

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

No 31039

Computation of Freeboard for Steamer, Sailing Ship, Tanker

having Raised Quarter Deck, Bridge & Forecastle

(Type of Superstructures.)

Port of Survey Sunderland

Date of Survey While building

Name of Surveyor James Dickie

Particulars of Classification +100A1.
(Contemplated)

| | | | | |
|--------------------------------------|--|----------------------------------|---------------------------------|------------------------------|
| Ship's Name <u>"S.S. TYNDALL"</u> | Nationality and Port of Registry <u>BRITISH LONDON.</u> | Official Number <u>162766</u> | Gross Tonnage <u>1313.59</u> | Date of Build <u>1932</u> |
|--------------------------------------|--|----------------------------------|---------------------------------|------------------------------|

Moulded Dimensions: Length 226'8" Breadth 36'25" Depth 17'46"

Moulded displacement at moulded draught = 85 per cent. of moulded depth 2672 tons

Coefficient of fineness for use with Tables .767

| | | |
|---|---|---|
| <p>Depth for Freeboard (D)</p> <p>Moulded depth <u>17'46"</u></p> <p>Stringer plate <u>.05</u></p> <p>Sheathing on exposed deck</p> <p>$T \left(\frac{L-S}{L} \right) =$</p> <p>Depth for Freeboard (D) = <u>17'51"</u></p> | <p>Depth correction</p> <p>(a) Where D is greater than Table depth (D - Table depth) R = <u>(17.51 - 15.12) 1.744 = + 4.17</u></p> <p>(b) Where D is less than Table depth (if allowed) (Table depth - D) R =</p> <p>If restricted by superstructures</p> | <p>Round of Beam correction</p> <p>Moulded Breadth (B) <u>36.25</u></p> <p>Standard Round of Beam = $\frac{B \times 12}{50} = 8.70$</p> <p>Ship's Round of Beam = <u>9.00</u></p> <p>Difference <u>.30 Excess.</u></p> <p>Restricted to</p> <p>Correction = $\frac{\text{Diff}^2}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.30^2}{4} (2274) = -.02$</p> |
|---|---|---|

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 | <u>138.00</u> | <u>138.00</u> | <u>3.42</u> | <u>3.42/3.85</u> | <u>122.58</u> | Standard Height of Superstructure <u>6.00</u> |
| " overhang | | | | | | " " R.Q.D. <u>3.85</u> |
| Bridge enclosed... .. | <u>15.75</u> | <u>15.75</u> | <u>7.0</u> | ✓ | <u>15.75</u> | Deduction for complete superstructure <u>28.68</u> |
| " overhang aft | | | | | | Percentage covered $\frac{S}{L} = 77.872$ |
| " overhang forward | | | | | | " " $\frac{S_1}{L} = 77.872$ |
| F'cle enclosed | <u>21.33</u> | <u>21.33</u> | <u>6.0</u> | ✓ | <u>21.33</u> | " " $\frac{E}{L} = 70.392$ |
| " overhang | | | | | | Percentage from Table, Line A. <u>63.492</u> |
| Trunk aft | | | | | | (corrected for absence of forecastle (if required)) |
| " forward | ✓ | ✓ | ✓ | ✓ | | Percentage from Table, Line B. |
| Tonnage opening aft | | | | | | (corrected for absence of forecastle (if required)) |
| " " forward | | | | | | Interpolation for bridge less than .2L (if required) |
| Total | <u>175.08</u> | <u>175.08</u> | | | <u>159.66</u> | Deduction = <u>28.68 - 63.49 = 18.21</u> |

SHEER CORRECTION.

