

EMPIRE BOMBARDIER
37105.Lloyd's Register of Shipping.
SURVEYS FOR FREEBOARD.(COMPUTATION FOR ~~STEAMER~~, ~~SAILING SHIP~~, TANKER.)Index No. 37713
(For London Office only.)

21 AUG 1944

Ship's Name <i>Empire Saturn</i> <i>FELIPES</i>	Official Number <i>168535</i>	Nationality and Port of Registry <i>British</i> <i>Belfast</i>	Gross Tonnage <i>8216</i> <i>MOT 2.125</i> <i>8223.99</i>	Date of Build <i>1944</i>	Port of Survey <i>Belfast & Glasgow</i>
Moulded Dimensions: Length <i>460</i> Breadth <i>59</i> Depth <i>34</i>				Date of Survey <i>during construction</i>	
Moulded displacement at moulded draught = 85 per cent. of moulded depth <i>17733</i> tons				Surveyor's Signature <i>Wm. Baillie & H. J. Pyle</i>	
Coefficient of fineness for use with Tables <i>.791</i>				Particulars of Classification <i>100A1 cargo</i> <i>Petroleum Bulk Class</i> <i>can be plated</i>	

DEPTH FOR FREEBOARD (D).	DEPTH CORRECTION.	ROUND OF BEAM CORRECTION.
Moulded depth <i>34</i>	(a) Where D is greater than Table depth (D-Table depth) R = <i>(34.07-30.67) 3 = +10.20"</i>	Moulded Breadth (B) <i>59</i>
Stringer plate <i>.84"</i> <i>.07</i>	(b) Where D is less than Table depth (if allowed) (Table depth-D) R = <i>✓</i>	Standard Round of Beam = $\frac{B \times 12}{50} = \frac{14.16}{50}$
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) = \text{kel}$ <i>✓</i>	If restricted by superstructures <i>✓</i>	Ship's Round of Beam = <i>14 3/4</i>
Depth for Freeboard (D) = <i>34.07</i>		Difference = <i>.59</i>
		Restricted to <i>✓</i>
		Correction = $\frac{\text{Diff}^e}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.59}{4} \times .5830 = -.09$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)	
Poop enclosed <i>EQUIV.</i> ...	<i>95.00</i>	<i>95.00</i>	<i>7'-6"</i>	<i>7'-6"</i>	<i>95.00</i>	Standard Height of Superstructure <i>7.5</i>
" overhang ...						" " R.Q.D. <i>✓</i>
R.Q.D. enclosed ...						Deduction for complete superstructure <i>42.00</i>
" overhang ...						Percentage covered $\frac{S}{L} = \frac{41.83}{41.70}$
Bridge enclosed <i>EQUIV.</i> ...	<i>46.86</i>	<i>46.86</i>	<i>7'-6"</i>	<i>7'-6"</i>	<i>46.86</i>	" " $\frac{S_1}{L} = \frac{41.70}{41.70}$
" overhang aft ...	<i>2.50</i>	<i>1.88</i>			<i>1.88</i>	" " $\frac{E}{L} = \frac{41.70}{41.70}$
" overhang forward ...						Percentage from Table, Line A <i>TANKER 32.70</i>
F'cle enclosed ...	<i>48.04</i>	<i>48.04</i>	<i>7'-6"</i>	<i>7'-6"</i>	<i>48.04</i>	(corrected for absence of forecastle (if required)) <i>✓</i>
" overhang ...						Percentage from Table, Line B. <i>✓</i>
Trunk aft ...						(corrected for absence of forecastle (if required)) <i>✓</i>
" forward ...						Interpolation for bridge less than .2L (if required) <i>-</i>
Tonnage opening aft ...						Deduction = <i>42.00 x .3270 = -13.73</i>
" " forward ...						
Total ...	<i>192.40</i>	<i>191.78</i>			<i>191.78</i>	

