

REPORT ON MACHINERY.

No. 2836.

Received at London Office WED. JUL. 7 1920

Date of writing Report 25th May 1920 When handed in at Local Office 19 Kobe Port of Kobe
 No. in Survey held at Kobe Date, First Survey 18th Oct 1919 Last Survey 12th May 1920
 Reg. Book. on the Steel Single Screw Steamer "BELGIUM MARU" (Number of Visits 62) Tons {Gross 5872.89
 Net 4253.90
 Master K. Hayashi Built at Kobe By whom built Kawasaki Dockyard Co. When built 1920
 Engines made at Kobe By whom made Kawasaki Dockyard Co. Ltd. when made 1920
 Boilers made at do By whom made do when made 1920
 Registered Horse Power 437 Owners The Kawasaki Kisen Kaisha Port belonging to Kobe
 Nom. Horse Power as per Section 28 440 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
 Dia. of Cylinders 26" 43 1/2" 72" Length of Stroke 48" Revs. per minute 70 Dia. of Screw shaft as per rule 15.41 Material of Steel
 as fitted 16" screw shaft
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube No liner 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' - 5 1/4"
 Dia. of Tunnel shaft as per rule 13.48 Dia. of Crank shaft journals as per rule 14.15 Dia. of Crank pin 14 3/4" Size of Crank webs 9 1/2" x 20 1/2" Dia. of thrust shaft under
 as fitted 13 3/4" as fitted 14 3/8" collars 14 3/8" Dia. of screw 17' - 6" Pitch of Screw 19' - 0" Mean No. of Blades 4 State whether moveable yes Total surface 100 sq. ft.
 No. of Feed pumps One Diameter of ditto 5" Stroke 24" Can one be overhauled while the other is at work yes (with Weir's feed)
 No. of Bilge pumps Two Diameter of ditto 5" Stroke 24" Can one be overhauled while the other is at work yes
 No. of Donkey Engines Three Sizes of Pumps Weir's Feed 9 1/2" x 7" x 24" Two No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Three 3 1/2" Ballant 10" x 11" x 12" dupl. Donkey 5 1/2" x 3 1/2" x 9" dupl. Holds, &c. Nos. 1, 3 + 4 Hold each two 3 1/2"
One 3 1/2" to Tunnel Well No. 2 Hold two 4"
 No. of Bilge Injections 1 sizes 9" Connected to condenser, or to circulating pump Yes Is a separate Donkey Suction fitted in Engine room of size yes 3 1/2"
 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 None
 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
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Up: platform of Eng. Rm.

OILERS, &c.—(Letter for record S.) Manufacturers of Steel Illinois St. Co. Carnegie St. Co. Am. Spiral Co.
2304.5 2252 x 2 + 1132 (Aux. Bl.) Michale Steel Co. Worth Pa. 2SB & 1A4 x SB (Furnaces)
 Total Heating Surface of Boilers 55636 sq. ft. Is Forced Draft fitted yes No. and Description of Boilers Two S. Co. + Aux. S. Co.
 Working Pressure 200 lbs. Tested by hydraulic pressure to 400 lbs. Date of test 5-3-20 10-3-20 No. of Certificate 11 LLOYD'S TEST
 Can each boiler be worked separately yes Area of fire grate in each boiler 60 1/2 sq. ft. No. and Description of Safety Valves to 1
 each boiler Two Spring loaded Area of each valve 3 3/4" dia. 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 2678 to 32000 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Ends Doubl.
 long. seams Double riveted Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 8 3/4" + 4 3/8" Lap of plates or width of butt straps 19 5/8" x 1 1/4"
 Per centages of strength of longitudinal joint rivets 95.84 Working pressure of shell by rules 201 lbs. Size of manhole in shell 16" x 12"
 plate 84.28 Size of compensating ring (1 1/2" + flange) 1 3/8" No. and Description of Furnaces in each boiler 3 Morrison's Material Steel Outside diameter 48 1/4"
 Length of plain part top 2 1/32" Thickness of plates bottom 2 1/32" Description of longitudinal joint Weld No. of strengthening rings 1
 Working pressure of furnace by the rules 221 lbs. Combustion chamber plates: Material Steel Thickness: Sides 1 1/16" Back 1 1/16" Top 1 1/16" Bottom 7/8"
 Pitch of stays to ditto: Sides 8 1/2" x 8 1/2" Back 8 1/2" x 9" Top 8 1/2" x 9 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 203 lbs.
 Material of stays Steel Area at smallest part 2.1 sq. ft. Area supported by each stay 8 1/2" x 9 1/2" Working pressure by rules 230 lbs. End plates in steam space:
 Material Steel Thickness 1 5/16" Pitch of stays 19 3/4" x 20 1/2" How are stays secured Double nuts + small washers Working pressure by rules 202 lbs. Material of stays Steel
 Area at smallest part 10" Area supported by each stay 19 3/4" x 20 1/2" Working pressure by rules 260 lbs. Material of Front plates at bottom Steel
 Thickness 1 3/16" Material of Lower back plate Steel Thickness 3/4" Greatest pitch of stays 13 1/2" at wide Working pressure of plate by rules 232 lbs.
 Diameter of tubes 3 1/4" Pitch of tubes 4 1/6" x 4 5/16" Material of tube plates Steel Thickness: Front 1" Back 13/16" Mean pitch of stays 8 3/4"
 Pitch across wide water spaces 13 3/4" + 5/8" dupl. Working pressures by rules 240 lbs. Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 10 3/4" + 13/16" (2) Length as per rule 34 1/2" Distance apart 9 3/8" Number and pitch of stays in each 3 @ 8 1/2"
 Working pressure by rules 220 lbs. Steam dome: description of joint to shell None % of strength of joint None
 Diameter None Thickness of shell plates None Material None Description of longitudinal joint None Diam. of rivet holes None
 Pitch of rivets None Working pressure of shell by rules None Crown plates None Thickness None How stayed None