| Station | Standard Ordinate | S | M | Product | Actual Ordinate | Effective Ordinate | S | M | Product | |
|----------------------------------|-------------------|---|---|---------------|-----------------|--------------------|---|---|---------------|--|
| A.P. | <u>32.68</u> | 1 | | <u>32.68</u> | <u>18.00</u> | <u>18.00</u> | 1 | | <u>18.00</u> | Mean actual sheer aft = <u>Deficient</u> |
| $\frac{1}{8}$ L from A.P. | <u>14.54</u> | 4 | | <u>58.16</u> | <u>8.00</u> | <u>8.00</u> | 4 | | <u>32.00</u> | Mean actual sheer forward = <u>Deficient</u> |
| $\frac{2}{8}$ L " | <u>3.59</u> | 2 | | <u>7.18</u> | <u>2.10</u> | <u>2.10</u> | 2 | | <u>4.20</u> | Mean standard sheer forward |
| Amidships | <u>0</u> | 4 | | <u>0</u> | <u>0</u> | <u>0</u> | 4 | | <u>0</u> | Length of enclosed superstructure forward of amidships = |
| $\frac{2}{8}$ L from F.P. | <u>7.18</u> | 2 | | <u>14.36</u> | <u>4.74</u> | <u>4.74</u> | 2 | | <u>9.48</u> | " " aft of " = |
| $\frac{1}{8}$ L " | <u>29.08</u> | 4 | | <u>116.32</u> | <u>18.75</u> | <u>18.75</u> | 4 | | <u>75.00</u> | |
| F.P. | <u>65.36</u> | 1 | | <u>65.36</u> | <u>42.00</u> | <u>42.00</u> | 1 | | <u>42.00</u> | |
| Total | | | | <u>294.06</u> | | | | | <u>180.68</u> | |

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{113.38}{18} = (.75 - .3864) = +2.29$

If limited on account of midship superstructure.

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

| <p>Deduction for Tropical Freeboard.</p> <p>Addition for Winter and Winter North Atlantic Freeboard.</p> <p>Depth to Freeboard Deck = <u>20.93</u></p> <p>Summer freeboard = <u>4.91</u></p> <p>Moulded draught (d) = <u>16.02</u></p> <p>Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = <u>4</u></p> <p>Addition for Winter North Atlantic Freeboard (if required) = <u>4 + 2 = 6</u></p> | <p>Deduction for Fresh Water.</p> <p>Displacement in salt water at summer load water line</p> <p>$\Delta = 2920$</p> <p>Tons per inch immersion at summer load water line</p> <p>$T = 16.65$</p> <p>Deduction = $\frac{\Delta}{40 T}$ inches = <u>4.38</u></p> | <p>TABULAR FREEBOARD corrected for Flush Deck (if required)</p> <p>Correction for coefficient $\frac{.767 + .68}{1.36} = 1.0639$</p> <table border="1"> <tr> <th></th> <th>+</th> <th>-</th> </tr> <tr> <td>Depth Correction</td> <td><u>4.17</u></td> <td></td> </tr> <tr> <td>Deduction for superstructures</td> <td></td> <td><u>18.21</u></td> </tr> <tr> <td>Sheer correction</td> <td><u>2.29</u></td> <td></td> </tr> <tr> <td>Round of Beam correction</td> <td></td> <td><u>.02</u></td> </tr> <tr> <td>Correction for Thickness of Deck amidships</td> <td></td> <td></td> </tr> <tr> <td>Other corrections (height of raised quarter deck, etc.)</td> <td><u>41.00</u></td> <td></td> </tr> <tr> <td></td> <td><u>47.46</u></td> <td><u>18.23</u></td> </tr> <tr> <td>Summer Freeboard =</td> <td><u>58.91</u></td> <td></td> </tr> </table> | | + | - | Depth Correction | <u>4.17</u> | | Deduction for superstructures | | <u>18.21</u> | Sheer correction | <u>2.29</u> | | Round of Beam correction | | <u>.02</u> | Correction for Thickness of Deck amidships | | | Other corrections (height of raised quarter deck, etc.) | <u>41.00</u> | | | <u>47.46</u> | <u>18.23</u> | Summer Freeboard = | <u>58.91</u> | |
|--|---|--|--|---|---|-------------------------|-------------|--|--------------------------------------|--|--------------|-------------------------|-------------|--|---------------------------------|--|------------|--|--|--|---|--------------|--|--|--------------|--------------|--------------------|--------------|--|
| | + | - | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Depth Correction | <u>4.17</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deduction for superstructures | | <u>18.21</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sheer correction | <u>2.29</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Round of Beam correction | | <u>.02</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Correction for Thickness of Deck amidships | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other corrections (height of raised quarter deck, etc.) | <u>41.00</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <u>47.46</u> | <u>18.23</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Summer Freeboard = | <u>58.91</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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

