

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Index. No.

(For London Office only.)

383.64

Computation of Freeboard for Steamer, Sailing Ship, Tanker

having *Combined bridge & poop, short well and forecastle*

(Type of Superstructures.)

Port of Survey *Bombay*

Date of Survey *1944 to 8/45*

Name of Surveyor *S. Southwell*

Particulars of Classification *+100AL for re-classification*

Ship's Name <i>EMPIRE INDUS</i>	Nationality and Port of Registry <i>British</i>	Official Number <i>168359</i>	Gross Tonnage <i>5155</i>	Date of Build <i>1923-6</i>
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Moulded Dimensions: Length *407* Breadth *56* Depth *23.58*

Moulded displacement at moulded draught = 85 per cent. of moulded depth

Coefficient of fineness for use with Tables *76.70 (Assumed)*

Depth for Freeboard (D)	Depth correction	Round of Beam correction
Moulded depth <i>28.55</i>	(a) Where D is greater than Table depth (D - Table depth) $\times \frac{1}{1.45}$ <i>(28.58 - 27.13) \times \frac{1}{1.45} = 4.35</i>	Moulded Breadth (B) <i>56.0</i>
Stringer plate <i>39</i> <i>.03</i>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = <i>—</i>	Standard Round of Beam = $\frac{B \times 12}{50}$ = <i>11.2</i> <i>13.39</i>
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$	If restricted by superstructures <i>—</i>	Ship's Round of Beam = <i>12</i>
Depth for Freeboard (D) = <i>28.58</i>		Difference <i>1.89</i>
		Restricted to
		Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right)$ = $\frac{1.89}{4} \times \frac{1312}{4} = +.05$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed	<i>35.25</i>	<i>35.25</i>			<i>35.25</i>
" overhang	<i>—</i>	<i>—</i>			<i>—</i>
R.Q.D. enclosed	<i>293.75</i>	<i>264.37</i>	<i>8.0</i>	<i>✓</i>	<i>264.37</i>
" overhang	<i>—</i>	<i>—</i>			<i>—</i>
Bridge enclosed	<i>—</i>	<i>—</i>			<i>—</i>
" overhang aft	<i>—</i>	<i>—</i>			<i>—</i>
" overhang forward	<i>—</i>	<i>—</i>			<i>—</i>
F'cle enclosed	<i>53.0</i>	<i>53.00</i>	<i>8.0</i>	<i>✓</i>	<i>53.00</i>
" overhang	<i>2.0</i>	<i>1.00</i>			<i>1.00</i>
Trunk aft	<i>—</i>	<i>—</i>			<i>—</i>
" forward	<i>—</i>	<i>—</i>			<i>—</i>
Tonnage opening aft	<i>—</i>	<i>—</i>			<i>—</i>
" forward	<i>—</i>	<i>—</i>			<i>—</i>
Total	<i>384.00</i>	<i>353.62</i>			<i>353.62</i>

Standard Height of Superstructure *7.5*

" " R.Q.D. *—*

Deduction for complete superstructure *42.0*

Percentage covered $\frac{S}{L} = 94.34$

" " $\frac{S_1}{L} = 86.88$

Percentage from Table, Line A. *83.83*

(corrected for absence of forecastle (if required))

Percentage from Table, Line B.

(corrected for absence of forecastle (if required))

Interpolation for bridge less than 2L (if required)

Deduction = $42.0 \times 83.83 = 35.22$

SHEER CORRECTION.

