

# LLOYD'S REGISTER OF SHIPPING.

(CLASSIFICATION SOCIETY RECOGNISED BY THE JAPANESE GOVERNMENT)

## SURVEY FOR FREEBOARD.

Ship's Name <b>ITIYO MARU</b>	Port of Registry -	Official No. -	No. in R.B. -	Gross Tonnage 3944	Tonnage under Fbd. Deck = V 3676.6	Date of Launch 5th June 1925	Date when Built	Report Number 32
Owners <b>Messrs. Osaka Iron Works.</b>		Builders <b>Messrs. Osaka Iron Works.</b>		Yard No. 1056		Port of Survey <b>Kobe.</b>		
Type of vessel <b>Decks &amp; Poop, Bridge and Forecastle. Longitudinal framing.</b>		Particulars of Classification <b>* 100 Al Shelter deck with Freeboard. Longitudinal framing.</b>		Position of Freeboard Deck <b>"Shelter deck"</b>		Date of Survey <b>While Building.</b>		
						Name of Surveyor <b>H.J. Cox &amp; H.D. Buchanan.</b>		

PRINCIPAL DIMENSIONS.			
Length between perpendiculars	345'0" ft.	Breadth Moulded = B <sub>0</sub>	49.83 ft.
Length on Load Line	345'0" ft.	Thickness of Side plating in ins. x 3/12*	.54 + .135 ft.
		*2/12 if plating is jogged	
Length for Freeboard = L	345'0" ft.	Breadth for Freeboard = B	49.97 ft.
		Depth Moulded to Fbd. deck = D <sub>0</sub>	28.17 ft.
		Round of Beam	+ 1.00 ft.
		Depth from base line to top of inner bottom plating or ordinary floors	29.17 ft.
		Depth for Tonnage Coef. (Art. 39) = D	25.80 ft.

CORRECTION TO TONNAGE (Art. 39)	
Tonnage between top of ceiling on double bottom or ordinary floors as fitted and standard level of top of ceiling (v) =	- 19.3 tons.

DEPTH OF DOUBLE BOTTOM (Art. 39)	
Depth of Actual Double Bottom (including plating) or Ordinary Floors	40.46 ins.
Depth of Standard Double Bottom (including plating) or Ordinary Floors	41.48 ins.
Difference	- 1.02
x 1/12 =	- .09 = d.

SHEER (Arts. 39 and 60-63)			
Ordinate	Height of Sheer in inches.	S.M.	Products
1	71.00	1	71.0
2	30.75	4	123.00
3	7.875	2	15.75
4	0	4	0
5	12.75	2	25.50
6	52.75	4	211.00
7	119.875	1	119.875

FRAMING (Art. 39)					
Between Frames	Length in ft.	Depth of Frame in ins.	Thickness of Sparring in inches	Total depth in inches	Products ft. x inches

Sum of Products = 566.125

Mean Height of Sheer =  $S = \frac{\text{Sum of Products}}{18} = 31.45$  ins.

Standard Mean Height =  $S_0 = \frac{1}{3}(L/10 + 10) = 14.83$  ins.

Difference  $16.62 \times 1/12 = 1.39$  ft. = d<sub>1</sub>

Correction (Arts. 60-63) =  $\frac{3}{4}(1 - e)(S_0 - S) = \frac{3}{4} \times .693 \times 16.62 = 8.64$  ins.

Sum of Products =

Sum of Products / Length of Ship = Actual Mean Depth of framing = 8.50 ins.

Standard " " " " = 7.50 ins.

Difference = 1.00 x 2/12 = .17 = 2b

COEFFICIENT OF FINENESS (Art. 39 or 43)

$$\frac{100(V + v)}{L(B - 2b)(D + d + d_1) + n}$$

$$\frac{100(3676.6 - 13.01)}{345(49.97 - .17)(25.8 - .09 + 1.39)} = .79$$

or

$$\frac{35 \times \Delta}{L \times B_0 \times d_0} + 0.04$$

$$= \dots + 0.04 =$$

Sketch showing arrangement and height of double bottom or ordinary floors and of superstructures (unless complete plans are submitted).

**Note:**

Construction of Hatchways, Ventilators, casings, and all openings in uppermost deck same as Full Scantling vessel.

Tank Top carried out to Bilge, rises 8". 2 1/2" Ceiling under hatches only.

Standard depth double bottom = 41.48 + 2.5 = 43.98

Actual " " " = 40.46 + 4.0 = 44.46

Horizontal Bilge Ceiling say 3 x 2 x 298 = 17.88

345 x 35.27 x .04 = 4.87 tons.

Net Correction = 4.87 - 17.88 = -13.01 tons.

