

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Ship's Name "CLAN FORBES"	Official Number 165951	Nationality and Port of Registry BRITISH GLASGOW	Gross Tonnage	Date of Build 1938	Port of Survey
Moulded Dimensions: Length 457.0 Breadth 62.75 Depth 40.9 $\frac{1}{8}$					Date of Survey 22.5.41
Moulded displacement at moulded draught = 85 per cent. of moulded depth tons					Surveyor's Signature
Coefficient of fineness for use with Tables 712 (estimated)					Particulars of Classification +100 A1 with freeboard.

Depth for Freeboard (D).
Moulded depth ... **40.78**
Stringer plate ... **72** ... **.06**
Heating on exposed deck
 $T \left(\frac{L-S}{L} \right) =$
Depth for Freeboard (D) = **40.84**

Depth correction.
(a) Where D is greater than Table depth
(D - Table depth) R =
 $(40.84 - 30.47) 3.0 = +31.05$
(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) **62.75**
Standard Round of Beam = $\frac{B \times 12}{50} = 15.06$
Ship's Round of Beam **15.50**
Difference **Excess** **.44**
Restricted to
Correction = $\frac{\text{Diff}^*}{4} \times \left(1 - \frac{S_1}{L}\right) = \frac{.44}{4} \times \frac{.5051}{.5051} = .06$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed ...	30.50	30.50	8.0	-	30.50
" overhang ...		97.51			97.51
AFTER B.O.D. enclosed ...	97.51	73.13			73.13
BRIDGE overhang Ford.	3.99	2.00			2.00
Fore Bridge enclosed...	19.19	19.19	8.0	-	19.19
" overhang aft ...	4.31	3.23			3.23
" overhang forward					
Fore enclosed ...	73.75	73.75	8.0	-	73.75
overhang ...					
Tank aft ...					
forward ...					
Tonnage opening aft ...					
" forward	9.2	226.18			226.18
Total ...	228.75	228.80			228.80

Standard Height of Superstructure **7.50'**
" " R.Q.D. **✓**
Deduction for complete superstructure **42.00"**
Percentage covered $\frac{S}{L} = \frac{50.46}{100} = 50.46\%$
" $\frac{S_1}{L} = \frac{49.49}{100} = 49.49\%$
" $\frac{E}{L} = \frac{49.49}{100} = 49.49\%$
Percentage from Table, Line A.
(corrected for absence of forecastle (if required)) **31.03**
Percentage from Table, Line B.
(corrected for absence of forecastle (if required)) **35.56**
Interpolation for bridge less than .2L (if required) **✓**
Deduction = **42.00" x 31.03 = -13.03" 14.94"**

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	55.70	1		55.70	60	60.00	1		60.00
1/4 L from A.P. ...	24.79	4		99.16	27	27.00	4		108.00
1/2 L " ...	6.13	2		12.26	8 $\frac{3}{8}$	8.38	2		16.76
Amidships ...		4					4		
3/4 L from F.P. ...	12.25	2		24.50	14	14.00	2		28.00
1/4 L " ...	49.57	4		198.28	54	54.00	4		216.00
F.P. ...	111.40	1		111.40	120	120.00	1		120.00
Total ...				501.30					548.76

Mean actual sheer aft = **Excess** **✓**
Mean standard sheer aft

Mean actual sheer forward = **Excess** **✓**
Mean standard sheer forward

Length of enclosed superstructure forward of amidships = **2.1 L** **✓**
" " aft of " = **.038 L** **✓**

Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{75 - S}{2L} \right) = \frac{47.46 - 75 - 2481}{18} = -1.32$ **✓**
If limited on account of midship superstructure. **YES** $\frac{738}{2} \times 1.32 = -91$ **✓**

If limited to maximum allowance of $1\frac{1}{2}$ ins. per 100 ft. **✓**

Deduction for Tropical Freeboard.
Addition for Winter and Winter North Atlantic Freeboard.

Depth to Freeboard Deck = **40.84**
Summer freeboard = **11.69.92**
Moulded draught (d) = **24.15**
28.90

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = **7.29 = 7 $\frac{1}{4}$**

Addition for Winter North Atlantic Freeboard (if required) =

Deduction for Fresh Water.

