

*Amended Freeboard due to closing fore-castle
but no change in freeboards as these are already limited*

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Index. No. _____
(For London Office only).

Ship's Name <i>"Cairngorm"</i>	Official Number <i>165950</i>	Nationality and Port of Registry <i>British Glasgow.</i>	Gross Tonnage <i>394.39</i>	Date of Build <i>1938-8</i>	Port of Survey _____
Moulded Dimensions: Length <i>137.0</i> Breadth <i>25.50</i> Depth <i>11.50</i>					Date of Survey <i>10 MAR 1944</i>
Moulded displacement at moulded draught = 85 per cent. of moulded depth <i>707.5</i> tons					Surveyor's Signature _____
Coefficient of fineness for use with Tables <i>.725</i>					Particulars of Classification <i>+100A1.</i>

Depth for Freeboard (D).	Depth correction.	Round of Beam correction.
Moulded depth <i>11.500</i>	(a) Where D is greater than Table depth (D - Table depth) R = <i>(11.53 - 9.13) 1.054 = +2.53</i> <i>2.40</i>	Moulded Breadth (B) <i>25.50</i>
Stringer plate <i>.08</i>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R =	Standard Round of Beam = $\frac{B \times 12}{50} = \frac{25.50 \times 12}{50} = 6.12$
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$ <i>✓</i>	If restricted by superstructures	Ship's Round of Beam = <i>6.48</i>
Depth for Freeboard (D) = <i>11.530</i>		Difference <i>excess</i> <i>.36</i>
		Restricted to
		Correction = $\frac{\text{Diff}^e}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.36}{4} (1 - .756) = -.02$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)	
Poop enclosed	<i>36.85</i>	<i>36.85</i>	<i>7.00</i>	<i>✓</i>	<i>36.85</i>	Standard Height of Superstructure <i>6.00</i>
" overhang						" " R.Q.D. <i>3.247</i>
R.Q.D. enclosed	<i>51.96</i>	<i>51.96</i>	<i>3.50</i>	<i>✓</i>	<i>51.96</i>	Deduction for complete superstructure <i>19.70</i>
" overhang						Percentage covered $\frac{S}{L} = \frac{76.39}{100} = 76.39$
Bridge enclosed						" $\frac{S_1}{L} = \frac{75.92}{100} = 75.92$
" overhang aft						" $\frac{E}{L} = \frac{75.92}{100} = 75.92$
" overhang forward						Percentage from Table, Line A. <i>✓</i>
F'cle enclosed	<i>14.56</i>	<i>14.56</i>	<i>6.50</i>	<i>✓</i>	<i>14.56</i>	(corrected for absence of fore-castle (if required)) <i>✓</i>
" overhang	<i>1.27</i>	<i>.63</i>			<i>.63</i>	Percentage from Table, Line B. <i>70.28</i>
Trunk aft						(corrected for absence of fore-castle (if required))
" forward						Interpolation for bridge less than 2L (if required) <i>✓</i>
Tonnage opening aft						Deduction = <i>19.70 × 70.28 = -13.84</i>
" " forward						
Total	<i>104.64</i>	<i>104.00</i>			<i>104.00</i>	

SHEER CORRECTION.

Station	Standard Ordinate	S M	Product	Actual Ordinate	Effective Ordinate	S M	Product	
A.P.	<i>23.70</i>	<i>1</i>	<i>23.70</i>	<i>35.62</i>	<i>49.25</i>	<i>1</i>	<i>49.25</i>	Mean actual sheer aft = <i>Excess</i>
$\frac{1}{2}$ L from A.P.	<i>10.54</i>	<i>4</i>	<i>42.16</i>	<i>15.87</i>	<i>21.92</i>	<i>4</i>	<i>87.68</i>	Mean actual sheer forward = <i>Excess</i>
$\frac{3}{8}$ L "	<i>2.61</i>	<i>2</i>	<i>5.22</i>	<i>4.00</i>	<i>5.42</i>	<i>2</i>	<i>10.84</i>	Mean standard sheer forward
Amidships	<i>-</i>	<i>4</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>4</i>	<i>-</i>	Length of enclosed superstructure forward of amidships = <i>> 1L</i>
$\frac{3}{8}$ L from F.P.	<i>5.22</i>	<i>2</i>	<i>10.44</i>	<i>5.50</i>	<i>5.50</i>	<i>2</i>	<i>11.00</i>	" " aft of " = <i>.5L</i>
$\frac{1}{2}$ L "	<i>21.08</i>	<i>4</i>	<i>84.32</i>	<i>22.12</i>	<i>22.125</i>	<i>4</i>	<i>88.50</i>	
F.P.	<i>47.40</i>	<i>1</i>	<i>47.40</i>	<i>52.75</i>	<i>52.75</i>	<i>1</i>	<i>52.75</i>	
Total			<i>213.24</i>				<i>300.02</i>	

