

REPORT ON MACHINERY

No. 1324

FRI. JUL. 29 1921

Received at London Office

Date of writing Report 6th June 21 When handed in at Local Office 6th June 21 Port of NAGASAKI.

No. in Survey held at Nagasaki, Date, First Survey 7th Jan'y '20. Last Survey 25th May, 1921.
Reg. Book.

on the Steel Twin Geared Turbine "RAKUYO MARU."

(Number of Visits 109)

Tons { Gross 9418.57
Net 5678.29

Master J. Yawata. Built at Nagasaki. By whom built Mitsubishi Zosen Kaisha, Ltd. When built 1921.

Engines made at Nagasaki, By whom made Mitsubishi Zosen Kaisha, Ltd., when made 1921.

Boilers made at Nagasaki, By whom made Mitsubishi Zosen Kaisha, Ltd., when made 1921.

Registered Horse Power 1153 NHP. Owners. Toyo Kisen Kabushiki Kaisha, Port belonging to Yokohama.

Shaft Horse Power at Full Power 7121 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

TURBINE ENGINES, &c.—Description of Engines Single Reduction Geared Turbine No. of Turbines 4

Diameter of Rotor Shaft Journals, H.P. 5 3/4" L.P. 8" Diameter of Pinion Shaft 5 1/4" H.P. & L.P.

Diameter of Journals 5 1/4" Distance between Centres of Bearings 2'-3 3/4" Diameter of Pitch Circle 6.65607.

Diameter of Wheel Shaft 14 1/4" Distance between Centres of Bearings 5'-8 1/2" Diameter of Pitch Circle of Wheel 144.2864"

Width of Face 16 1/2" Diameter of Thrust Shaft under Collars 14 1/4" Diameter of Tunnel Shaft as per rule 13.1

No. of Screw Shafts 2 Diameter of same as per rule 14.7" as fitted 15 1/2" Diameter of Propeller 16'-0" Pitch of Propeller 17'-0"

No. of Blades 4 State whether Moveable yes Total Surface 75.85 sq. ft. Diameter of Rotor Drum, H.P. 19 1/2" L.P. 35" Astern 28"

Thickness at Bottom of Groove, H.P. 1 5/8" L.P. 2 3/8" Astern 1 3/4" Revs. per Minute at Full Power, Turbine 2236 Propeller 103

PARTICULARS OF BLADING.

H.P.

L.P.

ASTERN.

	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
EXPANSION	1 3/16"	1'-9 7/8"	12	1 1/2"	3'-2"	2	5/8"	2'-5 1/4"	2
"	1 1/4"	1'-11"	12	1 7/8"	3'-2 1/2"	2	1"	2'-6"	2
"	2 1/8"	2'-0 1/2"	12	2 3/8"	3'-3 1/2"	2	1 1/8"	2'-7"	2
"	3 1/2"	2'-2 1/2"	12	2 7/8"	3'-4 1/2"	2	2 3/8"	2'-8 1/4"	2
"				3 1/2"	3'-6"	2	3 1/8"	2'-11"	2
"				4 3/8"	3'-7 1/4"	2	3 1/2"	2'-11"	1
"				5 1/4"	3'-9 1/2"	2	3 1/2"	2'-11"	1
"				6 1/2"	4'-0"	2			
"				8"	4'-3"	2	(7/8" 1 1/4" 1 5/8" 2 2 3/8" for Impulse)		
"				8"	4'-2"	1			
"				8"	4'-3"	1			

and size of Feed pumps. Main 3, 13 1/2" x 10" x 24", Aux. 1, 7" x 5" x 12".

and size of Bilge pumps. 4. 6" x 15".

and size of Bilge suction in Engine Room 2'-3 1/2" from wings, 2'-3 1/2" from hat, 2'-3 1/2" from gear case pocket.

In Holds, &c. No. 1, 2'-3 1/2". No. 2, 2'-3 1/2". Cofferdam 2. 2"
No. 3, 2'-3 1/2" No. 4, 2'-3 1/2" No. 5, 2'-3 1/2" Tunnel bilge hat 1'-3 1/2", Tunnel well 1'-3 1/2".

of Bilge Injections 2 sizes 10" Connected to circulating pump yes Is a separate Donkey Suction fitted in Engine Room & size yes, 6"

all the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible yes

all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks both.

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 both

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

all pipes are carried through the bunkers Bilge pipes. How are they protected wood ceiling.

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

the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from top platform (shelter dk)

MATERIALS, &c.—(Letter for record S.) Manufacturers of Steel the Steel Co of Scotland, Ltd.

Total Heating Surface of Boilers 12065 Is Forced Draft fitted yes No. and Description of Boilers 5 single end Cylindrical

Working Pressure 200 lbs Tested by hydraulic pressure to 400 lbs Date of test 2nd Nov. 1920 No. of Certificate 106

each boiler be worked separately yes Area of fire grate in each boiler 57.75 sq. ft. No. and Description of Safety Valves to

boiler 2 spring loaded Area of each valve 9.62 Pressure to which they are adjusted 205 lbs Are they fitted with easing gear yes

least distance between boilers or uptakes and bunkers or woodwork 16" Mean dia. of boilers 14'-6" Length 11'-6" Material of shell plates steel

thickness 1 3/8" Range of tensile strength 28 to 32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams DR lap

seams T.R.D.B.S. Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 5" & 10" width of butt straps 22"

percentages of strength of longitudinal joint rivets 95.6 Working pressure of shell by rules 215 lbs Size of manhole in shell 16" x 12"

plates 85.0

of compensating ring 36 1/2" x 32 1/2" x 1 3/8" No. and Description of Furnaces in each Boiler 3 Morison Material steel Outside diameter 46 1/4"

