

Ship's Name	Port of Registry	Official No.	No. in R.B.	Gross Tonnage	Tonnage under Fbd. Deck=V	Date of Launch	Date when Built	Report Number
Montevideo Maru	Osaka			7266.96	6088.41	15th Apr. 1926.	1926.	J.G.No.6.
Owners		Builders			Yard No.	Port of Survey		
Shosen Kaisha, Ltd.,		Nagasaki Works. Mitsubishi Zosen Kaisha.Ld.			4 1 2.	NAGASAKI.		
Type of vessel		Particulars of Classification		Position of Freeboard Deck		Date of Survey		
Castle and Bridge and of Intermediate Strength.		*100A1 with Freeboard and Teishinsho 1st Class.		Uppermost Continuous deck.		While Building.		
						Name of Surveyor		
						R. Crawford.		

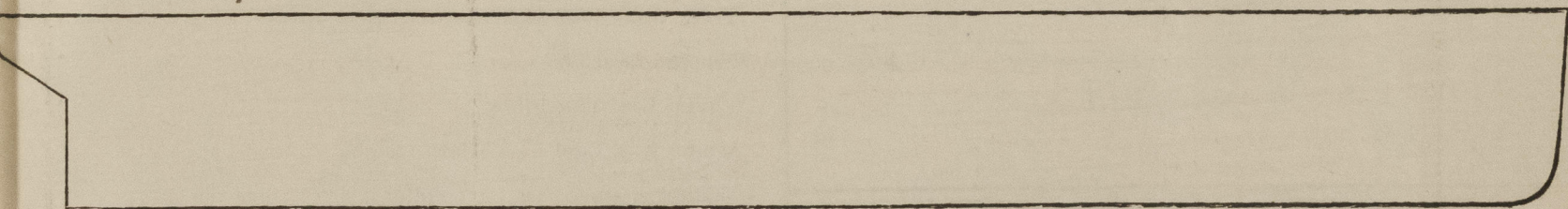
PRINCIPAL DIMENSIONS.					
Distance between perpendiculars	430.0 ft.	Breadth Moulded = B ₀	56.0 ft.	Depth Moulded to Fbd. deck = D ₀	36.0 ft.
Distance on Load Line	430.0 ft.	Thickness of Side plating in ins. x 3/12*	+	Round of Beam	+
		*(2/12 if plating is joggled)		Depth from base line to top of inner bottom plating or ordinary floors	-
Distance for Freeboard = L	430.0 ft.	Breadth for Freeboard = B		Depth for Tonnage Coef. (Art. 39) = D	

CORRECTION TO TONNAGE (Art. 39)	DEPTH OF DOUBLE BOTTOM (Art. 39)
Distance between top of ceiling on double bottom and ordinary floors as fitted and standard level of top of ceiling (v) =	Depth of Actual Double Bottom (including plating) or Ordinary Floors
	ins.
	Depth of Standard Double Bottom (including plating) or Ordinary Floors
	ins.
	Difference
	x 1/12 =
	= d.

SHEER (Arts. 39 and 60-63)				FRAMING (Art. 39)					
Distance	Height of Sheer in inches.	S.M.	Products	Between Frames	Length in ft.	Depth of Frame in ins.	Thickness of Sparring in inches	Total depth in inches	Products ft. x inches
1	42.0	1	42.0						
2	18.96	4	75.84						
3	5.40	2	10.80						
4	0.00	4							
5	11.40	2	22.80						
6	43.56	4	174.24						
7	96.00	1	96.00						

Sum of Products = 421.68	Sum of Products =
Mean Height of Sheer = S = $\frac{\text{Sum of Products}}{18} = 23.43$ ins.	Sum of Products = Actual Mean Depth of framing
Standard Mean Height = S ₀ = $\frac{1}{3}(L/10 + 10) = 17.67$ ins.	ins.
Difference = 5.76 x 1/12 = .48 ft. = d ₁	Standard „ „ „ „
Correction (Arts. 60-63) = $\frac{3}{4}(1 - e)(S_0 - S) = \frac{3}{4}(1 - .15)(5.76) = 3.67$ ins.	ins.
	Difference x 2/12 =
	= 2b

