

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Computation of Freeboard for Steamer, Sailing Ship, Tanker
having *Bridge and Forecastle Combined Poop.*

(Type of Superstructures.)

Ship's Name <i>S. City of Mandalay</i>	Nationality and Port of Registry <i>British Glasgow</i>	Official Number <i>147942</i>	Gross Tonnage <i>7028</i>	Date of Build <i>1925</i>
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Moulded Dimensions: Length *442.66* Breadth *57'-6"* Depth *34'-4"*
Moulded displacement at moulded draught = 85 per cent. of moulded depth *16400* tons
Coefficient of fineness for use with Tables *.774*

Port of Survey _____
Date of Survey _____
Name of Surveyor _____
Particulars of Classification *+100, P. 1.*

Depth for Freeboard (D) Moulded depth ... <i>34'-4"</i> ... <i>34.33</i> Stringer plate <i>.04</i> Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$ Depth for Freeboard (D) = <i>34.37</i>	Depth correction (a) Where D is greater than Table depth (D-Table depth) R = $(34.37-29.51)3 + 14.58$ (b) Where D is less than Table depth (if allowed) (Table depth-D) R = <i>✓</i> If restricted by superstructures <i>✓</i>	Round of Beam correction Moulded Breadth (B) <i>57.5</i> Standard Round of Beam = $\frac{B \times 12}{50} = 13.8$ Ship's Round of Beam = <i>14.4</i> Difference <i>.45</i> Restricted to Correction = $\frac{\text{Diff}^2}{4} \times \left(1 - \frac{S_1}{L} \right) = .112 \times (1 - .783) = .02$
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DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed ...	<i>43.41</i>	<i>43.41</i>	<i>8'-6"</i>	<i>✓</i>	<i>43.41</i>
" overhang ...					
R.Q.D. enclosed					
" overhang					
Bridge enclosed...	<i>303.25</i>	<i>303.25</i>	<i>8'-6"</i>	<i>✓</i>	<i>303.25</i>
" overhang aft					
" overhang forward					
Forecastle enclosed ...					
" overhang ...					
Trunk aft					
" forward					
Tonnage opening aft					
" forward					
Total ...	<i>346.66</i>	<i>346.66</i>			<i>346.66</i>

Standard Height of Superstructure *7.50*
" " R.Q.D. _____
Deduction for complete superstructure *42.00*
Percentage covered $\frac{S}{L} = .7832$
" " $\frac{S_1}{L} =$ "
" " $\frac{E}{L} =$ "
Percentage from Table, Line A. *73.23*
(corrected for absence of fore-castle (if required))
Percentage from Table, Line B.
(corrected for absence of fore-castle (if required))
Interpolation for bridge less than 2L (if required)
Deduction = $42.0 \times .7323 = -30.75$

SHEER CORRECTION.

Station	Standard Ordinate	S M	Product	Actual Ordinate	Effective Ordinate	S M	Product
A.P. ...	<i>54.27</i>	1	<i>54.27</i>	<i>43.50</i>	<i>43.50</i>	1	<i>43.50</i>
$\frac{1}{2}$ L from A.P. ...	<i>24.15</i>	4	<i>96.60</i>	<i>34.25</i>	<i>19.35</i>	4	<i>77.40</i>
$\frac{2}{3}$ L " ...	<i>5.97</i>	2	<i>11.94</i>	<i>7.75</i>	<i>4.83</i>	2	<i>9.66</i>
Amidships ...	<i>✓</i>	4	<i>✓</i>			4	
$\frac{2}{3}$ L from F.P. ...	<i>11.94</i>	2	<i>23.88</i>	<i>13.0</i>	<i>12.90</i>	2	<i>25.80</i>
$\frac{1}{2}$ L " ...	<i>48.30</i>	4	<i>193.20</i>	<i>51.0</i>	<i>51.70</i>	4	<i>206.80</i>
F.P. ...	<i>108.54</i>	1	<i>108.54</i>	<i>113.5</i>	<i>114.00</i>	1	<i>114.00</i>
Total ...			<i>488.43</i>				<i>477.16</i>

Mean actual sheer aft = *Deficient*
Mean standard sheer aft = _____
Mean actual sheer forward = *Excess*
Mean standard sheer forward = _____
Length of enclosed superstructure forward of amidships = _____
aft of _____

	stand	act.		stand	act.
1	<i>54.27</i>	<i>43.5</i>	1	<i>54.27</i>	<i>43.50</i>
2	<i>24.15</i>	<i>19.35</i>	3	<i>72.45</i>	<i>58.05</i>
3	<i>5.97</i>	<i>4.83</i>	3	<i>17.91</i>	<i>14.49</i>
4	<i>✓</i>	<i>✓</i>	4	<i>✓</i>	<i>✓</i>
				<i>144.63</i>	<i>116.04</i>

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{11.27}{18} (.75 - .39) = .225$
If limited on account of midship superstructure. *+ .225*
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 = <i>34.37</i> Summer freeboard = <i>6.22</i> Moulded draught (d) = <i>28.15</i> Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = <i>7.04 = 7"</i> Addition for Winter North Atlantic Freeboard (if required) = _____	Deduction for Fresh Water. Displacement in salt water at summer load water line $\Delta =$ <i>15953</i> Tons per inch immersion at summer load water line $T =$ <i>54.24</i> Deduction = $\frac{\Delta}{40T}$ inches = <i>7.4</i>	TABULAR FREEBOARD corrected for Flush Deck (if required) Correction for coefficient $\frac{774+.68}{1.36} = 1.0691$ <table border="1"> <tr> <th></th> <th>+</th> <th>-</th> </tr> <tr> <td>Depth Correction ...</td> <td><i>14.58</i></td> <td></td> </tr> <tr> <td>Deduction for superstructures ...</td> <td></td> <td><i>30.75</i></td> </tr> <tr> <td>Sheer correction ...</td> <td><i>.23</i></td> <td><i>.02</i></td> </tr> <tr> <td>Round of Beam correction ...</td> <td></td> <td></td> </tr> <tr> <td>Correction for Thickness of Deck amidships</td> <td></td> <td></td> </tr> <tr> <td>Other corrections, scantlings, etc. ...</td> <td></td> <td></td> </tr> <tr> <td></td> <td><i>14.81</i></td> <td><i>30.77</i></td> </tr> <tr> <td>Summer Freeboard =</td> <td><i>74.72</i></td> <td><i>-15.96</i></td> </tr> </table>		+	-	Depth Correction ...	<i>14.58</i>		Deduction for superstructures ...		<i>30.75</i>	Sheer correction ...	<i>.23</i>	<i>.02</i>	Round of Beam correction ...			Correction for Thickness of Deck amidships			Other corrections, scantlings, etc. ...				<i>14.81</i>	<i>30.77</i>	Summer Freeboard =	<i>74.72</i>	<i>-15.96</i>
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SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck:—

Tropical Fresh Water Line above Centre of Disc ...	<i>14.4</i>	Tropical Fresh Water Freeboard ...	<i>6.234</i>
Fresh Water Line " " ...	<i>7.4</i>	Fresh Water " " ...	<i>5.702</i>
Tropical Line " " ...	<i>7</i>	Tropical " " ...	<i>5.73</i>
Winter Line below " " ...	<i>7</i>	Winter " " ...	<i>6.7</i>
Winter North Atlantic Line " " ...	<i>✓</i>	Winter North Atlantic " " ...	<i>6.7</i>