

Rpt. 4a.

## REPORT ON MACHINERY.

No. 3936.

Received at London Office

16 JUL 1927

Date of writing Report June 4 1927 When handed in at Local Office

Port of Yokohama

No. in Survey held at Uraga

Date, First Survey 18<sup>th</sup> October Last Survey 18<sup>th</sup> May 1927.

Reg. Book.

on the Single Screw Steamer Takao Maru

(Number of Visits 26)

Gross 4281.76

Net

Master

Built at Uraga

By whom built Uraga Dock Coy

When built 1927

Engines made at Nippon

By whom made Mitsubishi Loden Kaisha

when made 1926

Boilers made at Uraga

By whom made Uraga Dock Coy

when made 1927

Registered Horse Power 732

Owners Osaka Shosen Kaisha Port belonging to Osaka

Shaft Horse Power at Full Power 3800

Is Refrigerating Machinery fitted for cargo purposes No

Is Electric Light fitted Yes

## TURBINE ENGINES, &amp;c.—Description of Engines Single Screw double reduction No. of Turbines 2 Astern

Diameter of Rotor Shaft Journals, H.P. 6" L.P. 6 1/2" Diameter of Pinion Shaft 14" 6" 2" 6" inner &amp; 11 1/2" outer

Diameter of Journals 14" 6" 2" 11 1/2" Distance between Centres of Bearings 22 1/2" 4" 0" Diameter of Pitch Circle 14" HP 7.70" LP 8.98" 2" 17.6"

Shaft 14" 1" 1 1/2" Distance between Centres of Bearings 14" 2" 2" 2" 4" 0" Diameter of Pitch Circle of Wheel 22 1/2" 4" 0"

16" 3" GAP Diameter of Thrust Shaft under Collars 14" Diameter of Tunnel Shaft as per rule 13" as fitted 13 1/8"

Diameter of same as per rule 14 1/4" as fitted 14 1/2" Diameter of Propeller 15' 0" Pitch of Propeller 11' 1" 6"

State whether Moveable Yes Total Surface 62.8 sq. ft. Diameter of Rotor Drum, H.P. 2' 9 3/4" L.P. 3' 4" Astern LP 3' 4"

Revs. per Minute at Full Power, Turbine HP 3378. Propeller 116.5

Diameter of Groove, H.P. L.P. Astern

Revs. per Minute at Full Power, Turbine LP 3242

## SAILS 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.
3 1/4"	2' 10 9/16"	1	2 3/16"	3' 6 1/4"	1	High pressure		
2 3/32"	2' 10 1/2"	1	2 9/16"	3' 6 5/8"	1	1st 1 1/16"	2' 9 1/16"	1
7/8"	2' 10 1/16"	1	3 1/16"	3' 7 3/4"	1	2nd 2"	2' 10"	1
1 3/32"	2' 10 7/8"	1	4"	3' 8 1/16"	1	Cylinder 1 9/16"	2' 6 7/16"	1
1 7/16"	2' 11 1/4"	1	4 3/16"	3' 8 7/8"	1	Low pressure		
			5 1/2"	3' 9 1/16"	1	1st 2 3/16"	3' 6 3/16"	1
						2nd 3 3/8"	3' 7 7/8"	1
						Cylinder 2 7/8"	3' 1 1/8"	1

Feed pumps 2 @ 10 1/2" x 8" x 21" Weirs.

Bilge pumps 1 @ 5" x 5" x 6" Worthington

Bilge suction in Engine Room 7 @ 3 1/2"

In Holds, &amp;c. No. 1 hold 2 @ 3 1/2" No. 2 hold 2 @ 3 1/2"

2 @ 3 1/2" No. 4 hold 2 @ 3 1/2" Tunnel 1 @ 3 1/2"

Connections 1 sizes 10" Connected to condenser to circulating pump Yes Is a separate Donkey Suction fitted in Engine Room &amp; size Yes 4 1/2"

suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes

Connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Both

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

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

Carried through the bunkers Yes How are they protected Yes

Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes

Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges Yes

Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Engine Room top platform

, &amp;c.—(Letter for record S) Manufacturers of Steel Gutehoffnungshutte Oberhausen: American Spiral Coy.