COEFFICIENT OF FINENESS (Art. 39 or 43)	
$\frac{100(V + v)}{L(B - 2b)(D + d + d_1)} + n$	or $\frac{35 \times \Delta}{L \times B_0 \times d_0} + 0.04$
=	$\frac{35 \times 15.200}{430 \times 56 \times 36 \times .86} + 0.04 = .76$



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.



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			
Bridge	3" wood deck throughout.		
Poop or R.Q.D.			
Open Deck, fwd.			
" " aft.			
Sum of Products =			
Total length = l =			
Sum of Products = t = ins. ; Sum of Products = t ₁ = ins.			

CORRECTION FOR DEPTH & CORRECTION FOR FREEBOARD.
 If no sheathing fitted amidships = $t_1 = \pm$ 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	36	ft.	0.00 ins.
Thickness of Stringer Plate	0.66	"	
Thickness of Wood Deck Amidships	3.00	"	
	36 - 3.66		
Correction for partial wood deck	±		
Depth to use in Freeboard Tables	36	ft.	3.66 ins. = D ₁ = 36.31 ft.

SUPERSTRUCTURES.				
HEIGHT (Arts. 46-48)				
Standard Height = $(0.018 L + 1.2)$ ft. = 7.5 ft.				
	Complete Superstructure	Forecastle	Bridge	Poop or R.Q.D.
Actual	— = /	7.47 = 1.0	8.0 = 1.0	— = /
Standard	— = /	7.5	7.5	— = /

CLOSING APPLIANCES (Arts. 50 and 54)				
	Forecastle	Bridge Forward End.	Bridge After End.	Poop or Raised Quarter Deck
Means of Closing openings in bulkhead	Wood doors	Hinged Steel W.T. doors	Wood doors	/
Corresponding Class	II	I	II	

EFFECTIVE LENGTH (Arts. 55 and 56)				
	Mean Length	Coef. Art. 56	Height Coef.	Products.
Forecastle closed part	46.68	1.00	1.00	45.58
" open part	/			
Bridge closed part	62.5	1.00	1.00	62.5
" open part fwd.	/			
" " aft.	/			
Poop closed part	/			
" open part	/			

Total Effective Length = 109.08
 Total Effective Length = $r = \frac{109.08}{430} = .25$
 Length of Vessel
 Corresponding Coef. in Table (Art. 49) = $e = 0.150$
 Reduction for Complete Superstructure = 39.00 ins.
 Product = 5.85 ins.
 Correction for Superstructures = 5.85 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 D₁ 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 5/10 covered] = $0.17 (1 - \frac{1.5}{2}) (430 - 12 \times 36.31) = 5.85$

Are the Engine and Boiler openings covered by a Bridge, Poop, Raised Quarter Deck or enclosed by a strong steel deck house? **Strong Steel Deck House.**
 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 **About 33'-6"**
 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
 Sister vessels **M/V "Santos Maru", and M/V "La Plata Maru".**
 Fee, Yen. ; Depth of Keel **1.56** ins. ; Draught (btm. keel) **25** ft. **2.52** ins.

CORRECTION FOR ROUND OF BEAM (Art. 59)
 Standard Round of Beam = $\frac{\text{Length of Beam in ins.}}{50} = 13.44$ ins.
 Correction = $\frac{1}{4} (\text{Standard Round of Beam} - \text{Actual Round of Beam})$
 = $\frac{1}{4} (13.44 - 9) = 1.11$ 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? **Forecastle**
 Height and breadth of gangway
 Correction = $-0.12 (80 - l) D_1$ or $1.2 (r - 0.5) D_1 = +$ ins.

