

DISCLOSED SECTION

## LLOYD'S REGISTER OF SHIPPING.

(CLASSIFICATION SOCIETY RECOGNISED BY THE JAPANESE GOVERNMENT)

## SURVEY FOR FREEBOARD.

Ship's Name <b>ASAMA MARU</b>	Port of Registry --	Official No. --	No. in R.B. --	Gross Tonnage <b>About 16800</b>	Tonnage under Fbd. Deck = V --	Date of Launch <b>30th Oct. 1928</b>	Date when Built --	Report Number <b>54</b>
Owners <b>Nippon Yusen Kaisha</b>		Builders <b>Mitsubishi Zosen Kaisha Nagasaki.</b>			Yard No. <b>450</b>	Port of Survey <b>Nagasaki.</b>		
Type of vessel <b>Light Scantling" with Combined Bridge &amp; Focle.</b>	Particulars of Classification <b>* 100 A.L. "With Freeboard"</b>		Position of Freeboard Deck <b>Upper Deck</b>		Date of Survey <b>While Building.</b>			
					Name of Surveyor <b>G. Anderson and H.J. Cox.</b>			

## PRINCIPAL DIMENSIONS.

Length between perpendiculars	<b>560.0</b>	ft.	Breadth Moulded = B <sub>0</sub>	<b>72.00</b>	ft.	Depth Moulded to Fbd. deck = D <sub>0</sub>	<b>42.5</b>	ft.
Length on Load Line	<b>560.0</b>	ft.	Thickness of Side plating in ins. x $\frac{1}{12}$	<b>+</b>	ft.	Round of Beam	<b>+</b>	ft.
			* $\frac{2}{12}$ if plating is jagged)			Depth from base line to top of inner bottom plating or ordinary floors	<b>-</b>	ft.
Length for Freeboard = L	<b>560.0</b>	ft.	Breadth for Freeboard = B		ft.	Depth for Tonnage Coef. (Art. 39) = D		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) = -- tons.

## DEPTH OF DOUBLE BOTTOM (Art. 39)

Depth of Actual Double Bottom (including plating) or Ordinary Floors	--	ins.
Depth of Standard Double Bottom (including plating) or Ordinary Floors	--	ins.
Difference	--	
x $\frac{1}{12}$	--	= d.

## SHEER (Arts. 39 and 60-63)

Ordinate	Height of Sheer in inches.	S.M.	Products
1 P.P.	<b>108</b>	1	<b>108</b>
2	<b>48</b>	4	<b>192</b>
3	<b>12</b>	2	<b>24</b>
4	<b>0</b>	4	<b>0</b>
5	<b>4.32</b>	2	<b>8.64</b>
6	<b>17.28</b>	4	<b>69.12</b>
7	<b>39.00</b>	1	<b>39.00</b>

Sum of Products = **440.76**

Mean Height of Sheer =  $S = \frac{\text{Sum of Products}}{18} = \frac{440.76}{18} = 24.49$  ins.  
 Standard Mean Height =  $S_0 = \frac{1}{2}(L/10 + 10) = \frac{1}{2}(560/10 + 10) = 22.00$  ins.  
 Difference  $2.48 \times \frac{1}{12} = 0.206$  ft. = d.  
 Correction (Art. 60-63) =  $\frac{1}{4}(1-e)(S_0 - S) = \frac{1}{4}(1-0.206)(22.00 - 24.49) = -0.86$  ins.

## 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 =

Sum of Products = Actual Mean Depth of framing ins.  
 Length of Ship  
 Standard " " " " ins.  
 Difference x  $\frac{2}{12}$  = 2b

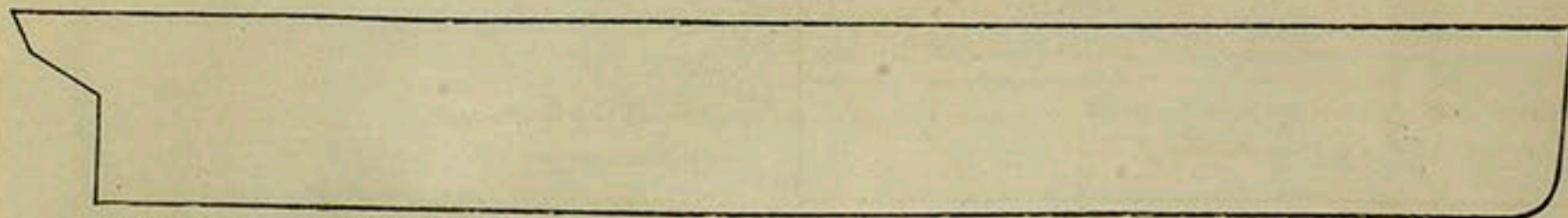
## COEFFICIENT OF FINENESS (Art. 37 or 43)

