

Rpt. C.11.

Lloyd's Register of Shipping.
SURVEYS FOR FREEBOARD.

| | | | | | |
|--|----------------------------------|-----------------|---------------|---------------|---|
| Computation of Freeboard for Steamer, Sailing Ship, Tanker | | | | | Port of Survey <i>Swansea</i> |
| having <i>Forecastle Bridge & Raised Quarter Decks</i> | | | | | Date of Survey <i>31 January 1933</i> |
| (Type of Superstructures.) | | | | | Name of Surveyor <i>J. S. Sellar</i> |
| Ship's Name | Nationality and Port of Registry | Official Number | Gross Tonnage | Date of Build | Particulars of Classification <i>+100 91.</i> |
| " <i>CARNALEA</i> " | <i>British Belfast</i> | <i>132028</i> | <i>579</i> | <i>1913-1</i> | <i>S.S. Bel. No. 3-2, 25</i> <i>S.S. Bel. No. 1-29</i> |
| Moulded Dimensions: Length <i>178'-0"</i> Breadth <i>25'-0"</i> Depth <i>13'</i> | | | | | |
| Moulded displacement at moulded draught = 85 per cent. of moulded depth <i>1008</i> tons | | | | | |
| Coefficient of fineness for use with Tables <i>.641</i> | | | | | |

| | | | | | |
|---|---------------|---|--|--|---|
| Depth for Freeboard (D) | | Depth correction | | Round of Beam correction | |
| Moulded depth ... | <i>13'-0"</i> | (a) Where D is greater than Table depth (D-Table depth) R = <i>(13.05 - 11.87) 1.369 = + 1.62</i> | | Moulded Breadth (B) | <i>28'</i> |
| Stringer plate ... | <i>.38</i> | (b) Where D is less than Table depth (if allowed) (Table depth-D) R = | | Standard Round of Beam = $\frac{B \times 12}{50}$ | <i>= 6.72</i> |
| Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$ | | If restricted by superstructures | | Ship's Round of Beam | <i>= 8.2</i> |
| Depth for Freeboard (D) = | <i>13.05</i> | | | Difference | <i>1.78</i> |
| | | | | Restricted to | |
| | | | | Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right)$ | <i>= \frac{1.78}{4} (1 - \frac{76.47}{141.42}) = -.10</i> |

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 | <i>101.17</i> | <i>101.17</i> | <i>4'-0"</i> | ✓ | <i>101.17</i> |
| " overhang | ✓ | | | | |
| Bridge enclosed... | <i>10.39</i> | <i>10.39</i> | <i>8'-0"</i> | ✓ | <i>10.39</i> |
| " overhang aft | ✓ | | | | |
| " overhang forward | ✓ | | | | |
| Forecastle enclosed | <i>32.92</i> | <i>24.55</i> | <i>7'-0"</i> | | <i>24.55</i> |
| " overhang | ✓ | | | | |
| Trunk aft | | | | | |
| " forward | | | | | |
| Tonnage opening aft | | | | | |
| " forward | | | | | |
| Total | <i>144.48</i> | <i>136.11</i> | | | <i>136.11</i> |

| | |
|--|------------------|
| Standard Height of Superstructure | <i>6'</i> |
| " " R.Q.D. | <i>3.52</i> |
| Deduction for complete superstructure | <i>23.8</i> |
| Percentage covered $\frac{S}{L} =$ | <i>81.16</i> |
| " " $\frac{S_1}{L} =$ | <i>96.47</i> |
| " " $\frac{E}{L} =$ | <i>96.47</i> |
| Percentage from Table, Line A. | <i>70.95</i> |
| (corrected for absence of forecastle (if required)) | |
| Percentage from Table, Line B. | |
| (corrected for absence of forecastle (if required)) | |
| Interpolation for bridge less than .2L (if required) | |
| Deduction = $23.8 \times .7095$ | <i>= - 16.89</i> |

SHEER CORRECTION.