Sketch of deck erections showing openings in end bulkheads and position and arrangement of closing appliances. Hatchways, and Engine and Boiler openings also to be shown. Extent and thickness of wood deck or composition to be shown in red ink, and extent and thickness of ceiling (and battens) on tank top to be given.



WOOD DECK (Arts. 5 and 6)

	Mean Length in ft.	Thickness in ins.	Products
Forecastle	34.87	3 1/2 - .38	512.83
Bridge	99.25		
Poop or R.Q.D.	30.25		
Open Deck, fwd.			
" " aft.			

Total length =  $l =$ 
Sum of Products = 512.83

Sum of Products =  $t =$ 
ins. : Sum of Products =  $t_1 =$  1.49 ins.

CORRECTION FOR DEPTH & CORRECTION FOR FREEBOARD.

If no sheathing fitted amidships =  $t_1 = \pm$  1.49 ins. (Arts. 6 and 57 p. 1)

If sheathing is fitted amidships =  $(t - t_1) = \mp$  ins. (Arts. 6 and 57 p. 2)

\* Note : Use the upper sign in correction for depth and the lower sign in correction for freeboard.

DEPTH TO USE IN FREEBOARD TABLE.

Depth moulded 28 ft. 2 ins.

Thickness of Stringer Plate .38

Thickness of Wood Deck Amidships 28 - 2.38

Correction for partial wood deck  $\pm$  1.49

Depth to use in Freeboard Tables 28 ft. 3.87 ins. =  $D_1 =$  28.32 ft.

SUPERSTRUCTURES.

HEIGHT (Arts. 46-48)

Standard Height =  $(0.018 L + 1.2)$  ft. = 7.41 ft.

	Complete Superstructure	Forecastle	Bridge	Poop or R.Q.D.
Actual		8.0 = 1.0	8.0 = 1.0	8.0 = 1.0
Standard		7.41	7.41	7.41

CLOSING APPLIANCES (Arts. 50 and 54)

	Forecastle	Bridge		Poop or Raised Quarter Deck
		Forward End.	After End.	
Means of Closing openings in bulkhead	Steel Hinged Doors	Intact	Steel Hinged doors	Steel Hinged doors
Corresponding Class	II	I	II	II

EFFECTIVE LENGTH (Arts. 55 and 56)

	Mean Length	Coef. Art. 56	Height Coef.	Products
Forecastle closed part	34.87	1.0	1.00	34.87
" " open part				
Bridge closed part	99.25	1.00	1.00	99.25
" " open part fwd.				
" " " aft.				
Poop closed part	30.25	1.00	1.00	30.25
" " open part				

Total Effective Length = 164.37

Total Effective Length =  $r =$  .48

Length of Vessel =  $e =$  .307

Corresponding Coef. in Table (Art. 49) =  $e =$  .307

Reduction for Complete Superstructure 39.0 ins.

Product 11.97 ins.

Correction for Superstructures 11.97 ins.

EFFECTIVE LENGTH (Shelter Deck Vessels Arts. 87-92)

$l + \frac{1}{2}(1 - p)(L - l) =$  ft.

(\* See Art. 90)

CORRECTION FOR PROPORTIONS L/D (Art. 58)

When  $D_1$  is less than 35 ft. =  $\frac{D_1 + 16}{300}(1 - e/2)(L - 12 D_1)$

" " " greater than 35 ft. =  $0.17(1 - e/2)(L - 12 D_1)$

[Note  $e = 1.0$  if more than 6/10 covered] =  $\frac{44.32}{300} \times .846 \times 5.16 =$  .65 ins.

CORRECTION FOR ROUND OF BEAM (Art. 59) Tumble home 6

Standard Round of Beam =  $\frac{\text{Length of Beam in ins.}}{50} = \frac{586}{50} = 11.72$  ins.

Correction =  $\frac{1}{4}(\text{Standard Round of Beam} - \text{Actual Round of Beam})$

=  $\frac{1}{4}(11.72 - 12) = -.07$  ins.

CORRECTION FOR FREEING PORTS (in vessels less than 15 ft. Depth Art. 64)

Length of bulwark in feet each side

Area of Freeing ports each side

Area of Freeing ports required by Table

Correction  $1.2(r - 0.5) D_1 = +$  ins.

CORRECTION FOR ACCESS TO CREW'S QUARTERS (Arts. 65-67)

Are Crew berthed in Bridge House or Forecastle ?

Height and breadth of gangway

Correction =  $.012(80 - l) D_1$  or  $1.2(r - 0.5) D_1$

= + ins.

SUMMARY.

Freeboard by Tables 77.47 ins.

