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(For London Office only.)

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

11.487

Computation of Freeboard for ^{Motor} ~~Steamer, Sailing Ship, Tanker~~
having Bridge and Forecastle.

Port of Survey BelfastDate of Survey During ConstructionName of Surveyor J. E. CochoParticulars of Classification 100A1
(class contemplated)

(Type of Superstructures.)

Ship's Name	Nationality and Port of Registry	Official Number	Gross Tonnage	Date of Build
<u>ROTHESAY CASTLE</u>	<u>British</u> <u>London</u>	<u>164453</u>	<u>7016</u>	<u>1935</u>

Moulded Dimensions: Length 420 Breadth 61 Depth 36.75
Moulded displacement at moulded draught = 85 per cent. of moulded depth 15370 tons
Coefficient of fineness for use with Tables .672 (.68 havent)

Depth for Freeboard (D)

Moulded depth 36.75
Stringer plate42035
Sheathing on exposed deck 1/2" asphalt no
 $T \left(\frac{L-S}{L} \right) =$ per sketch ✓
Depth for Freeboard (D) = 36.785

Depth correction

(a) Where D is greater than Table depth
(D - Table depth) R =
 $(36.785 - 28.00) \times 3 = + 26.35$
(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) 61
Standard Round of Beam = $\frac{B \times 12}{50} =$ 14.62
Ship's Round of Beam = 15
Difference = .38
Restricted to ✓
Correction = $\frac{\text{Diff}^e}{4} \times \left(1 - \frac{S_1}{L} \right) =$ $\frac{.38}{4} \times .5827 = - .06$

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 (equiv.)	<u>134.23</u>	<u>134.24</u>	<u>8'1" + 2 1/2" wood</u>	-	<u>134.24</u>
" overhang aft	<u>1.29</u>	<u>.97</u>	-	-	<u>.97</u>
" overhang forward	<u>.07</u>	-	-	-	-
F'cle enclosed (equiv.)	<u>40.35</u>	<u>40.07</u>	<u>8'0"</u>	-	<u>40.07</u>
" overhang	-	-	-	-	-
Trunk aft	-	-	-	-	-
" forward	-	-	-	-	-
Tonnage opening aft ...	-	-	-	-	-
" " forward	-	-	-	-	-
Total	<u>175.60</u>	<u>175.28</u>	-	-	<u>175.28</u>

Standard Height of Superstructure 7.5
" " R.Q.D. ✓
Deduction for complete superstructure 42
Percentage covered $\frac{S}{L} =$ 41.80
" " $\frac{S_1}{L} =$ 41.73
" " $\frac{E}{L} =$ 41.73
Percentage from Table, Line A. ✓
(corrected for absence of forecastle (if required))
Percentage from Table, Line B. 28.97
(corrected for absence of forecastle (if required))
Interpolation for bridge less than 2L (if required) ✓
Deduction = 42 × 28.97 = -12.17

SHEER CORRECTION.

Station	Standard Ordinate	S M	Product	Actual Ordinate	Effective Ordinate	S M	Product
A.P.	<u>52.00</u>	1	<u>52.00</u>	<u>53.37</u>	<u>53.37</u>	1	<u>53.37</u>
1/8 L from A.P.	<u>23.14</u>	4	<u>92.56</u>	<u>23.00</u>	<u>23.00</u>	4	<u>92.00</u>
3/8 L "	<u>5.72</u>	2	<u>11.44</u>	<u>5.31</u>	<u>5.31</u>	2	<u>10.62</u>
Amidships	-	4	-	-	-	4	-
5/8 L from F.P.	<u>11.44</u>	2	<u>22.88</u>	<u>11.44</u>	<u>11.44</u>	2	<u>22.88</u>
7/8 L "	<u>46.28</u>	4	<u>185.12</u>	<u>46.25</u>	<u>46.25</u>	4	<u>185.00</u>
F.P.	<u>104.00</u>	1	<u>104.00</u>	<u>104.25</u>	<u>104.25</u>	1	<u>104.25</u>
Total	-	-	<u>468.00</u>	-	-	-	<u>468.12</u>

