

# REPORT ON MACHINERY.

Received at London Office

Writing Report 10 When handed in at Local Office 10 Port of Kobe  
 Survey held at Osaka Date, First Survey 17 Jan Last Survey 10 May 1919  
 on the Steel Single Screw Steamer "Heijin Maru" (Number of Visits 22)  
 by M. Matsumoto Built at Osaka By whom built The Osaka Iron Works, Ltd. When built 1919  
 made at Osaka By whom made The Osaka Iron Works, Ltd. when made 1919  
 made at do By whom made do when made do  
 Rated Horse Power 390 Owners Natsuda Risen Kaisha Port belonging to Shinkama  
 Horse Power as per Section 28 390 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders Three No. of Cranks 3  
 of Cylinders 24: 41: 67 Length of Stroke 48 Revs. per minute 65 Dia. of Screw shaft as per rule 13.96 Material of Steel  
 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  
 propeller boss Yes If the liner is in more than one length are the joints burned Yes If the liner does not fit tightly at the part  
 on the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive Fitted close If two  
 are fitted, is the shaft lapped or protected between the liners Yes Length of stern bush 5.4  
 of Tunnel shaft as per rule 12.46 Dia. of Crank shaft journals as per rule 13.09 Dia. of Crank pin 13 1/2 Size of Crank webs 8 1/2 x 25 Dia. of thrust shaft under  
13 1/2 Dia. of screw 17.0 Pitch of Screw 17.0 No. of Blades 4 State whether moveable No Total surface 90  
 of Feed pumps Two Diameter of ditto 4 Stroke 25 Can one be overhauled while the other is at work Yes  
 of Bilge pumps Two Diameter of ditto 4 1/2 Stroke 25 Can one be overhauled while the other is at work Yes  
 of Donkey Engines Two Sizes of Pumps Bal. 9 1/2 x 12 x 10 Dupl. No. and size of Suctions connected to both Bilge and Donkey pumps  
 Engine Room Three 3 1/2" and 3 1/2" x tunnel well. Gen. Serv. 7 1/2 x 5 1/2 x 6 In Holds, &c. No. 1 & 2 holds each 3 1/2" Centre + 2 1/4" Wings  
 of Bilge Injections 1 sizes 7" Connected to condenser, or to circulating pump Cir. p. Is a separate Donkey Suction fitted in Engine room & size Yes 3 1/2"  
 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  
 all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Large valves: Small Cocks  
 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  
 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  
 at pipes are carried through the bunkers None How are they protected Yes  
 all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes  
 the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges Yes  
 of examination of completion of fitting of Sea Connections 9 Apr. 1919 of Stern Tube 14 Apr. 1919 Screw shaft and Propeller 9 Apr. 1919  
 the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper platform in Eng. Room

BOILERS, &c.—(Letter for record S.) Manufacturers of Steel Lucken's Iron & Steel Co. Allegheny, Pa.  
Amer. Spiral Tube Works (Pittsburgh)  
 Heating Surface of Boilers 5407 Is Forced Draft fitted Yes No. and Description of Boilers Two Single Ended  
 Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 8 Mar. 19 No. of Certificate 360 LBS  
8/3/1919 Y.U. R.  
 each boiler be worked separately Yes Area of fire grate in each boiler 63.9 No. and Description of Safety Valves to  
 boiler Two Spring loaded Area of each valve 3" dia. Pressure to which they are adjusted 185 lbs Are they fitted with easing gear Yes  
 least distance between boilers or uptakes and bunkers or woodwork 12" Mean dia. of boilers 15" 0" Length 12' 0" Material of shell plates Steel  
 thickness 1 5/16" Range of tensile strength 26,790 - 32,000 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams D. riv.  
 seams 2 1/2" riv. Diameter of rivet holes in long. seams 1 5/16" Pitch of rivets 9" x 4 1/2" width of butt straps 1' 7 1/2" x 1" outer  
 percentages of strength of longitudinal joint 85.0 Working pressure of shell by rules 188 lbs Size of manhole in shell 12 x 16  
 of compensating ring 2' 10" x 3' 2" x 1 5/16" No. and Description of Furnaces in each boiler 3 Morrison's Material Steel Outside diameter 48 1/4"  
 length of plain part top 21 1/2" Thickness of plates bottom 21 1/32" Description of longitudinal joint Weld No. of strengthening rings Yes  
 working pressure of furnace by the rules 219 Combustion chamber plates: Material Steel Thickness: Sides 5/8" Back 5/8" Top 5/8" Bottom 7/8"  
 of stays to ditto: Sides 8 x 8 1/2" Back 8 1/2 x 8 1/2" Top 8 x 9" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 187  
 material of stays Steel Section 1 1/2" Diameter at smallest part 1 1/2" Area supported by each stay 72 1/4" sq. in. Working pressure by rules 223 End plates in steam space:  
 material Steel Thickness 1 1/2" Pitch of stays 18 x 20" How are stays secured 4 3" small washers Working pressure by rules 194 lbs Material of stays Steel  
 at smallest part 7.5" Area supported by each stay 18 x 20" Working pressure by rules 216 lbs Material of front plates at bottom Steel  
 thickness 3/4" Material of Lower back plate Steel Thickness 3/4" Greatest pitch of stays 14" at end Working pressure of plate by rules 180 lbs  
 diameter of tubes 3" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates Steel Thickness: Front 3/4" Back 3/4" Mean pitch of stays 9 3/4"  
 pitch across wide water spaces 13 3/4" Working pressures by rules 180 lbs Girders to Chamber tops: Material Steel Depth and  
 thickness of girder at centre 9 3/4" x 15 1/16" Length as per rule 2' 9 5/8" Distance apart 9" Number and pitch of stays in each 3 @ 8"  
 working pressure by rules 226 lbs Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked  
 separately Yes Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivet  
 Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness  
 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 dky. blr.*

