Rpt. 4.

REPORT ON MACHINERY.

No. 1601

Port of Kobe

Received at London Office TUE APR 20 1915

No. in Reg. Book. Sup. 20 — Survey held at Kobe — Date, first Survey 3rd Nov. 1913 — Last Survey 22nd May 1915 — (Number of Visits 47)

on the Steel Twin Screw Steamer "Harbin Maru" — Tons Gross 5169 Net 3129

Master — Built at Kobe — By whom built Mess.rs The Kawasaki Dock.d Co.d — When built 1915

Engines made at Kobe — By whom made Mess.rs The Kawasaki Dock.d Co.d — when made 1915

Boilers made at do — By whom made do — when made 1915

Registered Horse Power — Owners Mess.rs The Osaka Shosen Kaisha — Port belonging to Osaka

Nom. Horse Power as per Section 28 659 ✓ — Is Refrigerating Machinery fitted for cargo purposes No ✓ — Is Electric Light fitted Yes ✓

ENGINES, &c.—Description of Engines Triple Expansion Twin Screws ✓ — No. of Cylinders Six ✓ — No. of Cranks Six ✓

Dia. of Cylinders 21 : 35 : 59 ✓ — Length of Stroke 48 ✓ — Revs. per minute — Dia. of Screw shaft as per rule 13.79 ✓ as fitted 14½ — Material of screw shaft Steel ✓

Is the screw shaft fitted with a continuous liner the whole length of the stern tube No liners ✓ — 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'-0" ✓

Dia. of Tunnel shaft as per rule 11.83 ✓ as fitted 12" — Dia. of Crank shaft journals as per rule 12.42 ✓ as fitted 12 9/16 — Dia. of Crank pin 13" ✓ — Size of Crank webs 8 x 14" at pin ✓ — Dia. of thrust shaft under collars 12 9/16 ✓ — Dia. of screw 15'-9" ✓ — Pitch of Screws 19'-0" to 21'-0" — No. of Blades 4 ✓ — State whether moveable Yes ✓ — Total surface 49 □' Each screw 14 at shaft Each propeller

No. of Feed pumps 2 ✓ — Diameter of ditto 3½ ✓ — Stroke 24 ✓ — Can one be overhauled while the other is at work Yes ✓

No. of Bilge pumps 2 ✓ — Diameter of ditto 4 ✓ — Stroke 24 ✓ — Can one be overhauled while the other is at work Yes ✓

No. of Donkey Engines Three ✓ — Sizes of Pumps Weir's fed. 10½ x 8 x 24 Two Worthington ditto 7½ x 5 x 6 Vert. Ballast. 10 x 11 x 12 duplex hor. Sanitary. 6 x 4½ x 6 Dup. — No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room Three 3½" ✓ In Holds, &c. No 1. Two 3½ No 2. Two 3½ No 3 Two 3½ No 4 One 3½ ✓ tunnel well, one 3½ ✓ Also in each tunnel, one 3" ✓

No. of Bilge Injections 2 ✓ sizes 7½" ✓ — Connected to condenser, or to circulating pump Circ.p ✓ — Is a separate Donkey Suction fitted in Engine room & size Yes ✓

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 Larger, valves: Smaller, cocks ✓

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 None ✓ — How are they protected ✓

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 22.7.14 ✓ of Stern Tube 14.7.14 ✓ Screw shaft and Propeller 22.7.14 ✓

Is the Screw Shaft Tunnel watertight Yes ✓ — Is it fitted with a watertight door Yes ✓ — worked from Upper Eng. Rm. platform ✓

BOILERS, &c.—(Letter for record S) — Manufacturers of Steel Steel Co. of Scotland & Leeds Forge

Total Heating Surface of Boilers 9219 □' — Is Forced Draft fitted Yes ✓ — No. and Description of Boilers Four Single Ended ✓

Working Pressure 200 lbs ✓ — Tested by hydraulic pressure to 400 lbs ✓ — Dates of test 29/5 20/6 17/7 3/8 1914 — No. of Certificate 46 to 49

