

Lloyd's Register of Shipping.
SURVEYS FOR FREEBOARD.Index. No. 32734
(For London Office only.)

No. 100457.

Computation of Freeboard for Steamer, Sailing Ship, Tug, etc.
having Sch. Bridge House

(Type of Superstructures.)

Ship's Name "BOTANIC" Nationality and Port of Registry British Official Number 160475 Gross Tonnage 2407 Date of Build 1928-5

Moulded Dimensions: Length 892.0 Breadth 44.78 Depth 22.5
Moulded displacement at moulded draught = 85 per cent. of moulded depth 5293 tons
Coefficient of fineness for use with Tables 741

Port of Survey Ramsgate
Date of Survey May 1932
Name of Surveyor J. P. Ryle
Particulars of Classification 10001

Depth for Freeboard (D)
Moulded depth ... 22.50 22.6
Stringer plate ... 0.3
Sheathing on exposed deck
 $T \left(\frac{L-S}{L} \right) =$
Depth for Freeboard (D) = 22.53

Depth correction
(a) Where D is greater than Table depth
(D - Table depth) R =
(22.53 - 19.47) 2.247 = +6.88
(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) 44.9
Standard Round of Beam = $\frac{B \times 12}{50} =$ 10.74
Ship's Round of Beam = 11
Difference 0.26
Restricted to
Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right) =$ 0.03

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 ... | <u>128.7</u> | <u>128.62</u> | <u>7.9</u> | | <u>128.62</u> |
| " overhang aft ... | | | | | |
| " overhang forward ... | <u>29.35</u> | <u>29.35</u> | | | |
| F'cle enclosed ... | <u>26.8</u> | | <u>7.9</u> | | <u>29.35</u> |
| " overhang ... | | | | | |
| Trunk aft ... | <u>4.0</u> | | <u>7.9</u> | | |
| " forward ... | | | | | |
| Tonnage opening aft ... | | | | | |
| " forward ... | | | | | |
| Total ... | <u>157.97</u> | <u>157.97</u> | | | <u>157.97</u> |

Standard Height of Superstructure 6.42
" " R.Q.D. ...
Deduction for complete superstructure 34.80
Percentage covered $\frac{S}{L} =$ 54.09
" " $\frac{S_1}{L} =$ 54.09
" " $\frac{E}{L} =$ 54.09
Percentage from Table, Line A.
(corrected for absence of forecastle (if required))
Percentage from Table, Line B.
(corrected for absence of forecastle (if required)) 40.09
Interpolation for bridge less than 2L (if required)
Deduction = 34.80 \times 40.09 =

SHEER CORRECTION.

| Station | Standard Ordinate | S | M | Product | Actual Ordinate | Effective Ordinate | S | M | Product |
|-------------------------------|-------------------|---|---|---------------|-----------------|--------------------|---|---|---------------|
| A.P. ... | <u>39.20</u> | 1 | | <u>39.20</u> | <u>39.2</u> | <u>39.00</u> | 1 | | <u>39.00</u> |
| $\frac{1}{2}$ L from A.P. ... | <u>17.44</u> | 4 | | <u>69.76</u> | <u>17.1738</u> | <u>17.38</u> | 4 | | <u>69.52</u> |
| $\frac{3}{4}$ L " ... | <u>4.31</u> | 2 | | <u>8.62</u> | <u>4.434</u> | <u>4.34</u> | 2 | | <u>8.68</u> |
| Amidships ... | | 4 | | | | | 4 | | |
| $\frac{1}{2}$ L from F.P. ... | <u>8.62</u> | 2 | | <u>17.24</u> | <u>9.869</u> | <u>8.69</u> | 2 | | <u>17.38</u> |
| $\frac{1}{4}$ L " ... | <u>34.89</u> | 4 | | <u>139.56</u> | <u>35.3476</u> | <u>34.76</u> | 4 | | <u>139.04</u> |
| F.P. ... | <u>78.40</u> | 1 | | <u>78.40</u> | <u>79.78</u> | <u>78.00</u> | 1 | | <u>78.00</u> |
| Total ... | | | | <u>352.78</u> | | | | | <u>351.62</u> |

Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{75-S}{2L} \right) =$ $\frac{1.16}{18} (75-2705) = +03$

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.

