

## Lloyd's Register of Shipping

## SURVEYS FOR FREEBOARD

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Ship's Name <b>"DUNDAS CROSS"</b>	Official Number <b>169308</b>	Nationality and Port of Registry <b>BRITISH MIDDLESBRO'</b>	Gross Tonnage <b>242</b>	Date of Build <b>1943</b>	Port of Survey <b>NEWCASTLE-ON-TYNE</b>
Moulded Dimensions Length <b>105'-0"</b> Breadth <b>26'-6"</b> Depth <b>13'-6"</b> Overall Length <b>113'-0"</b>					Date of Survey <b>7th-19th May, 1948</b>
Moulded displacement at moulded draught = 85 per cent. of moulded depth <b>523</b> tons					Surveyor's Signature <i>J. H. Ballum</i>
Coefficient of fineness for use with Tables <b>.68 (.573 Actual)</b> ✓					Particulars of Classification <b>*100A1</b> <i>for towing service.</i>

DEPTH FOR FREEBOARD (D).		DEPTH CORRECTION.		ROUND OF BEAM CORRECTION.	
Moulded depth ... ..	<b>13.50</b>	(a) Where D is greater than Table depth (D-Table depth) R = <b>(13.52 - 7.00) .808 = + 5.27" ✓</b>		Moulded Breadth (B)	<b>26.5' ✓</b>
Stringer plate ... ..	<b>0.30" = .02</b>	(b) Where D is less than Table depth (if allowed) (Table depth-D) R =		Standard Round of Beam = $\frac{B \times 12}{50}$ =	<b>6.36 ✓</b>
Sheathing on exposed deck $T \left( \frac{L-S}{L} \right) =$				Ship's Round of Beam =	<b>7" ✓</b>
Depth for Freeboard (D) = <b>13.52</b>		If restricted by superstructures ✓		Difference	<b>0.64 ✓</b>
				Restricted to	
				Correction = $\frac{\text{Diff}^2}{4} \times \left( 1 - \frac{S_1}{L} \right)$ =	<b><math>\frac{.64^2}{4} \times 1 = -.16" ✓</math></b>

## DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S <sub>1</sub> )	Height	Height Correction	Effective Length (E)	
Poop enclosed ... ..						Standard Height of Superstructure <b>6.00 ✓</b>
" overhang ... ..						" " R.Q.D. <b>✓</b>
R.Q.D. enclosed ... ..						Deduction for complete superstructure <b>16.50 ✓</b>
" overhang ... ..						Percentage covered $\frac{S}{L} =$
Bridge enclosed ... ..						" " $\frac{S_1}{L} =$ } <b>NIL.</b>
" overhang aft ... ..						" " $\frac{E}{L} =$
" overhang forward ... ..						Percentage from Table, Line A. <b>✓</b>
Fore enclosed ... ..						(corrected for absence of forecastle (if required)) <b>✓</b>
" overhang ... ..						Percentage from Table, Line B. <b>✓</b>
Trunk aft ... ..						(corrected for absence of forecastle (if required)) <b>✓</b>
" forward ... ..						Interpolation for bridge less than .2L (if required) <b>✓</b>
Tonnage opening aft ... ..						Deduction = <b>NIL.</b>
" " forward ... ..						
Total ... ..						

## SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ... ..	20.50	1		20.50	35	20.00	1		20.00
$\frac{1}{8}L$ from A.P. ... ..	9.12	4		36.48	18½	8.50	4		34.00
$\frac{2}{8}L$ " ... ..	2.255	2		4.51	6¾	1.75	2		3.50
Amidships ... ..		4			0		4		
$\frac{2}{8}L$ from F.P. ... ..	4.51	2		9.02	5	10.00	2		20.00
$\frac{1}{8}L$ " ... ..	18.24	4		72.96	29	39.00	4		156.00
F.P. ... ..	41.00	1		41.00	72	87.00	1		87.00
Total ... ..				184.47					320.50

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( .75 - \frac{S}{2L} \right) = \frac{136.03}{18} \times .75 = -5.67" ✓$

If limited on account of midship superstructure. ✓

*Taken on line of keel.*  
*Rate = 2'6" at F.P. from 0 at A.P.*

Mean actual sheer aft = **DEFICIENT 7.75 ✓**  
Mean standard sheer aft =

Mean actual sheer forward = **EXCESS. ✓**  
Mean standard sheer forward =

Length of enclosed superstructure forward of amidships = } **FLUSH**  
L aft of " = } **DECK ✓**