Working Surface of Boilers 9080 sq. ft. Is Forced Draft fitted Yes No. and Description of Boilers 3000 hp. American Spiral Coy.

Pressure 200 lbs. Tested by hydraulic pressure to 350 lbs. Date of test March 16, 1927 No. of Certificate 34516

Can be worked separately Yes Area of fire grate in each boiler 57.8 sq. ft. No. and Description of Safety Valves 10 F.E. on

2 Spring loaded Area of each valve 3 3/4 dia Pressure to which they are adjusted 200 lbs. Are they fitted with easing gear Yes

Space between boilers or uptakes and bunkers or woodwork Yes Mean dia. of boilers 24' 7 1/2" Length 12' 0" Material of shell plates Steel

1 1/2" Range of tensile strength 28-35 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams D. R. L.

TR DBS Diameter of rivet holes in long. seams 17/16" Pitch of rivets 9 1/16" Lap of plates or width of butt straps 22"

Strength of longitudinal joint rivets 96% plates 85% Working pressure of shell by rules 213 lbs. Size of manhole in shell 12" x 16"

Insulating ring 3' 1" x 2' 10 1/2" No. and Description of Furnaces in each Boiler 3 Morrison Material Steel Outside diameter 3' 10 1/4"

Main part top 8' 7 1/4" Thickness of plates crown 5 7/8" Description of longitudinal joint Weld No. of strengthening rings 3

Bottom 8' 7 1/4" Thickness of plates bottom 5 7/8" Description of longitudinal joint Weld No. of strengthening rings 3

Pressure of furnace by the rules 210 lbs. Combustion chamber plates: Material Steel Thickness: Sides 3/4" Back 1/16" Top 3/4" Bottom 7/8"

Is to ditto: Sides 10' x 8' 2" Back 9 1/4' x 8' 4" Top 10 1/4' x 8' If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 230 lbs.

Stays STEEL Diameter at smallest part 1' 5 9/16" Area supported by each stay 10' x 8' 5" Working pressure by rules 250 lbs. End plates in steam space

Cur Thickness 1 5/16" Pitch of stays 20 1/2" x 19" How are stays secured AN &amp; N Working pressure by rules 206 lbs. Material of stays Steel

Smallest part 3" Area supported by each stay 389.5 sq. ft. Working pressure by rules 219 lbs. Material of Front plates at bottom Steel

7/8" Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 23" Working pressure of plate by rules 230 lbs.

Tubes 3 1/4" Pitch of tubes 4 1/16" x 4 3/8" Material of tube plates Steel Thickness: Front 7/8" Back 3/16" Mean pitch of stays 9"

Wide water spaces 13 3/4" Working pressures by rules 227 lbs. Girders to Chamber tops: Material Steel Depth and

Girder at centre 9 3/4" x 13 1/4" Length as per rule 34" Distance apart 10 1/4" Number and pitch of stays in each 3 @ 8"

Pressure by rules 210 lbs. Steam dome: description of joint to shell Yes % of strength of joint Yes Diameter Yes

If shell plates Yes Material Yes Description of longitudinal joint Yes Diameter of rivet holes Yes Pitch of rivets Yes

Pressure of shell by rules Yes Crown plates: Thickness Yes How stayed Yes



SUPERHEATER. Type *Schmidt* Date of Approval of Plan ☒

Date of Test *10. 9. 26.*

Tested by Hydraulic Pressure to *1000 lbs* Rpt

Diameter of Safety Valve *3 1/4"*

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

Pressure to which each is adjusted *205 lbs*

Is Easing Gear fitted *Yes*

IS A DONKEY BOILER FITTED? *No*

If so, is a report now forwarded? ☒

SPARE GEAR. State the articles supplied:—

*1 set of HP rotor shaft bearing brasses.*  
*1 set of LP " " " "*  
*1 set connecting shaft bearing brasses.*  
*1 set pinion shaft bearing brasses.*  
*2 sets 1st gear wheel shaft bearing brasses.*  
*1 set 2nd pinion shaft bearing brasses.*  
*1 set 2nd gear wheel shaft bearing brasses.*  
*2 sets HP turbine adjusting block liners.*  
*2 " LP*  
*2 sets of pads for 2 faces of Adjusting Block*  
*of HP turbine*  
*2 sets of pads for 2 faces of Adjusting Block*  
*of LP turbine*  
*1 Spring for relief valve for HP ahead steam chest.*  
*1 Spring for relief valve for LP ahead steam chest.*  
The foregoing is a correct description.