Addition for Winter and Winter North Atlantic Freeboard.

Depth to Freeboard Deck = 22.53
Summer freeboard = 3.02
Moulded draught (d) = 19.51

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 4.88

Addition for Winter North Atlantic Freeboard (if required) = 2

Deduction for Fresh Water.

Displacement in salt water at summer load water line

$\Delta =$ 5438

Tons per inch immersion at summer load water line

T = 26.1

Deduction = $\frac{\Delta}{40T}$ inches = 5.21

5 1/4

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient 741 + 68
136

| | + | - |
|--|--------------|--------------|
| Depth Correction ... | <u>6.88</u> | |
| Deduction for superstructures ... | | <u>13.95</u> |
| Sheer correction ... | <u>0.03</u> | |
| Round of Beam correction ... | | <u>0.03</u> |
| Correction for Thickness of Deck amidships ... | | |
| Other corrections, scantlings, etc. ... | | |
| | <u>6.91</u> | <u>13.98</u> |
| Summer Freeboard = | <u>36.27</u> | |

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wm Steel, Deck:—

Tropical Fresh Water Line above Centre of Disc ... 10 1/4

Fresh Water Line " " ... 5 1/4

Tropical Line " " ... 5

Winter Line below " " ... 5

Winter North Atlantic Line " " ... 7

Tropical Fresh Water Freeboard ... 2.20

Fresh Water " " ... 2.7

Tropical " " ... 2.7 1/4

Winter " " ... 3.5 1/4

Winter North Atlantic " " ... 3.7 1/4

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PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS

| Description of Hatchway | UNDER DECK | | | | BRIDGE DECK | | | |
|--|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 3 | 4 | 4 |
| Dimensions of Hatchway | 22'4"-17'6" | 22'6"-17'6" | 16'4"-22'0" | 16'8"-22'0" | 22'6"-17'6" | 16'8"-22'0" | 22'6"-17'6" | 22'6"-17'6" |
| COAMINGS | Height above Deck | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Thickness Sides | 1/4" | 1/4" | 9/16" | 1/2" | 1/4" | 1/4" | 1/4" |
| | Thickness Ends | 1/4" | 1/4" | 1/4" | 1/4" | 1/4" | 1/4" | 1/4" |
| | Stiffeners | 7-8-10-12 | 7-8-10-12 | 7-8-10-12 | 7-8-10-12 | 7-8-10-12 | 7-8-10-12 | 7-8-10-12 |
| HATCH BEAMS | Brackets, Stays | 2 | 2 | N/A | 3 | 2 | 2 | 2 |
| | Number | 4 | 4 | 3 | 2 | 4 | 2 | 2 |
| | Spacing | 4'6" | 4'9" | 4'10" | 4'9" | 4'6" | 4'9" | 4'9" |
| | Scantling and Sketch | 18"x34" angles | 18"x34" angles | 18"x35" angles | 18"x34" angles | 18"x34" angles | 18"x34" angles | 18"x34" angles |
| FORE AND AFTERS | Bearing Surface | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | Number | | | | | | | |
| | Spacing | | | | | | | |
| | Unsupported Lengths | | | | | | | |
| HATCH COVERS | Scantling and Sketch | | | | | | | |
| | Bearing Surface | | | | | | | |
| | Material | W.P. | As | As | As | As | As | As |
| | Thickness | 3/8" | N°1 | N°1 | N°1 | N°1 | N°1 | N°1 |
| HATCH COVERS | How fitted | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | Bearing Surface | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Spacing of Cleats | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| Number of Tarpaulins | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| <p>*Are wood fore and afters steel shod at all bearing surfaces? <i>Yes.</i></p> <p>Are battens and wedges efficient and in good condition? <i>Yes.</i></p> <p>Are tarpaulins in good condition and in accordance with rule requirements? <i>Yes.</i></p> <p>Are lashings provided in accordance with rule requirements? <i>Yes.</i></p> | | | | | | | | |

