

DISCLOSED SECTION

LLOYD'S REGISTER OF SHIPPING.

(CLASSIFICATION SOCIETY RECOGNISED BY THE JAPANESE GOVERNMENT)

SURVEY FOR FREEBOARD.

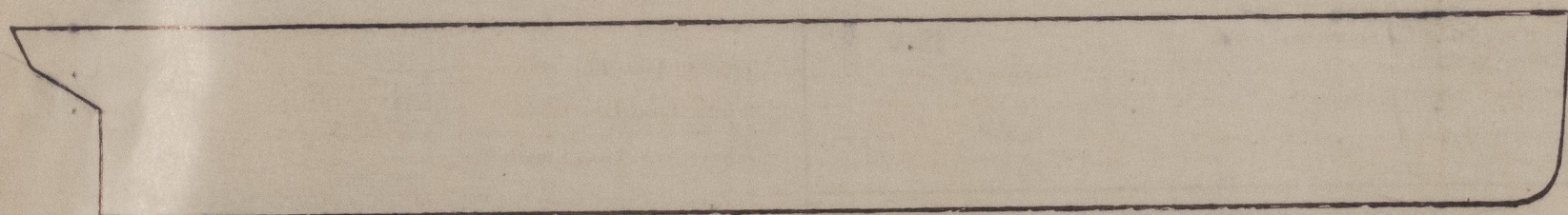
Ship's Name "KINAI MARU" "OSAKI MARU" "SAITO MARU" "HOSURU MARU"	Port of Registry Osaka.	Official No. --	No. in R.B. --	Gross Tonnage About 8400	Tonnage under Fbd. Deck = V	Date of Launch	Date when Built Building	Report Number 71
Osaka Shosen Kaisha.		Builders Mitsubishi Zosen Kaisha. Nagasaki.		Yard No. 471 - 2 3-4	Port of Survey Nagasaki.			
Type of vessel Complete Superstructure Tween deck height 8' 6"		Particulars of Classification * 100 A. 1. With Freeboard.		Position of Freeboard Deck Assumed at 7' 6" below corrected, C.S. Deck.		Date of Survey While Building.		
						Name of Surveyor G. Anderson & H. J. Cox.		

PRINCIPAL DIMENSIONS.				Depth for Freeboard = 33.37 See over. Less assumed 3 1/2" wood deck = .29	
Length between perpendiculars.....	445 ft.	Breadth Moulded = B _o	60.5 ft.	Depth Moulded to Fbd. deck = D _o	33.08 ft.
Length on Load Line.....	ft.	Thickness of Side plating in ins. x 3/12.....	ft.	Round of Beam.....	ft.
		*(2/12 if plating is joggled)		Depth from base line to top of inner bottom plating or ordinary floors.....	ft.
Length for Freeboard = L.....	445 ft.	Breadth for Freeboard = B.....	60.5 ft.	Depth for Tonnage Coef. (Art. 39) = D.....	ft.

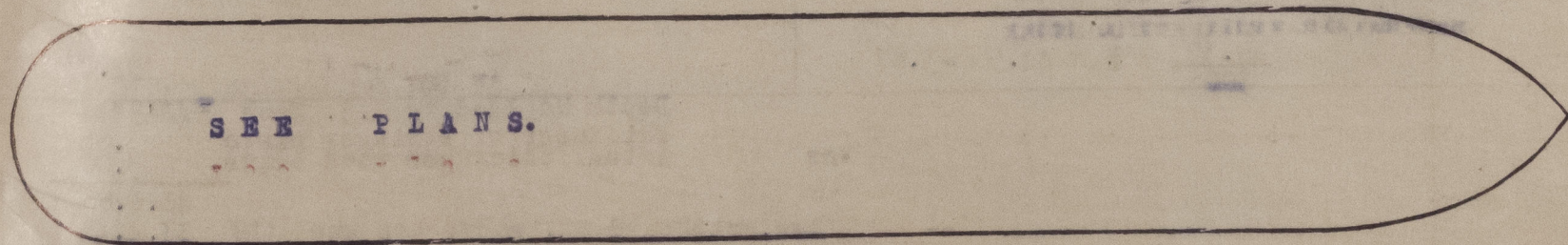
CORRECTION TO TONNAGE (Art. 39)	DEPTH OF DOUBLE BOTTOM (Art. 39)
Tonnage between top of ceiling on double bottom or ordinary floors as fitted and standard level of top of ceiling (v) = tons.	Depth of Actual Double Bottom (including plating) or Ordinary Floors ins. Depth of Standard Double Bottom (including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

