

# Lloyd's Register of Shipping.

## SURVEYS FOR FREEBOARD.

Computation of Freeboard for Steamer, ~~Sailing Ship, Tanker~~  
having POOP BRIDGE & FORECASTLE

(Type of Superstructures.)

Ship's Name <b>ARANA</b>	Nationality and Port of Registry <b>British London</b>	Official Number <b>143950</b>	Gross Tonnage <b>2504</b>	Date of Build <b>1919-12</b>
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Port of Survey London

Date of Survey 3<sup>rd</sup> - 14<sup>th</sup> June 1932

Name of Surveyor J. A. Allan

Particulars of Classification \* 100 A1 6.31

Moulded Dimensions: Length 302.62 Breadth 42.75 Depth 23.0  
Moulded displacement at moulded draught = 85 per cent. of moulded depth 5700 tons  
Coefficient of fineness for use with Tables .789

Depth for Freeboard (D)		Depth correction		Round of Beam correction	
Moulded depth	23.00	(a) Where D is greater than Table depth (D - Table depth) R =		Moulded Breadth (B)	42.75
Stringer plate	.04	(23.04 - 20.17) 2.328 = + 6.68		Standard Round of Beam = $\frac{B \times 12}{50}$	10.26
Sheathing on exposed deck $T \left( \frac{L-S}{L} \right) =$		(b) Where D is less than Table depth (if allowed) (Table depth - D) R =		Ship's Round of Beam	10.75
Depth for Freeboard (D) =	23.04	If restricted by superstructures		Difference	.49
				Restricted to	
				Correction = $\frac{\text{Diff}}{4} \times \left( 1 - \frac{S_1}{L} \right)$	$\frac{.49}{4} \times .5201 = .06$

## DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S <sub>1</sub> )	Height	Height Correction	Effective Length (E)	
Poop enclosed	32.66	32.66	7'-6"		32.66	Standard Height of Superstructure 6.53
" overhang						" " R.Q.D.
R.Q.D. enclosed						Deduction for complete superstructure 35.51
" overhang						Percentage covered $\frac{S}{L} = 48.20\%$
Bridge enclosed	80.00	80.00	7'-6"		80.00	" " $\frac{S_1}{L} = 47.99\%$
" overhang aft						" " $\frac{E}{L} = 47.99\%$
" overhang forward	1.25	.62			.62	Percentage from Table, Line A.
F'cle enclosed	31.96	31.96	7'-6"		31.96	(corrected for absence of forecastle (if required))
" overhang						Percentage from Table, Line B.
Trunk aft						(corrected for absence of forecastle (if required))
" forward						Interpolation for bridge less than .2L (if required)
Tonnage opening aft						Deduction = $35.51 \times .3429 = 12.18$
" " forward						
Total	145.87	145.24			145.24	

## SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P.	40.26	1		40.26	62.00	62.00	1		40.26
$\frac{1}{8}$ L from A.P.	17.91	4		71.64	29.62	29.62	4		71.64
$\frac{2}{8}$ L	4.43	2		8.86	7.40	7.40	2		8.86
Amidships		4					4		
$\frac{3}{8}$ L from F.P.	8.86	2		17.72	8.25	8.25	2		16.48
$\frac{4}{8}$ L	35.83	4		143.32	32.98	32.98	4		131.92
F.P.	80.52	1		80.52	73.00	73.00	1		73.00
Total				362.32					342.16

Mean actual sheer aft = Excess  
Mean standard sheer aft = Deficient

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

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( \frac{.75 - \frac{S}{2L}}{.18} \right) = \frac{20.16}{18} (.75 - .241) = +.57$

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 = 23.04  
Summer freeboard = 3.54  
Moulded draught (d) = 19.50

Deduction for Tropical freeboard and addition for Winter freeboard =  $\frac{d}{4}$  inches =  $4.875 = 4\frac{3}{4}$   
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

Depth Correction ...  
Deduction for superstructures ...  
Sheer correction ...  
Round of Beam correction ...  
Correction for Thickness of Deck amidships ...  
Other corrections, scantlings, etc. ...