If limited to maximum allowance of 1½ ins. per 100 ft. **Yes = -1.58" ✓**

<b>Deduction for Tropical Freeboard.</b> <b>Addition for Winter and Winter North Atlantic Freeboard.</b> Depth to Freeboard Deck = <b>13.52</b> Summer freeboard = <b>1.29</b> Moulded draught (d) = <b>12.23</b> Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = <b>3.06 = 3" ✓</b> Addition for Winter North Atlantic Freeboard (if required) = <b>5"</b>	<b>Deduction for Fresh Water.</b> Displacement in salt water at summer load water line $\Delta =$ Tons per inch immersion at summer load water line $T =$ Deduction = $\frac{\Delta}{40 T}$ inches <b>= 2¾" ✓</b>	<b>TABULAR FREEBOARD</b> corrected for Flush Deck (if required) <b>10.50 + 1.58</b> Correction for coefficient <b>NIL.</b> <table border="1"> <thead> <tr> <th></th> <th>+</th> <th>-</th> </tr> </thead> <tbody> <tr> <td>Depth Correction ... ..</td> <td><b>5.27</b></td> <td><b>✓</b></td> </tr> <tr> <td>Deduction for superstructures ... ..</td> <td><b>✓</b></td> <td><b>✓</b></td> </tr> <tr> <td>Sheer correction ... ..</td> <td><b>✓</b></td> <td><b>1.58</b></td> </tr> <tr> <td>Round of Beam correction ... ..</td> <td><b>✓</b></td> <td><b>.16</b></td> </tr> <tr> <td>Correction for Thickness of Deck amidships ... ..</td> <td><b>✓</b></td> <td><b>✓</b></td> </tr> <tr> <td>Other corrections, scantlings, etc. ... ..</td> <td><b>✓</b></td> <td><b>✓</b></td> </tr> <tr> <td></td> <td><b>5.27</b></td> <td><b>1.74</b></td> </tr> </tbody> </table> Summer Freeboard = <b>15.61 ✓</b>		+	-	Depth Correction ... ..	<b>5.27</b>	<b>✓</b>	Deduction for superstructures ... ..	<b>✓</b>	<b>✓</b>	Sheer correction ... ..	<b>✓</b>	<b>1.58</b>	Round of Beam correction ... ..	<b>✓</b>	<b>.16</b>	Correction for Thickness of Deck amidships ... ..	<b>✓</b>	<b>✓</b>	Other corrections, scantlings, etc. ... ..	<b>✓</b>	<b>✓</b>		<b>5.27</b>	<b>1.74</b>
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## SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck :-

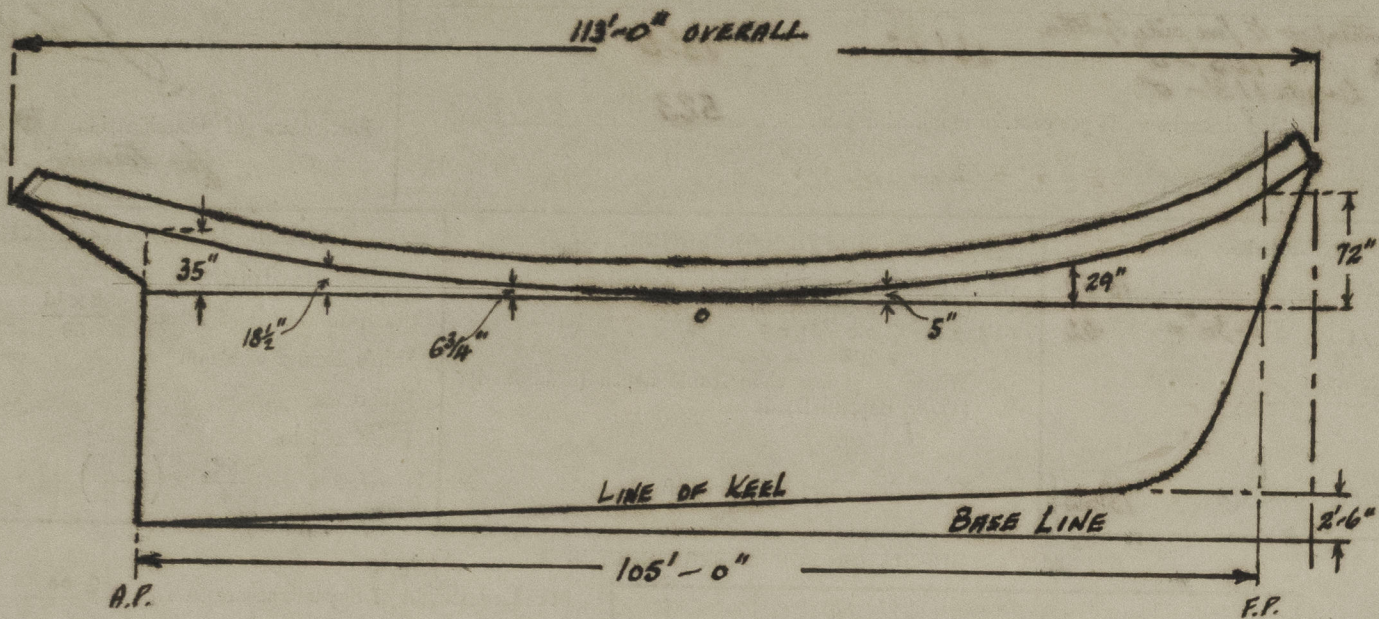
Tropical Fresh Water Line above Centre of Disc	... 5¾"
Fresh Water Line " "	... 2¾"
Tropical Line " "	... 3"
Winter Line below " "	... 3"
Winter North Atlantic Line " "	... 5"

Tropical Fresh Water Freeboard	1' - 3½"
Fresh Water " "	0' - 9¾"
Tropical " "	1' - 0¾"
Winter " "	1' - 6½"
Winter North Atlantic " "	1' - 3½"



# Sundas Cross.

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.



Trade of ship for towing purposes.

Names of sister ships EMPIRE BEN (C.H. ref no 39377)

Builder's name and yard number J. S. Weston (Gainsborough), Ltd. Yard no. 1534.

Owners Leo Towing Co. Ltd. (Robinson & Brotherton, managers).

Fee £ 7 0 0

LICENCE SUPERVISION: 11005-28/4/48 (RL) TO FOLLOW

*[Signature]*



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