

24 MAR 1954

Index No. _____
(For London Office only.)

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Ship's Name	Official Number	Nationality and Port of Registry	Gross Tonnage	Date of Build	Port of Survey
"FRENULINA"	169457	British London.	1038	November 1945	Hong Kong.
Moulded Dimensions: Length 218.46' ✓ Breadth 32.00' Depth 14.75' at 13'-2" draught. Stem rake 3" per ft.					Date of Survey 16th March, 1954.
Moulded displacement at moulded draught = 85 per cent. of moulded depth 1852 tons					Surveyor's Signature <i>J. M. L. L. L.</i>
Coefficient of fineness for use with Tables. 737 740 ✓					Particulars of Classification +100A1
					"Carrying Petroleum in Bulk"

DEPTH FOR FREEBOARD (D).		DEPTH CORRECTION.		ROUND OF BEAM CORRECTION.	
Moulded depth ...	14.750 ✓	(a) Where D is greater than Table depth (D-Table depth) R =		Moulded Breadth (B)	32.00' ✓
Stringer plate ...	0.025	(14.79 - 14.57) 1.681 = .37		Standard Round of Beam = $\frac{B \times 12}{50}$	7.68 ✓
Sheathing on exposed deck		(b) Where D is less than Table depth (if allowed) (Table depth-D) R =		Ship's Round of Beam	7.1" ✓
$T \left(\frac{L-S}{L} \right) =$	14.79			Difference	.18 ✓
Depth for Freeboard (D) =	14.786	If restricted by superstructures ✓		Restricted to	
				Correction = $\frac{\text{Diff.}}{4} \times \left(1 - \frac{S_1}{L} \right)$	$\frac{.18}{4} \times .2952 = .013$ ✓

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed ...	60.99 ✓	60.99 ✓	7'-6" ✓		60.99 ✓
" overhang ...	See Sketch				
R.Q.D. enclosed ...	See Sketch		2'-9" ✓		
R. Upper Dk. ...	36.74 ✓	16.13 ✓	2'-9" ✓	2.75	60.739 ✓
Bridge enclosed ...	16.13 ✓				
" overhang aft ...					
" overhang forward ...					
F'cle enclosed ...	20.61 ✓	20.61 ✓	7'-0" ✓		20.61 ✓
" overhang ...					
Trunk amidships ...	120.46 ✓	56.23 ✓	2'-9" ✓	SEE OVER	25.77 ✓
" forward ...					
Tonnage opening aft ...					
" " forward ...					
Total ...	97.73 ✓	153.96 ✓			114.76 ✓

Standard Height of Superstructure 6'00" ✓
" " R.Q.D. ✓
Deduction for complete superstructure 27.84" ✓
Percentage covered $\frac{S}{L} = 44.74\%$ ✓
" " $\frac{S_1}{L} = 70.48\%$ ✓
" " $\frac{E}{L} = 52.53\%$ ✓
Percentage from Table, ~~STEAMER~~ TANKER. 43.78% ✓
(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 = 27.84 × .4378 = 12.19" ✓

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	31.85 ✓	1		31.85 ✓	6.75 ✓	55.87 ✓	1		55.87 ✓
$\frac{1}{4}$ L from A.P. ...	14.17 ✓	4		56.68 ✓	0.01 ✓	8.14 ✓	4		32.56 ✓
$\frac{2}{4}$ L " ...	3.50 ✓	2		7.00 ✓	-	✓	2		✓
Amidships ...	✓	4		✓	-	✓	4		✓
$\frac{3}{4}$ L from F.P. ...	7.01 ✓	2		14.02 ✓	-	✓	2		✓
$\frac{1}{4}$ L " ...	28.34 ✓	4		113.36 ✓	1.88 ✓	✓	4		✓
F.P. ...	63.69 ✓	1		63.69 ✓	7.00 ✓	40.50 ✓	1		40.50 ✓
Total ...				286.60 ✓					128.93 ✓

Mean actual sheer aft =
Mean standard sheer aft = } Sufficient ✓
Mean actual sheer forward =
Mean standard sheer forward = }
Length of enclosed superstructure forward of amidships = } Deficient
" " aft of " = } Sheer

Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{.75 - S}{2L} \right) = \frac{157.67}{18} \left(\frac{.75 - .2237}{2} \right) = +4.61$
If limited on account of midship superstructure. 18 .5263 ✓ If limited to maximum allowance of 1½ ins. per 100 ft.

