

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Computation of Freeboard for Steamer, Sailing Ship, Tanker
having Forecastle and Bridge

Port of Survey London

Date of Survey 27th May, 1932

Name of Surveyor J. Allan

Particulars of Classification +100 A 1
Shelter deck with freeboard

(Type of Superstructures.)

Ship's Name HURUNUI Nationality and Port of Registry British Plymouth Official Number 145100 Gross Tonnage 9315 Date of Build 1920-10

Moulded Dimensions: Length 469.50 Breadth 62'-2" 62.17 Depth 32'-9" 40.75

Moulded displacement at moulded draught = 85 per cent. of moulded depth 22337 tons

Coefficient of fineness for use with Tables .443

Depth for Freeboard (D)

Moulded depth 40.75

Stringer plate05

Sheathing on exposed deck
 $T \left(\frac{L-S}{L} \right) =$

Depth for Freeboard (D) = 40.80

Depth correction

(a) Where D is greater than Table depth
(D - Table depth) R = (40.80 - 31.30) x 3 = 28.50

(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) 62.17

Standard Round of Beam = $\frac{B \times 12}{50} =$ 14.92

Ship's Round of Beam = 12. -

Difference deficient 2.92

Restricted to

Correction = $\frac{\text{Diff}^2}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{2.92^2}{4} \times .5805 = (+).42$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)	
Poop enclosed ...	✓					Standard Height of Superstructure <u>7.50</u> ✓
" overhang ...	✓					" " R.Q.D. ✓
R.Q.D. enclosed ...	✓					Deduction for complete superstructure <u>42.00</u> ✓
" overhang ...	✓					Percentage covered $\frac{S}{L} =$ <u>41.95</u> ✓
Bridge enclosed ...	<u>150'-0"</u>	<u>150.00</u>	<u>8'-0"</u>	✓	<u>150.00</u>	" " $\frac{S_1}{L} =$ <u>41.95</u> ✓
" overhang aft ...	✓					" " $\frac{E}{L} =$ <u>41.95</u> ✓
" overhang forward ...	✓					Percentage from Table, Line A. ✓
Forecastle enclosed ...	<u>47'-0"</u>	<u>47.00</u>	<u>7'-6"</u>	✓	<u>47.00</u>	(corrected for absence of forecastle (if required))
" overhang ...	✓					Percentage from Table, Line B. <u>29.15</u> ✓
Trunk aft ...	✓					(corrected for absence of forecastle (if required))
" forward ...	✓					Interpolation for bridge less than 2L (if required) ✓
Tonnage opening aft ...	✓					Deduction = $.2915 \times 42 =$ <u>12.25</u> ✓
" " forward ...	✓					
Total ...	<u>197.00</u>	<u>197.00</u>			<u>197.00</u>	

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product	
A.P. ...	<u>56.95</u>	1		<u>56.95</u>	<u>48.00</u>	<u>48.00</u>	1		<u>48.00</u>	Mean actual sheer aft = <u>deficient</u>
$\frac{1}{2}$ L from A.P. ...	<u>25.34</u>	4		<u>101.36</u>	<u>20.85</u>	<u>20.85</u>	4		<u>83.40</u>	Mean actual sheer forward = <u>deficient</u>
$\frac{3}{8}$ L " ...	<u>6.26</u>	2		<u>12.52</u>	<u>5.21</u>	<u>5.21</u>	2		<u>10.42</u>	Mean standard sheer forward
Amidships ...	-	4		-	✓	-	4		-	Length of enclosed superstructure forward of amidships =
$\frac{3}{8}$ L from F.P. ...	<u>12.53</u>	2		<u>25.06</u>	<u>11.73</u>	<u>11.73</u>	2		<u>23.46</u>	" " aft of " = <u>thus deficient</u>
$\frac{1}{2}$ L " ...	<u>50.69</u>	4		<u>202.76</u>	<u>46.92</u>	<u>46.92</u>	4		<u>187.68</u>	
F.P. ...	<u>113.90</u>	1		<u>113.90</u>	<u>114.00</u>	<u>114.00</u>	1		<u>114.00</u>	
Total ...				<u>512.55</u>					<u>466.96</u>	

$$\text{Correction} = \frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{45.59}{18} \left(.75 - \frac{.5403}{2094} \right) = (+) 1.37$$

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 = 40.80 Ft.