Mean actual sheer aft = Deficient: > .75 standard
Mean standard sheer aft =

Mean actual sheer forward = Standard
Mean standard sheer forward =

Length of enclosed superstructure forward of amidships = > .1 L
" " aft of " =

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) =$ $\frac{.12}{18} (.75 - .209) =$ Nil

If limited on account of midship superstructure. ✓If limited to maximum allowance of 1 1/2 ins. per 100 ft. ✓

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

Depth to Freeboard Deck = 36.78
Summer freeboard = 7.67
Moulded draught (d) = 29.11

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 7.27 = 7 1/4
Addition for Winter North Atlantic Freeboard (if required) =

Deduction for Fresh Water.

Displacement in salt water at summer load water line
 $\Delta =$ 14240
Tons per inch immersion at summer load water line
 $T =$ 49.04
Deduction = $\frac{\Delta}{40 T}$ inches = 7.26
= 7 1/4

TABULAR FREEBOARD corrected for Flush Deck (if required) Nil

Correction for coefficient

Depth Correction 26.35
Deduction for superstructures 12.17
Sheer correction -
Round of Beam correction06
Correction for Thickness of Deck amidships -
Other corrections, scantlings, etc. -

77.80
77.80

+	-
<u>26.35</u>	<u>-</u>
<u>-</u>	<u>12.17</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>.06</u>
<u>-</u>	<u>-</u>
<u>-</u>	<u>-</u>
<u>26.35</u>	<u>12.23</u>

Summer Freeboard = 91.92SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, ~~Wood~~, Steel, Deck: - 7' 8"

Tropical Fresh Water Line above Centre of Disc 14 1/2"
Fresh Water Line " " 7 1/4"
Tropical Line " " 7 1/4"
Winter Line below " " 7 1/4"
Winter North Atlantic Line " " ✓

Tropical Fresh Water Freeboard 6' 5 1/2"
Fresh Water " " 7' 0 3/4"
Tropical " " 7' 0 3/4"
Winter " " 8' 3 3/4"
Winter North Atlantic " " ✓

W4SD-0106 1/2

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RECEIVED 20 MAY 1939

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PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS									
FREEBOARD DECK									
Description of Hatchway	N ^o 1	N ^o 2	N ^o 3	N ^o 4	N ^o 5	N ^o 3	Hatch to Store	Hatches to Cooler Rooms inside masts/hoists	
Dimensions of Hatchway	20'3" x 16'0"	26'3" x 16'0"	23'7½" x 16'0"	21'0" x 16'0"	21'0" x 16'0"	23'7½" x 16'0"	9'0" x 2'1"	2'3" x 2'6"	
COAMINGS	Height above Deck	30"	30"	9"	30"	30"	30"	38"	6" x 3" x 30 ea
	Thickness	4"	4"	4"	4"	4"	4"	4"	
	Stiffeners	7 x 3 x 40 ba	7 x 3 x 40 ba	✓	7 x 3 x 40 ba	7 x 3 x 40 ba	✓	✓	
	Brackets, Stays	6 x 40 bp	6 x 40 bp	✓	6 x 40 bp	6 x 40 bp	✓	✓	
HATCH BEAMS	Number	4	5	4	4	4	4	4	
	Spacing	4'4½" max	4'4½" max	4'4½" max	4'4½" max	4'4½" max	4'4½" max	4'4½" max	
	Scantling and Sketch	Plate 14'6" x 34"	As N ^o 1	Plate 14'6" x 34"	As N ^o 1	As N ^o 1	Plate 14'6" x 34"	As N ^o 1	
		Angles 3 x 3 x 40		Angles 3 x 3 x 40			Angles 3 x 3 x 40		
	Bearing Surface	4"	✓	3½"	✓	✓	4"	✓	
FORE AND AFTERS	Number	✓	✓	✓	✓	✓	✓	✓	
	Spacing	✓	✓	✓	✓	✓	✓	✓	
	Unsupported Lengths	✓	✓	✓	✓	✓	✓	✓	
	Scantling* and Sketch	None	None	None	None	None	None	None	
	Bearing Surface	✓	✓	✓	✓	✓	✓	✓	
HATCH COVERS	Material	N.P.	N.P.	N.P.	N.P.	N.P.	N.P.	N.P.	Insulated plug hatches
	Thickness	2½"	2½"	2½"	2½"	2½"	2½"	2½"	
	How fitted	F and A	F and A	F and A	F and A	F and A	F and A	F and A	
	Bearing Surface	3"	3"	3"	3"	3"	3"	3"	
Spacing of Cleats	24"	24"	✓	24"	24"	24"	24"	24"	
Number of Tarpaulins	2	2	✓	2	2	2	2	2	