SUMMARY.
 Freeboard by Tables **112.66** ins.
 Correction for Sheer **3.67** ins.
 " " Partial Wood Deck **5.85**
 " " Superstructures **.90**
 " " Proportions L/D **1.11**
 " " Round of Beam **1.11**
 " " Freeing Ports **1.11**
 " " Access to Crew's Quarters **10.42**
 Totals **9.31**
 Net Correction **103.35** ins.
 Geometric Freeboard **27.639** ft.
 Corresponding Geometric Draught (mld.)
 Moulded Draught limited by $\frac{\text{Form Factor}}{\text{Transverse strength}} \times \frac{\text{Longitudinal strength}}{\text{Position of side scuttles}}$ to **25.08** ft.
 Corresponding Freeboard (Summer) **134.7** ins.

Winter Freeboard (Art. 22) = $\frac{1}{4} (D_1 - 10) + \frac{1}{4} 45 \times (59 - D_1)$
 = $\frac{1}{4} (36.31 - 10) + \frac{1}{4} 25 \times (59 - 36.31) = 6.7$ ins.
 Tropical Freeboard (Art. 24) do. do. = **6.7** 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)
 $\frac{1}{4}$ " per foot of Summer Draught = $25.08 \times \frac{1}{4} = 6.27$ 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) **134.7** ins.
 Fresh Water Load Line above centre of disc. **6.3** ins.
 Tropical Load Line above " " **6.7** ins.
 Winter Load Line below " " **6.7** ins.
 Winter N.A. Load Line below " " **/** ins.
 Vertical distance from the point of intersection of the extended line of the upper surface of **3" wood** of the Uppermost continuous 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 **Nil** ins.

DETAILS OF CONSTRUCTION OF WEATHER DECK HATCHWAYS.

DETAILS OF CONSTRUCTION OF UPPER DECK

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Length and Breadth	20'3"x 16'0"	27'6"x 18'0"	22'6"x 18'0"	25'0"x 18'0"	20'0"x 16'0"	/
Height above deck and thickness of side and end coaming	24" x .44	24" x .44	18" x .44	24" x .44	24" x .44	
Shifting Beams { Number and Material Scantlings Angles	3 M. Steel Pl 14 x .34 3 1/2 x 3 x .42	5 M. Steel 15 x .36 4 x 3 x .44	4 M. Steel 12 x .30 4 x 3 x .44	4 M. Steel 16 x .36 4 x 3 x .44	3 M. Steel 14 x .34 3 1/2 x 3 x .42	
*Fore and Afters { Number and Material Scantlings	None	None	None	None	None	
Thickness of hatches	3" O.P	3"	3"	3"	3"	
Remarks	Construction of Hatchways, Ventilators and other openings in uppermost deck same as for Full Scantling Vessel.					
* 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 = top of keel = 14.4
 Section at **Engine Opening.**