| Station | Standard Ordinate | S | M | Product | Actual Ordinate | Effective Ordinate | S | M | Product |
|-------------------------------|-------------------|---|---|---------------|-----------------|--------------------|---|---|---------------|
| A.P. ... | <i>27.80</i> | 1 | | <i>27.80</i> | <i>33.1</i> | <i>33.00</i> | 1 | | <i>27.80</i> |
| $\frac{1}{4}$ L from A.P. ... | <i>12.37</i> | 4 | | <i>49.48</i> | <i>63.4</i> | <i>14.62</i> | 4 | | <i>49.48</i> |
| $\frac{3}{4}$ L " ... | <i>3.06</i> | 2 | | <i>6.12</i> | <i>2.6</i> | <i>3.65</i> | 2 | | <i>6.12</i> |
| Amidships ... | | 4 | | | | | 4 | | |
| $\frac{3}{4}$ L from F.P. ... | <i>6.12</i> | 2 | | <i>12.24</i> | <i>10.3</i> | <i>5.83</i> | 2 | | <i>11.66</i> |
| $\frac{1}{4}$ L " ... | <i>24.74</i> | 4 | | <i>98.96</i> | <i>42.3</i> | <i>23.31</i> | 4 | | <i>93.24</i> |
| F.P. ... | <i>55.60</i> | 1 | | <i>55.60</i> | <i>54.3</i> | <i>54.00</i> | 1 | | <i>54.00</i> |
| Total | | | | <i>250.20</i> | | | | | <i>242.30</i> |

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{7.90}{18} \left(.75 - \frac{40.58}{141.42} \right) = + .15$

If limited on account of midship superstructure.

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

Mean actual sheer forward = *Deficient*
Mean standard sheer forward

Length of enclosed superstructure forward of amidships =
" " aft of " =

FOR SHEER CORRECTION

| | STANDARD | ACTUAL |
|----------|---------------|---------------|
| 1. 6.12 | <i>18.36</i> | <i>5.83</i> |
| 3. 24.74 | <i>74.22</i> | <i>23.31</i> |
| 1. 55.60 | <i>54.60</i> | <i>54.00</i> |
| | <i>148.18</i> | <i>141.42</i> |

$\frac{141.42}{148.18} = .9544$

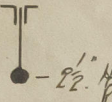
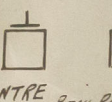
If limited to maximum allowance of $1\frac{1}{2}$ ins. per 100 ft.

| | | | |
|---|---|--|--------------|
| Deduction for Tropical Freeboard. | Deduction for Fresh Water. | TABULAR FREEBOARD corrected for Flush Deck (if required) | <i>19.50</i> |
| Addition for Winter and Winter North Atlantic Freeboard. | Displacement in salt water at summer load water line | Correction for coefficient $\frac{68 + 680}{1.36} = \frac{1.86}{1.36}$ | <i>19.50</i> |
| Depth to Freeboard Deck = <i>17.05</i> | $\Delta = 1327$ | Depth Correction ... | <i>1.62</i> |
| Summer freeboard = <i>4.35</i> | Tons per inch immersion at summer load water line | Deduction for superstructures | <i>16.89</i> |
| Moulded draught (d) = <i>12.70</i> | T = <i>10</i> | Sheer correction ... | <i>.15</i> |
| Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{\Delta}{40T}$ inches = <i>3.17 = 3\frac{1}{4}</i> | Deduction = $\frac{\Delta}{40T}$ inches = <i>3.32</i> | Round of Beam correction ... | <i>.10</i> |
| Addition for Winter North Atlantic Freeboard (if required) = <i>+ 2 = 5\frac{1}{4}</i> | = <i>3\frac{1}{4}</i> | Correction for Thickness of Deck amidships | <i>48.00</i> |
| | | Other corrections, scantlings, etc. | <i>49.77</i> |
| | | Summer Freeboard = <i>52.18</i> | <i>28</i> |

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

| | | | |
|--|---------------------|--------------------------------|------------------------|
| Tropical Fresh Water Line above Centre of Disc | <i>5\frac{1}{2}</i> | Tropical Fresh Water Freeboard | <i>3.10\frac{3}{4}</i> |
| Fresh Water Line | <i>3\frac{1}{4}</i> | Fresh Water | <i>4-1</i> |
| Tropical Line | <i>2\frac{1}{4}</i> | Tropical | <i>4-2 (limited)</i> |
| Winter Line below | <i>3\frac{1}{4}</i> | Winter | <i>4-7\frac{1}{2}</i> |
| Winter North Atlantic Line | <i>5\frac{1}{4}</i> | Winter North Atlantic | <i>4-9\frac{1}{2}</i> |