*Are wood fore and afters steel shod at all bearing surfaces? *Yes*
 Are battens and wedges efficient and in good condition? *Yes*
 Are tarpaulins in good condition and in accordance with rule requirements? *Yes*
 Are lashings provided in accordance with rule requirements? *Yes*

Note: Side coamings of N^o 1, 2, 4 & 5 hatches on Freeboard Deck and N^o 3 hatch on Bridge deck are of Reith patent construction, thus *12 x 3½ x 50 ba Deck*

Particulars of fiddley, funnel and ventilator coamings:—

*Motor casing top of steel, strongly constructed, with no open gratings.
 Skylight of steel of strong construction.*

Particulars of Flush Bunker Scuttles:—

None.

Particulars of Companionways:—

*Steel Mast houses, 8'0" high, plating 26", stiffeners 5 x 3 x 30 angles spaced 24" to 30", enclosing access hatches to cooler rooms. Entrance openings 5'2" x 2'0", sills 24", closed by hinged steel doors, operated from both sides.
 Entrance to steering gear compartment and tunnel escape bunk in steel deckhouse aft. Deckhouse plating 26" stiffeners 3 x 2½ x 26 angles spaced 33". Door to steering gear, 5'4" x 2'2" of 2" solid hardwood, operated from both sides.
 Door to tunnel escape 5'3" x 2'0" hinged steel, operated from both sides. Sills 24".*

Particulars of Ventilators in exposed positions on freeboard and superstructure decks:—

*On Freeboard deck in fore well, 4 vents to hold, 14" x 36", and 4 vents to cooler rooms 9' x 32", all 36" high coamings.
 " " " aft " " " " 14" x 36", 4 vents to cooler rooms 9' x 32", 3 vents to steering gear compartment 9' x 32", all 36" high coamings.
 On Forecastle deck, 2 vents to hold, 14" x 36", and 1 vent to peak 9' x 32", coamings 36" high. Patent vents to forecastle 12" x 4", 36" high.
 On Bridge deck, 2 sampson post vents, 16" dia. to hold, efficiently stayed. Patent vents to Bridge and upper green deck 8' x 4" to 16" x 4", 36" high. All vent vents have galvanised iron plugs. All vents have canvas covers.*

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks:—

*On Freeboard deck in fore well, 2 @ 2½" and 2 @ 4" from double bottom tanks, 1 @ 4" from duct keel, all 36" high.
 " " " aft " " " " 2 @ 4" from double bottom tanks, 4 @ 4" from after oil fuel tanks, 1 @ 2" from drain tank.
 On Forecastle deck, 2 @ 2½" from fore peak tank, all 36" high.
 On Bridge deck, 12 @ 4" from double bottom tanks, 4 @ 2½" from cofferdams, 4 @ 2½" from fuel tanks, all 18" high.
 All air pipes provided with canvas covers.*

Particulars of Gangway Cargo and Coaling Ports:—

None.

Particulars of Scuppers and Sanitary Discharge Pipes :— Scuppers from exposed freeboard deck through gunwale angle
Scuppers from above freeboard deck with forecastle led overboard below freeboard deck with brass storm
valve at ship's side. Scuppers and sanitary discharges from spaces above bridge deck led overboard below
freeboard deck with brass storm valve at ship's side.
Sanitary discharges from bridge space, led overboard below freeboard deck, with brass storm valve at
ship's side.

Particulars of Side Scuttles :—
In Forecastle, Bridge, and upper tween decks in way of bridge, sidelights of substantial
pattern, 10" dia., fitted with hinged steel deadlights.