Displacement in salt water at summer load water line

$\Delta =$
Tons per inch immersion at summer load water line

$T =$
Deduction = $\frac{\Delta}{40 T}$ inches = **7 $\frac{1}{2}$**

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient **712 + 68**
1.36

	+	-
Depth Correction ...	31.05	14.94
Deduction for superstructures ...	-	13.03
Sheer correction ...	-	.91
Round of Beam correction ...	-	.06
Correction for Thickness of Deck amidships	36.50	-
Other corrections, scantlings, etc. To CORRESPOND	15.91	-
TO A SUMMER MOULDED DRAUGHT OF	65.64	12.00
Summer Freeboard =	67.55	51.64

89.27 **✓**
91.36 **✓**

80.8
23.5.41

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

Tropical Fresh Water Line above Centre of Disc	14 $\frac{1}{4}$
Fresh Water Line	7 $\frac{1}{2}$
Tropical Line	7 $\frac{1}{4}$
Winter Line below	7 $\frac{1}{4}$
Winter North Atlantic Line	7 $\frac{1}{4}$

Tropical Fresh Water Freeboard	11 $\frac{1}{4}$
Fresh Water	10 $\frac{1}{4}$
Tropical	11 $\frac{3}{4}$
Winter	11 $\frac{3}{4}$
Winter North Atlantic	12 $\frac{1}{4}$

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.

DIMENSIONS:- 457'-0" x 62'-9" x 40'-9"

After Bridge

Equivalent Bld. Free End:-

Area of recess one side = $24.5 \times 5.0 = 122.5 \text{ sq. ft.}$
 Half-Breadth of Deck = 30.67 ft.

∴ Equivalent overhang free = 3.99 ft.

Even enclosed = $\frac{101.50}{97.51} \times 8\frac{1}{2} = 8\frac{1}{2}$

Fore Bridge

Equivalent Bld. after End:-

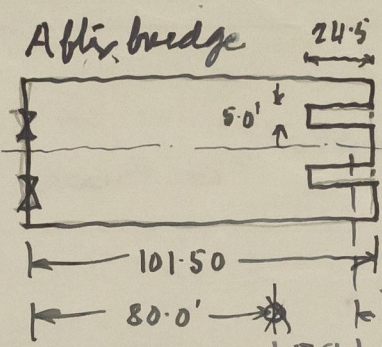
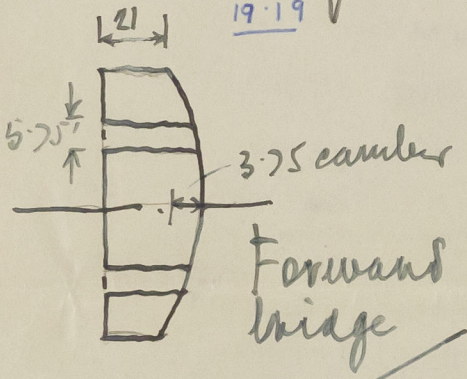
Area of recess one side = $23 \times 5.75 = 132.25 \text{ sq. ft.}$
 Half-Breadth of Deck = 30.67 ft.

Equivalent overhang aft = 4.31 ft.