Can each boiler be worked separately Yes ✓ — Area of fire grate in each boiler 60.5 □' ✓ — No. and Description of Safety Valves to each boiler Two, Direct Spring ✓ — Area of each valve 11.04 □" — 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 12" ✓ — Mean dia. of boilers 14'-6" ✓ — Length 12'-0" — Material of shell plates Steel ✓

Thickness 1 5/16 ✓ — Range of tensile strength 29-32 tons ✓ — Are the shell plates welded or flanged No ✓ — Descrip. of riveting: cir. seams Double long. seams Treble riveted ✓ — Diameter of rivet holes in long. seams 1 3/8" ✓ — Pitch of rivets 8 3/4 x 14 3/8 ✓ — Lap of plates or width of butt straps 1'-7 5/8"

Per centages of strength of longitudinal joint (Shape) rivets 96.0 plate 84.3 — Working pressure of shell by rules 202 lbs (209 @ 29 tons) — Size of manhole in shell 12" x 16" ✓

Size of compensating ring 2'-9" x 3'-1" x 1 5/16 ✓ — No. and Description of Furnaces in each boiler 3 "Morison" Susp. — Material Steel ✓ — Outside diameter 48½" ✓

Length of plain part top ✓ bottom ✓ — Thickness of plates crown 5/8" ✓ bottom — Description of longitudinal joint Weld ✓ — No. of strengthening rings ✓

Working pressure of furnace by the rules 222 lbs (208) — Combustion chamber plates: Material Steel ✓ — Thickness: Sides 11/16 ✓ — Back 11/16 ✓ — Top 11/16 ✓ — Bottom 7/8 ✓

Pitch of stays to ditto: Sides 9" x 8½" — Back 9 x 8½ — Top 9 3/8 x 8½ ✓ — If stays are fitted with nuts or riveted heads Nuts inside ✓ — Working pressure by rules 203 lbs ✓

Material of stays Steel ✓ — Diameter (Area) at smallest part 2.10" (2.43 sect. area) — Area supported by each stay 9 3/8 x 8½ ✓ — Working pressure by rules 238 lbs ✓ — End plates in steam space:

Material Steel ✓ — Thickness 1 5/16 ✓ — Pitch of stays 20½ x 19¾ (3.71 corners.) — How are stays secured Double nuts (2.10" ans.) — Working pressure by rules 200 lbs ✓ (259 lbs) — Material of stays Steel ✓

Diameter (Sect. area) at smallest part 10.12 — Area supported by each stay 20½ x 19¾ — Working pressure by rules 249 — Material of Front plates at bottom Steel ✓

Thickness 13/16 ✓ — Material of Lower back plate Steel ✓ — Thickness 3/4 ✓ — Greatest pitch of stays 13½ wide sp. — Working pressure of plate by rules 200 lbs

Diameter of tubes 3 1/4 ✓ — Pitch of tubes 4 7/16 x 4 5/16 ✓ — Material of tube plates Steel ✓ — Thickness: Front 13/16 ✓ (doubling 5/8) — Back 13/16 ✓ — Mean pitch of stays 8¾

Pitch across wide water spaces 13¾ (double plate 5/8") — Working pressures by rules 200 lbs (240) ✓ — Girders to Chamber tops: Material Steel ✓ — Depth and thickness of girder at centre 10½ x 13/16 (two) — Length as per rule 34½" — Distance apart 9 3/8 x 6 5/8 ✓ — Number and pitch of stays in each 3 @ 8½ ✓

Working pressure by rules 226 lbs (5 x 2 3/8 solid.) — Superheater or Steam chest; how connected to boiler ✓ — 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

1m.4.6.—T.

