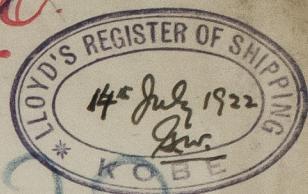


DISCLOSED SECTION COPY



No 322

AL NUMBER 62 VESSELS NAME HARUNA MARU PORT OF SURVEY Nagasaki
No. OF REPORT 6 DATE 14th July 1922
NAME OF SURVEYOR R. Crawford.

Full scantling vessel with
poop Bridge and Forecastle.
* 100 A.L. Lloyd's
Teishinsho Rule 1st Class.
Upper Deck
Nippon Yusen Kabushiki Kaisha
Passenger and Cargo.
Ocean going
Mitsubishi Zosen Kaisha Ltd.
1922

PRINCIPAL DIMENSIONS

REGISTERED 495 FT BREADTH MOULDED = 62.00 FT DEPTH MOULDED 37 FT 0.0
ON LOAD LINE 494.33 FT THICKNESS SIDE PLATING 0.21 FT THICKNESS STRINGER PL + 0.52
IN INS $\times \frac{1}{2}$ (.82 $\times \frac{1}{2}$) 0.21 FT THICKNESS WOOD DECK + 3.00
JOGGED $\times \frac{1}{2}$ = $\times \frac{1}{2}$ = + FT CORRECTION FOR PARTIAL
WOOD DECK OR SUPER- 0.16
STRUCTURES (ARTS 5+6) -
CORRECTED DEPTH 37 3.68
FOR FREEBOARD 494.33 FT BREADTH FOR FREEBOARD 62.21 FT DEPTH FOR FREEBOARD 37.31 FT

COEFFICIENT OF FINENESS (ART. 39)

$$\frac{100(V \pm v)}{L(B-2b)(D+d+d_1) + \dots} = \frac{100(8392.2 - 4.64)}{494.33 \times (62.21 - .56) \times 34.16 + 0 + .88} = 0.79$$

TONNAGE UNDER FREEBOARD D_k = 8392.2

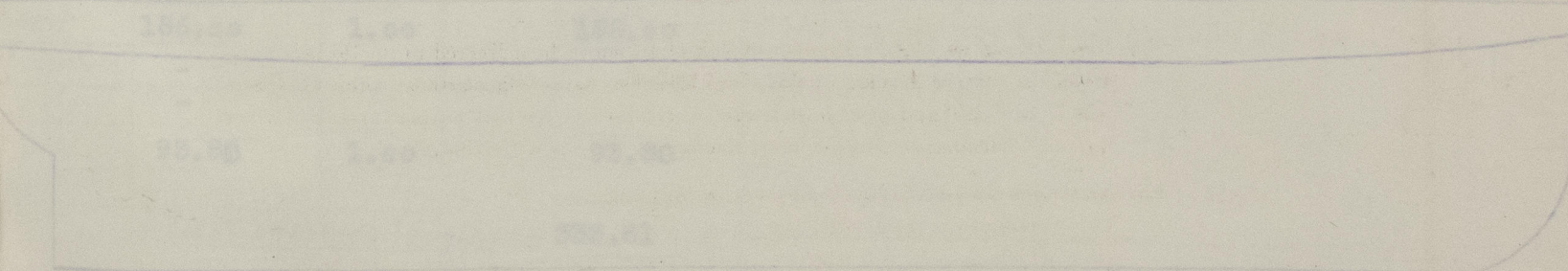
CHANGE BETWEEN TOP OF DOUBLE BOTTOM OR ORDINARY FLOORS (INCLUDING CORRECTIONS) AND LEVEL OF TOP OF CEILING D_{100} = 4.64

