

WRECK SECTION

B.T. COPY

25 JUL 1932

W1019-02261/2

Rpt. C.11.

Lloyd's Register of Shipping. SURVEYS FOR FREEBOARD.

Index No. **24907**
(For London Office only.)

574

GLASGOW REPORT No. **52755**

Computation of Freeboard for Steamer, ~~Sailing Ship~~, ~~Tanker~~
having a bridge and forecastle on a shelter deck with tonnage opening.

(Type of Superstructures.)

| | | | | |
|---------------------------------|--|----------------------------------|------------------------------|---------------------------------|
| Ship's Name "RARANGA" | Nationality and Port of Registry British Southampton | Official Number 135699 | Gross Tonnage 7956 | Date of Build 1916-12 |
|---------------------------------|--|----------------------------------|------------------------------|---------------------------------|

Moulded Dimensions: Length **477.09** Breadth **62.75** Depth **34.33**
Moulded displacement at moulded draught = 85 per cent. of moulded depth **18823** tons
Coefficient of fineness for use with Tables **754**

Port of Survey **Glasgow**
Date of Survey **19th July 1932**
Name of Surveyor **H. Thumam**
Particulars of Classification **+100 A.1.**
SS mod. No. 3-1, 29

| | | |
|---|--|--|
| Depth for Freeboard (D) | Depth correction | Round of Beam correction |
| Moulded depth ... 34.33 | (a) Where D is greater than Table depth (D - Table depth) R = (34.33 - 31.81) 3 2.52 x 3 = 7.68 | Moulded Breadth (B) 62.75 Standard Round of Beam = $\frac{B \times 12}{50}$ = 15.06 Ship's Round of Beam = 11 Difference 4.06 |
| Stringer plate ... 4.6 | (b) Where D is less than Table depth (if allowed) (Table depth - D) R = | Restricted to |
| Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$ | If restricted by superstructures | Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right)$ = $\frac{4.06}{4} \times 0.0049$ = 0.0049 NIL |
| Depth for Freeboard (D) = 34.37 | | |

DEDUCTION FOR SUPERSTRUCTURES.

| | Mean Covered Length (S) | Equivalent Enclosed Length (S ₁) | Height | Height Correction | Effective Length (E) |
|-------------------------|-------------------------|--|--------------|-------------------|----------------------|
| Poop enclosed ... | 24.33 | 24.33 | 8'-6" | | 24.33 |
| " overhang ... | <i>none</i> | | | | |
| R.Q.D. enclosed ... | | | | | |
| " overhang ... | | | | | |
| Bridge enclosed ... | | | | | |
| " overhang aft ... | 448.01 | 448.01 | 8'-6" | | 448.01 |
| " overhang forward ... | | | | | |
| Fore enclosed ... | | | | | |
| " overhang ... | <i>none</i> | | | | |
| Fore enclosed ... | | | | | |
| " forward ... | 4.75 | 2.38 | | | 2.38 |
| Tonnage opening aft ... | | | | | |
| " forward ... | | | | | |
| Total ... | 477.09 | 474.72 | | | 474.72 |

Standard Height of Superstructure **7.5**
" " R.Q.D. ...
Deduction for complete superstructure **42.0**
Percentage covered $\frac{S}{L} = 100.0$
" " $\frac{S_1}{L} = 99.51$
" " $\frac{E}{L} = 99.51$
Percentage from Table, Line A.
(corrected for absence of forecastle (if required))
Percentage from Table, Line B. **99.39**
(corrected for absence of forecastle (if required))
Interpolation for bridge less than 2L (if required)
Deduction = **41.74**

SHEER CORRECTION.