Particulars of Guard Rails :—
Guard Rails on Forecastle and Bridge deck, 3' 8" high, 3 rails, Stanchions spaced
4' 3" apart average.

Particulars of Gangways, Lifelines, etc. :—
Efficient lifelines provided in fore and after wells.
The crew is berthed amidships.

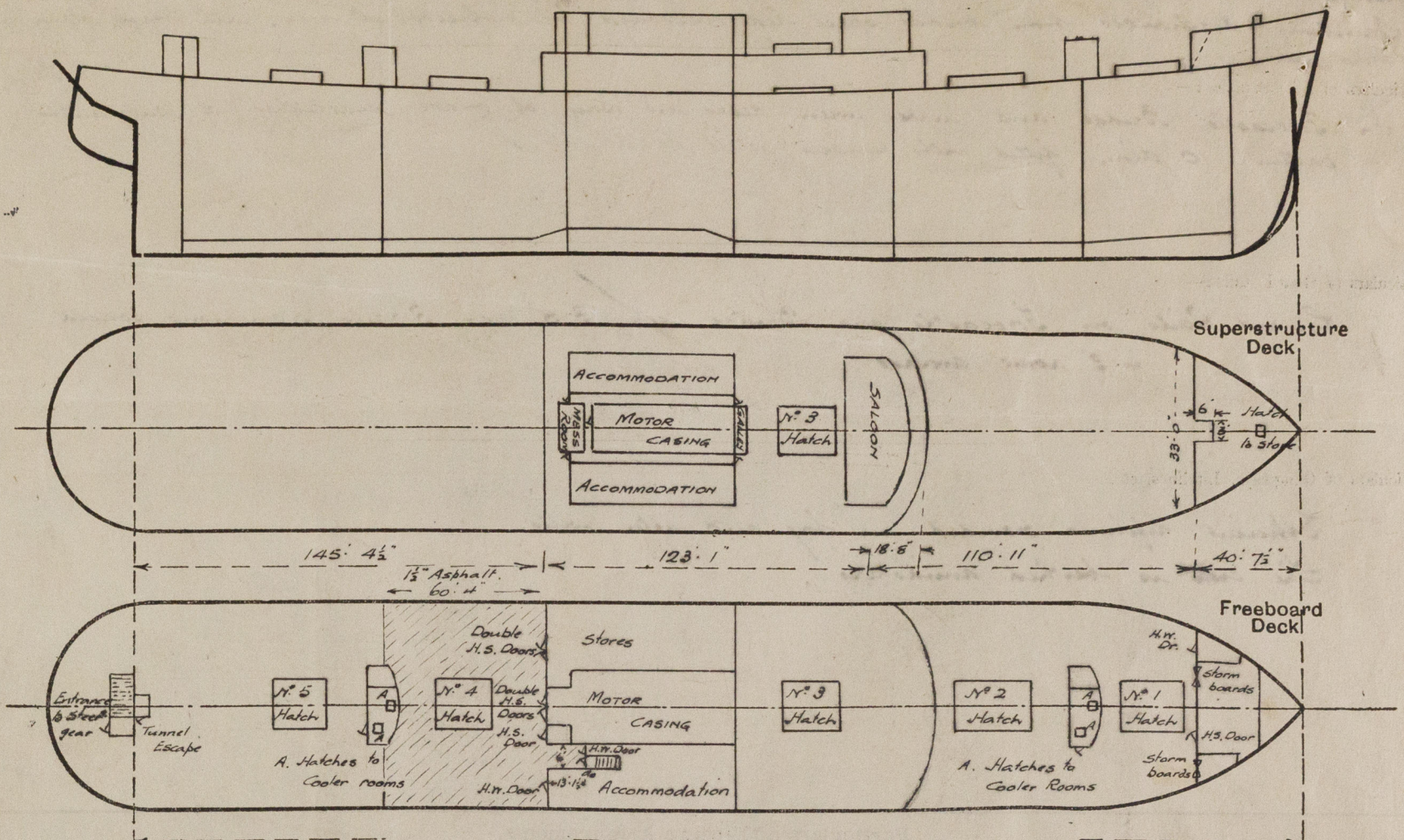
Particulars of Freeing Arrangements.						
	Length of Bulwark	Height of Bulwark	Size of Freeing Ports	Number each side	Area each side	Rule area each side
After Well	145' 4 1/2"	3' 9"	3' 0" x 1' 3"	9	33.75	29.08 f
Forward Well	105' 4 1/2"	3' 9"	3' 0" x 1' 3" 2' 6" x 1' 3"	5 1	21.87	21.08 f
State position of each freeing port } After Well :— FE port from Aft Br. Bhd. 12' 0", 40' 6", 52' 6", 64' 6", 76' 6", 98' 6", 110' 6", 123' 0", 134' 6" (F. and A. position and height above deck edge) } Forward Well :— FE port from Br. front 6", 10' 0", 19' 0", 45' 0", 57' 0", 69' 0". All ports 15" above State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such :— One horizontal bar. deck edge.						
Additional area where sheer is less than standard.						