Summer freeboard = 9.79

Moulded draught (d) = 31.01

Deduction for Tropical freeboard and addition for

Winter freeboard = $\frac{d}{4}$ inches = 7.75

Addition for Winter North Atlantic Freeboard (if required) =

Deduction for Fresh Water.

Displacement in salt water at summer load water line

$\Delta =$

Tons per inch immersion at summer load water line

T =

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

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient $\frac{.443 + .68}{1.36} = \frac{1.123}{1.36}$

	+	-
Depth Correction ...	<u>28.50</u>	
Deduction for superstructures ...		<u>12.25</u>
Sheer correction ...	<u>1.37</u>	
Round of Beam correction ...	<u>.42</u>	
Correction for Thickness of Deck amidships ...		
Other corrections, scantlings, etc. ...		
	<u>30.29</u>	<u>12.25</u>

Summer Freeboard = 114.56SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Steel, Deck:—

Tropical Fresh Water Line above Centre of Disc ...

Fresh Water Line " " ...

Tropical Line " " ...

Winter Line below " " 43 ...

Winter North Atlantic Line " " ...

Tropical Fresh Water Freeboard ...

Fresh Water " " ...

Tropical " " ...

Winter " " ...

Winter North Atlantic " " ...

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PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS										
			Shelter deck.	Bridge.	Shelter deck.	Bridge.	Shelter deck.	Shelter		
Description of Hatchway			1.	2.	3.	4.	5.	deck bunker batch.	3.	deck bunker batch.
Dimensions of Hatchway			27' x 18'	30' x 18'	27' x 18'	27' x 18'	27' x 18'	12' x 18'	27' x 18'	12' x 18'
COAMINGS	Height above Deck	...	30"	30"	30"	30"	30"	30"	9" B.A.	9" B.A.
	Thickness	Sides	AA	AA	AA	AA	AA	AA	AA	AA
		Ends	AA	AA	AA	AA	AA	AA	AA	AA
	Stiffeners	...	8" B.A.	8" B.A.	8" B.A.	8" B.A.	8" B.A.	7" B.A.	✓	✓
	Brackets, Stays	...	Nil	Nil	Nil	Nil	Nil	Nil	✓	✓
HATCH BEAMS	Number	...	3	4	4	3	3	2	3	1
	Spacing	...	6'-9"	6'-0"	5'-5"	6'-9"	6'-9"	4'-0"	6'-9"	6'-0"
	Scantling and Sketch	...	3 x 3 x 40 AA 1/2 x 38	3 x 3 x 40 AA 1/2 x 36	4 x 3 x 40 1 1/2 x 32	3 x 3 x 40 AA 1/2 x 38	3 x 3 x 40 AA 1/2 x 38	4 x 3 x 40 1 1/2 x 32	4 x 3 x 50 1 1/2 x 60	4 x 3 x 40 1 1/2 x 38
	Bearing Surface	...	3"	3"	4"	3"	3"	4"	4"	4"
		...								
FORE AND AFTERS	Number	...								
	Spacing	...								
	Unsupported Lengths	...								
	Scantling* and Sketch	...								
	Bearing Surface	...								
HATCH COVERS	Material	...	WP	WP	WP	WP	WP	WP	WP	WP
	Thickness	...	3"	3"	3"	3"	3"	3"	3"	3"
	How fitted	...	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"
Spacing of Cleats			21"	24"	22"	24"	24"	24"	24"	22"
Number of Tarpaulins			3	3	3	3	3	3	2	2
<p>*Are wood fore and afters steel shod at all bearing surfaces? ✓</p> <p>Are battens and wedges efficient and in good condition? yes.</p> <p>Are tarpaulins in good condition and in accordance with rule requirements? yes.</p> <p>Are lashings provided in accordance with rule requirements? yes.</p>										

Particulars of fiddle, funnel and ventilator coamings:—

Stokehold gratings fitted with strong steel hinged covers.
Fiddle, funnel & vent coamings in efficient condition.
Engine room skylight strongly constructed & in efficient condition.

Particulars of Flush Bunker Scuttles:—

3 flush scuttles on Bridge deck fitted with bayonet joints & no chain attachment.

