

REPORT ON MACHINERY.

No. 2916

TUE. SEP. 28 1920

Received at London Office

Date of writing Report 9th July 1920 When handed in at Local Office

10 Port of Kobe

No. in Survey held at Osaka

Date, First Survey July 3rd 1919 Last Survey May 27th 1920.

Reg. Booh.

on the Steel Single Screw Steamer "ETNA MARU" (Number of Visits 34)

Gross 7144.48

Net 5201.40

When built 1920

Master Y. Hamada Built at Osaka

By whom built The Osaka Iron Works, Ltd.

Engines made at Osaka

By whom made Osaka Iron Works, Ltd.

when made May, 1920

Boilers made at do

By whom made do

when made May, 1920

Registered Horse Power

Owners Kokusai Kisen Kaishiki Kaisha

Port belonging to Osaka

Nom. Horse Power as per Section 28 552

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 27": 45": 75" Length of Stroke 51" Revs. per minute 65

Dia. of Screw shaft as per rule 15 1/8"

Material of screw shaft steel

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

in the propeller boss yes 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

liners are fitted, is the shaft lapped or protected between the liners

Length of stern bush 5'-4 3/4"

Dia. of Tunnel shaft as per rule 13.68

Dia. of Crank shaft journals as per rule 14.37

Dia. of Crank pin 14 7/8"

Size of Crank webs 9 1/4" x 27 1/2"

collars 14 7/8"

Dia. of screw 18'-3"

Pitch of Screw 18'-3"

No. of Blades 4

State whether moveable yes

Total surface 100 sq. ft.

No. of Feed pumps Two

Diameter of ditto 4"

Stroke 27"

Can one be overhauled while the other is at work yes

No. of Bilge pumps Two

Diameter of ditto 4 1/2"

Stroke 27"

Can one be overhauled while the other is at work yes

No. of Donkey Engines 4

Sizes of Pumps Ballast 10" x 13" x 13" dupl. x 1

Jen. Serv. 7 1/2" x 5 1/2" x 6" x 1

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

In Engine Room Two @ 3 1/2" Tunnel Well one @ 3 1/2"

In Holds, &c. Nos. 1, 2, 3 & 4 two each @ 3 1/2"

Stokehold two @ 3 1/2"

No. of Bilge Injections 1

sizes 9 1/2"

Connected to condenser, or to circulating pump yes

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

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 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

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

Is the Screw Shaft Tunnel watertight yes

Is it fitted with a watertight door yes

worked from Top platform.

BOILERS, &c.—(Letter for record S.)

Manufacturers of Steel Otis St. Co. Cambria St. Co. Am. Spiral Pipe Works.

Total Heating Surface of Boilers 8084.4

Is Forced Draft fitted yes

No. and Description of Boilers Three Single ended

Working Pressure 180 lbs.

Tested by hydraulic pressure to 360 lbs.

Date of test 3rd May, 1920

No. of Certificate

Can each boiler be worked separately yes

Area of fire grate in each boiler 61.8

No. and Description of Safety Valves to

each boiler 2 Spring loaded

Area of each valve 7.0686

Pressure to which they are adjusted 185 lbs.

Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 15"

Mean dia. of boilers 15'-0"

Length 12'-0"

Material of shell plates steel

Thickness 9/16"

Range of tensile strength 28-32 tons

Are the shell plates welded or flanged No

Descrip. of riveting: cir. seams

Doub. riveted

long. seams Doub. riveted

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

Pitch of rivets 10 5/8" + 5 5/8"

Lap of plates or width of butt straps 1 3/4" x 1 1/4" (ex)

Per centages of strength of longitudinal joint

rivets 92.9

plate 84.7

Working pressure of shell by rules 227 lbs.

Size of manhole in shell 12" x 16"

Size of compensating ring 3'-2" x 2'-10" x 1 1/8"

No. and Description of Furnaces in each boiler 3 Morisons.

Material steel

Outside diameter 3'-11 1/4"

Length of plain part top

bottom

Thickness of plates crown 1 1/8"

bottom 1 1/8"

Description of longitudinal joint Weld

No. of strengthening rings

Working pressure of furnace by the rules 239 lbs.

Combustion chamber plates

Material steel

Thickness: Sides 1 1/8"

Back 1 1/8"

Top 1 1/8"

Bottom 7/8"

Pitch of stays to ditto: Sides 8 1/4" x 8 1/4"

Back 8" x 8 1/2"

Top 8" x 8 1/2"

If stays are fitted with nuts or riveted heads nuts

Working pressure by rules 239 lbs.

Material of stays steel

Area at smallest part 2.1

Area supported by each stay 68

Working pressure by rules 277 lbs.

End plates in steam space:

Material steel

Thickness 1 1/32"

Pitch of stays 18" x 20"

How are stays secured Doub. nuts

Working pressure by rules 236 lbs.

Material of stays steel

Area at smallest part 8.76

Area supported by each stay 360

Working pressure by rules 253

Material of Front plates at bottom steel

Thickness 7/8" + 3/4"

Material of Lower back plate steel

Thickness 7/8" + 3/4"

Greatest pitch of stays 14 1/2" 50% stay

Working pressure of plate by rules 249 lbs.