| Station | Standard Ordinate | S | M | Product | Actual Ordinate | Effective Ordinate | S | M | Product |
|-------------------------------|-------------------|---|---|---------------|-----------------|--------------------|---|---|---------------|
| A.P. ... | 57.71 | 1 | | 57.71 | 54 | 66.066.0 | 1 | | 66.00 |
| $\frac{1}{2}$ L from A.P. ... | 25.68 | 4 | | 102.72 | 24 | 29.3729.37 | 4 | | 117.48 |
| $\frac{3}{4}$ L " ... | 6.34 | 2 | | 12.68 | 5.2 | 7.26726 | 2 | | 14.52 |
| Amidships ... | | 4 | | | | | 4 | | |
| $\frac{3}{4}$ L from F.P. ... | 12.69 | 2 | | 25.38 | 10.2 | 12.8712.87 | 2 | | 25.74 |
| $\frac{1}{2}$ L " ... | 51.36 | 4 | | 205.44 | 46 | 52.0652.06 | 4 | | 208.24 |
| F.P. ... | 115.42 | 1 | | 115.42 | 105 | 117.0117.00 | 1 | | 117.00 |
| Total ... | | | | 519.35 | 412 | | | | 548.98 |

Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{75-S}{2L} \right) = \frac{519.35 - 548.98}{18} \left(\frac{75-1}{2 \times 474.72} \right) = \frac{29.37}{18} \times 0.25 = 0.41$
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 = **34.37**
Summer freeboard = **5.52**
Moulded draught (d) = **28.85**

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = **7.21**
Addition for Winter North Atlantic Freeboard (if required) =

Deduction for Fresh Water.

Displacement in salt water at summer load water line
 $\Delta = 18,684$
Tons per inch immersion at summer load water line
 $T = 59.91$
Deduction = $\frac{\Delta}{40T}$ inches
7.80 = 7 $\frac{3}{4}$

TABULAR FREEBOARD corrected for Flush Deck (if required)

| | | | |
|--|---------------|--------------|----------------|
| Correction for coefficient | 754.68 | 1.434 | 1.00.63 |
| Depth Correction ... | 7.68 | | |
| Deduction for superstructures ... | | 41.74 | |
| Sheer correction ... | | 41 | |
| Round of Beam correction ... | | | |
| Correction for Thickness of Deck amidships ... | | | |
| Other corrections, scantlings, etc. ... | | | |
| | 7.68 | 42.15 | 34.47 |
| Summer Freeboard = | | | 66.16 |

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, ~~44.9~~ Steel, Deck:—

| | | | |
|--|----------------------------------|------------------------------------|---------------------------------------|
| Tropical Fresh Water Line above Centre of Disc ... | 15 | Tropical Fresh Water Freeboard ... | 4'-3$\frac{1}{4}$" |
| Fresh Water Line " " ... | 7$\frac{3}{4}$ | Fresh Water " " ... | 4'-10$\frac{1}{2}$" |
| Tropical Line " " ... | 7$\frac{1}{4}$ | Tropical " " ... | 4'-11" |
| Winter Line below " " ... | 7$\frac{1}{4}$ | Winter " " ... | 6'-1$\frac{1}{2}$" |
| Winter North Atlantic Line " " ... | | Winter North Atlantic " " ... | |