UPERHEATER. Type Date of Approval of Plan None Tested by Hydraulic Pressure to None
 Date of Test None Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler None
 Diameter of Safety Valve None Pressure to which each is adjusted None Is Easing Gear fitted None

AUXILIARY
IS A ~~DOUBLE~~ BOILER FITTED? **yes**

If so, is a report now forwarded? **yes**

SPARE GEAR. State the articles supplied:-

Four Main bearing bolts + nuts ✓ Set packing rings + springs each piston. Centrifugal pump impeller
Two Crank-pin bolts + nuts ✓ Set junk ring bolts + nuts. Shaft + nut.
Two Crosshead bolts + nuts ✓ Set of packing for each piston rods + Valve rods. A.P. rod + nut.
Set coupling bolts + nuts ✓ Propeller shaft with nut. 3 Safety valve springs
Set Feed + Bilge pump valves. ✓ 1 Feed check valve + seat. Cond. Blr. tubes etc.
Assorted bolts, nuts + iron. ✓ Slide valve spindle each size. 1 Set A.P. head valves

The foregoing is a correct description,

Kawasaki Dockyard Co., Ltd.

Per A. O. Kane Secretary. Manufacturer.

Dates of Survey (During progress of work in shops --) 1919. Oct 18; Nov 7, 27; Dec 4, 8, 13, 17, 22, 25, 27; 1920. Jan 9, 14, 17, 19, 22, 24, 27, 28, 29, 30; Feb 2, 3, 4, 7, 9, 10, 12, 13, 14
(During erection on board vessel --) Feb 17, 18, 19, 21, 23, 24, 26, 28; Mar 1, 3, 5, 8, 9, 10, 13, 15, 17, 19, 20, 26; Apr. 6, 9, 10, 15, 17, 19, 20, 28, 29; May 1, 3, 11
Total No. of visits **62.**

Is the approved plan of main boiler forwarded herewith **Yes**
" " " " " " **Yes**

Dates of Examination of principal parts—Cylinders 19-3-20 Slides 20-4-20 Covers 10-4-20 Pistons 10-4-20 Rods 17-4-20

Connecting rods 20-3-20 Crank shaft 17-3-20 Thrust shaft 3-3-20 Tunnel shafts 8-3-20 Screw shaft 8-3-20 Propeller 17-3-20
Stern tube 19-3-20 Steam pipes tested 5-3-20 Engine and boiler seatings 26-3-20 Engines holding down bolts 19-4-20
Completion of pumping arrangements 29-4-20 Boilers fixed 19-4-20 Engines tried under steam 1-5-20
Completion of fitting sea connections 26-3-20 Stern tube 22-3-20 Screw shaft and propeller 26-3-20

Main boiler safety valves adjusted 28-4-20 Thickness of adjusting washers Locknuts (Sealed by Government Inspector)

Material of Crank shaft **F Steel** Identification Mark on Do. **LLOYDS 17-3-20 WL R** Material of Thrust shaft **F Steel** Identification Mark on Do. **R832 3-3-20 WL R**

Material of Tunnel shafts **F Steel** Identification Marks on Do. **LLOYDS 8-3-20 WL R** Material of Screw shafts **F Steel** Identification Marks on Do. **(PA 7) 8-3-20 T.S. 1-5-20 WL R**

Material of Steam Pipes **S. S. Steel** Test pressure **600 lbs.**

Is an installation fitted for burning oil fuel **No.** Is the flash point of the oil to be used over 150°F. **Yes**

Have the requirements of Section 49 of the Rules been complied with **Yes**

Is this machinery duplicate of a previous case **Yes** If so, state name of vessel **3/5. WAR QUEEN (Kobe Reg. No. 2009)**

General Remarks (State quality of workmanship, opinions as to class, &c.) **3/5. WAR PRINCE (" " No. 2031)**
3/5. SINGAPORE MARU (" " " 2530)
3/5. SWEDEN MARU (" " " 2780)
3/5. NORWAY MARU (" " " 2808)

The Tunnel Shafting was forged + tested at Oshima Steel Works, Tokyo and finished at Kawasaki Dockyard Co.

The Machinery has been made + fitted under special Survey in accordance with the requirements of the Rules and the materials and workmanship are good.

The Machinery is eligible in my opinion for the notation **LMC 5-20** in the Register Book.

submitted that this vessel is eligible for THE RECORD + LMC 5.20 F.D.

J.W.D. 16/7/20 **G.P.R.**

The amount of Entry Fee **Yen 30.-** When applied for, **18th May 1920**
Special ... £ **735.-**
AUXY Boiler Fee ... £ **Included** When received, **21st May 1920**
Travelling Expenses (if any) £ **20.-**

A. Watt.
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute
Assigned **MACHINERY TESTED + LMC 5.20 F.D.**

