

Rpt. 4.

REPORT ON MACHINERY.

No. 1268.

REC'D FEB. 25 1920

Date of writing Report 18th Dec. 1919 When handed in at Local Office 18th Dec. 1919

Received at London Office

Port of **NAGASAKI.**

No. in Survey held at **NAGASAKI.**

Date, First Survey 16th April 1919 Last Survey 6th Dec 1919

Reg. Book. on the *S.S. Durban Maru*

(Number of Visits 69)

Master *E. Takahashi* Built at *Nagasaki*

By whom built *Mitsubishi Zosen Kaisha*

Tons } Gross 716 4
Net 438 3

Engines made at *Nagasaki*

By whom made *Mitsubishi Zosen Kaisha*

When made 1919

Boilers made at *Nagasaki*

By whom made *Mitsubishi Zosen Kaisha*

When made 1919

Registered Horse Power

Owners *Nippon Zosen Kaisha*

Port belonging to *Tokio*

Net Horse Power as per Section 28 574

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

a. of Cylinders 28" 47" 79"

Length of Stroke 51"

Revs. per minute 81

Dia. of Screw shaft as per rule 15.911"

Material of screw shaft *Steel*

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 *yes*

the 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 between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive *yes*

are the shafts fitted, is the shaft lapped or protected between the liners *yes*

Length of stern bush 6'0"

b. of Tunnel shaft as per rule 14.571"

Dia. of Crank shaft journals as per rule 15.268"

Dia. of Crank pin as fitted 15.32"

Size of Crank webs 23" x 10 1/2"

Dia. of thrust shaft under bars 15 3/4"

c. of Feed pumps 2

Diameter of ditto 5"

Stroke 25 1/2"

Can one be overhauled while the other is at work *yes*

d. of Bilge pumps 2

Diameter of ditto 5"

Stroke 25 1/2"

Can one be overhauled while the other is at work *yes*

e. of Donkey Engines 4

Sizes of Pumps 10" x 5" x 12"

7" x 5" x 12"

10" x 12" x 12"

7" x 5" x 7"

No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room 3 c 3 1/2"

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

No. 2 Hold 2 c 3 1/2"

No. 3 Hold 2 c 3 1/2"

No. 4 Hold 2 c 3 1/2"

Jammed well 1 c 3"

f. of Bilge Injections 1

sizes 10"

Connected to condenser or to circulating pump.

Is a separate Donkey Suction fitted in Engine room & 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 *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*

Are all pipes 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*

Is the Screw Shaft Tunnel watertight *yes*

Is it fitted with a watertight door *yes*

worked from *Shelter deck*

MANUFACTURERS, &c.—(Letter for record *S*)

Manufacturers of Steel *Luckens Iron Steel Co., Ohio Steel Co., & David Colville & Sons*

Heating Surface of Boilers 7726 sq. ft. Is Forced Draft fitted *yes*

No. and Description of Boilers *3 cylindrical, single ended.*

Working Pressure 200 lbs.

Tested by hydraulic pressure to 400 lbs.

Date of test 6.11.19

No. of Certificate 98.

Can each boiler be worked separately *yes*

Area of fire grate in each boiler 63.96 sq. ft.

No. and Description of Safety Valves to each boiler *3 Spring loaded*

Area of each valve 9.62 sq. in.

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 18"

Mean dia. of boilers 15'0"

Length 12'0"

Material of shell plates *Steel*

Thickness 1 7/8"

Range of tensile strength 28 to 32 tons

Are the shell plates welded or flanged *no*

Descrip. of riveting: cir. seams *Double lap*

g. seams 2 straps

Diameter of rivet holes in long. seams 1 5/8"

Pitch of rivets 9 3/8" x 4 15/16"

Lap of plates or width of butt straps 1' 11 1/2"

Percentages of strength of longitudinal joint rivets 99.9

plate 83.5

Working pressure of shell by rules 234 lbs.

Size of manhole in shell 16" x 12"

Size of compensating ring 37" x 33" x 1 1/2"

No. and Description of Furnaces in each boiler *3 horizontal suspension*

Material *Steel*

Outside diameter 4' 0 3/4"

Length of plain part top 21"

Thickness of plates bottom 32"

Description of longitudinal joint *Butted*

No. of strengthening rings *yes*

Working pressure of furnace by the rules 219 lbs.

Combustion chamber plates: Material *Steel*

Thickness: Sides 11/16"

Back 11/16"

Top 11/16"

Bottom 15/16"

Pitch of stays to ditto: Sides 9" x 8 1/2"

Back 9" x 8"

Top 8 1/2" x 8 1/2"

If stays are fitted with nuts or riveted heads *nuts*

Working pressure by rules 213 lbs.

Material of stays *Steel*

Area at smallest part 2.03 sq. in.

Area supported by each stay 76.5 sq. in.

Working pressure by rules 238 lbs.

End plates in steam space:

Material *Steel*

Thickness 1 1/2"

Pitch of stays 1' 6" x 1' 7 1/2"

How are stays secured *Double nuts washers*

Working pressure by rules 239 lbs.

Material of stays *Steel*

Area at smallest part 7.67 sq. in.

Area supported by each stay 350 sq. in.

Working pressure by rules 210 lbs.

Material of Front plates at bottom *Steel*

Thickness 7/8"

Material of Lower back plate *Steel*

Thickness 7/8"

Greatest pitch of stays 13 1/4"

Working pressure of plate by rules 332 lbs.