SHEER (Arts. 39 and 60-63)				FRAMING (Art. 39)					
Ordinate	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		1							
2		4							
3		2							
4		4							
5		2							
6		4							
7		1							
Sum of Products = Mean Height of Sheer = S = $\frac{\text{Sum of Products}}{18}$ = ins. Standard Mean Height = S _o = $\frac{1}{3}(L/10 + 10)$ = ins. Difference x 1/12 = ft. = d ₁ Correction (Arts. 60-63) = $\frac{3}{4}(1 - e)(S_o - S)$ = ins.				Sum of Products = Sum of Products = Actual Mean Depth of framing ins. Length of Ship Standard " " " " ins. Difference x 2/12 = = 2b					

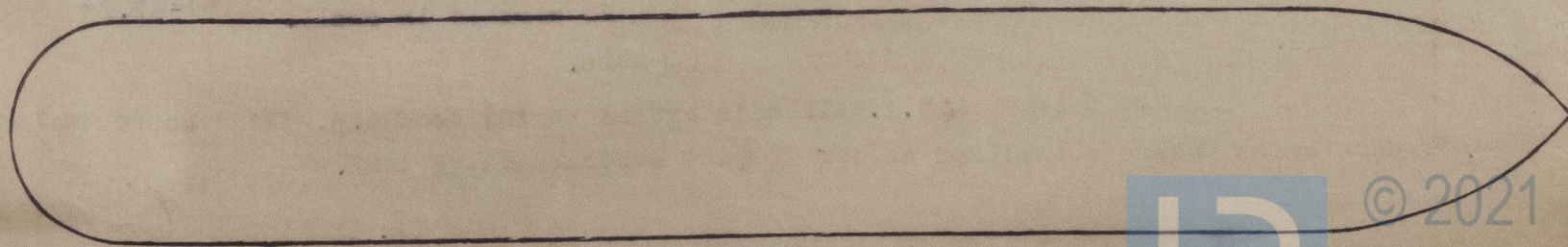
COEFFICIENT OF FINENESS (Art. 39 or 43)		do = 85% of 33.08 = 28.12 above top of keel	
$\frac{100(V + v)}{L(B - 2b)(D + d + d_1) + n}$		or $\frac{35 \times \Delta}{L \times B_o \times d_o} + 0.04$	
= + =		= $\frac{35 \times 15.460}{445 \times 60.5 \times 28.12} + 0.04 = .75$	



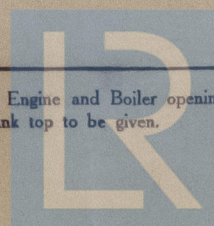
Sketch showing arrangement and height of double bottom or ordinary floors and of superstructures (unless complete plans are submitted).



SEE PLANS.



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.



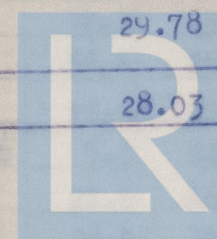
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TRANSVERSE STRENGTH.

	IN WAY OF WING F.O. TANK	IN CARGO HOLD	IN ENGINE ROOM
FRAMES Revised British Standard B.A.	10"x3½"x.42"B.A.	11"x3½"x.58" B.A.	11"x3½"x.52"B.A.
I Y OF FRAMES	17.6	26.65	24.65
(H) IN FT.	8.17	17.92	16.88
(K) IN FT. (Depth Mld. to Fbd. Dk. = 33.08')	33.58	22.33	22.33
(f 1)	11.13	29.28	26.42
(f 2)	8.29	3.70	3.70
$f_2 \times \frac{20' 3''}{20' 3''} = f_2 \times 1.0125$	--	3.75	--
(f 1 + f 2)	19.42	33.03	30.12
(f 1 + f 2) x S (S = 33")	640.86	1089.99	993.96
1000 M	17.600	26650	24.650
$\frac{1000 M}{S \times (f 1 + f 2)}$	27.48	24.45	24.8
(t) IN FT.	3.83	5.33	6.37
DRAUGHT PERMITTED BY TRANSVERS STRENGTH	31.31	29.78	31.17
REQUIRED DRAUGHT	28.03	28.03	28.03