Particulars of Companionways:—

1 steel door 5'-0" x 27" sill 14" operated both sides, to Bosun's store.
2 wood " 5'-0" x 24" " 15" " " " crew space.
1 " " 5'-0" x 24" " 16" " " " tunnel escape.

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

On Forecastle deck 1 Vent 10" dia. coaming 35" x 32 to fore peak store.
" " 1 " 24" " 35" x 34 " hold.
" Shelter " 8 " 24" " 35" x 34 " " & refug. engine.
" " 1 " 10" " 17" x 34 " Brine room.
" " 2 " 12" " 36" x 34 " crew space.
" " 1 S.N.V. 6" " 10" high " aft peak store.
" " 8 " 5' x 3" " 5" " " crew space.

On Bridge deck 1 Vent 24" dia. coaming 3'-6" x 38 to hold.
" " 4 " 8 1/2" " 35" x 30 " bunkers.
" House aft 1 " 12" " 2'-5" x 30 " tunnel.

all vents fitted with wood plugs & canvas covers.

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

On Forecastle deck 2 C.I. air pipes 12" high to fore peak & D.B. tanks. 3" dia.
" Shelter " 6 " " 12" 20" " " D.B. tanks. 3" dia.
" " 1 " " 9" " " aft peak tank 3" dia.
" Bridge " 2 " " 22" " " D.B. tanks. 3" dia.

Air pipes to D.B. tanks in way of E. & B. spaces are led up inside casing.

means of closing fitted to air pipes.
ie wood plugs

Particulars of Gangway Cargo and Coaling Ports:—

1 ash shoot door (starboard) 2'-0" x 1'-6", in Bridge space, efficient constructed.



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Particulars of Scuppers and Sanitary Discharge Pipes:— All sanitary discharges about 18" above upper deck, fitted with stem valves & efficient traps.

2 Scuppers P. & S. from Bridge space, fitted with brass screw down caps.

Particulars of Side Scuttles:— all scuttles below freeboard deck fitted with strong hinged deadlights.

Particulars of Guard Rails:—

Shelter deck Bridge & Forecastle rails 3'-6" high with 3 rods & stanchions about 4'-6" apart.

Particulars of Gangways, Lifelines, etc.:—

efficient lifeline fitted at aft end of shelter deck.

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	Open rails.					
Forward Well	Open rails.					

State position of each freeing port } After Well:—
(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:—

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 ...	✓							
Bridge, After Bulkhead ... ..	.34	.30	3x3x.34	36"	nil.	5'-0" x 3'-6"	17"	8'-0"
Bridge, Forward Bulkhead ... ..	.44	.40	4x3½x.64	30"	Blts.	5'-1" x 2'-6"	18"	8'-0"
Forecastle Bulkhead ... ..	.34	.30	3x3x.34	36"	nil.	5'-1" x 3'-1"	18"	7'-6"
Trunk, Aft	✓							
Trunk, Forward	✓							
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	✓							
Exposed Machinery Casings on Superstructure Decks ... ..	.32	.30	4x3x.40	36"	Continuous	5'-0" x 2'-0"	18"	8'-0"
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ... ..	.36	.30	4x3x.40	36"	"	5'-0" x 2'-0"	18"	8'-0"
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 wood doors operated both sides. 1 steel door in halves operated both sides, to selfing engine.
Bridge, Forward Bulkhead	2 openings 5'-0" x 3'-6" fitted with weatherboards full height.
Forecastle Bulkhead	2 steel hinged doors operated both sides.
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	2 hook bolted plates 5'-1" x 3'-1"
Exposed Machinery Casings on Superstructure Decks	2 steel doors operated both sides.
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	4 steel doors operated both sides, to E. & B. rooms.
Deckhouses on Flush Deck Ships ...	2 steel doors operated both sides, to bunkers.

The drawing consists of two horizontal deck plans of the USS Albatross (SS-218). The top plan is the Superstructure Deck, and the bottom plan is the Freeboard Deck. Both plans show the ship's hull, internal compartments, and various pieces of equipment. Dimensions are provided for the length of the ship and the distance between the decks.

Superstructure Deck

Dimensions:

- 105'-0"
- 109'-6"
- 47'-0"

Freeboard Deck

Dimensions:

- 470'-0"