

REPORT ON MACHINERY.

Old No 24908 No. 6865

Received at London Office JUN 1911

pt. 5a.

pt. 4.

Port of MIDDLESBROUGH Date, First Survey 7th Nov 1910 Last Survey 9th June 1911 on the Steel Screw Steamer TENPAISAN MARU (S.S. No 481) Tons Gross 4985 Net 4985

Master Isuji Built at Sunderland By whom built J. L. Thompson & Sons When built 1911

Engines made at Stockton By whom made Messrs Blair & Co (No 1703) when made 1911

Engines made at Stockton By whom made Messrs Blair & Co when made 1911

Registered Horse Power Owners Mitsui Bussan Kaisha Ltd. Port belonging to Mitsui

Horse Power as per Section 28 417 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

Engines, &c.—Description of Engines Tri-compound No. of Cylinders 3 No. of Cranks 3

No. of Cylinders 26-42-70 Length of Stroke 48 Revs. per minute 65 Dia. of Screw shaft as per rule 14.48 Material of screw shaft as fitted 15.3/4

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

Is the propeller boss yes If the liner is in more than one length are the joints burned one length 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 tight fit If two

are fitted, is the shaft lapped or protected between the liners Length of stern bush 5'-4"

No. of Tunnel shaft as per rule 12.98 Dia. of Crank shaft journals as per rule 13.63 Dia. of Crank pin 14 3/4 Size of Crank web 28 1/2 x 9 1/2 Dia. of thrust shaft under

bars 14 3/4 Dia. of screw 17'-6" Pitch of Screw 18'-0" No. of Blades 4 State whether moveable no Total surface 96 sq ft

No. of Feed pumps 2 Diameter of ditto 3 1/2" Stroke 34" Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 5" Stroke 34" Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 Sizes of Pumps Ballast - 11 x 10 1/2 Feed - 4 1/2 x 8 No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room 3 @ 3 1/2" & one 3 1/2" in dry tank In Holds, &c. 2 @ 3 1/2" in each hold; tunnel

will one @ 2 1/2"

No. of Bilge Injections 1 sizes 6 3/4 Connected to condenser or to circulating pump yes Is a separate Donkey Suction fitted in Engine room & size yes - 4"

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 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

How are they protected wood ceiling

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 8-5-11 of Stern Tube 8-5-11 Screw shaft and Propeller 27-5-11

Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from top platform

MILERS, &c.—(Letter for record (S)) Manufacturers of Steel Messrs John Spencer & Sons Ltd.

Total Heating Surface of Boilers 7114 Is Forced Draft fitted no No. and Description of Boilers 3 single ended

Working Pressure 180 Tested by hydraulic pressure to 360 Date of test 27-4-11 No. of Certificate 4633

Can each boiler be worked separately yes Area of fire grate in each boiler 63 1/2 sq ft No. and Description of Safety Valves to

each boiler 2 direct spring Area of each valve 8.29 Pressure to which they are adjusted 185 Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 2 ft external Mean dia. of boilers 15'-3" Length 11'-0" Material of shell plates steel

Thickness 1 1/2 Range of tensile strength 28-32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams 2 Riv lap

Long. seams 2 B-3 Riv Diameter of rivet holes in long. seams 1 1/4 Pitch of rivets 8 1/8 Lap of plates or width of butt straps 18 5/8 x 1 3/8

Per centages of strength of longitudinal joint rivets 86.3 Working pressure of shell by rules 182 Size of manhole in shell 16" x 12"

Size of compensating ring 7 1/2 x 1 1/2 No. and Description of Furnaces in each boiler 3 Morrison Material steel Outside diameter 45 3/8

Length of plain part top Thickness of plates crown 7/16 Description of longitudinal joint welded No. of strengthening rings

Working pressure of furnace by the rules 192 Combustion chamber plates: Material steel Thickness: Sides 1/2 Back 1/2 Top 1/2 Bottom 1 1/2

Pitch of stays to ditto: Sides 8 1/2 x 10 Back 9 5/8 x 9 1/4 Top 9 x 9 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 184

Material of stays steel Diameter at smallest part 1.59 Area supported by each stay 89 Working pressure by rules 202 End plates in steam space:

Material steel Thickness 1 1/2 Pitch of stays 18 3/4 x 18 1/2 How are stays secured nuts & washers Working pressure by rules 184 Material of stays steel

Diameter at smallest part 2.79 Area supported by each stay 340 Working pressure by rules 186 Material of Front plates at bottom steel