	+	-
Depth Correction	6.68	
Deduction for superstructures		12.18
Sheer correction	.57	
Round of Beam correction		.06
Correction for Thickness of Deck amidships		
Other corrections, scantlings, etc.		
Summer Freeboard	7.25	12.24
		4.99

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, ~~Wood~~, Steel, Deck: 3'-6 $\frac{1}{2}$ "

Tropical Fresh Water Line above Centre of Disc	...
Fresh Water Line	"
Tropical Line	"
Winter Line below	"
Winter North Atlantic Line	"

Tropical Fresh Water Freeboard	...
Fresh Water	"
Tropical	"
Winter	"
Winter North Atlantic	"

1906 Freeboard  
Re-assigned



# PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS									
Upper decks. Bridge ← Upper decks →									
Description of Hatchway	1	2	3	4	5	6	7	8	9
Dimensions of Hatchway	26' x 16'	26' x 18'	11'6" x 17'	26' x 18'	26' x 16'	6' x 17'			
COAMINGS	Height above Deck	30	30	30	30	12"			
	Thickness	AA	AA	AA	AA	AA			
	Sides	AA	AA	AA	AA	AA			
	Stiffeners	7" BA	7" BA	nil	7" BA	7" BA			
	Brackets, Stays	2 @ 2" dia.	2 @ 2"	nil	2 @ 2"	2 @ 2"			
HATCH BEAMS	Number	5	5	1	5	5	nil		
	Spacing	4'-4"	4'-4"	5'-9"	4'-4"	4'-4"			
	Scantling and Sketch	15" x 32"	15" x 32"	divisional bulkhead	as for	as for			
	Bearing Surface	A @ 3 1/2" x 1/2" A2	3 1/2" x 1/2" A6	at 15"	N° 2	N° 1			
		3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"			
FORE AND AFTERS	Number								
	Spacing								
	Unsupported Lengths								
	Scantling and Sketch								
	Bearing Surface								
HATCH COVERS	Material	WP	WP	WP	WP	WP			
	Thickness	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"			
	How fitted	F & A	F & A	F & A	F & A	F & A			
	Bearing Surface	3"	3"	3"	3"	3"			
		3"	3"	3"	3"	3"			
Spacing of Cleats		26"	26"	26"	26"	26"			
Number of Tarpaulins		3	3	3	3	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? ☒

Particulars of fiddle, funnel and ventilator coamings:—

Stokehold gratings fitted with steel hinged covers, same to be overhauled & made good. X  
 Fiddle, funnel, vent coamings & skylights strongly constructed & in efficient condition.

Particulars of Flush Bunker Scuttles:—

none.

Particulars of Companionways:—

none.

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

On upper deck 16 vents @ 24" dia. coamings 36" x 34 to hold.  
 " " 1 " " 9" " " 36" x 30 " tunnel.  
 " Bridge " 2 " " 12" " " 36" x 30 " lower bunkers.  
 " Poop " 1 " " 7" " " 36" 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 foredeck 1 C.I. air pipe 4" dia. 8' high to fore peak.  
 " " 1 " " 2" " 13" " " D.B. tank.  
 " " 4 " " 2" " 14" " " " "  
 " Poop " 1 " " 4" " 10" " " aft peak.

Efficient means of closing air pipes provided

Particulars of Gangway Cargo and Coaling Ports:—

none.

Particulars of Scuppers and Sanitary Discharge Pipes:—

No scuppers discharge thro' shell from freeboard decks in way of bridge.

All sanitary discharges above & below freeboard decks fitted with storm valves & efficient traps.

Particulars of Side Scuttles:—

Side scuttles in poop space fitted with hinged deadlights.

Particulars of Guard Rails:—

Poop rails 3'-3" high with 2 rods & stanchions about 4'-6" apart.

Bridge " 3'-4" " " 3 " " " 4'-6" "

Forecastle " 3'-3" " " 2 " " " 4'-6" "

Particulars of Gangways, Lifelines, etc.:—

Efficient lifelines fitted in wells. 76'-0" 34'-11 1/2"

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	32'-0"	4'-0"	3'-0" x 16"	4	16 sq ft	16.4 sq ft
Forward Well	76'-0"	4'-0"	3'-0" x 16"	4	16 sq ft	15.2 sq ft

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.