Correction for Sheer + 8.64

" " Partial Wood Deck 1.49

" " Superstructures 11.97

" " Proportions L/D .65

" " Round of Beam .07

" " Freeing Ports

" " Access to Crew's Quarters

Totals .65 22.17

Net Correction 21.52

Geometric Freeboard 55.95 ins.

Corresponding Geometric Draught (mld.) 23.53 ft.

Moulded Draught limited by  $\left\{ \begin{array}{l} \text{form} \\ \text{transverse strength} \\ \text{longitudinal strength} \\ \text{position of side scuttles} \end{array} \right\}$  to 23.53 ft.

Corresponding Freeboard (Summer) 56.0 ins.

Winter Freeboard (Art. 22) =  $\frac{1}{4}(D_1 - 10) + r/45 \times (59 - D_1)$

=  $\frac{1}{4} \times 18.32 + \frac{.48}{45} \times 30.68 = + 4.91$  ins.

Tropical Freeboard (Art. 24) do. do. = - 4.91 ins.

Winter North Atlantic Fbd. (Art. 23) Vessels 330 ft. and below.

Ratio of effective length of superstructures to length of vessel

Additional Freeboard + ins.

Fresh Water Freeboard (Art. 27)

1" per foot of Summer Draught = - 5.88 ins.

FREEBOARD TO BE ASSIGNED.

Vertical distance from upper edge of horizontal line indicating the freeboard deck to the centre of the disc. (Summer Line) 56.0 ins.

Fresh Water Load Line above centre of disc. 5.9 ins.

Tropical Load Line above " " " 4.9 ins.

Winter Load Line below " " " 4.9 ins.

Winter N.A. Load Line below " " " ins.

Vertical distance from the point of intersection of the extended line of the upper surface of ~~Stl. Stages~~ of the uppermost deck at mid length of the vessel with the outside of shell plating to the upper edge of the horizontal line indicating the freeboard deck 0.00 ins.

Are the Engine and Boiler openings covered by a Bridge, Poop, Raised Quarter Deck or enclosed by a strong steel deck house ? Yes

If openings are not so protected give thickness of plating and scantlings and spacing of stiffeners of Casings

Are suitable means provided for closing all openings in them in bad weather ? Yes

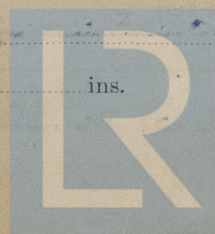
State the vertical distance from base line at top of keel to lower edge of lowest side scuttle above freeboard deck.

State if there are any cargo ports or scuppers through sides of vessel below upper deck No.

State any special features in the construction of the vessel Longitudinal framing. Old Rule Basis.

Sister vessels S.S. "Storborg" ex "Meichu Maru"

Fee. Yen. : Depth of Keel ins. ; Draught (btm. keel) ft. ins.



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"	"	G	27½ x .54	14.9	1.1	16	20	"	"				
Shell Logls.								Shell Longls					
Nos. 1-8	7@7½x3½x.38BA	33.6	11.0	370	4070	No. 13	8½x3½x.42BA	5.7	.7	4	-		
No. 9	-do-	4.8	10.5	50	530	No. 14	8x3½x.40 BA	5.2	2.8	15	40		
No. 10	9½x3½x.46	6.8	5.3	36	190	No. 15	7½x3½x.40BA	5.0	5.3	27	140		
No. 11	9½x3½x.42	6.3	3.3	21	70	No. 16	7x3½x.36	4.3	10.2	45	460		
No. 12	9x3½x.42	6.0	1.3	8	10	No. 17	7x3½x.36	4.3	12.4	53	660		
						No. 18	7x3½x.36	4.3	14.6	63	920		
Totals		477.5		4176	40040	Totals		350.6		4018	55760		

Keel

MODULUS OF SECTION =  $\frac{191540}{11} = 11227$



DETAILS OF CONSTRUCTION OF WEATHER DECK HATCHWAYS.

	No. 1	No. 2	Bridge. <sup>No. 3</sup>	No. 4	No. 5	No. 6
Length and Breadth	22' x 20'	28' x 20'	15' x 18'	10' x 20'	22' x 20'	22' x 20'
Height above deck and thickness of side and end coaming	36" x .44	36" x .44	36" x .50 <sup>side</sup> .44 <sup>end</sup>	36" x .44	36" x .44	36" x .44
Shifting Beams { Number and Material Scantlings	4 steel 17 x .36 4x3x.44	5 steel 17 x .36 4x3x.44	2 steel 16 x .36 4x3x.44	1 steel 18 x .36 4x3x.44	4 steel 17 x .36 4x3x.44	4 steel 17 x .36 4x3x.44
*Fore and Afters { Number and Material Scantlings	None	None	None	None	None	None
Thickness of hatches			2½"			
Remarks						
* When the fore and afters are of wood the depth should be stated from the underside of hatches.						