MARKING FORM MARKING FORM
27 SEP 1937
RECEIVED
18 OCT 1932
RECEIVED
14 AUG 1932

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

| HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------|-----------------|------------------|------------------|----------------|----------------|------------------|------|
| | | Shelter Deck | | | | | | Upper Deck | | | | | | Bridge Deck | | | | | | S.O. | V.D. | B.D. | S.D. |
| Description of Hatchway | ... | ... | Nº1 | Nº2 | Nº3 | Nº4 | Nº5 | Nº6 | Nº1 | Nº2 | Nº3 | Nº4 | Nº5 | Nº6 | Nº3 | COAL HATCH | COAL HATCH | TRIMMING HATCHES | TRIMMING HATCHES | ESCAPE HATCHES | ESCAPE HATCHES | TORNAGE OPENINGS | |
| Dimensions of Hatchway | ... | ... | 18'-0" 16'-6" | 23'-8" 16'-6" | 14'-3" 16'-6" | 19'-0" 16'-6" | 19'-0" 16'-6" | 16'-7" 16'-6" | 18'-0" 16'-6" | 23'-8" 16'-6" | 14'-3" 16'-6" | 19'-0" 16'-6" | 19'-0" 16'-6" | 16'-7" 16'-6" | 14'-3" 16'-6" | 7'-0" 16'-6" | 6'-5" 18'-0" | 14'-5" 2'-6" | 14'-5" 2'-6" | 2'-3" 2'-6" | 2'-3" 2'-6" | 4'-6" 16'-6" | |
| COAMINGS | Height above Deck | ... | 30 | 30 | 9 | 30 | 30 | 30 | 9 | 9 | 9 | 9 | 9 | 9 | 30 | 30 | 30 | 9 | 9 | 30 | 30 | 9 | |
| | Thickness | { Sides | ... | .44 | .44 | 3½ | .44 | .44 | .44 | 3½ | 3½ | 3½ | 3½ | 3½ | .44 | .44 | .44 | 3½ | 3½ | .36 | .36 | 3½ | |
| | | { Ends | ... | .44 | .44 | .50 | .44 | .44 | .44 | .50 | .50 | .50 | .50 | .50 | .44 | .44 | .44 | .50 | .50 | .36 | .36 | .50 | |
| | Stiffeners | ... | ... | | | | | | | | | | | | | | | | | | | | |
| | Brackets, Stays | ... | ... | | | | | | | | | | | | | | | | | | | | |
| HATCH BEAMS | Number | ... | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 2 | 3 | 3 | 3 | 3 | 1 | 1 | | | | | | |
| | Spacing | ... | 4'-6" | 4'-9" | 3'-6½" | 4'-9" | 4'-9" | 4'-2½" | 4'-6" | 4'-9" | 4'-9" | 4'-9" | 4'-9" | 4'-2½" | 3'-6½" | 3'-6" | 3'-2½" | | | | | | |
| | Scantling and Sketch | ... | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | Bearing Surface | ... | 3½ | 3½ | 3½ | 3½ | 3½ | 3½ | 6 | 6 | 6 | 6 | 6 | 6 | 3½ | 3½ | 3½ | 3½ | | | | | |
| FORE AND AFTERS | Number | ... | | | | | | | | | | | | | | | | | | | | | |
| | Spacing | ... | | | | | | | | | | | | | | | | | | | | | |
| | Unsupported Lengths | ... | | | | | | | | | | | | | | | | | | | | | |
| | Scantling* and Sketch | ... | | | | | | | | | | | | | | | | | | | | | |
| | Bearing Surface | ... | | | | | | | | | | | | | | | | | | | | | |
| HATCH COVERS | Material | ... | WP | WO | WP | W.P. | WP | WP | W.P. | W.P. | WP | WP | WP | WP | WP | WP | WP | WP | WP | WP | WP | WP | |
| | Thickness | ... | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | |
| | How fitted | ... | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | F+A | |
| | Bearing Surface | ... | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | Spacing of Cleats | ... | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 22 | 22 | 24 | 24 | 24 | 24 | |
| Number of Tarpaulins | ... | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |

*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? *Ringbolts for lashings provided.*

Particulars of fiddley, funnel and ventilator coamings :—

Engine skylight on casing top of steel strongly constructed -

7 idling pinwings on casing top protected by strong beveled plate covers. ✓

✓ initiators in casing top in good condition ✓

Particulars of Flush Bunker Scuttles :—

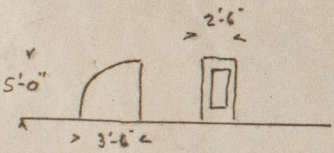
8 on port & starboard sides of bridge deck.

scuttles of cast iron 21" in diameter and fitted with bayonet joints.

no chains fitted.