Station	Standard Ordinate	S	Product	Actual Ordinate	Effective Ordinate	S	Product
A.P.	<i>50.70</i>	<i>1</i>	<i>50.70</i>	<i>50.75</i>	<i>50.75</i>	<i>1</i>	<i>50.75</i>
$\frac{1}{2}$ L from A.P.	<i>22.56</i>	<i>4</i>	<i>90.24</i>	<i>14.75</i>	<i>14.75</i>	<i>4</i>	<i>59.00</i>
$\frac{2}{2}$ L "	<i>5.58</i>	<i>2</i>	<i>11.16</i>	<i>4.0</i>	<i>4.0</i>	<i>2</i>	<i>8.00</i>
Amidships	<i>—</i>	<i>4</i>	<i>—</i>	<i>0</i>	<i>—</i>	<i>4</i>	<i>—</i>
$\frac{3}{2}$ L from F.P.	<i>11.15</i>	<i>2</i>	<i>22.30</i>	<i>13.0</i>	<i>13.00</i>	<i>2</i>	<i>26.00</i>
$\frac{4}{2}$ L "	<i>45.12</i>	<i>4</i>	<i>180.48</i>	<i>42.0</i>	<i>42.00</i>	<i>4</i>	<i>168.00</i>
F.P.	<i>101.40</i>	<i>1</i>	<i>101.40</i>	<i>124.25</i>	<i>124.25</i>	<i>1</i>	<i>124.25</i>
Total			<i>456.28</i>		<i>436.00</i>		<i>470.48</i>

Correction = $\frac{\text{Difference between sums of products}}{18} = \frac{20.28}{18} = 1.13$

If limited on account of midship superstructure.

Mean actual sheer aft = *7.75*

Mean standard sheer aft = *7.5*

Mean actual sheer forward = *7.5*

Mean standard sheer forward = *7.5*

Length of enclosed superstructure forward of amidships = *30.8%*

" " aft of " = *50%*

Shur aft.

$\frac{50.70}{22.56} = \frac{50.70}{67.68}$

$\frac{22.56}{5.58} = \frac{67.68}{16.68}$

$\frac{5.58}{11.15} = \frac{16.68}{44.25}$

$\frac{11.15}{45.12} = \frac{44.25}{124.25}$

$\frac{45.12}{101.40} = \frac{124.25}{107.00}$

$\frac{101.40}{135.06} = .79$

Deduction for Tropical Freeboard.	Deduction for Fresh Water.	TABULAR FREEBOARD corrected for Flush Deck (if required)
Addition for Winter and Winter North Atlantic Freeboard.	Displacement in salt water at summer load water line	Correction for coefficient $\frac{7.8}{1.36} = \frac{1.38}{1.36}$
Depth to Freeboard Deck = <i>28.58</i>	$\Delta =$	Depth Correction <i>4.35</i>
Summer freeboard = <i>3.65</i>	Tons per inch immersion at summer load water line	Deduction for superstructures <i>35.22</i>
Moulded draught (d) = <i>24.93</i>	T =	Sheer correction <i>.31</i>
Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = <i>6.23</i> = <i>6 1/4</i>	Deduction = $\frac{\Delta}{40 T}$ inches	Round of Beam correction <i>.05</i>
Addition for Winter North Atlantic Freeboard (if required) =	$\frac{d}{4} = \frac{6.23}{4} = 1.56$	Correction for Thickness of Deck amidships <i>—</i>
	Existing = <i>7 6 3/4</i>	Other corrections, scantlings, etc. <i>—</i>
		Summer Freeboard = <i>43.72</i>

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck:—	<i>3 1/2</i> <i>11 1/2</i> <i>1206</i>
Tropical Fresh Water Line above Centre of Disc <i>33.0</i> <i>13 1/2</i> <i>1374</i>	Tropical Fresh Water Freeboard <i>2 1/2</i> <i>10 1/2</i> <i>876</i>
Fresh Water Line " " <i>17.1</i> <i>6 3/4</i> <i>763 1/2</i>	Fresh Water " " " <i>3 1/2</i> <i>4 3/4</i> <i>1035</i>
Tropical Line " " <i>15.9</i> <i>6 1/4</i> <i>674</i>	Tropical " " " <i>4 1/2</i> <i>5 1/4</i> <i>1047</i>
Winter Line below " " <i>15.9</i> <i>6 1/4</i> <i>674</i>	Winter " " " <i>4 1/2</i> <i>5 1/4</i> <i>1365</i>
Winter North Atlantic Line " " " " " "	Winter North Atlantic " " " " " "