Diameter of tubes 3"

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

Material of tube plates steel

Thickness: Front 7/8"

Back 7/8"

Mean pitch of stays 9 1/8"

Pitch across wide water spaces 13 1/2"

Working pressures by rules 277 lbs.

Girders to Chamber tops: Material steel

Depth and

thickness of girder at centre 9 3/4" x 2"

Length as per rule 33 1/6"

Distance apart 8 1/2"

Number and pitch of stays in each 3 @ 8"

Working pressure by rules 280 lbs.

Steam dome: description of joint to shell

% of strength of joint

Diameter

Thickness of shell plates

Material

Description of longitudinal joint

Diam. of rivet holes

Pitch of rivets

Working pressure of shell by rules

Crown plates

Thickness

How stayed

SUPERHEATER. Type

Date of Approval of Plan

Tested by Hydraulic Pressure to

Date of Test

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

Diameter of Safety Valve

Pressure to which each is adjusted

Is Easing Gear fitted

IS A DONKEY BOILER FITTED?

No

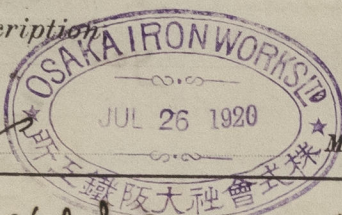
If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:—

1 Set packing rings + springs for each size of piston. 1 Set coupling bolts + nuts, 1 Set feed pump valves + port
1 Manganese bronze propeller blade with studs + nuts. 2 main bearing bolts + nuts. 1 Set helge pump "
1 Set Crank pin brasses. 2 main slide valve spindles. 2 Eccentric rods. 1 Set feed check valves + s
1 " Crosshead brasses. 1/4 Set junk ring bolts + nuts. 40 Condenser tubes + 120 Ferrules. 3 safety valves
4 Bolts + nuts for Crosshead brasses. 1 Air pump rod. 1/2 Set air pump valves. 3 Cylinder escape valve sh
2 bolts + nuts for Crank pin brasses. 1 Centrifugal pump fan + 1 fan shaft. 10 plain boiler tubes. 100 assorted

The foregoing is a correct description

G. Yumura



Manufacturer.

Dates of Survey while building
During progress of work in shops -- 1919 June 3, 11, 26; July 5, 19, 23; Aug. 6, 15, 19, 28; Sept. 4, 11, 20; Oct. 3, 8, 21, 26; Nov. 8; Mar. 1920
During erection on board vessel -- Mar. 20, 22, 25, 29; Apr. 5, 6, 10, 19; May 3rd.
Total No. of visits 37.

Is the approved plan of main boiler forwarded herewith

" " " donkey " " "

Dates of Examination of principal parts—Cylinders 6-8-19 etc. Slides 11-9-19 etc. Covers 6-8-19 etc. Pistons 3-10-19 etc. Rods 5-7-19

Connecting rods 19-8-19 etc. Crank shaft 21-10-19 Thrust shaft 21-10-19 Tunnel shafts 25-3-20 Screw shaft 5-4-20 etc. Propeller 16-3-

Stern tube 11-3-20 Steam pipes tested 21-5-20 Engine and boiler seatings 29-3-20 Engines holding down bolts 11-5-2

Completion of pumping arrangements 22-5-20 Boilers fixed 22-5-20 Engines tried under steam 25-5-20

Completion of fitting sea connections 29-3-20 Stern tube 29-3-20 Screw shaft and propeller 29-3-20

Main boiler safety valves adjusted 22-5-20 Thickness of adjusting washers Lock nuts

Material of Crank shaft Steel Identification Mark on Do. Material of Thrust shaft Steel Identification Mark on Do.

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

Material of Steam Pipes Solid drawn steel Test pressure 540 lbs.

Is an installation fitted for burning oil fuel No 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 If so, state name of vessel

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

The Crank and Thrust Shafts were forged + finished at the Kobe Steel Works; one tunnel shaft was forged + finished at the Sumitomo Steel Works, five tunnel + Scr Shafts were forged + rough turned at the Sizer Forge Company, Buffalo, finished at Osaka Iron Works.

This machinery has been made + fitted under special Survey in accordance with the requirements of the Rules and the materials + workmanship have been found good.

The machinery is eligible in my opinion for the record of L.M.C. 5-20

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 5-20 F.D.

Rel 1/10/20

J.R.R.

The amount of Entry Fee ... Yen 30.- : When applied for, June 1st 1920
Special ... £ 828.- :
Donkey Boiler Fee ... £ : When received, June 14th 1920
Travelling Expenses (if any) £ :

Committee's Minute

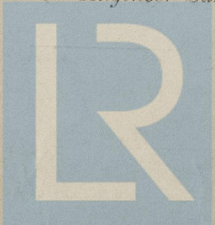
Assigned

TUE. OCT. 15 1920

+ L.M.C. 5-20

F.D.

CERTIFICATE WRITTEN



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