| | | | | | |
|---|--------------|--------------|---------------------------------------|--------------|------------------|
| Tropical Fresh Water Line above Centre of Disc | <u>8 1/2</u> | <u>8 1/2</u> | Tropical Fresh Water Freeboard | <u>5 7/8</u> | <u>4' 2 1/2"</u> |
| Fresh Water Line " " | <u>4 1/2</u> | <u>4 1/2</u> | Fresh Water " " | <u>5 3/4</u> | <u>4' 6 1/2"</u> |
| Tropical Line " " | <u>4</u> | <u>4</u> | Tropical " " | <u>5 3</u> | <u>4' 7"</u> |
| Winter Line below " " | <u>4</u> | <u>4</u> | Winter " " | <u>4 7</u> | <u>5' 3"</u> |
| Winter North Atlantic Line " " | <u>6</u> | <u>6</u> | Winter North Atlantic " " | <u>4 5</u> | <u>5' 5"</u> |

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

| | | HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS | | |
|-------------------------|-----------------------|---|--|--|
| Description of Hatchway | | No. 1. | No. 2. | No. 3. |
| Dimensions of Hatchway | | 43'6" x 24'0" - 17'9" | 33'9" x 24'0" | 33'9" x 24'0" - 23'6" |
| COAMINGS | Height above Deck | 54" | 54" | 54" |
| | Thickness | 44 | 44 | 44 |
| | Sides | 44 | 44 | 44 |
| | Ends | 44 | 44 | 44 |
| Stiffeners | | 7 x 3 x 40 (Sides) | 7 x 3 x 40 (Sides) | 7 x 3 x 40 (Sides) |
| Brackets, Stays | | 7 x 3 x 38 L (Sides) spaced 6'9" | one plate bracket 40 holes on each side, 2 1/2" dia. at ends, spaced 6'9" | 40 holes on each side, spaced 6'9" |
| HATCH BEAMS | Number | 6 | 5 | 5 |
| | Spacing | 5'11" | 5'4 1/2" | 5'4 1/2" |
| | Scantling and Sketch | 4 @ 29 1/2 x 42 1 @ 25 1/2 x 42 1 @ 22 1/2 x 42 | 28 x 42 Double angle 5 x 3 1/2 x 46 Double solid Half round 3 1/2 x 1 3/4 | 28 x 42 Double angle 5 x 3 1/2 x 46 Double solid Half round 3 1/2 x 1 3/4 |
| | Bearing Surface | 5" | 5" | 5" |
| FORE AND AFTERS | Number | NONE! | | |
| | Spacing | | | |
| | Unsupported Lengths | | | |
| | Scantling* and Sketch | | | |
| Bearing Surface | | | | |
| HATCH COVERS | Material | W. W. | W. W. | W. W. |
| | Thickness | 3" | 3" | 3" |
| | How fitted | F & A | F & A | F & A |
| | Bearing Surface | 3" | 3" | 3" |
| Spacing of Cleats | | 24" | 24" | 24" |
| Number of Tarpaulins | | 2 | 2 | 2 |

*Are wood fore and afters steel shod at all bearing surfaces? ☒

Are battens and wedges efficient and in good condition? ☒

Are tarpaulins in good condition and in accordance with rule requirements? ☒

Are lashings provided in accordance with rule requirements? ☒

one coal shed hatch on casing 13'0" x 6'9" plate coaming 9 x 40

one tarpaulin, cleats & battens & 3 1/2" wood covers

one hatch on fore and after deck 2'3" x 1'11" coaming 18 x 30 to fore and after, 2 1/2" wood covers, tarpaulins, cleats & battens

one hatch on upper deck 2'3" x 2'0" coaming 30 x 30 to fore hold, 2 1/2" wood covers, tarpaulins, cleats & battens

one W. T. hatch on upper deck 2'3" x 2'0" coaming 18 x 30, shed cover 30, to deep tank

one hatch on raised quarter deck 2'6" x 1'2" coaming 30 x 30 to after hold, 2 1/2" wood covers, tarpaulins, cleats & battens

two brattice hatches on raised quarter deck 2'2" x 2'3" coaming 30 x 30 2 1/2" wood covers