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

| HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS | | | | | | | | | |
|---|--|---|--|---------------------|---------------------|----------------------------|--|-----------------------|--|
| Description of Hatchway | ... | ... | ... | No 1 | No 2 | Bunker Hatch Lidley Top | | Hatch to Fore Peak | |
| Dimensions of Hatchway | ... | ... | ... | 24'4" x 15'4" | 24'4" x 15'4" | 7'0" x 16'0" | | 22' x 21' | |
| COAMINGS | <div> <div>Height above Deck</div> <div>Thickness</div> <div>Stiffeners</div> <div>Brackets, Stays</div> </div> | <div> <div>Sides</div> <div>Ends</div> </div> | <div> <div>...</div> <div>...</div> <div>...</div> <div>...</div> </div> | 30" | 30" | 7" above casing top | | 12" | |
| | | | | 50 | 50 | 30 | | 30 | |
| | | | | 40 | 40 | 30 | | 30 | |
| | | | | Plate 10' x 30' | Plate 10' x 30' | ✓ | | ✓ | |
| | | | | Angle 3' x 3' x 25' | Angle 3' x 3' x 25' | ✓ | | ✓ | |
| HATCH BEAMS | <div> <div>Number</div> <div>Spacing</div> <div>Scantling and Sketch</div> <div>  </div> </div> | <div> <div>...</div> <div>...</div> <div>...</div> </div> | <div> <div>...</div> <div>...</div> <div>...</div> </div> | 2 | 2 | none | | none | |
| | | | | 6" 9' 4" | 6" 9' 4" | none | | none | |
| | | | | Plate 27' x 22' | Plate 27' x 22' | none | | none | |
| | | | | Angle 3' x 3' x 40' | Angle 3' x 3' x 40' | none | | none | |
| | | | | Bearing Surface | Bearing Surface | none | | none | |
| FORE AND AFTERS | <div> <div>Number</div> <div>Spacing</div> <div>Unsupported Lengths</div> <div>Scantling* and Sketch</div> <div>  </div> </div> | <div> <div>...</div> <div>...</div> <div>...</div> </div> | <div> <div>...</div> <div>...</div> <div>...</div> </div> | 3 | 3 | none | | none | |
| | | | | 3' 9' 4" 3' 10" | 3' 9' 4" 3' 10" | none | | none | |
| | | | | 4' 3" 9' 13" | 4' 3" 9' 13" | none | | none | |
| | | | | Centre 9' x 8" | Centre 9' x 8" | none | | none | |
| | | | | Side 8' x 7" | Side 8' x 7" | none | | none | |
| HATCH COVERS | <div> <div>Material</div> <div>Thickness</div> <div>How fitted</div> <div>Bearing Surface</div> </div> | <div> <div>...</div> <div>...</div> <div>...</div> </div> | <div> <div>...</div> <div>...</div> <div>...</div> </div> | White wood | White wood | White wood | | White wood | |
| | | | | 2 1/2" | 2 1/2" | 2 1/2" | | 2 1/2" | |
| | | | | P & S | P & S | F & A | | Solid | |
| | | | | 1 3/4" | 1 3/4" | 2 1/4" | | 1 1/4" | |
| | | | | Bearing Surface | Bearing Surface | Bearing Surface | | Bearing Surface | |
| Spacing of Cleats | ... | ... | ... | 24' 1/2" 24' 1/2" | 24' 1/2" 24' 1/2" | 36' 7" 24' 1/2" | | none | |
| Number of Tarpaulins | ... | ... | ... | Two | Two | Two | | one | |
| <div> <div>*Are wood fore and afters steel shod at all bearing surfaces?</div> <div>Are battens and wedges efficient and in good condition?</div> <div>Are tarpaulins in good condition and in accordance with rule requirements?</div> <div>Are lashings provided in accordance with rule requirements?</div> </div> | | | | | | | | | |
| | | | | See page 4 | Yes | Efficient | | battening | |
| | | | | Yes | Yes | arrangements | | | |
| | | | | Yes | Yes | | | | |
| | | | | Yes | Yes | | | | |

Particulars of fiddle, funnel and ventilator coamings:— Funnel Coaming riveted to Lidley Top. 20" high x 20 thick - Strong Hinged plate over Lidley Gratings. Engine Room & Storehold Ventilators protected by Casings. Engine Room sky lights - stout hinged wood flaps fitted with glass bulls eyes.