Diameter of tubes 3 1/4"

Pitch of tubes 4 1/2" x 4 3/8"

Material of tube plates *Steel*

Thickness: Front 7/8"

Back 3/4"

Mean pitch of stays 8 7/8"

Pitch across wide water spaces 13 1/2"

Working pressures by rules 205 lbs.

Girders to Chamber tops: Material *Steel*

Depth and thickness of girder at centre 10 1/2" x 7/8"

Length as per rule 2' 11 5/16"

Distance apart 8" x 8 1/2"

Number and pitch of stays in each *3 c 8 1/2"*

Working pressure by rules 248 lbs.

Steam dome: description of joint to shell *yes*

% of strength of joint *yes*

Diameter *yes*

Thickness of shell plates *yes*

Material *yes*

Description of longitudinal joint *yes*

Diam. of rivet holes *yes*

Pitch of rivets *yes*

Working pressure of shell by rules *yes*

Crown plates *yes*

Thickness *yes*

How stayed *yes*

SUPERHEATER. Type *yes*

Date of Approval of Plan *yes*

Tested by Hydraulic Pressure to *yes*

Date of Test *yes*

Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *yes*

Diameter of Safety Valve *yes*

Pressure to which each is adjusted *yes*

Is Easing Gear fitted *yes*

009278-009286-0243

IS A DONKEY BOILER FITTED? No.

If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:—1 H.P. valve spindle, 1 L.P. valve spindle, 2 eccentric rods, 1 set each of H.P., L.P., H.P. piston packing rings, 1 set each of metallic packings for piston rods & valve spindles, 1 complete set of top and bottom brasses & bolts for one connecting rod, 1/4 total number of junk ring bolts, 1 complete set of coupling bolts, 1 complete set of main bearing bolts, 1 air pump rod, 1 impeller spindle for circulating pump, 1 set air pump valves, 3 cylinder escape valve springs, 1 complete set of valves & seats for feed & bilge pumps, 1 complete set of valve seats for main & donkey feed checks, 1/20 total number of condenser tubes, 1/20 total number of condenser ferrules, 3 safety valve springs, 100 assorted bolts & nuts, 15 lbs. of assorted steel plates, 30 lbs. of assorted steel bars, 1 crank shaft, 1 propeller shaft, 2 propeller blades &cs, and spare gear for auxiliary machinery.

The foregoing is a correct description,

NAGASAKI WORKS, MITSUBISHI ZOSSEN MACHINERY CO., LTD.

W. J. Harry Manufacturer.

Dates of Survey while building: During progress of work in shops - - - 1919, Apr. 16, May 14, 26, 29, June 10, 20, 23, 26, July 11, 23, 24, 25, Aug. 2, 7, 8, 27, 29, Sept. 2, 3, 6, 8, 13, 15, 17, 18, 22, 23, 26, Oct. 1, 2, 6, 10, 11, 13, 15, 16, 17, 18, 20, 21, 22, 23, 25, 27, 28, 29, 30, Nov. 1, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 17, 18, 19, 20, 21, 22, 25, 26, 29, Dec. 6. Total No. of visits 69. Is the approved plan of main boiler forwarded herewith Yes.

Dates of Examination of principal parts—Cylinders 1.11.19 Slides 10.11.19 Covers 1.11.19 Pistons 10.11.19 Rods 10.11.19 Connecting rods 10.11.19 Crank shaft 5.11.19 Thrust shaft 5.11.19 Tunnel shafts 5.11.19 Screw shaft 1.11.19 Propeller 1.11.19 Stern tube 1.11.19 Steam pipes tested 11.19.11.19 Engine and boiler seatings 13.10.19 Engines holding down bolts 17.11.19 Completion of pumping arrangements 25.11.19 Boilers fixed 13.11.19 Engines tried under steam 26.11.19 Completion of fitting sea connections 8.11.19 Stern tube 4.11.19 Screw shaft and propeller 5.11.19 Main boiler safety valves adjusted 25.11.19 Thickness of adjusting washers Jamb nuts No 160 Material of Crank shaft Steel Identification Mark on Do. A.S.W. Material of Thrust shaft Steel Identification Mark on Do. No 160 A.S.W. Material of Tunnel shafts Steel Identification Marks on Do. No 160 A.S.W. Material of Screw shafts Steel Identification Marks on Do. No 160 A.S.W. Material of Steam Pipes Steel Test pressure 600 lbs.

Is an installation fitted for burning oil fuel Is the flash point of the oil to be used over 150°F.

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

Is this machinery duplicate of a previous case Yes. If so, state name of vessel "Ataska Maru"

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

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 of **LMC** 12.19 in the Register Book.

Mean speed on trial when 1/2 loaded = 15.228 knots.

It is submitted that this vessel is eligible for THE RECORD. T.L.M.C. 12.19.F.D.

J.W.D. 26/2/20 *G.P.R.*

The amount of Entry Fee ... 30/- : When applied for, Special ... 85/- 25 : 24th Dec 1919 Donkey Boiler Fee ... £ : When received, Travelling Expenses (if any) £ : 29th Dec 1919

A.S. Williamson Engineer Surveyor to Lloyd's Register of Shipping.

FRI. 27 FEB. 1920

Committee's Minute

Assigned

+ L.M.C. 12.19 F.D.



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