Particulars of fiddley, funnel and ventilator coamings:—

Stokehold gratings covered by strong steel hinged covers.
Fidley & Flannel Ventilators in efficient condition.
Engine skylight of steel strongly constructed.

Particulars of Flush Bunker Scuttles:—

NONE

Particulars of Companionways :—

NONE!

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

| Particulars of Ventilators in exposed positions on freeboard and superstructure decks :- | | | | | |
|--|---|-----------|-------------------|--|---|
| 2 | Ventilators on upper deck 13 1/2" dia. coaming, | 36" x 36" | led to fore hold. | | All Ventilators constructed in accordance with Rules, & coverings closed with wood plugs & canvas covers. |
| 2 | " " " " " " " " " " | 36" x 38" | " " " " " " | | |
| 5 | " " " " " " " " " " | 36" x 38" | " " " " " " | | |
| 2 | " " " " " " " " " " | 36" x 30" | " " " " " " | | |
| 4 | " " " " " " " " " " | 36" x 30" | " " " " " " | | |

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

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

| | |
|---|--|
| One W.I. Air pipe 4" dia. on upper deck 36" high from Fore peak ✓ | Two W.I. Air sounding pipes 3½" dia. on raised quarter deck, ✓ |
| Two " " " 3½" " " " 36" " from No. 1. Tank ✓ | 30" high from No. 2. Tank ✓ |
| Two " " Air sounding pipes ½" dia. on bridge deck 18" high " " " ✓ | Two W.I. Air pipes 2¼" dia. on raised quarter-deck, ✓ |
| (One " " Air pipe 3" dia. 6" above hatch gullies (48" above upper deck), ✓ from deep tank - amn. tanks.) | 30" high from engine room tank. ✓ |
| Two W.I. Air pipes 4" dia. on bridge-deck 18" high from No. 2. Tank ✓ | One W.C. Air pipe ½" dia. on raised quarter deck, ✓ |
| | 30" high, from after peak tank. |
| | All pipes filled with wood plugs or Canvas cover. |

Particulars of Gangway Cargo and Coaling Ports :—

NONE

Lyndall

Scuppers: 3 1/2" I. pipe scuppers 2 1/2" dia. each side on upper-deck, 4" each side on quarter-deck, led out below-decks.

Particulars of Scuppers and Sanitary Discharge Pipes:—

Bath & pantry-discharges led out-above-decks without storm valves.

One 4" Brass S.V. from Captain's W.C. (Atlantic type with manual operated trap at inner end) led out on starboard side below upper-deck. Two 4" Brass S.V. from crew's & engineers side house led out on port side below raised quarter-decks.

Particulars of Side Scuttles:—

Side scuttles to fore-castle & accommodation in bridge & crew space aft, below raised-quarter-deck, provided with hinged deadlights. All scuttles of substantial construction.

Particulars of Guard Rails:—

Guard rails on fore-castle-deck 3'0" high with two rods & stanchions spaced 4'3" apart. Steel bulwarks in fore well 4'0" high x 25, raised quarter-deck 3'0" x 25, & bridge-deck 3'3" x 30, efficiently constructed & supported as approved.

Particulars of Gangways, Lifelines, etc.:—

Permanent fittings have been fitted & lifelines supplied for use by the crew in any part of the vessel.