LENGTH OF VESSEL = 494.33 FT B = BREADTH OF VESSEL OUTSIDE PLATING AT BRONDEST PART = 62.21 FT

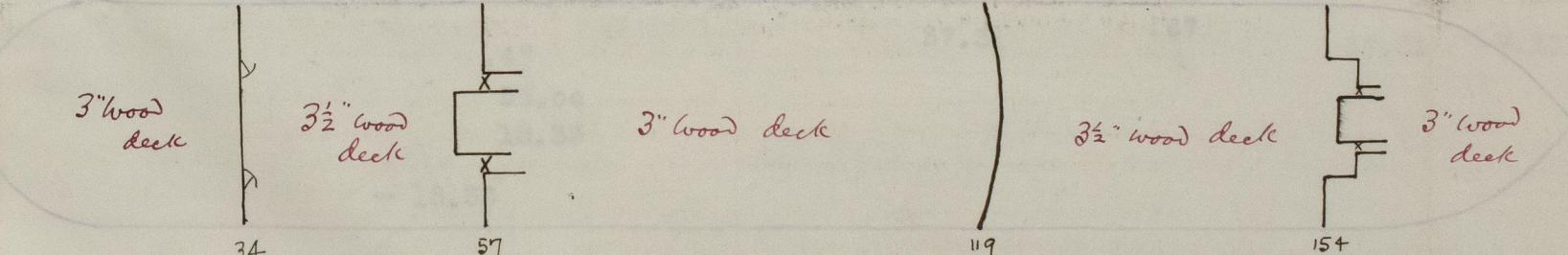
DEPTH FROM TOP OF FREEBOARD DECK TO TOP OF LOWER BOTTOM PLATING OR ORDINARY FLOORS = 34.16 FT

FRAMEWORKING { ACTUAL = 12.88 INS DEPTH DOUBLE BOTTOM { ACTUAL = 52.58 INS
{ STANDARD = 9.50 INS { STANDARD = 52.08 INS
DIFFERENCE = 3.38 $\times \frac{1}{2}$ = .56 FT $\times \frac{1}{2}$ = .50 FT

SHEER { ACTUAL = 30.37 INS τ = ZERO FOR VESSELS WITH DOUBLE BOTTOMS
{ STANDARD = 19.81 INS AND 0.02 FOR VESSELS WITH ORDINARY FLOORS
DIFFERENCE = 10.56 $\times \frac{1}{2}$ = 0.88 FT



SHOWING HEIGHT OF FLOORS, ARRANGEMENT & HEIGHT OF DOUBLE BOTTOM & OF SUPERSTRUCTURES WITH BULKHEADS & RAKE OF STEM. ALSO SCANTLING OF
BULKHEADS IF NOT THE SAME THROUGHOUT (UNLESS COMPLETE PLANS ARE SUBMITTED)



25. PARTIAL WOOD DECK (Arts. 57 & 6)

MEAN LENGTH	THICKNESS OF WOOD DECK	PRODUCTS
52.6	3.0	157.8
190.0 mean	3.0	570.0
93.8	3.0	281.4
157.9	3.5	552.6

Sum of products = 1561.8

actual 3.00

1561.8 = 3.16
494.3

3.00 - 3.16 = - 0.16

26. CORRECTION OF DEPTH (Arts. 57 & 6)

DEPTH of Stringer Plate	37	0.0
wood deck on stringer plate		0.52
		3.00
		.16
USE IN FREEBOARD TABLE	37	3.68
		37.31

27. FOR HEIGHT OF SUPERSTRUCTURES (Arts. 46 to 49)

Height = (0.018 + 1.2) ft = 7.5 ft	
Complete Superstructure	7.75
Forecastle	9.0
Bridge	8.0
Prop	7.5

28. FOR LENGTH OF SUPERSTRUCTURES (Arts. 49 to 56)

MEAN LENGTH	COEF	HEIGHT	PRODUCTS
51.29	1.00		51.29
3.36	.75		2.52
186.00	1.00		186.00
93.80	1.00		93.80

Total effective lengths = 333.61

333.61

494.33

.67

.47

39.00

18.33

- 18.33

29. CORRECTION FOR PARTIAL WOOD DECK (Art. 57)

Deck fitted amidships, - t = - 0.16

30. VESSELS, EFFECTIVE LENGTH OF SUPERSTRUCTURES (Art. 87)

(L - L) = (1 -) () =

CORRECTION OF PROPORTIONS L/D (Art. 57)

(1) When depth is less than 25 ft.

$$\frac{1}{100} (1 - \frac{2}{3}) (D + 10) (L - 12 D) = \frac{1}{100} (1 - \frac{2}{3}) (+ 10) (- 12)$$

(2) When depth is 25 ft or greater

$$0.17 (1 - \frac{2}{3}) (L - 12 D) = 0.17 (1 - \frac{2}{3}) (494.33 - 12 \times 37.31) = 3.96$$

CORRECTION FOR ROUND OF BEAM (Art. 29)

Standard round of beam = Length of beam in ft. 14.88"

$$\text{Correction} = \frac{1}{4} (\text{Standard Rd. of Bm} - \text{Actual Rd. of Bm}) = \frac{1}{4} (14.88 - 15.50) = -0.16$$