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

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

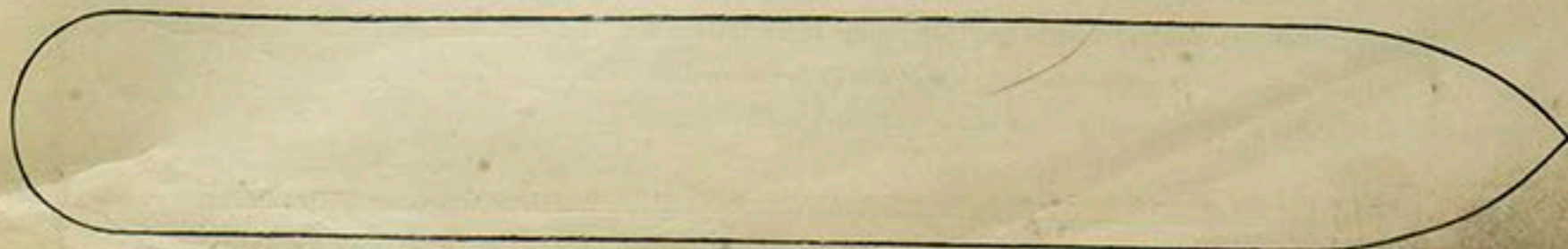
= + =

$$\frac{35 \times 29160}{560 \times 72 \times 36.13} + 0.04 = .74$$



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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## WOOD DECK (Arts. 5 and 6)

	Mean Length in ft.	Thickness in ins.	Products
Forecastle	479.0	3.44=3.06	1465.74
Bridge			
Poop or R.Q.D.			
Open Deck, fwd.	81.0	3"	243.00
" " aft.			
Total length = $l$ =	Sum of Products =		1708.74
Sum of Products = $t$ =	ins. :	Sum of Products = $t$ =	3.05 ins.

## CORRECTION FOR DEPTH &amp; CORRECTION FOR FREEBOARD.

**Dinning Saloon**  
**Amidships**  
**Deck**  
**Composition.**

If no sheathing fitted amidships =  $t_1 = \pm^* 3.05$  ins. (Arts. 6 and 57 p. 1)  
 If sheathing is fitted amidships =  $(t - t_1) = \pm^*$  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	42	ft.	6	ins.
Thickness of Stringer Plate			.44	ins.
Thickness of Wood Deck Amidships				ins.
Correction for partial wood deck	$\pm$		3.05	ins.
Depth to use in Freeboard Tables	42	ft.	9.5	ins. = $D_1 = 42.79$ 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		9.0 = 1	9.0 = 1	9.0 = 1
Standard				

## CLOSING APPLIANCES (Arts. 50 and 54)

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

## EFFECTIVE LENGTH (Arts. 55 and 56)

	Mean Length	Coef. Art. 56	Height Coef.	Products.
Forecastle closed part	479.0	1	1	479
" open part				
Bridge closed part				
" open part fwd.				
" " aft.				
Poop closed part				
" open part				

Total Effective Length = 479

Total Effective Length =  $r = .86$

Corresponding Coef. in Table (Art. 49) =  $e = .54$

Reduction for Complete Superstructure = 39.00 ins.

Product = -21.06 ins.

Correction for Superstructures = -21.06 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  $\frac{1}{10}$  covered] =  $.17 \times .50 \times 46.52 = +3.95$  ins.

## CORRECTION FOR ROUND OF BEAM (Art. 59)

Standard Round of Beam =  $\frac{\text{Length of Beam in ins.}}{50} = 17.28$  ins.  
 Correction =  $\frac{1}{2} (\text{Standard Round of Beam} - \text{Actual Round of Beam})$   
 =  $\frac{1}{2} (17.28 - 4) = + 3.32$  ins.