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 ... (RAISED QUARTER DECK) | 137' 50" | 3' 0" | 27' 00" 26' 75" 17' 50" } x 58' | one one one | 41.325 | 27.50 |
| Forward Well ... | 51' 75" | 4' 0" | 26' 08" x 71' | one | 18.5 f 18.51 18.13 | 11.67 |

State position of each freeing port SEE SKETCH After Well: 7" above F. and A. position and height above deck edge Forward Well: 9" above

State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:— None. Slots in bulwarks as approved.

Additional area where sheer is less than standard. —as-above.

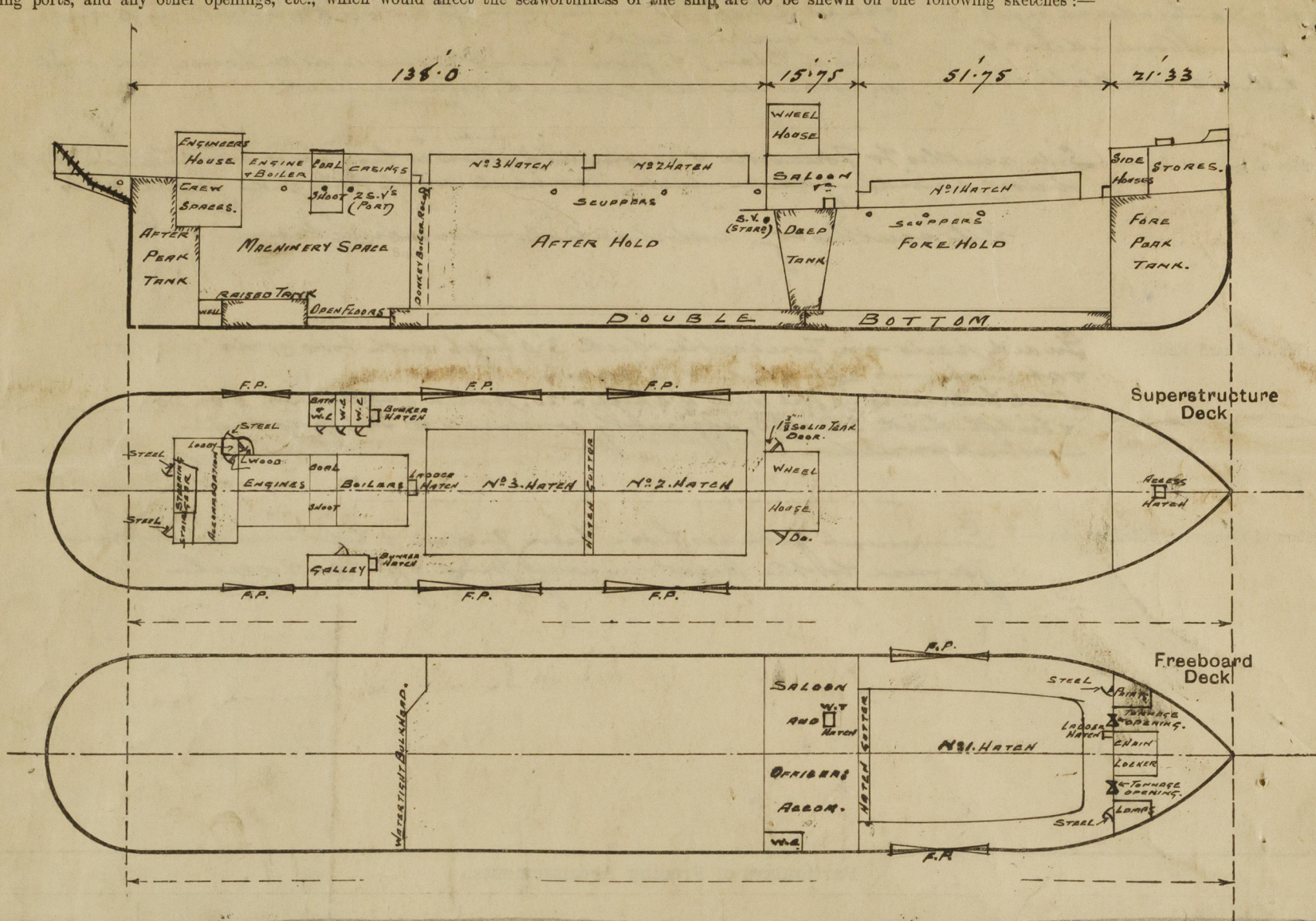
Particulars of Superstructures, Trunks, Casings, Deckhouses.