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C.S. Deck. WOOD DECK (Arts. 5 and 6) **Correction.**

	Mean Length in ft.	Thickness in ins.	Products
Forecastle	39.9	3 1/2 = .66	
Bridge		= 2.84	113.3
Poop or R.Q.D.			
Open Deck, fwd.	79.75	3	239.25
.. aft.			

Total length = $l =$ Sum of Products = **352.55**

Sum of Products = $l =$ ins. : Sum of Products = $l =$ **.79** ins.

Mean thickness

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 to C.S. deck **40.19** ins. above Top of keel.

Thickness of Stringer Plate **.66** ins.

Thickness of Wood Deck **.79** ins.

Depth to corrected C.S. deck **40.10.45**

Depth to use in Freeboard Tables **33.4.45** ins. = $D_1 = 33.37$ ft.

SUPERSTRUCTURES.

HEIGHT (Arts. 46-48)

Standard Height = $(0.018 L + 1.2)$ ft. = **11.2** ft.

	Complete Superstructure	Forecastle	Bridge	Poop or R.Q.D.
Actual				
Standard				

CLOSING APPLIANCES (Arts. 50 and 54)

	Forecastle		Bridge		Poop or Raised Quarter Deck
	Forward End.	Aft. End.	Forward End.	Aft. End.	
Means of Closing openings in bulkhead					
Corresponding Class					

EFFECTIVE LENGTH (Arts. 55 and 56)

	Mean Length	Coef. Art. 56	Height Coef.	Products
Forecastle closed part				
.. open part				
Bridge closed part				
.. open part fwd.				
.. .. aft.				
Poop closed part				
.. open part				

Total Effective Length = **154.40**

Length of Vessel = $l =$ **154.40**

Corresponding Coef. in Table (Art. 49) = $e =$ **0.63**

Reduction for Complete Superstructure = **39.0** ins.

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

$l + \frac{1}{2}(1-p)(L-l) =$ **154.40** ft.

(* See Art. 90)

CORRECTION FOR PROPORTIONS L/D (Art. 58)

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

Correction = **3.67** 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. **Ass. Freeboard Dk. above top keel (D) 33.4.45**

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 **No scuttle in shell. (*) = 92.2"**

State if there are any cargo ports or scuppers through sides of vessel below upper deck **None.**

State any special features in the construction of the vessel **W.T. Bulkheads extend to 2nd deck i.e. 32'3" above keel**

Weather deck hatch beams scantlings as per Compleat Superstructure deck.

Sister vessels

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

DETAILS OF CONSTRUCTION OF WEATHER DECK HATCHWAYS.

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Length and Breadth	27 x 20	35'9" x 20	35'9" x 20	24'9" x 20	33'0" x 20	24'9" x 20
Height above deck and thickness of side and end coaming	30 x .44	30" x .44	30" x .44	30" x .44	30" x .44	30" x .44
Shifting Beams	15 x .34	16 1/2 x .35	13 x .34	13 x .34	13 x .34	13 x .34
* Fore and Afters	4 x 3 x .44	4 x 3 x .44	4 x 3 x .44	4 x 3 x .44	4 x 3 x .44	4 x 3 x .44
Thickness of hatches	3" O.P.	3" O.P.	3" O.P.	3" O.P.	3" O.P.	3" O.P.

Remarks **Shifting beams as for Complete Superstructure Type.**

* When the fore and afters are of wood the depth should be stated from the underside of hatches.

Least LONGITUDINAL MODULUS.