Particulars of Companionways :—

on shelter deck forward.



• 32 plating

Over $3'-10'' \times 1'-11'' - 12''$ sell.

knives work don't 1/2" thick manipulated from both sides.

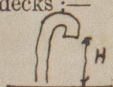
Particulars of Ventilators in exposed positions on freeboard and superstructure decks :—

| | Ventilator | on | fore deck to stove. | crowning | 36" | high | x | 12" | dia | x | .38 | |
|----|------------|----|---------------------|-------------|-----|------|---|-----|-----|---|-----|--|
| 15 | " | " | - - - - - | cross space | 36 | - | x | 9 | - | x | .22 | |
| 15 | " | " | - - - - - | tween deck | 36 | - | x | 9 | - | x | .30 | |
| 2 | " | " | - - - - - | hold | 36 | - | x | 21 | - | x | .38 | |
| 4 | " | " | fore deck to | hold | 36 | - | x | 24 | - | x | .38 | |
| 4 | " | " | - - - - - | tween deck | 36 | - | x | 9 | - | x | .28 | |
| 8 | " | " | bridge deck to | - - - - - | 24 | - | x | 12 | - | x | .25 | |
| 2 | " | " | - - - - - | - - - - - | 24 | - | x | 15 | - | x | .30 | |
| 2 | " | " | - - - - - | - - - - - | 24 | - | x | 9 | - | x | .26 | |
| 10 | " | " | after deck to | hold | 36 | - | x | 24 | - | x | .36 | |
| 4 | " | " | - - - - - | tween deck | 36 | - | x | 9 | - | x | .25 | |

Ventilator coverings constructed in accordance with the Rules and closed with the wood plugs and canvas covers. ✓

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

| | | | | | | |
|---|-----------|------------------------------|--------|------|---------|-----|
| 6 | air pipes | on bridge deck to d to tanks | 26 1/2 | high | x 2 | dis |
| 4 | - | - | - | - | x 2 1/2 | - |
| 4 | - | - | - | - | x 2 | - |
| 2 | - | on after deck | - | - | x 2 | 100 |



no shifting holes fitted
sufficient ~~no~~ means of closing and pipes
provided. except to
passing head ships

Particulars of Gangway Cargo and Coaling Ports:—

1. Coaling post is fitted in the shelter tween decks on p + s sides where shown in sketch
5'-10" x 4'-1" - 6" sill. ✓

2. Cargo ports are fitted in the bridge timber decks on p & s sides where shown on sketch
5'-10" x 4'-1" - 6" sill. ✓

11. meet points are fitted on p + s sides where shown on sketch

$2'-3" \times 2'-3"$. bottom of points below upper deck = 6'-6"

all ports are strongly constructed and watertight and secured by two strongbacks

Particulars of Scuppers and Sanitary Discharge Pipes:

Scuppers from shelter trunnels led ~~in positions shown in sketch~~
 Scuppers have storm-valves at ship's side and are closed by hatched plates on deck
 There are no sanitary pipes discharging below the upper deck.

Particulars of Side Scuttles:—

Side scuttles below upper deck 9" dia fitted with hinged deadlights
 Distance from upper deck stringer plate to bottom of scuttle = 18"
 Side scuttles in shelter trunnels 10" dia. fitted with hinged arm deadlights
 " " " bridge " " 13" " " " "
 " " " Forecastle " " 9" " " " "

Particulars of Guard Rails:—

Guard rails on forecastle deck 3'-6" high with 2 rails. Stanchions 5'-4" apart
 " " " shelter " 4'-0" " " 3 " " 4'-6"
 " " " bridge " 3'-9" " " 3 " " 4'-0"

Particulars of Gangways, Lifelines, etc.:—

none

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 ... | 4'-9" | 8'-6" | 20" x 25" | 1 | 3.5 | |
| Forward Well ... | | | | | | |