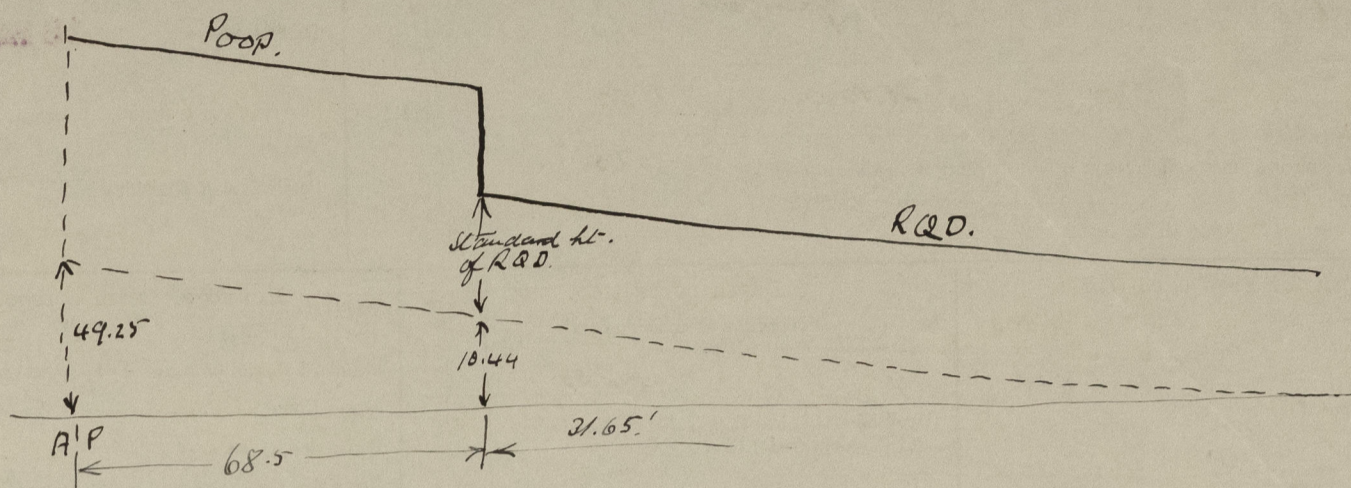
Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{.75 - \frac{S}{2L}}{.75 - \frac{S}{2L}} \right) = \frac{86.78}{18} \left(\frac{.75 - .382}{.75 - .382} \right) = -1.77$
If limited on account of midship superstructure. *✓* If limited to maximum allowance of $1\frac{1}{2}$ ins. per 100 ft. *✓*

Deduction for Tropical Freeboard.	Deduction for Fresh Water.	TABULAR FREEBOARD corrected for Flush Deck (if required)
Addition for Winter and Winter North Atlantic Freeboard.	Displacement in salt water at summer load water line	Correction for coefficient $\frac{.725 + .68}{1.36} = \frac{1.405}{1.36}$
Depth to Freeboard Deck = <i>15.03</i>	$\Delta = 845$	Depth Correction <i>2.53</i>
Summer freeboard = <i>3.67</i>	Tons per inch immersion at summer load water line	Deduction for superstructures <i>13.84</i>
Moulded draught (d) = <i>11.36</i>	T = <i>7.16</i>	Sheer correction <i>1.77</i>
Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = <i>2.84 = 2\frac{3}{4}</i>	Deduction = $\frac{\Delta}{40T}$ inches = <i>2.95</i>	Round of Beam correction <i>.02</i>
Addition for Winter North Atlantic Freeboard (if required) = <i>4\frac{3}{4}</i>	= <i>3"</i>	Correction for Thickness of Deck amidships <i>42.00</i>
		Other corrections, scantlings, etc. <i>-</i>
		44.53 / 5.63 + 28.90
		Summer Freeboard = <i>43.20</i>

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, *RAISED QUARTER* Wood, Steel/Deck: *3' 8" (LIMITED)*

Tropical Fresh Water Line above Centre of Disc	<i>3"</i>	Tropical Fresh Water Freeboard	<i>3' 5"</i>
Fresh Water Line " "	<i>3"</i>	Fresh Water " "	<i>3' 5"</i>
Tropical Line " "	<i>NIL</i>	Tropical " "	<i>3' 8" (LIMITED)</i>
Winter Line below " "	<i>2\frac{3}{4}"</i>	Winter " "	<i>3' 10\frac{1}{4}"</i>
Winter North Atlantic Line " "	<i>4\frac{3}{4}"</i>	Winter North Atlantic " "	<i>4' 0\frac{1}{4}"</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.



Allowed Sheer aft.

Actual ht. at poop front = 7.47'

Excess ht. of RQD = $\frac{3.04}{10.51}$

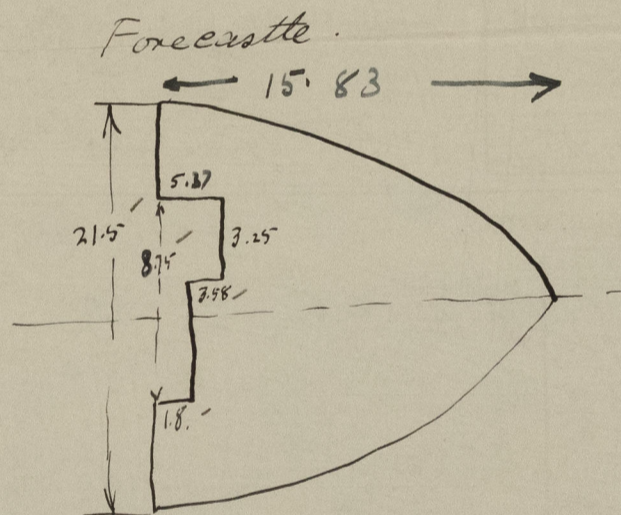
Virtual Sheer at AP = $10.51 \left(\frac{68.50}{31.65} \right)^2 = 49.25''$

Actual ht. RQD = 3.500

Stand " = 3.247

Excess = .253

= 3.04"



$8.75 \times 1.8 = 15.75$

$3.58 \times 3.25 = 11.63$

$\frac{27.38}{21.50} = 1.27$

$15.83 - 1.27 = 14.56$ enclosed

overhang = 1.27'

Trade of ship

Names of sister ships

Builder's name and yard number

Owners

Fee £



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Foundation