CORRECTION ON MAX SHEER (Arts. 60 to 62)

ORDINAL	HEIGHT OF SHEER	HEIGHT OF SHEER	MULTIPLIER	PRODUCTS
1	S ₁	3 - S ₁	1	10.00
2	S ₂	S ₂ - S ₁	4	18.00
3	S ₃	S ₃ - S ₂	2	2.50
4	S ₄		4	0.00
5	S ₅	3 - S ₅	2	1.20
6	S ₆	S ₆ - S ₅	4	8.80
7	S ₇	S ₇ - S ₆	1	5.06

Sum of products = 45.56

Mean height of sheer, S = $\frac{\text{Sum of products}}{18} = 30.37$

Standard mean sheer, S₀ = $\frac{1}{3} (\frac{L}{10} + 10) = 19.81$

$$\text{Correction} = \frac{3}{4} (1 - e) (S_0 - S)$$

$$= \frac{3}{4} (1 - e) (19.81 - 30.37) = - 4.20$$

CORRECTION FOR FREEING PARTS AND ACCESS CREW'S QTRS (Arts. 64 to 67)

Length bulwarks in ft. each side

Area freeing ports each side =

Area freeing ports reqd. by Table Art. 64

Formulae if applicable

$$1.5 (7 - 0.5) \times D - 1.2 (- 0.5) \times$$

$$\text{or } 0.012 (80 - 1) \times D - 0.012 (80 -)$$

WINTER FREEBOARD (Art. 82)

Add to Summer Fbd. $\frac{1}{4} (D - 10) + \frac{1}{45} (39 - D)$

$$\frac{1}{4} (37.31 - 10) + \frac{.67}{45} (39 - 37.31) = 7.15 \text{ ins} = 7.2"$$

WINTER NORTH ATLANTIC (Art. 23)

Add 2 ins to Winter Fbd. except for mill deck and

Shelter dk. vessels (Arts. 23, 49 & 89)

Ratio effective length superstructures to vessel length =

Additional Freeboard (Art. 23) =

Tropical Freeboard (Art. 24)

Deduct from Summer Freeboard $\frac{1}{4} (D - 10) + \frac{1}{45} (39 - D)$ ins

$$\frac{1}{4} (- 10) + \frac{1}{45} (39 -) = 7.2$$

FRESH WATER

Deduct from Summer Fbd.

$\frac{1}{4} \times \text{Draught in ft. at Summer Fbd.}$



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TABLE OF COMPUTATION

FREEBOARD BY THE TABLES 119.23 ins.

	ins.
for Partial Wood Deck -	0.16
Superstructures -	18.33
Proportions L/D 3.96 -	-
Round of Beam -	0.16
Sheer -	4.20
Freeing ports & access -	-
Totals + 3.96 -	22.85
Net Correction	18.89

Distance from upper edge of line indicating the fresh water line of the disc	100.34 ins. = 100.3
Distance from centre of Fresh Water line	7.2 ins. measured upward
Distance from centre of Tropical Load line	7.2 ins. measured upward
Distance from centre of Winter Load line	7.2 ins. measured downward
Distance from centre of Winter N.A. Load line	- ins. measured downward
Distance from the point of intersection of the extended line of surface of wood upper deck at the midline of the vessel with the outer plating to the upper horizontal line indicating freeboard deck.	0.00 ins. measured upward
Corresponding to Geometric Freeboard	= 28.93 ft.

SIDE FRAMING

DESCRIPTION	SIZE OF	HEIGHT TO WHICH
VESEL	SIZE OF FRAME	FRAME ARE CARRIED
9 x 3 1/2 x .44 B.A.	-	-
- do. -	-	-
Spacing 11 x 3 1/2 x .58 B.A.	-	-
Frames 12 x 3 1/2 x 3 1/2 x .56	5 x 3 1/2 x .56	2nd deck
Recess. way of deck	- do -	-
elsewhere	- do -	3 1/2 x 3 1/2 x .56 2nd deck.

in way of 3rd deck 54"