| | Coaming | Plating | Stiffeners | Spacing | End Attachments of Stiffeners | Size of Openings | Height of Sills | Height of Casings |
|--|------------------------------|-----------|---|--------------------------|--|------------------------------|-----------------|-------------------|
| Poop Bulkhead ... | ✓ | ✓ | 4 x 3 x 30. 3 webs on fore side 9 x 40 flanged brackets to deck girders on aft side as approved. | 36" | Joisted brackets top & bottom on webs. | ✓ | ✓ | ✓ |
| Raised Quarter Deck Bulkhead ... | ✓ | 30 | ✓ | ✓ | ✓ | None | ✓ | ✓ |
| Bridge, After Bulkhead ... | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bridge, Forward Bulkhead ... | ✓ | 32 | 5 7/8 x 3 x 36.0 2 webs 9 x 40 flanged 2 1/2 x 2 1/2 x 30.0 25 slab bulkheads 26 | 23"-29" ✓ 30" ✓ | Joisted brackets top & bottom on webs. | None | ✓ | ✓ |
| Fore-castle Bulkhead ... | ✓ | 26 | ✓ | ✓ | Joisted | 22 4/0 x 3.0 22 4/0 x 2.0 | 18" | ✓ |
| Trunk, Aft ... | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Trunk, Forward ... | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Exposed Machinery Casings on Free-board or Raised Quarter Decks ... | E.R. 42 x 33 B.R. 42 x 40 | 33 1/4 40 | E.R. 3 1/2 x 3 x 30 B.R. 3 x 3 x 40 | 27"-30" | Brackets as approved. | 4' 6" x 2' 0" | 18" | 3' 6" |
| Exposed Machinery Casings on Super-structure Decks ... | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Machinery Casings within Superstruc-tures not fitted with Class I Closing Appliances ... | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Deckhouses on Flush Deck Ships ... | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Particulars of Closing Appliances (state if capable of being manipulated from both sides).

| | | | | | |
|--|--|---|---|---|---|
| Poop Bulkhead ... | ✓ | ✓ | ✓ | ✓ | ✓ |
| Raised Quarter Deck Bulkhead ... | None | | | | |
| Bridge, After Bulkhead ... | | | | | |
| Bridge, Forward Bulkhead ... | | | | | |
| Fore-castle Bulkhead ... | Two openings with 2 1/2" storm boards full height in riveted channels, & two steel hinged doors 26 thick, to slab side houses, operated from both sides. | | | | |
| Exposed Machinery Casings on Free-board or Raised Quarter Decks ... | Two steel hinged doors 26 thick, to slab deck houses, operated from both sides. | | | | |
| Exposed Machinery Casings on Super-structure Decks ... | One steel hinged door, port, 26 thick, to accom. & engine room, operated from both sides. | | | | |
| Machinery Casings within Superstruc-tures not fitted with Class I Closing Appliances ... | ✓ | ✓ | ✓ | ✓ | ✓ |
| Deckhouses on Flush Deck Ships ... | ✓ | ✓ | ✓ | ✓ | ✓ |

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:—



Copies of the approved plans are in the London Office.

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

External Displacement & Tonnage per inch.

| <i>Draft.</i> | <i>Displ.</i> | <i>Tonnage per inch.</i> |
|---------------|---------------|--------------------------|
| 15'0" | 2700 | 16.47 |
| 16'0" | 2900 | 16.63 |
| 17'0" | 3100 | 16.80 |

Builder's name and yard number *S. P. Austin & Son Ltd. No 325.*

Names of sister ships *✓*

Owners *London Power Co. Ltd. (Stephenson Clarke & Associated Companies Ltd.), Managers.*

Fee £

10.

Received by me

See 76 Report

Will be charged on completion



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Foundation