Particulars of fiddle, funnel and ventilator coamings:—

Starboard & fiddle gratings covered by strong steel hinges covers.
Funnel & funnel ventilators are in efficient condition.
Engine skylight is of steel strongly constructed.

Particulars of Companionways:—

Nil.

Particulars of Companionways:—

Nil.

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

| | | | | | |
|---|--------------|--------|---------|-----------|---------------------|
| 2 | Bent on Side | 9' Dia | Coaming | 36" x 36" | Lead to fore hatch. |
| 2 | " | 8' | " | 30" x 30" | " |
| 2 | " | 8' | " | 30" x 30" | " |
| 2 | " | 8' | " | 30" x 30" | " |
| 4 | Fore | 18" | " | 36" x 36" | 1/2" Dia. Spans. |
| 4 | Bridge | 20" | " | 37" x 37" | " |
| 4 | " | 14" | " | 30" x 36" | Lead to fore hatch. |
| 4 | Afters | 18" | " | 30" x 32" | " |
| 2 | " | 18" | " | 36" x 36" | 1/2" Dia. Spans. |

All Ventilators are constructed in accordance with rules and coamings fitted with worn plug and canvas covers.

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

| | | | | |
|---|-------------------|---------|--------|--|
| 2 | Air pipes on Side | 7' high | 2" | Del. (1 from fore hatch tank & 1 from DB tank) |
| 4 | " | 22" | 2 1/2" | from DB tank. |
| 4 | " | 19" | 2 1/2" | " |
| 1 | Deck | 30" | 5" | Dry Land. |
| 2 | Pipes | 22" | 2 1/2" | DB tank. |
| 1 | " | 36" | 2 1/2" | Open to fore hatch. |

*marked **
Air pipes have no rifling holes.
Annular plugs & canvas covers fitted to air pipes and through shell.

Particulars of Gangway Cargo and Coaling Ports:—

Nil.



Particulars of Scuppers and Sanitary Discharge Pipes —

Scuppers and Sanitary pipes are fitted with 6.17. Storm valves
Pipes discharge about 2'0" below deck ✓

Particulars of Side Scuttles:

Side scuttles to main space in side are provided with
portable deadlights and are of substantial construction ✓

Particulars of Guard Rails:—

Side oblongs 3'4" high incl 3 rods.
and stanchion spaced 4'9" apart. ✓

Particulars of Gangways, Lifelines, etc.:—

Efficient lifelines and suitable supports have
been provided between bridge and after end and in
the forward well on both sides of the ship.
Pia.

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 ... | ✓ | 3'6" | 36" x 14" | 4 | 13.9 | 12.3 |
| Forward Well ... | 75'6" | 3'6" ✓ | 48" x 16 1/2" ✓ | 3 | 16.5 ✓ | 14.6 ✓ |

State position of each freeing port ...

After Well:—

Forward Well:—

State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:—

Additional area where sheer is less than standard.

12'8" 9'8" 8'7" 6'9" 24'0"

Freeing Port 13" above deck.
1 bar to each freeing port ✓

Particulars of Superstructures, Trunks, Casings, Deckhouses.