LONGITUDINAL MODULUS.

Height of Assumed Axis above base = 11.3 feet.

No.2 hatch assuming  
Section at midship depth

BELOW ASSUMED AXIS.						ABOVE ASSUMED AXIS.					
Item	Scantlings	Area	Lever	Moment	Mt. of Inertia	Item	Scantlings	Area	Lever	Moment	Mt. of Inertia
Flat Keel	22.5 x .84	18.9	11.3	214	2420	Top Deck Str.	52 x .56	29.1	17.1	498	8320
" "						" " "					
Centre Girder	40 x .24	9.6	9.6	92	880	" " Plating	72 x .40	28.8	17.4	501	8720
C.G. btm. ang.	4 x 4 x .58	4.3	11.2	48	540	" " "	54 x .50	27.0	17.6	475	8360
C.G. top angles	3 1/2 x 3 1/2 x .46	3.0	8.1	24	190	" " Longs.	50 x 3 x .38 BA	19.1	17.2	329	5660
T.T. Cr. Strake	20 x .46	9.2	8.0	74	590	" " Str. Ang.	4 1/2 x 4 1/2 x .60	5.0	17.0	85	1450
T.T. plating	72 x .38	27.4	7.8	214	1670	2nd Deck Str.	44" x .34	15.0	8.1	122	990
" "	72 x .38	27.4	7.7	211	1620	" " Plating	69 x .34	23.5	8.4	197	1650
" "	78 x .38	29.6	7.5	222	1670	" " "	54 x .34	18.4	8.6	158	1360
" " Longs.	70 x 3 x .38 BA	30.2	7.9	239	1890	" " Longs.	40 1/2 x 3 x .38 BA	18.4	8.2	151	1240
" "						" " Str. Ang.	3 1/2 x 3 1/2 x .40	2.6	8.1	21	170
Margin Plate	66 x .42	27.7	7.4	205	1520	3rd Deck Str.					
" "						" " Plating					
" Angle	3 1/2 x 3 1/2 x .42	2.8	7.1	20	140	" " "					
Shell Strake A	67 1/2 x .54	36.5	11.3	412	4660	" " Str. Ang.					
" " B	65 1/2 x .54	35.6	11.3	402	4540	Sheerstrake	51 x .72	36.7	15.8	580	9160
" " C	65 1/2 x .54	35.3	11.2	395	4420	Strake below	67 x .56	37.5	11.3	424	4790
" " D	65 1/2 x .54	35.4	11.2	396	4440	Shell Strake H	69 x .54	37.3	6.1	228	1390
" " E	78 1/2 x .54	42.3	9.0	381	3430	" " G	43 1/2 x .54	23.4	1.8	42	80
" " F	55 1/2 x .54	29.9	4.2	126	530	" "					
" " G	27 1/2 x .54	14.9	1.1	16	20	" "					
Totals below assumed axis		477.5		4176	40040	Totals above assumed axis		350.6		4018	55760
" above assumed axis		350.6		4018	55760	Neutral Axis above assumed axis (x) =	158 / 828.1 = .19				
Sum or Difference		828.1		158	5800	Correction = (Total Area x x^2 x 2)	= - 60				
						Moment of Inertia about Neutral Axis	191540				
						Distance from Neutral Axis to top of Strength deck beam at side =	17.05 ft.				
						MODULUS OF SECTION =	191540 / 17.06 = 11227				
						Actual Modulus =	11227 / 8.78 x 49.83 = 25.66 feet.				

DRAUGHT PERMITTED BY LONGITUDINAL STRENGTH (Arts. 81-86) =

TRANSVERSE MODULUS.

Minimum Side Plating (Art. 77)  $\frac{0.105 \times +17}{100} =$  ; Standard Frame Spacing (Art. 78) = .025 X +17 =

Actual Side Plating = ; Actual Frame Spacing =

If actual frame spacing exceeds the standard  $\sqrt{\frac{\text{Actual frame spacing}}{\text{Standard frame spacing}}}$  t =

Moulded Geometric Draught (d) = ; H = ; f<sub>1</sub> =

t = ; K = ; f<sub>2</sub> =

d - t = ; f<sub>1</sub> + f<sub>2</sub> =

Standard I/y =  $\frac{s(d-t)(f_1+f_2)}{1000} =$

Frame in ship = at spacing, I/y =

DRAUGHT PERMITTED BY TRANSVERSE STRENGTH =  $\frac{I/y \times 1000}{s(f_1+f_2)} + t =$