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	<i>56.00</i>	<i>1</i>		<i>56.00</i>	<i>56.4</i>	<i>56.40</i>	<i>1</i>		<i>56.40</i>
1/2 L from A.P. ...	<i>24.92</i>	<i>4</i>		<i>99.68</i>	<i>25.0</i>	<i>25.00</i>	<i>4</i>		<i>100.00</i>
2/3 L " ...	<i>6.16</i>	<i>2</i>		<i>12.32</i>	<i>6.2</i>	<i>6.20</i>	<i>2</i>		<i>12.40</i>
Amidships ...	<i>-</i>	<i>4</i>		<i>-</i>	<i>-</i>	<i>-</i>	<i>4</i>		<i>-</i>
2/3 L from F.P. ...	<i>12.32</i>	<i>2</i>		<i>24.64</i>	<i>12.4</i>	<i>12.40</i>	<i>2</i>		<i>24.80</i>
1/2 L " ...	<i>49.84</i>	<i>4</i>		<i>199.36</i>	<i>50.0</i>	<i>50.00</i>	<i>4</i>		<i>200.00</i>
F.P. ...	<i>112.00</i>	<i>1</i>		<i>112.00</i>	<i>112.1</i>	<i>112.10</i>	<i>1</i>		<i>112.10</i>
Total ...				<i>504.00</i>					<i>505.70</i>

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{1.7}{1.8} \left(.75 - \frac{.2092}{.5408} \right) = -.05$ *✓*

If limited on account of midship superstructure. *✓*

If limited to maximum allowance of 1 1/2 ins. per 100 ft. *✓*

Mean actual sheer aft =
Mean standard sheer aft = } *EXCESS.*

Mean actual sheer forward =
Mean standard sheer forward = }

Length of enclosed superstructure forward of amidships =
L aft of " = } *TANKER.*

Deduction for Tropical Freeboard.	Deduction for Fresh Water.	TABULAR FREEBOARD corrected for Flush Deck (if required)	<i>77.70</i>
Addition for Winter and Winter North Atlantic Freeboard.	Displacement in salt water at summer load water line	Correction for coefficient $\frac{.791 + .68}{1.36} = \frac{1.471}{1.36}$	<i>84.05</i>
Depth to Freeboard Deck <i>34.07</i>	$\Delta = 16791$	Depth Correction <i>10.20</i>	
Summer freeboard = <i>6.71</i>	Tons per inch immersion at summer load water line	Deduction for superstructures <i>13.73</i>	
Moulded draught (d) = <i>27.36</i>	$T = 56.41$	Sheer correction <i>.05</i>	<i>80.8</i>
Deduction for Tropical freeboard and addition for	Deduction = $\frac{\Delta}{40 T}$ inches	Round of Beam correction <i>.09</i>	<i>21.8.44</i>
Winter freeboard = $\frac{d}{4}$ inches = <i>6.84 = 6 3/4"</i>	$\frac{16791}{40 \times 56.41} = 7.44 = 7 1/2"$	Correction for Thickness of Deck amidships <i>-</i>	
Addition for Winter North Atlantic Freeboard (if required) = <i>6.84 + 4.60 = 11.44 = 11 1/2"</i>	<i>28 17/15 56.6</i>	Other corrections, scantlings, etc. <i>-</i>	
	<i>27 16439 56.2</i>		
		Summer Freeboard = <i>80.38</i>	

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 1/4"</i>	Tropical Fresh Water Freeboard ...	<i>5' 6 1/4"</i>
Fresh Water Line " " ...	<i>7 1/2"</i>	Fresh Water " " ...	<i>6' 1"</i>
Tropical Line " " ...	<i>6 3/4"</i>	Tropical " " ...	<i>6' 1 3/4"</i>
Winter Line below " " ...	<i>6 3/4"</i>	Winter " " ...	<i>7' 3 1/4"</i>
Winter North Atlantic Line " " ...	<i>11 1/2"</i>	Winter North Atlantic " " ...	<i>7' 8"</i>

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.

Loop equiv. Bhd.

$$\frac{2}{3} \times 3'-7\frac{1}{2}" = 2'-5"$$

$$\begin{array}{r} 92'-7. \\ \hline 95. - 0 \end{array}$$

Bridge Equiv. Bhd.

$$\frac{2}{3} \times 4'-6\frac{1}{2}" = 3.03$$

$$\begin{array}{r} 43.83. \\ \hline 46.86 \end{array}$$

omit

omit

omit

Midship section, scantlings in way of bil Tanks & Stern Frame Plans are enclosed.

Trade of ship Ocean going Tanker

Names of sister ships Empire Industry, Empire Bombardier

Builder's name and yard number Messrs Harland & Wolff No 1242

Owners Ministry of War Transport (Managers Davies & Newman Ltd)

Fee £ 19 . 0 . 0