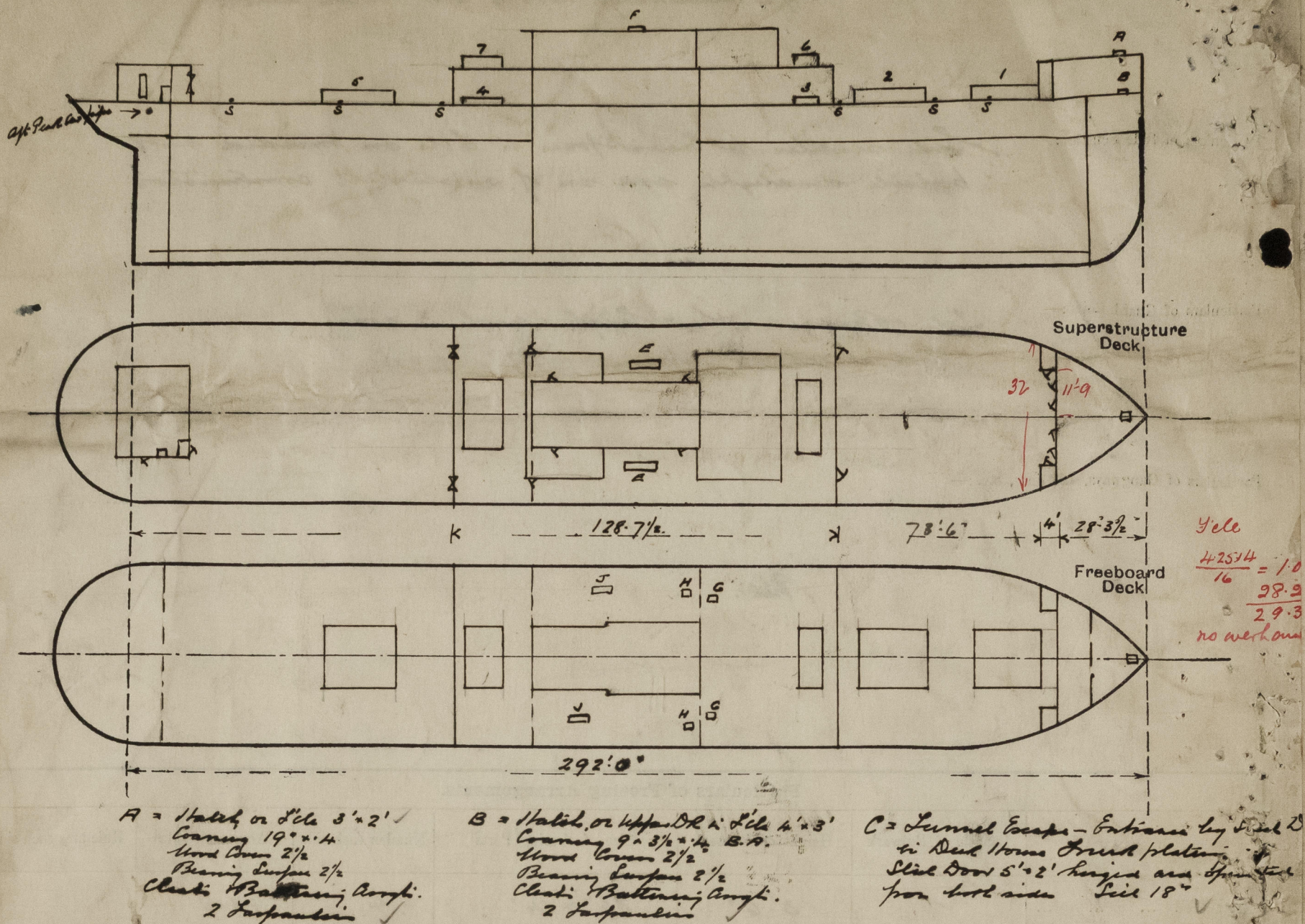
| | Coaming | Plating | Stiffeners | Spacing | End Attachments of Stiffeners | Size of Openings | Height of Sills | Height of Casings |
|---|------------------|---------|------------------------------------|-------------|---------------------------------|------------------|-----------------|-------------------|
| Poop Bulkhead ... | ✓ | | | | | | | |
| Raised Quarter Deck Bulkhead ... | ✓ | | | | | | | |
| Bridge, After Bulkhead ... | 1/4 | 3 | 7 x 3 x 4 B.R. ✓ 3 1/2 x 3 x 35 | 25' x 30' ✓ | Bracket I.B. ✓ when B.R. ✓ | 60" x 36" | 19 ✓ | 7'9" |
| Bridge, Forward Bulkhead ... | 1/45 | 35 | 8 x 3 x 4 B.R. ✓ | 29/30' ✓ | Bracket I.B. ✓ I.B. Batten ✓ | 4'6" x 2'9" | 18 1/2 ✓ | 7'9" |
| Forecastle Bulkhead ... | Unlashed Plating | 3 | 3 x 3 x 30 | 27/30' ✓ | Ind ✓ | 60" x 24" | 18 ✓ | 7'9" |
| Trunk, Aft ... | ✓ | | | | | | | |
| Trunk, Forward ... | ✓ | | | | | | | |
| Exposed Machinery Casings on Free-board or Raised Quarter Decks ... | ✓ | | | | | | | |
| Exposed Machinery Casings on Super-structure Decks ... | 35 | 30 | 3 1/2 x 3 x 35 ✓ | 27/30' ✓ | Bracket I.B. only ✓ | 4-5' x 2' | 18 1/2 ✓ | 7'9" |
| Machinery Casings within Superstructures not fitted with Class I Closing Appliances ... | 30 | 20 | 3 1/2 x 3 x 35 ✓ | 27/30' ✓ | Ind ✓ | ✓ | ✓ | 7'9" ✓ |
| 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 ... | 2 1/2" Sliding Boards in permanent channels full height |
| Bridge, Forward Bulkhead ... | Strong steel hinged door with both sides closed for fire side only |
| Forecastle Bulkhead ... | Steel doors operated from both sides ✓ |
| Exposed Machinery Casings on Free-board or Raised Quarter Decks ... | ✓ |
| Exposed Machinery Casings on Super-structure Decks ... | 2 Steel Doors to E.R. (protected by Dead Home) operated from both sides |
| Machinery Casings within Superstructures not fitted with Class I Closing Appliances ... | N/A ✓ |
| Deckhouses on Flush Deck Ships ... | ✓ |