STRENGTH FORMULAE

Standard longitudinal Modulus (Arts. 75 & 76)

$$\frac{I}{Y} = f \cdot a \cdot b = \text{FULL SCANTLING VESSEL}$$

Standard thickness side plating (Art. 77)

$$\frac{0.105L + 17}{100} = \frac{0.103L + 17}{100}$$

Actual thickness =

Standard frame spacing (Art. 78)

$$0.025L + 17 = 0.025L + 17$$

or 21" if L be not greater than 160 ft =

Actual frame spacing =

Where the frame spacing exceeds the standard the standard thickness of side plating is to be taken as

$$S = \frac{C}{S_0} \times t = \text{ins}$$

S = Actual frame spacing

S₀ = Standard frame spacing

t = " thickness side plating

Standard Transverse Modulus (Arts. 79 & 80)

$$S \cdot (d - f) \cdot (f_1 + f_2) = \frac{S \cdot (d - f) \cdot (f_1 + f_2)}{1000}$$

Actual Transverse Modulus =

DRAUGHT DUE TO LONGITUDINAL STRENGTH (Art. 81)

$$\text{Draught} = \frac{M}{f \cdot B}$$

DRAUGHT DUE TO TRANSVERSE STRENGTH (Art. 84)

$$\text{Draught} = \frac{1000M}{S(f_1 + f_2)} + t = \frac{1000M}{S(f_1 + f_2)} + t$$



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CLOSING APPLIANCES FOR SUPERSTRUCTURES.

	FORECASTLE	BRIDGE		POOP
		FORWARD END	AFTER END	
MEANS OF CLOSING OPENING IN BULKHEAD	storm boards half height	W.T. Bulkhead No opening	storm boards half height	W.T. Hinged Doors.
CORRESPONDING CLASS (ART. 51-54)	1V	1	1V	1

ACCESS TO CREW'S QUARTERS IN VESSELS HAVING A FORECASTLE AND LONG POOP AND IN VESSELS OF LESS THAN 15 FT. MOULDED DEPTH HAVING A FORECASTLE, BRIDGE AND POOP.

ARE CREW BERTHED IN BRIDGE HOUSE OR FORECASTLE?

HEIGHT AND BREADTH OF GANGWAY.

CORRECTION (ART. 15 & 16) = $0.012(80 - L) D$ INS. = $0.012(80 -)$ INS. =
OR $1.2(4 - 0.5) D$ INS. = $1.2(- 0.5)$ INS. =

DETAILS OF CONSTRUCTION OF THE WEATHER DECK HATCHWAYS.

	Nº 1	Nº 2	Nº 3	Nº 4	Nº 5	Nº 6	Nº 7	Nº 8
LENGTH AND BREADTH	20.25	30.0	Bridge Dk. 12.0 x	15.0	24.0	Poop Dk. 18.0		
WOOD	x 18.0	x 20.0	16.0	x 20.0	x 20.0	x 20.0		
HEIGHT ABOVE DECK AND THICKNESS OF COAMINGS	30" x.44	30"x.50	30"x.44	30" x.44	30" x.44	30" x.44		
NUMBER AND MATERIAL	3	5	2	2	4	3		
SCANTLING	mild stl 16 x.36	mild stl 18 x.36	mild stl 11 x.34	mild stl 18 x.36	mild stl 17½ x.36	mild stl 12½ x.36		
	4x3x.44	4x3x.44	3½x3x.50	4x3x.44	4x3x.44	4x3x.44		
NUMBER AND MATERIAL	-	-	-	-	-	-		
SCANTLING	-	-	-	-	-	-		
THICKNESS OF HATCHES	3" O.P	do	do	do	do	do		
REMARKS								

* WHEN THE FORE AND AFTERS ARE OF WMD THE DEPTH SHOULD BE STATED FROM THE UNDERSIDE OF THE HATCHES.

ARE THE ENGINE AND BOILER OPENINGS COVERED BY A BRIDGE, POOP, RAISED QUARTER DECK, OR ENCLOSED BY A STRONG STEEL DECKHOUSE?

Bridge

IF OPENINGS ARE NOT SO PROTECTED GIVE THICKNESS OF PLATING AND SCANTLING AND SPACING OF STIFFENERS OF CASINGS.

ARE SUITABLE MEANS PROVIDED FOR CLOSING ALL OPENINGS IN THEM IN BAD WEATHER?

Yes

STATE VERTICAL DISTANCE FROM BASE LINE AT TOP OF KEEL TO LOWER EDGE OF LOWEST SIDE SCUTTLE.

STATE IF THERE ARE ANY CARGO PORTS OR SCUFFERS THROUGH SIDES OF VESSEL BELOW UPPER DECK.

Yes

See Plan

STATE ANY SPECIAL FEATURES IN THE CONSTRUCTION OF THE VESSEL.

Sister Vessel to T.S.S. "Hakozaki Maru".



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