Particulars of Superstructures, Trunks, Casings, Deckhouses.								
	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead								
Raised Quarter Deck Bulkhead ...						1 @ 5' 3" x 5' 9" 1 @ 5' 9" x 4' 0" 1 @ 5' 9" x 3' 0" 3 @ 5' 9" x 2' 6"	24" 15"	
Bridge, After Bulkhead	30	30	4 1/2 x 3 x 36 ca	25 1/2"	None	No openings		8' 1"
Bridge, Forward Bulkhead	44	44	9 x 3 1/2 x 50 ca	30"	Lugged top & bottom			8' 1"
Forecastle Bulkhead	30	30	4 x 2 1/2 x 36 ca	27"	None	2 @ 5' 9" x 3' 3" 1 @ 5' 9" x 2' 4" 1 @ 5' 9" x 2' 11"	15"	8' 0"
Trunk, Aft								
Trunk, Forward								
Exposed Machinery Casings on Free- board or Raised Quarter Decks ...								
Exposed Machinery Casings on Super- structure Decks								
Machinery Casings within Superstruc- tures not fitted with Class I Closing Appliances	40	28	4 x 3 x 40 ca	3 1/2"	None	None		8' 1"
Deckhouses on Flush Deck Ships ...								

Particulars of Closing Appliances (state if capable of being manipulated from both sides).	
Poop Bulkhead	
Raised Quarter Deck Bulkhead ...	
Bridge, After Bulkhead	3 hinged steel doors, and 3 solid hardwood doors 2" thick, all operated from both sides
Bridge, Forward Bulkhead	No openings
Forecastle Bulkhead	Storm boards full height in riveted channels in openings 3' 3" wide
Exposed Machinery Casings on Free- board or Raised Quarter Decks ...	One hinged hardwood door 2" thick, and one hinged steel door, both operated from both sides
Exposed Machinery Casings on Super- structure Decks	
Machinery Casings within Superstruc- tures not fitted with Class I Closing Appliances	No openings
Deckhouses on Flush Deck Ships ...	

Rathenay Castle

Superstructure bulkheads, trunks, deckhouses, casings, cargo and coaling hatchways, extent and thickness of sheathing on the freeboard deck, gangway, cargo and coaling ports, and any other openings, etc., which would affect the seaworthiness of the ship are to be shewn on the following sketches:—



After Bridge bulkhead equivalent $\frac{6 \times 13.125}{61} = 1.29$ deduct
 Bridge front " " $\frac{2}{3} \times 18.67 = 12.44$ add.
 Forecastle " " $\frac{6 \times 3}{2 \times 33} = 0.27$ deduct

Diagrammatic sketch of Bridge front at side.
 Bridge deck

Length of Br. at side to this point 5.65 Rail Length of Bulwarks to this point 5.65 Fwd. Dk.

State any special features in the construction of the ship:—

Full Draft.	Extreme Displacement.	Tons per inch.
28' 0"	13484 tons	48.4
29' 0"	14068	48.9
30' 0"	14658	49.4

Builder's name and yard number. Messrs Harland & Wolff Ltd. N° 944

Names of sister ships. ROSLIN CASTLE. Same Builders N° 943

Owners. Union Castle Mail Steamship Co. Ltd.

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