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(For London Office only)

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

9 JAN 1942

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

empirical

Ship's Name SINGLE SCREW TUG. "EMPIRE LINDEN"	Official Number 167112	Nationality and Port of Registry BRITISH HULL	Gross Tonnage 245	Date of Build 1941	Port of Survey HULL
Moulded Dimensions: Length 105.0' Breadth 26.5' Depth 13.5'	Date of Survey WHILE BUILDING				Surveyor's Signature <i>W. McDonald</i>
Moulded displacement at moulded draught = 85 per cent. of moulded depth 523 tons	Particulars of Classification * 100 A.1. "FOR TOWING SERVICES".				(CONTEMPLATED)
Coefficient of fineness for use with Tables .68.	.573 (actual)				

Depth for Freeboard (D).		Depth correction.		Round of Beam correction.	
Moulded depth	13.5'	(a) Where D is greater than Table depth (D-Table depth) R = (13.53 - 7.00) x .808 = + 5.28		Moulded Breadth (B)	26.5'
Stringer plate30"			Standard Round of Beam = $\frac{B \times 12}{50} =$	6.36
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$.03	(b) Where D is less than Table depth (if allowed) (Table depth-D) R =		Ship's Round of Beam =	4 1/2"
Depth for Freeboard (D) =	13.53	If restricted by superstructures	<input checked="" type="checkbox"/>	Difference	1.14
				Restricted to	<input checked="" type="checkbox"/>
				Correction = $\frac{\text{Diff}^2}{4} \times \left(1 - \frac{S_1}{L} \right) =$	$\frac{1.14^2}{4} = -.28$

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					
• F'cle enclosed					
" overhang					
• Trunk aft					
" forward					
• Tonnage opening aft					
" forward					
Total					

Flush Deck

Standard Height of Superstructure _____
 " " R.Q.D. _____
 Deduction for complete superstructure _____
 Percentage covered $\frac{S}{L} =$ } Nil.
 " " $\frac{S_1}{L} =$ }
 " " $\frac{E}{L} =$ }
 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 = Nil.

Sheer updated in that measured from a line parallel to the steeple waterline
 SHEER CORRECTION.

Station	Standard Ordinate	S	Product	Actual Ordinate	Effective Ordinate	S	Product
A.P.	20.50	1	20.50	18"	18	1	18.0
1/2 L from A.P.	9.12	4	36.48	8"	8	4	32.0
2/2 L "	22.55	2	45.1	1 3/4"	1.75	2	3.5
Amidships	-	4	-	NIL	-	4	-
2/2 L from F.P.	4.51	2	9.02	9 3/4"	9.75	2	19.5
1/2 L "	18.24	4	72.96	35 1/2"	35.5	4	142.0
F.P.	41.00	1	41.00	81 1/2"	81.5	1	81.5
Total			184.47				296.5

Mean actual sheer aft = *Definit but > .75*
 Mean standard sheer aft _____
 Mean actual sheer forward = *excess*
 Mean standard sheer forward _____
 Length of enclosed superstructure forward of amidships = } Nil.
 " " aft of " = }

Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{.75 - S}{2L} \right) = \frac{112.03 \times .75}{18} = -4.67$
 If limited on account of midship superstructure. If limited to maximum allowance of 1 1/2 ins. per 100 ft. **1.58**

Deduction for Tropical Freeboard.	Deduction for Fresh Water.	TABULAR FREEBOARD corrected for Flush Deck (if required)	12.08
Addition for Winter and Winter North Atlantic Freeboard.	Displacement in salt water at summer load water line	Correction for coefficient	12.08
Depth to Freeboard Deck = 13.53 Ft.	$\Delta = 580$	Depth Correction	5.28
Summer freeboard = 1.29	Tons per inch immersion at summer load water line	Deduction for superstructures	-
Moulded draught (d) = 12.24	$T = 5.47$	Sheer correction	1.58
Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 3.06 = 3"	Deduction = $\frac{\Delta}{40T}$ inches = $\frac{580}{40 \times 5.47} = 2.65 = 2 3/4"$	Round of Beam correction	-.28
Addition for Winter North Atlantic Freeboard (if required) = 5"	MLO DRAFT EXT. DISPL T.P.I. 12'-6" 595 5.50 11'-6" 529.4 5.35 9'-6" 407 4.90	Correction for Thickness of Deck amidships	-
		Other corrections, scantlings, etc.	-
		Summer Freeboard =	15.50

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

Tropical Fresh Water Line above Centre of Disc	5 3/4"	Tropical Fresh Water Freeboard	1'-8 1/2"
Fresh Water Line " "	2 3/4"	Fresh Water " "	0-9 3/4"
Tropical Line " "	3"	Tropical " "	1-0 3/4"
Winter Line below " "	3"	Winter " "	1-0 1/2"
Winter North Atlantic Line " "	5"	Winter North Atlantic " "	1-6 1/2"

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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..... *TUG FOR TOWING SERVICES*

Names of sister ships..... *"EMPIRE BIRCH."*

Builder's name and yard number..... *MESSRS HENRY SCARR LTD., N^o 419.*

Owners..... *MINISTRY OF SHIPPING.*

Fee £..... *TO BE CHARGED WITH FIRST ENTRY REPORT.*



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Foundation