Particulars of Flush Bunker Scuttles:—

none

Particulars of Companionways:— 1 under Forecastle deck. Stul plates and angles 5' 10" long x 2' 5" wide 6' 9" high. 1 wood door 2" thick; 4' 7" x 22" x 11" sill.

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

Forecastle. 2-5" dia x 18" Coaming x 25 thick to clear space. 1-10" " x 30" " x 25 " to hold. Raised Quarter Deck 1-10" dia x 30" Coaming x 20 thick. to hold. Wood caps & Canvas covers to ~~supply~~ ^{protect}.

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

1 under Forecastle deck to Fore Peak. 2" dia x 12" high. 1 in Forward well 1-2 1/2" dia x 16" opening from deck. (Goose neck) Raised Quarter Deck 2-2 1/2" dia x 16" opening from deck (Goose neck) Canvas ~~to~~ covers fitted

Particulars of Gangway Cargo and Coaling Ports:—

none



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Particulars of Scuppers and Sanitary Discharge Pipes:—

1-4" non return valve fitted on ships side below lubboard deck in Forecastle
amidships
aft.

Particulars of Side Scuttles:—

In Forecastle, Bridge & Crews Quarters aft.
Glass lights in frames, fitted with hinged deadlights

Particulars of Guard Rails:—

Forecastle Deck. 3'-0" high. spaced 3'-9" with 2 Rails

Particulars of Gangways, Lifelines, etc.:—

~~None~~

Lifeline capable of being fitted either side supplied
for the forward well

Particulars of Freeing Arrangements.

| | Length of Bulwark | Height of Bulwark | Size of Freeing Ports | Number each side | Area each side | Rule area each side |
|--|-------------------|-------------------|---|-------------------|----------------------------|---------------------|
| Raised Quarter Deck After Well | 101'-2" | 3'-0" | 2'-0" x 1'-3" 30 1/4 x 19 3/4 | 3 5 | 7.5 # 20 1/4 | 20 23 sq ft. |
| Forward Well | 34'-9" | 4'-1" | 2'-6" x 1'-6" | 3 | 10.25 # | 10 sq ft. |
| State position of each freeing port (F. and A. position and height above deck edge) | | | | | | |
| 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. | | | | | | |

Particulars of Superstructures, Trunks, Casings, Deckhouses.

| | Coaming | Plating | Stiffeners | Spacing | End Attachments of Stiffeners | Size of Openings | Height of Sills | Height of Casings |
|---|---------|-------------|---------------------|---------|-------------------------------|------------------|-----------------|-------------------|
| Poep Bulkhead | ✓ | | | | | | | |
| Raised Quarter Deck Bulkhead ... | ✓ | | | | | | | |
| Bridge, After Bulkhead | 30 | full height | not accessible | | ✓ | none | ✓ | 4'-0" |
| Bridge, Forward Bulkhead | 35 | 30 | 6 x 3 x .44 37. 30" | 30" | ✓ | none | ✓ | 8'-0" |
| Forecastle Bulkhead ... open ... | 30 | 30 | 3 1/2 x 3 x 25 OA | 30" | Brackets TTB | none | ✓ | 7'-11" |
| Trunk, Aft | ✓ | | | | | | | |
| Trunk, Forward | | | | | | | | |
| Exposed Machinery Casings on Free-board or Raised Quarter Decks ... | 30 | 25 | 3 x 2 1/2 x 25 OA | 30" | Full height | 4'-6" x 1'-11" | 20" | 6'-9" |
| 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).

| | |
|---|---|
| Poep Bulkhead | ✓ |
| Raised Quarter Deck Bulkhead ... | ✓ |
| Bridge, After Bulkhead | ✓ |
| Bridge, Forward Bulkhead | ✓ |
| Forecastle Bulkhead | ✓ |
| 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 | ✓ |
| Deckhouses on Flush Deck Ships ... | ✓ |