W1322-0074

VERTICAL DONKEY BOILER— *Manufacturers of Steel* _____

No. _____ *Description* None

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 :—* Two bolts & nuts for crossheads. Two bolts & nuts for crank pin brasses. Four main bearing bolts & nuts. Set coupling bolts. Set of fuel & bilge pump valves. Set packing rings & springs for all pistons. Assorted bolts & nuts & iron. 1 Part crank shaft. Propeller shaft. 4 blades & 2 sets studs. Pair cr. pin brasses. Piston rod & nut of each size. Slide valve rod each size. H.P. junk rings. etc. etc

The foregoing is a correct description,

KAWASAKI DOCKYARD COMPANY, LTD.

Manufacturer.

Business Manager

Dates of Survey while building

During progress of work in shops — Nov 3rd Dec 27. 1913. Jan 6. 8. 14. 15. Feb 16 Mar. 6. 18. 20. 25. 31 Apr. 8 May 1. 23. 29 June 1. 16. 20. 23. July 1. 2. 14. 22. 27. Aug 17. 18. 28 Sep. 10. 16. 19. 30

During erection on board vessel — Oct 3. 13. 15. 24. Nov. 10. 27 Dec 5. 9. 18. 25. 31. 1914. Jany 25. Feb 1. 3. 22. 1915

Total No. of visits 47

Is the approved plan of main boiler forwarded herewith Yes

" " " *donkey* " " "

Dates of Examination of principal parts— *Cylinders* 25/3 1/7 30/9 1914 etc *Slides* 8/4 2/7 30/9 1914 *Covers* 29/5/14 etc *Pistons* 2/7/14 etc *Rods* 6/1/14 etc etc

Connecting rods 6/1/14 31/3/14 etc *Crank shaft* 8/1/14 31/3/14 etc *Thrust shaft* 16/4/15 etc *Tunnel shafts* 29/5/15 1/7/14 *Screw shafts* 1/7/14 etc *Propeller* 2/7/14 etc

Stern tube 2/7/14 etc *Steam pipes tested* Dec 5. 9 & 18 1914 *Engine and boiler seatings* 13/10/14 etc *Engines holding down bolts* 27/11/14 etc

Completion of pumping arrangements 5/12/14 *Boilers fixed* 27/11/14 *Engines tried under steam* 25/12/14 25/1/15

Main boiler safety valves adjusted 25/12/14 *Thickness of adjusting washers* Fwd Stbd F 1/2 A 5/8 Fwd Port F 1/2 A 7/16 Aft Stbd F 9/16 A 9/16 Aft Port F 1/2 A 3/8

Material of Crank shaft Steel *Identification Mark on Do.* LLOYDS 1.7.14 A.L.J. R *Material of Thrust shaft* Steel *Identification Mark on Do.* LLOYDS 1.7.14 A.L.J. R

Material of Tunnel shafts _____ *Identification Marks on Do.* _____ *Material of Screw shafts* Steel *Identification Marks on Do.* _____

Material of Steam Pipes Solid drawn Steel *Test pressure* 600 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 workmanship has been found good throughout.

Cylinders tested by hydraulic pressure to H.P 290 lbs I.P 150 lbs L.P 60 lbs.

The shafting has been forged by The Mitsu Bishi Co, Kobe from tested ingots made by The Kobe Steel Works. The crank arms & pin are of one piece of cast steel in each case, made by The Kawasaki Steel Works & tested.

Schmidts patent superheaters are fitted to the boilers.

A report on the Electric Lighting is forwarded.

The machinery in my opinion renders the vessel eligible for the notation +LMC 2.15

It is submitted that this vessel is eligible for THE RECORD. +LMC 2.15. F.D.

JWD 21/4/15. AFR

The amount of Entry Fee..	Yen	30·00	When applied for, 16·2·1915
Special	Yen	795·00	
Donkey Boiler Fee	£	: :	When received, 10. 3. 1915
Travelling Expenses (if any)	£	: :	

A. L. Jones

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

Committee's Minute FRI. APR. 23. 1915

Assigned +LMC 2.15. F.D.

MACHINERY CERTIFICATE. COPIED.

Certificate (if required) to be sent to _____

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