Deduction for Tropical Freeboard.	Deduction for Fresh Water.	TABULAR FREEBOARD corrected for Flush Deck (if required)	26.06 ✓
Addition for Winter and Winter North Atlantic Freeboard.	Displacement in salt water at summer load water line 13'-2" draft.	Correction for coefficient	27.21 ✓
Depth to Freeboard Deck = 14.79	Δ = 1960 tons.	Depth Correction ...	37 -
Summer freeboard = 1.67	Tons per inch immersion at summer load water line	Deduction for superstructures ...	12.19 ✓
Moulded draught (d) = 13.12	T = 14.32 at 13'-2" draft	Sheer correction ...	4.61 -
Deduction for Tropical freeboard and addition for	Deduction = $\frac{\Delta}{40 T}$ inches	Round of Beam correction01 ✓
Winter freeboard = $\frac{d}{4}$ inches = 3.28	= 3.41 = 3½ ✓	Correction for Thickness of Deck amidships ...	-
Addition for Winter North Atlantic Freeboard (if required) = 328 + 2.18 = 546.5½ ✓		Other corrections, scantlings, etc. ...	-
		Summer Freeboard = 20.01	

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

Tropical Fresh Water Line above Centre of Disc ...	6¾" ✓	Tropical Fresh Water Freeboard ...	1'-8" ✓
Fresh Water Line " " ...	3½" ✓	Fresh Water " " ...	1'-14" ✓
Tropical Line " " ...	3¼" ✓	Tropical " " ...	1'-4½" ✓
Winter Line below " " ...	3¼" ✓	Winter " " ...	1'-4¾" ✓
Winter North Atlantic Line " " ...	5½" ✓	Winter North Atlantic " " ...	2'-1½" ✓

Grenulina.

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.

Poof.

$$\text{Eqns. Length} = 58.39 + \frac{2.87 \times 23.5}{32} + .50$$

$$= 60.99 \checkmark$$

Raised Upper Deck. $S = S_1 = 16.13 \checkmark$ $\text{Foal} = 20.61 = S = S_1 \checkmark$

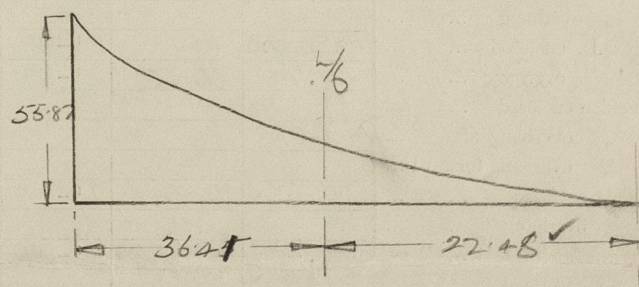
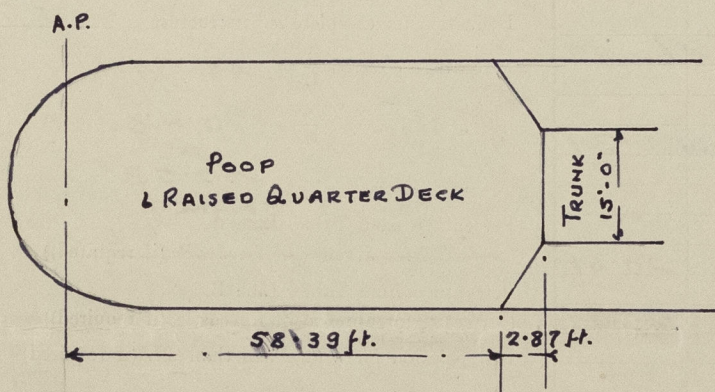
Trunk.

$$S_1 = 119.96 \times \frac{15}{32} = 56.23 \checkmark$$

$$L = 56.23 \times \frac{2.75}{6} = 25.77 \checkmark$$

Foal.

$$S = S_1 = 20.61 \checkmark$$



Height of Poof at A.P. $= 37.87 + 90 = 127.87 \checkmark$
Standard Height of Poof $= \frac{72.00}{55.87} \checkmark$

$$55.87 \times 55.87 \times \frac{22.48^2}{58.89^2} = 8.14 \checkmark$$

$$55.87 \times \frac{29445}{58.89^2} = 13.97 \checkmark$$

$$\frac{L}{6} = \frac{21846}{6} = 3641 \checkmark$$

$$\text{Length of Poof} = 58.89 \checkmark$$

$$\text{Side } \frac{L}{6} = \frac{36.41}{22.48} \checkmark$$

Area under Virtual Shear curve aft.

$$55.87 \times 1 \times 55.87 \checkmark$$

$$13.97 \times 14 \times 55.88 \checkmark$$

$$111.75 \times \frac{1}{3} \times 29445 = 1097 \checkmark$$

Area under Standard curve aft.

$$31.85 \times 1 \times 31.85 \checkmark$$

$$14.17 \times 3 \times 42.51 \checkmark$$

$$3.50 \times 3 \times 10.50 \checkmark$$

$$84.86 \times \frac{3}{8} \times 3641 = 1159 \checkmark$$

Trade of ship Ocean Going.
 Names of sister ships Nil.
 Builder's name and yard number A. & J. Inglis Ltd. Glasgow. New Cargo Tanks & Alterations by Hongkong & Whampoa Dock Co. Ltd. - Hong Kong. April, 1954.
 Owners Anglo Saxon Petroleum Co. Ltd.
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