Still hinged doors 25 thick, operated from both sides



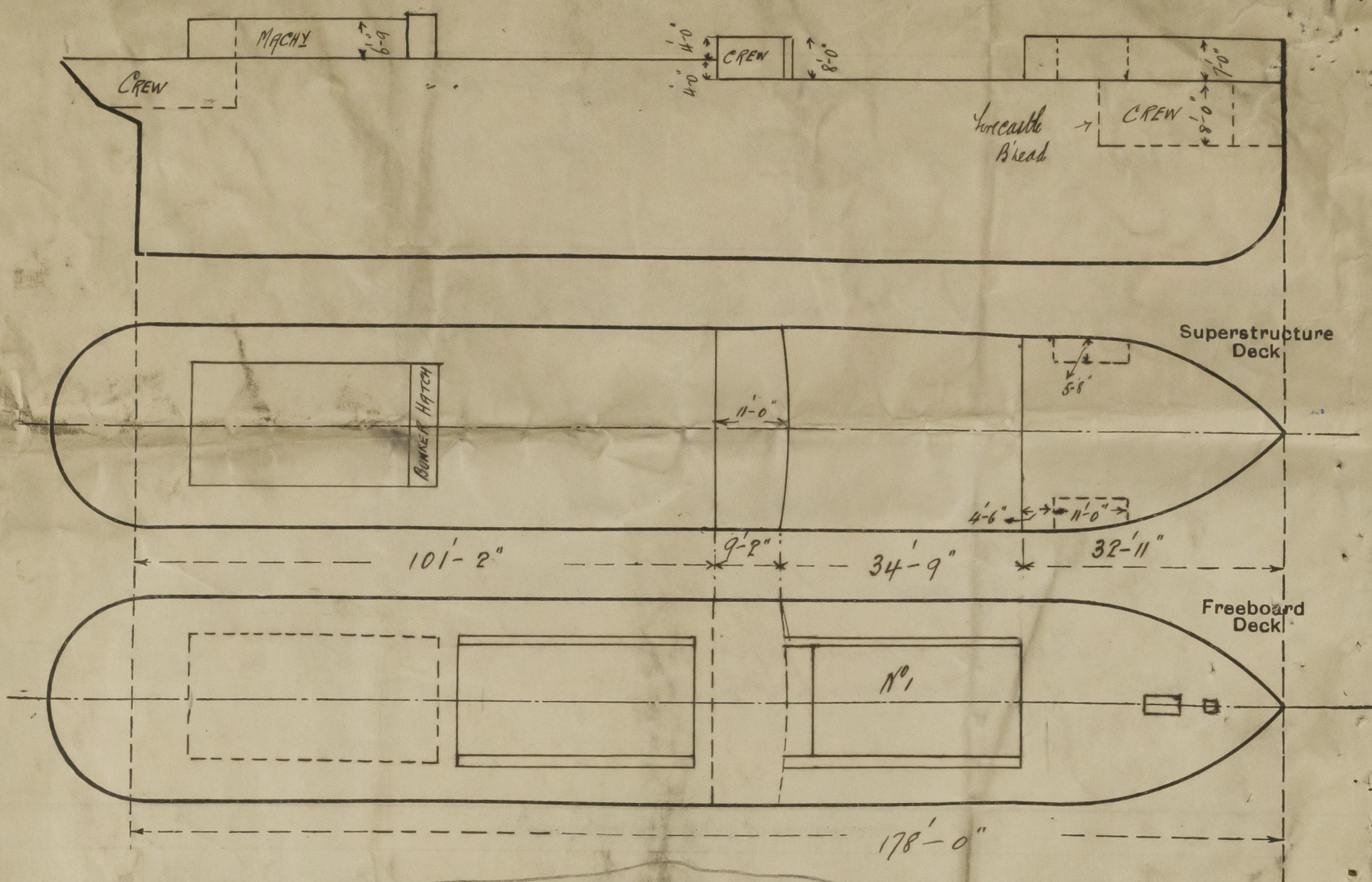
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Superstructure bulkheads, trunks, deckhouses, casings, cargo and coaling hatchways, extent and thickness of sheathing on the freeboard deck, gangway, cargo and coaling ports, and any other openings, etc., which would affect the seaworthiness of the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



Forecastle
 $4.0 \times \text{def. sh.} + \text{nm.} \times 50\%$
 $= 17.80 \times .9544 + 15.12 \times .50$
 $= 16.99 + 7.56$
 $= 24.55$

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

Steel shoes on fore & afters to repair.
 Side light (scuttles) glasses and deadlights to be condition.
 Hinges on freeing port shutters to repair.
 Air pipe to fore peak (under forecastle deck) to refit with gooseneck.
 Battening arrangements to be fitted to hatch to fore peak.

[Handwritten signature]

Builder's name and yard number

Scott & Sons Bowling

Names of sister ships

Owners

John Kelly Ltd. (W. Clint. Mgrs.)

Fee £

6 : 16 : 0

Received by me

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