*1 Spring for relief valve for stand steam receiver.*  
*1/20 total number of bolts & nuts for each turbine casing joint.*  
*1/20 total number of bolts & nuts for each gear casing joint.*  
*2 bolts & nuts for each size of rotor bearings.*  
*2 bolts & nuts for each size of pinion bearings.*  
*2 bolts & nuts for each size of G.W. bearings.*  
*1 Sight Glass for Kerosene Injector.*  
*6 Sept. Classes for lubrication oil flow indicator.*  
*1 set of felt packing for HP turbine for + aft bearing.*  
*1 set of felt packing for LP turbine for + aft bearing.*  
*1 set of pads for one face of main thrust block.*  
*A quantity of assorted bolts studs & nuts.*

*Calcutta* Manufacturer.  
*for Uraga Dock Co., Uraga Japan*

Dates of Survey while building  
During progress of work in shops -- *1926. Hapagati. July. 1. 2. 3. 6. 12. 20. 23. Aug. 2. 3. 10. 15. Sept. 13. 24. 27. 28. 29. 30. Oct. 1. 2. 5.*  
During erection on board vessel --- *15. 26. Nov. 1. 2. 4. 6. 9. 10. 12. 13. 17. 22. 26. 27.*  
Total No. of visits *Uraga. Oct 18 Nov 17. Dec. 21, 27. Jan 10. 13. 20. Feb 1. 10. 21. March 1. 11. 16. 22. 25. 28. Apr 6. 8.*  
*Apr 21. May 2. 4. 7. 9. 11. 16. 18.*  
*26. Uraga.*

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

Dates of Examination of principal parts—Casings *15. 9. 26. 26. 11. 26.* Rotors *24. 9. 26. 26. 11. 26.* Blading *24. 9. 26. 26. 11. 26.* Gearing *2. 7. 26. 27. 11. 26.*  
Rotor shaft *26. 11. 26.* Thrust shaft *23. 7. 26. 27. 11. 26.* Tunnel shafts *Feb 1.* Screw shaft *22. 11. 26.* Propeller *22. 11. 26.*

Stern tube *22. 11. 26.* Steam pipes tested *Apr 21. May 2.* Engine and boiler seatings *Apr 6.* Engines holding down bolts *21. 11. 26.*

Completion of pumping arrangements *May 2.* Boilers fixed *Apr 21.* Engines tried under steam *Hapagati. 22. 11. 26.*

Main boiler safety valves adjusted *May 4.* Thickness of adjusting washers ☒

Material and tensile strength of Rotor shaft *S.M. 2 Steel*

Material and tensile strength of Pinion shaft *do.*

Material of Wheel shaft *S.M. 2 Steel* Identification Mark on Do. *RC. 26. 10. 26.* Material of Thrust shaft *S.M. 2 Steel* Identification Mark on Do. *RC. 27. 11.*

Material of Tunnel shafts *Steel* Identification Marks on Do. *5. 27. ROB R* Material of Screw shafts *Steel* Identification Marks on Do. *4. 10. 26. ROB R*

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 a duplicate of a previous case *Engine. Yes.* If so, state name of vessel *Engine No 425.*

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

*The machinery has been built in accordance with the requirements of the Rules & the materials & workmanship found good.*

*The machinery is eligible in my opinion to have the record of + L.M.C. 5. 27.*

*It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 5. 27. F.D. CL. 2 Steam Turbines DR geared to 1 Screw Shaft*

The amount of Entry Fee ... £ *✓* :  
Special ... *¥ 1059.* :  
Donkey Boiler Fee ... £ :  
Travelling Expenses (if any) *7 70.* :  
When applied for, *18. 5. 1927*  
When received, *30. 5. 1927.*

Committee's Minute *TUES. 19 JUL 1927*

Assigned *+ L.M.C. 5. 27 F.D. CL.*



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