BELOW ASSUMED AXIS.						ABOVE ASSUMED AXIS.				
Item	Scantlings	Area	Lever	Moment	Mt. of Inertia	Item	Scantlings	Area	Lever	Moment
Flat Keel	1/2 x 53 x .78	20.7	14.4	298	4290	Top Deck Str.	60 x .66	39.6	21.8	863
" "						Coaming ag.	3 x 3 x .34	1.9	22.4	43
Centre Girder	1/2 x 48 x .58	13.9	12.4	172	2130	" " Plating	64.5 x .42	27.1	22.0	596
C.G. btm. ang.	5 x 5 x .60A	5.6	14.3	80	1140	" " "	68 x .42	28.6	22.1	632
C.G. top angles	3 1/2 x 3 1/2 x .54A	3.5	10.5	37	390	" " "	57.5 x .42	24.2	22.3	540
T.T. Cr. Strake	1/2 x 54 x .52	14.0				" " Str. Ang.	6 x 6 x .66	7.5	21.8	164
T.T. plating	66 x .52	34.3				2nd Deck Str.	42 x .48	20.2	14.1	285
" "	66 x .52	34.3				" " Plating	66 x .46	30.4	14.2	432
" "	66 x .52	34.3	10.4	1869	19440	" " "	58.5 x .46	26.9	14.3	385
" "	71 x .52	36.9				Coaming ag.	3 x 3 x .36	2.0	14.4	29
Margin Plate	48 x .54	25.9				" " Str. Ang.	3 x 3 x .48	2.7	14.1	38
" "						3rd Deck Str.	41 x .36	15.6	5.6	87
" Angle	3 1/2 x 3 1/2 x .54A	3.5	10.3	36	370	" " Plating	69 x .34	23.5	5.7	134
Shell Strake A	78 x .60	46.8	14.3	669	9570	" " "	56 x .34	19.0	5.8	110
" " B	77.5 x .60	46.5	14.3	665	9510	" " Str. Ang.	3 x 3 x .38	2.1	5.6	12
" " C	78 x .60	46.8	14.1	660	9310	Sheerstrake	54 x .74	40.0	20.5	820
" " D	69.25 x .60	41.6	13.8	574	7920	Strake below	51 x .66	33.7	16.5	556
" " E	66 x .60	39.6	11.2	444	4970	Shell Strake J	77.25 x .60	46.4	11.7	543
" " F	71.5 x .60	42.9	6.2	266	1650	" " H	77.5 x .60	46.5	5.6	260
" " G	42 x .60	25.2	1.8	45	80	" " G	35 x .60	21.0	1.5	32
Totals below assumed axis		516.3		5815	70770	Totals above assumed axis		458.9		6561
" above assumed axis		458.9		6561	114890					
Sum or Difference		975.2		746	185660					
Moment of Inertia about assumed axis 371320						Neutral Axis above assumed axis (x) = .76				
						Correction = (Total Area x x ² x 2) = -975.2 x .76 ² x 2 = -1130				
						Moment of Inertia about Neutral Axis 370190				
						Distance from Neutral Axis to top of Strength deck beam at side = 20.84 ft.				
						MODULUS OF SECTION = 17763.4				

DRAUGHT PERMITTED BY LONGITUDINAL STRENGTH (Arts. 81-86) = $\frac{\text{Actual Modulus}}{f. B.} = \frac{17763.4}{12.65 \times 56} = 25.08 \text{ ft.} = 25 - 0.96"$

TRANSVERSE MODULUS.
 Minimum Side Plating (Art. 77) $\frac{0.105 \times 430 + 17}{100} = .62$; Standard Frame Spacing (Art. 78) = $.025 \times 430 + 17 = 27.75$
 Actual Side Plating = **.60**; Actual Frame Spacing = **30.00**
 If actual frame spacing exceeds the standard $\sqrt{\frac{\text{Actual frame spacing}}{\text{Standard frame spacing}}} t = \sqrt{\frac{30}{27.75}} \times .62 = .646$
 Moulded Geometric Draught (d) = **27.69** H = **14.42** f₁ = **20.05**
 t = **5.50** K = **23.58** f₂ = **4.07**
 d - t = **22.19** f₁ + f₂ = **24.12**
 Standard I/y = $\frac{s(d-t)(f_1 + f_2)}{1000} = \frac{30 \times 22.19 \times 24.12}{1000} = 16.05 \text{ ins.}^3$
 Frame in ship = **10** x **3 1/2** x **.48** B.A. at **30"** spacing, I/y = $\frac{17.23 \times 1.05}{1000} = 18.09$
DRAUGHT PERMITTED BY TRANSVERSE STRENGTH = $\frac{I/y \times 1000}{s(f_1 + f_2)} + 5.5 = \frac{18.09 \times 1000}{30 \times 25.98} + 5.5 = 28.71$

In way of Bridge
 K = 28.58 f₂ = 5.93
 f₁ + f₂ = 25.98
 17.3 ins 3