## CORRECTION FOR FREEING PORTS

(in vessels less than 15 ft. Depth Art. 64)

Length of bulwark in feet each side = -- ft.  
 Area of Freeing ports each side = -- sq. ft.  
 Area of Freeing ports required by Table = -- sq. ft.  
 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 =  $-.012 (80 - D) D_1$  or  $1.2 (r - 0.5) D_1$  = -- ins.

## SUMMARY.

Freeboard by Tables	138.00	ins.
Correction for Sheer	+	.86
" " Partial Wood Deck		3.05
" " Superstructures		21.06
" " Proportions L/D	3.95	
" " Round of Beam	3.32	
" " Freeing Ports		
" " Access to Crew's Quarters		
Totals	7.27	24.97
Net Correction		17.70
Geometric Freeboard	120.3	ins.
Corresponding Geometric Draught (mld.)	32.51	ft.
Moulded Draught limited by $\left\{ \begin{array}{l} \text{non-design} \\ \text{flame strength} \\ \text{displacement through} \\ \text{position of the center} \end{array} \right\}$ to	28.37	ft.
Corresponding Freeboard (Summer)	170.00	ins.

Winter Freeboard (Art. 22) =  $\frac{1}{2} (D_1 - 10) + r/45 \times (59 - D_1)$   
 = -- ins.

Tropical Freeboard (Art. 24) do. do. = -- 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 = - 7.09 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) 170.00 ins.  
 Fresh Water Load Line above centre of disc. 7.1 ins.  
 Tropical Load Line above " " " ins.  
 Winter Load Line below " " " ins.  
 Winter N.A. Load Line below " " " ins.  
 Vertical distance from the point of intersection of the extended line of the upper surface of **steel str.** of the upper 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? --

State the vertical distance from base line at top of keel to lower edge of lowest side scuttle About 32' - 0"

State if there are any cargo ports or scuppers through sides of vessel below upper deck Yes

State any special features in the construction of the vessel All bulkheads extend w.t. to upper deck.

Sister vessels

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



DETAILS OF CONSTRUCTION OF WEATHER DECK HATCHWAYS.

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
	Bridge Dk 15'9"x16'0"					
Length and Breadth						
Height above deck and thickness of side and end coaming	33" x .44			Hatches Trunked from		
Shifting Beams { Number and Material Scantlings	3 Steel 12 x .32 3 1/2 x 3 x .42			Promenade Deck.		
*Fore and Afters { Number and Material Scantlings	None					
Thickness of hatches	3"					
Remarks						
* When the fore and afters are of wood the depth should be stated from the underside of hatches.						

top of keel LONGITUDINAL MODULUS to Promenade Deck (Strength deck).  
Height of Assumed Axis above base = 24.0 Section at Machinery openings frame 84.

