

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Ship's Name DURHAM.	Official Number 163522	Nationality and Port of Registry British, London.	Gross Tonnage 10893	Date of Build 1934	Port of Survey 27.5.41
Moulded Dimensions: Length 490 Breadth 68.33 Depth 47'-2"					Surveyor's Signature
Moulded displacement at moulded draught = 85 per cent. of moulded depth tons					Particulars of Classification +100A1 with freeboard
Coefficient of fineness for use with Tables .754 (estimated)					

Depth for Freeboard (D). Moulded depth ... 47.17' Stringer plate77" Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) = \frac{2}{12} \times \frac{287}{490}$ Depth for Freeboard (D) = 47.35	Depth correction. (a) Where D is greater than Table depth $(D - \text{Table depth}) R = (47.35 - 32.67) 3.0 = +44.04"$ (b) Where D is less than Table depth (if allowed) (Table depth - D) R = ✓ If restricted by superstructures ✓	Round of Beam correction. Moulded Breadth (B) 68.33' Standard Round of Beam = $\frac{B \times 12}{50} = 16.404$ Ship's Round of Beam = 16.00" Difference .40" Restricted to ✓ Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.40}{4} = +.10"$
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DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed ...					
" overhang ...					
R.Q.D. enclosed ...					
" overhang ...					
Bridge enclosed ...					
" overhang aft ...					
" overhang forward ...					
Fore enclosed ...					
" overhang ...					
Trunk aft ...					
" forward ...					
Tonnage opening aft ...					
" forward ...					
Total ...					

Flush deck

Standard Height of Superstructure **7.5'**
 " " R.Q.D. **✓**
 Deduction for complete superstructure **42.0"**
 Percentage covered $\frac{S}{L} =$ **Nie**
 " " $\frac{S_1}{L} =$ **Nie**
 " " $\frac{E}{L} =$ **Nie**
 Percentage from Table, Line A. (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 = **Nie**

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	59.00	1		59.00	66.00	66.00	1		66.00
1/4 L from A.P. ...	46.25	4		185.00	29.25	29.25	4		117.00
1/2 L " ...	6.49	2		12.98	7.25	7.25	2		14.50
Amidships ...		4					4		
3/4 L from F.P. ...	12.98	2		25.96	16.50	16.50	2		33.00
3/4 L " ...	51.51	4		206.04	66.50	66.50	4		266.00
F.P. ...	118.00	1		118.00	150.00	150.00	1		150.00
Total ...				530.98					646.50

Mean actual sheer aft = **Excess**
 Mean standard sheer aft = **Excess**
 Mean actual sheer forward = **Excess**
 Mean standard sheer forward = **Excess**
 Length of enclosed superstructure forward of amidships = **Nie**
 " " aft of " = **Nie**

Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{.75 - S}{.2L} \right) = \frac{115.52}{18} \times .75 = +4.81"$
 If limited on account of midship superstructure. **No. Flush deck**
 If limited to maximum allowance of 1 1/2 ins. per 100 ft. **✓**

Deduction for Tropical Freeboard. Addition for Winter and Winter North Atlantic Freeboard. Depth to Freeboard Deck = 47.44 Summer freeboard = 14.15 Moulded draught (d) = 33.29 Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 8.32" - 8 1/4" Addition for Winter North Atlantic Freeboard (if required) = ✓	Deduction for Fresh Water. Displacement in salt water at summer load water line $\Delta = 23930$ Tons per inch immersion at summer load water line $T = 70$ Deduction = $\frac{\Delta}{40T}$ inches = 8.54 = 8 1/2"	TABULAR FREEBOARD corrected for Flush Deck (if required) Correction for coefficient $\frac{.754 + .68}{1.36} = 1.434 \times 106.65 = 112.44$ Depth Correction ... 44.04 Deduction for superstructures ... - Sheer correction ... 4.81 Round of Beam correction10 Correction for Thickness of Deck amidships ... 1.08 Other corrections, scantlings, etc. 5.2 Summer Freeboard = 169.75
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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	16 3/4"	Tropical Fresh Water Freeboard	14' - 1 3/4"
Fresh Water Line	8 1/2"	Fresh Water	12' - 9"
Tropical Line	8 1/4"	Tropical	13' - 5 1/4"
Winter Line below	8 1/4"	Winter	14' - 10"
Winter North Atlantic Line	✓	Winter North Atlantic	246/41

30 MAY 1941

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