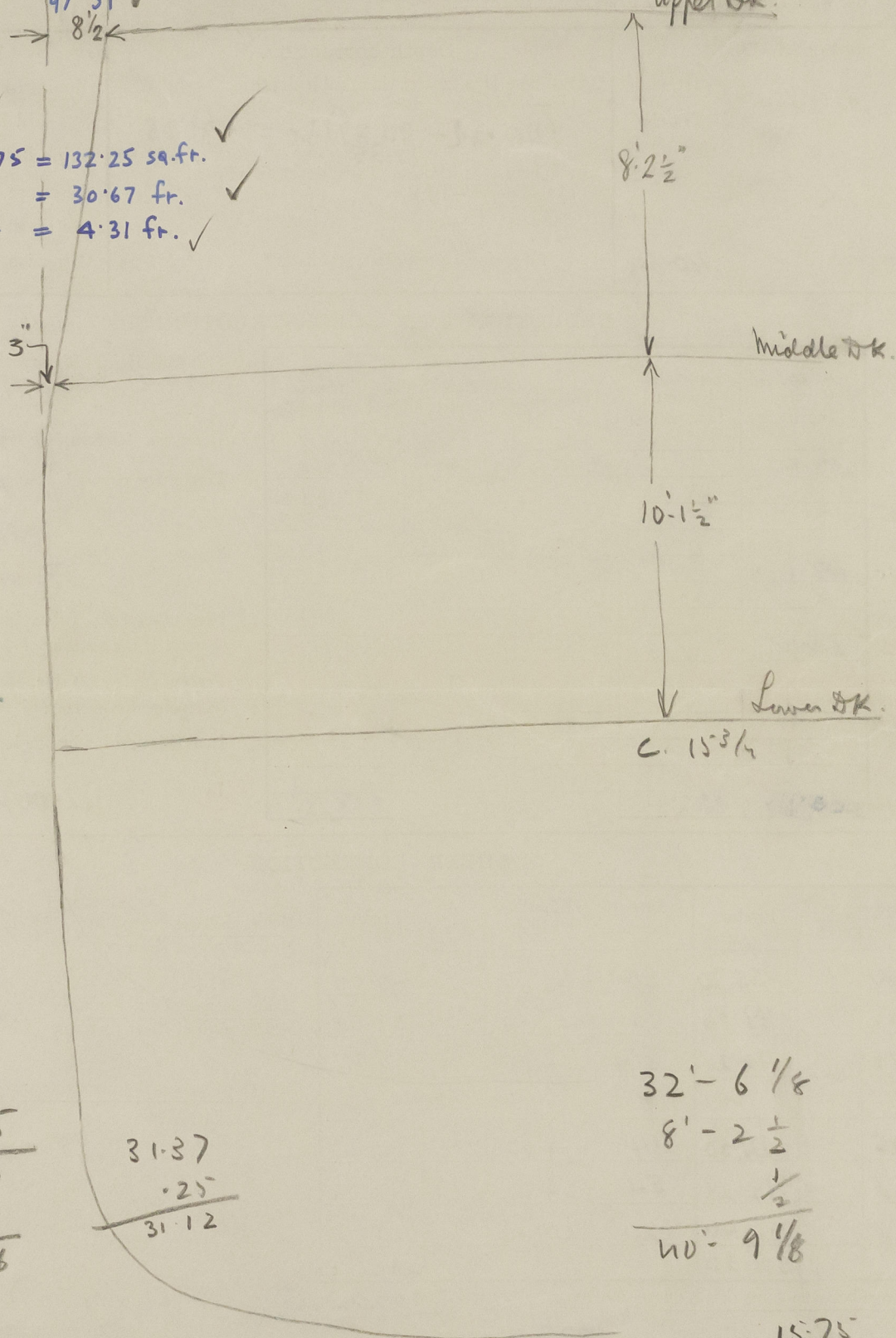
Equivalent Bld. Fore End:-

$\frac{2}{3} \times 3.75 = 2.5$

$\frac{21}{23.5} = 0.9$
 $\frac{4.31}{19.19} = 0.22$



Position of equiv. breadth Upper Deck



$\frac{19.4}{15.75} = 1.233$
 $\frac{7.4}{27.9} = 0.265$
 $\frac{101.75}{101.75} = 1.0$

$2 \times 62.75 = 125.5$
 $31.37 \times 2 = 62.74$
 $125.5 - 62.74 = 62.76$

$31.37 \times 2 = 62.74$
 $62.75 - 62.74 = 0.01$

$32.675 - 8.25 = 24.425$
 $24.425 - 10.15 = 14.275$
 $14.275 - 15.37 = -1.095$

$\frac{15.75}{15.04} = 1.047$
 $\frac{15.75}{15.50} = 1.016$

Trade of ship

Names of sister ships

Builder's name and yard number

Owners

Fee £

$15.75 \times \left(\frac{80.66}{31.37} \right)^2 = 15.04$
 $15.75 \times \left(\frac{31.12}{31.37} \right)^2 = 15.50$