

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Ship's Name **Empire Rain** Official Number **168647** Nationality and Port of Registry **British South Shields** Gross Tonnage **7200** Date of Build **1940**

Port of Survey **South Shields**

Date of Survey **During Construction**

Surveyor's Signature **J.L. Roberts.**

Particulars of Classification **+100A1 with freeboard.**

Moulded Dimensions: Length **425.6** Breadth **56.5** Depth **29.08**

Moulded displacement at moulded draught = 85 per cent. of moulded depth **12950** tons

Coefficient of fineness for use with Tables **763**

Depth for Freeboard (D). Moulded depth ... **29.08** Stringer plate ... **.03** Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$ **✓**

Depth correction. (a) Where D is greater than Table depth $(D - \text{Table depth}) R =$ **$(29.11 - 28.37) \times 3 = +2.22$** (b) Where D is less than Table depth (if allowed) $(\text{Table depth} - D) R =$ **29.11** If restricted by superstructures

Round of Beam correction. Moulded Breadth (B) **56.5** Standard Round of Beam $= \frac{B \times 12}{50} =$ **13.56** Ship's Round of Beam **13.50** Difference **Deficiency .06** Restricted to **✓** Correction $= \frac{\text{Diff}^2}{4} \times \left(1 - \frac{S_1}{L} \right) =$ **$\frac{.06^2}{4} \times .006 = \text{Nil.}$**

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)	
Poop enclosed ...	40.35	40.35	8.75	✓	40.35	Standard Height of Superstructure 7.5'
" overhang ...						" " R.Q.D. ✓
R.Q.D. enclosed ...						Deduction for complete superstructure 42.00
" overhang ...	377.59	277.59			377.59	Percentage covered $\frac{S}{L} =$ 100.00
Bridge enclosed ...	380.09	480.09	8.75	✓	380.09	" $\frac{S_1}{L} =$ 99.40-20
" overhang aft ...	2.50	1.88			1.88	" $\frac{E}{L} =$ 99.40-20
" overhang forward ...						Percentage from Table, Line A. 99.46.01
Fore enclosed ...						(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 ...	5.16	1.58			1.58	Deduction = 42.00 x .4426 = -41.67
" forward ...		422.21			422.21	
Total ...	425.60	423.02			423.02	

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product	
A.P. ...	52.56	1	52.56	63.0	78.0	1	78.00			Mean actual sheer aft = Excess
1/4 L from A.P. ...	23.39	4	93.56	27.5	34.71	4	138.84			Mean actual sheer forward = Excess
1/2 L " ...	5.78	2	11.56	6.5	8.58	2	17.16			Mean standard sheer forward
Amidships ...	-	4	-	-	-	4	-			Length of enclosed superstructure forward of amidships = ✓
3/4 L from F.P. ...	11.56	2	23.12	12.75	15.18	2	30.36			" " aft of " = ✓
1/4 L " ...	46.78	4	187.12	49.75	61.41	4	245.64			
F.P. ...	105.12	1	105.12	123	138.0	1	138.00			
Total ...			473.04	+15			648.00			

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{174.96}{18} \times .25 = -2.43$

If limited on account of midship superstructure.

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 = **29.11** Ft.

Summer freeboard = **3.545**

Moulded draught (d) = **25.586**

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = **6.39 = 6 1/2"**

Addition for Winter North Atlantic Freeboard (if required) =

Deduction for Fresh Water. Displacement in salt water at summer load water line $\Delta =$ **13531** Tons per inch immersion at summer load water line $T =$ **48.9** Deduction = $\frac{\Delta}{40T}$ inches = **6.92** = **7"**

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient $\frac{.763 + .68}{1.36} = 1.443 / 1.36$

Depth Correction ... **2.22**

Deduction for superstructures ... **41.67**

Sheer correction ... **2.43**

Round of Beam correction ... **23.12.40**

Correction for Thickness of Deck amidships ... **79**

Other corrections, scantlings, etc. ... **2.22**

Summer Freeboard = **42.50.61**

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

Tropical Fresh Water Line above Centre of Disc ...	13 1/2"	Tropical Fresh Water Freeboard ...	2-5"
Fresh Water Line " " ...	7 1/2"	Fresh Water " " ...	2'-11 1/2"
Tropical Line " " ...	6 1/2"	Tropical " " ...	3'-0"
Winter Line below " " ...	6 1/2"	Winter " " ...	4'-1"
Winter North Atlantic Line " " ...	-	Winter North Atlantic " " ...	-