Bothnia.

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 shown on the following sketches:—



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

- D = Entrance Hatch to aft part inside DR 1/2" (Slid Door in DR 1/2" 5' x 2' hinges and operated from both sides. Laid 18"
- E = Burles Hatch on Bridge Deck 10' 3" x 3' 6" Coaming 30" x 4" Wood Cover 2 1/2" Bearing Surface 2 1/2" Cleats 23" 2 Larpaulin east hatch + battening arrangement.
- F = Coaling Hatch on Loading Top 13' 6" x 4' 6" Coaming 15 1/2" x 7 1/2" Wood Cover 2 1/2" Bearing Surface 2 1/2" Cleats 23" 2 Larpaulin + Battening Arrangement.
- I = Burles Hatch 6' 0" x 3' 7" Coaming 9' 3 1/2" x 5" B.P. Wood Cover 2 1/2" Rest 2 1/2" Cleats 22" 2 Larpaulin.
- G = Escape Hatch under Bridge 2' 11" x 1' 6" Coaming 9' 3 1/2" x 5" B.P. with hinges steel cover with rubber joints secured by heavy bolt & lock.
- H = Burles trimming hatch 2' 5 1/2" x 2' 5 1/2" Coaming 9' 3 1/2" x 5" B.P. Wood Cover 2 1/2" Rest 2 1/2" Cleats 18" 2 Larpaulin.

Ship undergoing Post Special Survey and Entrance Arrangement.

Builder's name and yard number

J. L. Thompson & Son Ltd.

Names of sister ships

Bothnia No. Rpt 99816 Bosnia No. Rpt 99857 Bothnia No. Rpt 99816

Owners

Cunard S. S. Co. Ltd.

Fee £ 10 : 4 : 0

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