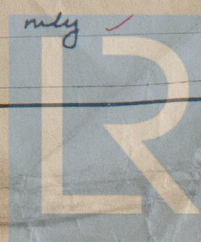
State position of each freeing port ... { After Well:— 3" from after bulkhead. 4" above deck
 (F. and A. position and height above deck edge) { Forward Well:—
 State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:— fitted with shutters.
 Additional area 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 ... | none | .30 | 4 x 3 x .36 | 39 | none | 5'-6" x 4'-0" | 11" | ✓ |
| BRIDGE AFTER | | | | | | | | |
| Raised Quarter Deck Bulkhead ... | none | .30 | 4 x 3 x .36 | 39 | none | 5'-6" x 4'-0" | 11" | ✓ |
| Bridge, After Bulkhead on S.D. | none | .32 | 3 x 3 x .30 | 36 | brackets top & bottom | 5'-3" x 6'-0" | 13" | ✓ |
| Bridge, Forward Bulkhead on S.D. | none | .42 | 9½ x 3½ x .50 BA | 26 | brackets top & bottom | 5'-6" x 3'-6" | 17" | ✓ |
| Forecastle Bulkhead on S.D. | none | .30 | 3 x 3 x .30 | 36 | none | 4'-9" x 2'-7" | 18" | ✓ |
| Trunk, Aft ... | | | | | | | | |
| Trunk, Forward ... | | | | | | | | |
| Exposed Machinery Casings on Free-board or Raised Quarter Decks ... | none | .32 | 3 x 2½ x .30 | 29 | none | 4'-3" x 3'-0" | 19" | 8'-0" ✓ |
| Exposed Machinery Casings on Super-structure Decks ... | 17 x 40 | .30 | 3 x 2½ x .30 | 29 | none | 4'-6" x 3'-6" | 19" | ✓ |
| Machinery Casings within Superstructures not fitted with Class I Closing Appliances ... | 17 x 40 | .30 | 3 x 2½ x .30 | 29 | none | 4'-6" x 3'-6" | 19" | ✓ |
| Deckhouses on Flush Deck Ships ... | | | | | | | | |

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

| | |
|---|--|
| Poop Bulkhead ... | sliding boards 3" thick in channels riveted to bulkhead. Full height of opening. |
| BRIDGE AFTER | |
| Raised Quarter Deck Bulkhead ... | sliding boards 3" thick in channels riveted to bulkhead. Full height of opening. |
| Bridge, After Bulkhead on S.D. | sliding boards 3" thick in channels riveted to bulkhead. Full height of opening. |
| Bridge, Forward Bulkhead on S.D. | Hinged steel door manipulated from both sides. |
| Forecastle Bulkhead ... | Hinged wood door 1½" thick manipulated from both sides. |
| Exposed Machinery Casings on Free-board or Raised Quarter Decks ... | Hinged steel door efficient means of closing. |
| Exposed Machinery Casings on Super-structure Deck ... | Hinged steel door efficient means of closing. |
| Machinery Casings within Superstructures not fitted with Class I Closing Appliances ... | Hinged steel door manipulated from one side only. |
| Deckhouses on Flush Deck Ships ... | |