Height of Assumed Axis above ~~base~~ top of keel = **16.3** feet.

Section at **Engine Opening.**

BELOW ASSUMED AXIS.						ABOVE ASSUMED AXIS.					
Item	Scantlings	Area	Lever	Moment	Mt. of Inertia	Item	Scantlings	Area	Lever	Moment	Mt. of Inertia
Flat Keel	55 x .85 x 1/2	23.4	16.3	381	6210	Top Deck Str.	64 x .66	42.2	24.6	1038	25530
Centre Girder	21 x .62 x 1/2	6.5	15.4	100	1540	.. Plating	62.5 x .49	30.6	24.8	759	18820
Centre Girder	21 x .62 x 1/2	6.5	12.2	79	970	.. Plating	62.5 x .49	30.6	25.1	768	19280
C.G. btm. ang.	5 x 5 x .6 x 1/2	3.1	16.2	50	810	.. Str. Ang.	6 x 6 x .66	7.5	24.6	185	4550
C.G. top angles	3 1/2 x 3 1/2 x .56 x 1/2	1.8	11.4	21	240	2nd Deck Str.	52 x .44	22.9	16.0	366	5860
T.T. Cr. Strake	88 x .56 x 1/2	24.6	11.3	278	3150	.. Plating	62.5 x .40	25.0	16.0	400	6400
T.T. plating	67					.. Str. Ang.	74.5 x .40	29.8	16.0	477	7630
..	69					..					
..	69	.48	138.4	11.3	1564	3rd Deck Str.	51.5 x .34 x 1/2	8.8	7.0	61	430
..	69					.. Plating	63 x .30 x 1/2	9.4	7.0	66	460
Margin Plate	57.5 x .56	32.2	13.2	425	5610	..	50.5 x .30 x 1/2	7.6	7.0	53	370
Gusset	6 x .48	2.9	11.0	32	350	.. 3" flange		.5	7.1	4	30
.. Angle	5 x 5 x .56 x 1/2	10.6	13.2	140	1850	.. Str. Ang.					
Shell Strake A	71.88 x .67	48.2	16.2	780	12650	Sheerstrake	72.0 x .78	56.2	22.3	1253	87980
.. B	72.0 x .67	48.2	16.2	780	12660	Strake below	71.81 x .65	46.7	16.8	784	13180
.. C	71.88 x .67	48.2	16.0	770	12320	Shell Strake	71.75 x .65	46.6	11.3	527	5960
.. D	71.75 x .67	48.1	16.0	770	12300	..	72.06 x .65	46.8	5.8	272	1580
.. E	56.56 x .67	37.9	13.9	527	7320	..	37.53 x .65	24.4	1.6	39	60
.. F	50.63 x .65	32.9	10.1	333	3360	Totals below assumed axis					
.. H	71.88 x .65	46.7	5.4	252	1360	Totals above assumed axis					
.. J	34.35 x .65	22.3	1.4	31	40	Sum or Difference					
Totals below assumed axis		617.7		7871	109190						
.. above assumed axis		478.7		8144	165700						
Sum or Difference		1096.4	.25 up	273	274890						

Moment of Inertia about assumed axis = **549780**

Moment of Inertia about Neutral Axis = **549640**

Distance from Neutral Axis to top of Strength deck beam at side = **24.2** ft.

MODULUS OF SECTION = **22710**

Actual Modulus = **13.39 x 60.5 = 28.04 ft.**

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

Minimum Side Plating (Art. 77) $\frac{0.105 \times 445 + 17}{100} = .637$; Standard Frame Spacing (Art. 78) = $.025 \times 445 + 17 = 28.125$

Actual Side Plating = **.65** ; Actual Frame Spacing = **33"**

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

Moulded Geometric Draught (d) = **H =** **f₁ =**

t = **K =** **f₂ =**

d - t = **f₁ + f₂ =**

Standard $I/y = \frac{s(d-t)(f_1 + f_2)}{1000} = \frac{33 \times 21.61 \times 30.17}{1000} = 21.52$

Frame-in ship = **1000** at spacing, $I/y =$

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

For particulars of Calculations see attached sheet.