

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Ship's Name HARIMA. Nos. 453/4.	Official Number	Nationality and Port of Registry JAPANESE.	Gross Tonnage	Date of Build	Port of Survey
Moulded Dimensions: Length 535.93 Breadth 70.21 Depth 38.71 <i>To top of Rudder Stock</i>					Date of Survey 9/5/50.
Moulded displacement at moulded draught = 85 per cent. of moulded depth 27125 tons					Surveyor's Signature
Coefficient of fineness for use with Tables .767					Particulars of Classification 100 A carrying petroleum in bulk (contemplated)

DEPTH FOR FREEBOARD (D).	DEPTH CORRECTION.	ROUND OF BEAM CORRECTION.
Moulded depth 38.71	(a) Where D is greater than Table depth (D - Table depth) R = (38.71 - 35.73) 3 = + 9.18	Moulded Breadth (B) 70.21
Stringer plate08	(b) Where D is less than Table depth (if allowed) (Table depth - D) R =	Standard Round of Beam = $\frac{B \times 12}{50} =$ 16.85
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$	If restricted by superstructures	Ship's Round of Beam = 16.93
Depth for Freeboard (D) = 38.79		Difference .08
		Restricted to
		Correction = $\frac{\text{Diff}^{\circ}}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.08}{4} \times .5244 = .01$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)	
Poop enclosed <i>Equiv.</i> ...	132.65	132.65	7.71	✓	132.65	Standard Height of Superstructure 7.50
" overhang ...						" " R.Q.D. ✓
R.Q.D. enclosed ...						Deduction for complete superstructure 42.00
" overhang ...						Percentage covered $\frac{S}{L} =$
Bridge enclosed <i>Equiv.</i> ...	45.50	45.50	7.55	✓	45.50	" " $\frac{S_1}{L} =$ 47.01
" overhang aft ...						" " $\frac{E}{L} =$
" overhang forward ...						Percentage from Table, Line A. TANKER. 3801
F'cle enclosed ...	73.82	73.82	7.55	✓	73.82	(corrected for absence of forecastle (if required))
" overhang ...						Percentage from Table, Line B. ✓
Trunk aft ...						(corrected for absence of forecastle (if required))
" forward ...						Interpolation for bridge less than .2L (if required) ✓
Tonnage opening aft ...						Deduction = 42.00 × 3801 = 15.96
" " forward ...						
Total ...	251.97	251.97			251.97	

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	63.59	✓	1	63.59	60.63	60.63	✓	1	60.63
$\frac{1}{2}$ L from A.P. ...	28.30	✓	4	113.20	14.96	14.96	✓	4	59.84
$\frac{2}{2}$ L " ...	6.995	✓	2	13.99	0	0	✓	2	0
Amidships ...	✓	✓	4	✓	✓	✓	✓	4	✓
$\frac{3}{2}$ L from F.P. ...	13.99	✓	2	27.98	0	0	✓	2	0
$\frac{4}{2}$ L " ...	56.60	✓	4	226.40	22.83	22.83	✓	4	91.32
F.P. ...	127.19	✓	1	127.19	118.11	118.11	✓	1	118.11
Total ...				572.35					329.90

Mean actual sheer aft
Mean standard sheer aft = } DEFICIENT.

Mean actual sheer forward
Mean standard sheer forward = }

Length of enclosed superstructure forward of amidships = } DEFICIENT.

" " aft of " = } SHEERS (TANKER).

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{242.45}{18} \left(.75 - \frac{2350}{5150} \right) = + 6.94$

If limited on account of midship superstructure. If limited to maximum allowance of $1\frac{1}{2}$ ins. per 100 ft.

Deduction for Tropical Freeboard.

Addition for Winter and Winter North Atlantic Freeboard.

Depth to Freeboard Deck =	38.79
Summer freeboard =	8.48
Moulded draught (d) =	30.31

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = **7.58 × 7½ = 13**

Addition for Winter North Atlantic Freeboard (if required) = **7.58 + 5.36 = 12.94 = 13**

Deduction for Fresh Water.

Displacement in salt water at summer load water line	$\Delta =$ 24730
Tons per inch immersion at summer load water line	T = 75.65
Deduction = $\frac{\Delta}{40 T}$ inches	= 8.17 = 8¼

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient

Depth Correction	9.18
Deduction for superstructures	15.96
Sheer correction	6.94
Round of Beam correction	.01
Correction for Thickness of Deck amidships	✓
Other corrections, scantlings, etc.	✓

Summer Freeboard = **101.86**

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck :-

Tropical Fresh Water Line above Centre of Disc	15¾	Tropical Fresh Water Freeboard	8-5¾
Fresh Water Line	8¼	Fresh Water	7-2
Tropical Line	7½	Tropical	7-9½
Winter Line below	7½	Winter	7-10¼
Winter North Atlantic Line	13	Winter North Atlantic	9-1¼

A new form should be prepared if any alterations that affect the freeboard have been made. If no such alterations have been made, the Surveyor should endorse the form on this side with his signature and the date.

$$= \frac{4.99}{132.65}$$
$$\therefore \text{Eqn Length} = \frac{46.77 \cdot 68.31}{70.21} = 45.50$$

Fr. 8