Thickness of plates top 21" crown 21" Description of longitudinal joint Welded No. of strengthening rings None

bottom 32

Working pressure of furnace by the rules 231 lbs combustion chamber plates: Material steel Thickness: Sides 11/16" Back 11/16" Top 11/16" Bottom 15/16"

of stays to ditto: Sides 7 1/2" x 10" Back 8 1/2" x 8 7/8" Top 9" x 8 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 209 lbs

Material of stays steel Diameter at smallest part 1.6 Area supported by each stay 75.5 sq. Working pressure by rules 246 lbs End plates in steam space

Material steel Thickness 1 7/32" Pitch of stays 17 1/2" x 19" How are stays secured D. Nuts & Washers Working pressure by rules 211 lbs Material of stays steel

Area supported by each stay 325.5 sq. in Working pressure by rules 223 lbs Material of Front plates at bottom steel

Thickness 3/4" Material of Lower back plate steel Thickness 3/4" Greatest pitch of stays 18 1/2" x 6" Working pressure of plate by rules 215 lbs

Pitch of tubes 4 1/8" x 4 3/8" Material of tube plates steel Thickness: Front 3/4" Back 3/4" Mean pitch of stays 8 1/2"

Working pressures by rules 222 lbs Girders to Chamber tops: Material steel Depth and

Thickness of girder at centre 10" x 7/8" dble Length as per rule 2'-5 13/16" distance apart 8 1/2" Number and pitch of stays in each 2 @ 9"

Working pressure by rules 354 lbs Steam dome: description of joint to shell / % of strength of joint / Diameter /

Thickness of shell plates / Material / Description of longitudinal joint / Diameter of rivet holes / Pitch of rivets /

Working pressure of shell by rules / Crown plates: Thickness / How stayed /

Lloyd's Register
Foundation

W1067-010

IS A DONKEY BOILER FITTED? No If so, is a report now forwarded? /

The foregoing is a correct description,
NAGASAKI WORKS, MITSUBISHI ZOSEN KAISHA, LTD.

GENERAL MANAGER.

Manufacturer

P.H.P.20-8-20. " " " donkey " " "

S.H.P.16-9-20.

Dates of Examination of principal parts—Casing P.L.P.1-10-20. Rotors 22-1-21. Blading 31-3-21. Gearing 28-6-

S.L.P.6-10-20.

Rotor shaft 22-1-21 Thrust shaft 5-7-20 11-8-20 Tunnel shafts 4-8-20 to 25-9-20 Screw shaft 20-11-20 25-9-20 Propeller 8-1-21
Stern tube 24-2-21 Steam pipes tested 3-5-21 Engine and boiler seatings E. 9-3-21 Engines holding down bolts 8-4-21

Completion of mumping arrangements 3-5-21. Boilers fixed 27-2-21 Engines tried under steam 7-5-21.

Main boiler safety valves adjusted 3-5-21 Thickness of adjusting washers Lock nuts,

Material and tensile strength of Rotor shaft **Forged stl.** P.H.P. 36.4 tons S.H.P. 35 tons
P.L.P. 36.8 " S.L.P. 36.4 " Identification Mark on Do. No.178, W

Material and tensile strength of Pinion shaft Nickel steel, P. 44.6 - 43.6 tons. Identification Mark on Do. No.178, W.

Material of Wheel shaft steel Identification Mark on Do. No. 178, W.B. Material of Thrust shaft steel Identification Mark on Do. No. 17

Material of Tunnel shafts steel Identification Marks on Do. No. 178.W.B. Material of Screw shafts steel Identification Marks on Do. No. 17

Material of Steam Pipes steel Test pressure 600 lbs

1. an installation fitted for burning oil fuel yes 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 partly, see note.

If so, state name of vessel: "Anvo - Maru" Report No. 826

Is this machinery a duplicate of a previous case yes If so, state name of vessel USSC

General Remarks. (Suitability of workmanship, opinions as to class, &c.) The boilers have been fitted with Esaky's

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

Superheaters in accordance with the Society's requirements.

All the necessary piping for the oil fuel installation has been fitted to No. 2, 3, & 4, tanks & settling tanks & all these tanks have been tested & are equipped in accordance with the

tions contained in section 49, of the Rules & Regulations & in the Secretary's letter dated 11

The vessel has left this port burning coal & on arrived at Yokohama, oil burners & gauging settling tanks are to be fitted, & the installation completed. The Surveyors there have been advised.

These Engines and Boilers have been constructed under Special Survey in accordance with

Rules, & of good materials and workmanship. They have been securely fitted on board, and have satisfactorily trial under steam.

The Machinery of this vessel is eligible, in my opinion, for the record of LMC

in the Register Book, the record of "Fitted for oil fuel F. P. above 150° F". being deferred

the installation is completed.

Main speed on Trial in half loaded condition 16.204 knots.

The amount of Entry Fee ... Yen 60:00 : When applied for,

Special **Yen 1292:00** : **26-5-1921** *U. Boylan*

Donkey Boiler Fee	...	£	:	:	When received,	Engineer Surveyor to Lloyd's Register of Shipping.
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Travelling Expenses (if any) £ : :) 4-6-1921

Committee's Minute

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Assigned + L.N.C. 3.21 F.D.

2. Asked for oil fuel 6.21

J.P. above 180° F.