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 \_\_\_\_\_

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:— 4 Crank bolts & nuts. 2 Cr. pin bolts & nuts. Set Coupling 2 main bearing bolts & nuts. Piston springs for all pistons. Cr. pin & crank brasses. Valve spindles. Sec. rods. A & C pump rods. Set feed & bilge pump valves & seats. Feed check valves & seats. 2 Safety valves & springs. Assorted bolts & nuts, steel plates

The foregoing is a correct description of the above

*J. Young*  
 Dates of Survey { During progress of work in shops - - }  
 while building { During erection on board vessel - - }  
 Total No. of visits *22*



17. 20. 22. 25 Jan. 8. 15. 18. 20. 21 Feb. 8. 12. 18. 20. 27 Mar. 1. 9. 22. 23. 25. 28 Apr. 10 May 1919 & dates at Steel Works

Is the approved plan of main boiler forwarded herewith \_\_\_\_\_

\_\_\_\_\_ " " " donkey " " "

Dates of Examination of principal parts—Cylinders *17. 1. 19* Slides *20. 1. 19* Covers *20. 1. 19* Pistons *20. 1. 19* Rods *20. 1. 19*

Connecting rods *22. 1. 19* Crank shaft *8/3/19* Thrust shaft *8/3/19* Tunnel shafts *20/3/19* Screw shaft *20/3/19* Propeller *1/4*

Stern tube *27/3/19* Steam pipes tested *22/4/19* Engine and boiler seatings *27. 3. 19* Engines holding down bolts *28. 4*

Completion of pumping arrangements *30 Apr. 1919* Boilers fixed *23/4/19* Engines tried under steam *25/4/19* ✓ *28*

Main boiler safety valves adjusted *25/4/19* Thickness of adjusting washers *Lock nuts. Intervals Port B. 6. 1" 5 1/2" 13*

Material of Crank shaft *Steel* Identification Mark on Do. *LLOYD'S 30/10/18 & 31/1/18 R.O.B.* Material of Thrust shaft *Steel* Identification Mark on Do. *LLOYD'S 30/10/18 & 31/1/18 R.O.B.*

Material of Tunnel shafts *Steel* Identification Marks on Do. *LLOYD'S 11/10/18 : 20/1/18 : 18/1/18 : 20/1/18 : 15/1/18 ROB. R.* Material of Screw shafts *Steel* Identification Marks on Do. *LLOYD'S 11/10/18 : 20/1/18 : 18/1/18 : 20/1/18 : 15/1/18 ROB. R.*

Material of Steam Pipes *Steel* Test pressure *540 lbs*

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

*The machinery has been made & fitted under Special Survey in accordance with the Rules & the materials & workmanship are good.*

*The vessel is eligible in my opinion for the notation + LMC 5. 1919*

*It is submitted that this vessel is eligible for THE RECORD + LMC. 5. 19. FII.*

*A. J. M. Rehl. 8. 7. 19*

The amount of Entry Fee .. *£* : *20* : When applied for, *8<sup>th</sup> May 1919*

Special .. *£* : *691* : When received, *21<sup>st</sup> May 1919*

Donkey Boiler Fee .. *£* : \_\_\_\_\_ : \_\_\_\_\_

Travelling Expenses (if any) *£* : *15* : \_\_\_\_\_

*A. L. Jones* *Y. Jo. and*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute *TUE. JUL. 15. 1919*

Assigned *+ L.M.C. 5. 19*

*F. D.*



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

Registered deposit of hull 19. 16 ft. to upper deck & 28. 11 ft. to Miller deck.