunnel shafts 5. 2. 16	Screw shaft 18. 4. 16	Propeller 15. 4. 16
Stern tube 14. 4. 16	Steam pipes tested 9. 6. 16	Engine and boiler seatings 13. 5. 16	Engines holding down bolts 18. 5. 16		
Completion of pumping arrangements 2. 6. 16	Boilers fixed 17. 5. 16	Engines tried under steam 24. 6. 16			
Main boiler safety valves adjusted 19. 6. 16	Thickness of adjusting washers	Jamb nuts			
Material of Crank shaft Steel	Identification Mark on Do. No. 121 ASW	Material of Thrust shaft Steel	Identification Mark on Do. No. 121 ASW		
Material of Tunnel shafts Steel	Identification Marks on Do. No. 121 ASW	Material of Screw shafts Steel	Identification Marks on Do. No. 121 ASW		
Material of Steam Pipes Solid drawn steel	Test pressure 600 lbs. per sq. in.				

General Remarks (State quality of workmanship, opinions as to class, &c. Boilers fitted with leaky Superheaters, and a safety valve fitted to each one. The headers, superheater pipes, and all steam pipes subjected to the temperature of the superheated steam have been made of steel, and all stop valves, junction pieces subjected to the temperature of the superheated steam have been made of cast steel. all the steel castings have been tested as required by the Rules. The headers and superheater pipes were tested by hydraulic pressure to 1000 lbs. per sq. in., and the steam pipes, stop valves, junction pieces to 600 lbs. per sq. in., and found satisfactory.

These Engines and Boilers have been constructed under Special Survey, in accordance with the Rules, and of good materials and workmanship. They have been securely fitted on board, and have been satisfactorily tried under steam. The Machinery of this vessel is eligible, in my opinion, for the record **LMC 7.16** in the Register Book.

Mean speed of 6 Runs on Trial when $\frac{1}{2}$ Loaded = 14.458 knots.

It is submitted that this vessel is eligible for THE RECORD + LMC 7.16

The amount of Entry Fee..	£ 3 : 0 : 0	When applied for,
Special	£ 55 : 13 : 0	10th July 1916
Donkey Boiler Fee	£ : : :	When received,
Travelling Expenses (if any) £	: : :	11th July 1916

Committee's Minute
Assigned

TUE. 22. AUG. 1916

+ L.M.C. 7.16

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



Lloyd's Register
Foundation

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

Rpt. 13.

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