Thickness 1 1/2 Material of Lower back plate steel Thickness 1" Greatest pitch of stays 16 3/4 x 9 1/4 Working pressure of plate by rules 189

Diameter of tubes 3 1/4 Pitch of tubes 4 1/2 x 4 3/8 Material of tube plates steel Thickness: Front 1 1/2 Back 1 1/2 Mean pitch of stays 10 1/2

Pitch across wide water spaces 14 1/4 Working pressures by rules 188 Girders to Chamber tops: Material steel Depth and

thickness of girder at centre 7 1/2 x 1 5/8 Length as per rule 29" Distance apart 9" Number and pitch of stays in each 2 @ 9 1/2

Working pressure by rules 191 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

Thickness 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

Lloyd's Register Foundation

VERTICAL DONKEY BOILER—

Manufacturers of Steel *See Indt Report No 6637*

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 _____
 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 _____ Radius of do. _____ Stayed by _____
 Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— Propeller & shaft. Reach bolts & nuts for top & bottom beds & main bearing. Set of coupling bolts & nuts. Sets of piston rings, valves for all pumps, bolts nuts & iron assorted etc.

Geo Nettleship is a correct description, Manufacturer.

Dates of Survey while building	During progress of work in shops	1910 Nov 9, 10, 15, 17, 21, 28, 30 Dec 4, 11, 19, 21, 23 1911 Jan 4, 7, 10, 11, 16, 20, 22, 25, 30 Feb 1, 2, 3, 6, 8, 10, 13, 15, 17, 20, 21, 22
	During erection on board vessel	Mar 1, 2, 3, 6, 8, 9, 11, 14, 15, 16, 17, 20, 22, 24, 27, 28, 29, 31 Apr 3, 4, 5, 7, 11, 26, 29 May 1, 6, 9, 31 June 1, 2, 7, 8, 9 June 16, 30
	Total No. of visits	Mar: 71 + 3

Is the approved plan of main boiler forwarded herewith yes

Dates of Examination of principal parts—Cylinders	15-2-11	" " " donkey "	" " " "	" " " "							
Connecting rods	27-3-11	Crank shaft	15-3-11	Thrust shaft	15-2-11	Tunnel shafts	11-1-11	Screw shaft	3-5-11	Propeller	16-5-11
Stern tube	28-3-11	Steam pipes tested	2-6-11	Engine and boiler seatings	8-5-11	Engines holding down bolts	31-5-11				
Completion of pumping arrangements	9-6-11	Boilers fixed	9-6-11	Engines tried under steam	9-6-11						
Main boiler safety valves adjusted	9-6-11	Thickness of adjusting washers	Port 1 1/2, 5/8 B; PV 1 1/2, 5/8; star B, 5/8								
Material of Crank shaft	Eng Steel Identification Mark on Do. 6633	Material of Thrust shaft	Eng Steel Identification Mark on Do. 766								
Material of Tunnel shafts	Eng Steel Identification Marks on Do. 7666-N	Material of Screw shafts	Eng Steel Identification Marks on Do. 663								
Material of Steam Pipes	Solid drawn copper 4 1/2 x 9 x 5 T.S.G	Test pressure	400 lbs								

General Remarks (State quality of workmanship, opinions as to class, &c. To complete the survey the following repairs to be done. It is stated that the survey will be completed at Sunderland. The surveyors have been advised:—Donkey boiler to secure in place, mountings to fit and safety valves to adjust. Engine spare gear to examine and crank shaft gauge to adjust: Watertight doors to fit at tunnel & in stokehold: Suction pipes in tunnel and for topside tanks to connect & secure in place, and topside tank valves in machinery space to be made accessible. It is stated that Electric Light will be installed at Sunderland.

The machinery of this vessel has been built under special survey. The material and workmanship are sound and good and renders the vessel eligible in my opinion to have the notation of **⊕ LMC** with a date when the survey has been completed.

The above has now been completed which renders the vessel in our opinion eligible for record of **⊕ LMC 7-11**

It is submitted that this vessel is eligible for **THE RECORD + LMC 7.11.**

N.H.P. = 417

The amount of Entry Fee	£ 3-0-0	When applied for, at the
Special	40-17-0	When received, 19...
Donkey Boiler Fee	✓	
Travelling Expenses (if any)	✓	15-7-11

Wm Morrison
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping
 17/7/11

Committee's Minute
 Assigned
 TUE JUL 18 1911
 + LMC 7.11



Certificate (if required) to be sent to Sunderland

The Surveyors are requested not to write on or below the space for Committee's Minute.