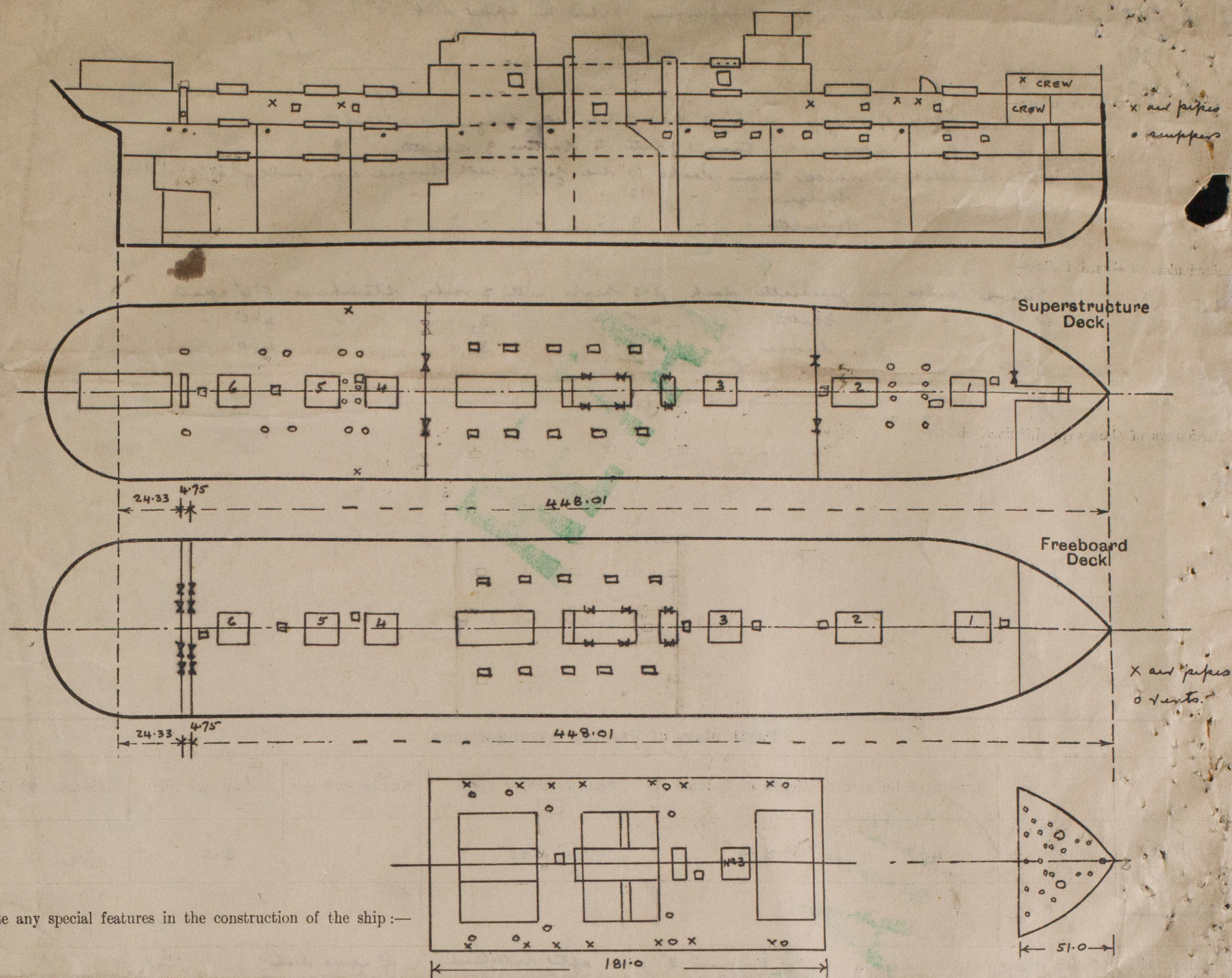


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Superstructure bulkheads, trunks, deckhouses, casings, cargo and coaling hatchways, extent and thickness of sheathing on the freeboard deck, gangway, cargo and coaling ports, and any other openings, etc., which would affect the seaworthiness of the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



*This vessel is engaged in the New Zealand Trade
Lumber freetrade not required.*

*The survey on this vessel was held in dry dock and confined to an examination of the
bottom and the means for clearing the openings in the decks and sides of the ship.
No part of a special survey has been held at this time.*

Builder's name and yard number *Armstrong, Whitworth & Co Ltd No 883.*

Names of sister ships *not known*

Owners *Shaw, Sandell & Albion Co Ltd*

Fee *15 : 6 : 0*

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