STAR.  
PORT

BELOW ASSUMED AXIS.						ABOVE ASSUMED AXIS.					
Item	Scantlings	Area	Lever	Moment	Mt. of Inertia	Item	Scantlings	Area	Lever	Moment	Mt. of Inertia
Flat Keel	33 x .96	31.7	24.0	761	18260	Top Deck Str.	72.0 x .54	38.9	36.0	1400	50400
" " "						" " "	74.5 x .46	34.3	36.3	1244	45150
" " "						" " Plating	110.5 x .46	50.9	36.8	1872	68870
" " Girder	1 x 69 x .75	25.9	21.1	546	11520	str. L	6 x 6 x .54	6.2	35.8	222	7930
" " Do	1 x 41 x .75	15.4	21.1	324	6840	Bridge Dk str.	45 x .50	22.5	27.6	622	17150
" " Side Gird	37 x .75	27.8	21.0	583	12240	" " "	42 x .46	19.3	27.8	537	14940
" " "						Upper Dk str	110.5 x .46	50.9	28.3	1440	40770
T.T. Cr. Strake						" " "	45 x .44	19.8	18.5	366	6780
T.T. plating	347 x 1.00	347.0	18.2	6320	114900	" " "	44.5 x .40	17.8	18.6	331	6170
" " "						Deck str	149.5 x .40	59.8	18.8	1124	21140
Continuous Gusset	12 x .62	7.4	18.3	135	2480	2nd Dk str	45 x .34	15.3	10.5	160	1680
" " Do	24 x .62	14.8	17.9	265	4750	" " Plating	44.25 x .28	12.4	10.6	131	1390
" " "						" " "	150.75 x .28	42.2	10.8	456	4920
" " "						" " "					
Margin Plate	50 x .64	32.0	20.0	640	12800	" " Str. Ang.					
Do top	6 x 6 x .64	7.3	18.4	134	2470	3rd Deck Str.	45 x .34	15.3	2.5	38	100
Do bottom	6 x 6 x .64	7.3	21.7	158	3440	" " Plating	50.5 x .30	15.2	2.6	40	100
Shell Strake A	75 x .72	54.0	23.8	1286	30580	" " "					
" " B	72 x .72	51.8	23.7	1228	29120	curtain Plate	15 x .44	6.6	35.9	237	8510
" " C	72 x .72	51.8	23.5	1217	28600	" " Str. Ang.					
" " D	66 x .72	47.5	23.4	1112	26030	Sheerstrake	93 x .70	65.1	32.1	2088	67010
" " E	72 x .72	51.8	23.1	1197	27650	Strake below	84 x .70	58.8	25.1	1475	37030
" " F	72 x .72	51.8	21.3	1103	23490	Shell Strake	90 x .72	64.8	18.4	1192	21920
" " G	69 x .72	49.7	17.0	845	14360	" " "	72 x .72	51.8	12.1	627	7590
" " H	75 x .72	54.0	11.5	621	7140	" " "	75 x .72	54.0	6.3	340	2140
" " J	78 x .72	56.2	5.6	315	1760	Part L	45 x .72	32.4	1.87	61	110
Part L	33 x .72	23.8	1.4	33	50						
Totals below assumed axis		1009.0		18823	378480	Totals above assumed axis		754.3		16003	431800
" " above assumed axis		754.3		16003	431800						
Sum or Difference		1763.3		2820	810280						

Moment of Inertia about assumed axis 1620560

Neutral Axis above assumed axis (x) 1763.3 1.60  
Correction = (Total Area x x<sup>2</sup> x 2) = 1763.3 x 2 x 1.60<sup>2</sup> = 9020  
Moment of Inertia about Neutral Axis 1611540  
Distance from Neutral Axis to top of Keel 37.6 ft.

MODULUS OF SECTION = 42860

DRAUGHT PERMITTED BY LONGITUDINAL STRENGTH (Arts. 81-86) = Actual Modulus / f. B<sub>o</sub> = 42860 / 19.53 x 72.0 = 30.48 feet.

TRANSVERSE MODULUS.

Minimum Side Plating (Art. 77)  $\frac{0.105 \times 560}{100} + 17 = .758$ ; Standard Frame Spacing (Art. 78) =  $.025 \times 560 + 17 = 31"$

Actual Side Plating = .72; Actual Frame Spacing = 34"

If actual frame spacing exceeds the standard  $\sqrt{\frac{\text{Actual frame spacing}}{\text{Standard frame spacing}}} = \sqrt{\frac{34}{31}} \times .758 = .794$

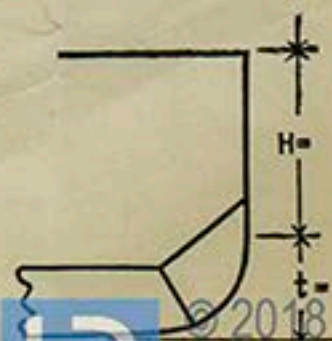
Moulded Geometric Draught (d) = 32.51 H = 19.62 f<sub>1</sub> = 34.77  
IN MAIN ENGINE t = 6.88 K = 28.50 f<sub>2</sub> = 5.9  
ROOM d - t = 25.63 f<sub>1</sub> + f<sub>2</sub> = 40.67

Standard I/y =  $\frac{s(d-t)(f_1+f_2)}{1000} = \frac{34 \times 25.63 \times 40.67}{1000} = 35.43$

Frame in ship 9 x 3 x .40 12 x 3 x .42 at 34" spacing, I/y = 24.6

DRAUGHT PERMITTED BY TRANSVERSE STRENGTH =  $\frac{I/y \times 1000}{s(f_1+f_2)} + t = \frac{24.6 \times 1000}{34 \times 40.67} + 6.88 = 24.67$

Note:- 30" web frames fitted every 4th or 5th frame.



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