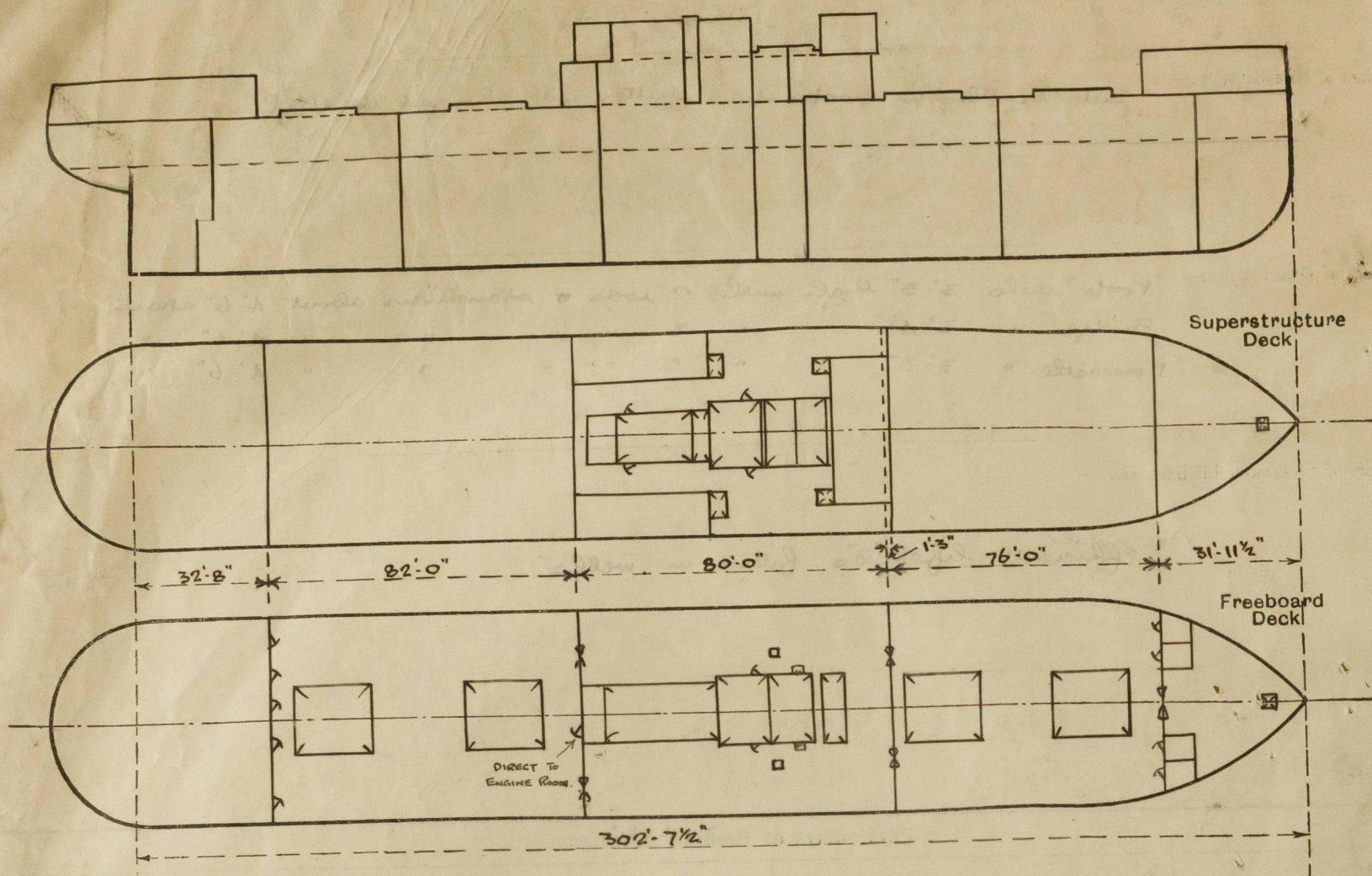
Particulars of Superstructures, Trunks, Casings, Deckhouses.								
	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead	3A	30	6 x 3 1/2 x 36 A	30"	lugs	5'-6" x 24"	16"	7'-6"
Raised Quarter Deck Bulkhead								
Bridge, After Bulkhead	3A	3A	3" flange	36"	nil	5'-6" x 3'-6"	24"	7'-6"
Bridge, Forward Bulkhead	40	3A	7 x 3 x 18 B	30"	Bbb	5'-3" x 2'-0"	15"	7'-6"
Forecastle Bulkhead	32	32	3" flange	33"	nil	6'-2" x 4'-0"	3"	7'-6"
Trunk, Aft								
Trunk, Forward								
Exposed Machinery Casings on Freeboard or Raised Quarter Decks								
Exposed Machinery Casings on Superstructure Decks	36	32	3 1/2 x 3 1/2 x 3A	36"	continuous	4'-6" x 2'-0"	16"	7'-6"
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	38	3A				4'-6" x 2'-0"	18"	7'-6"
Deckhouses on Flush Deck Ships								

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

Poop Bulkhead	2 steel doors 5'-6" x 24" sill 16" operated both sides.
Raised Quarter Deck Bulkhead	3 " " 5'-0" x 24" " 16" " " "
Bridge, After Bulkhead	2 openings 5'-6" x 3'-6" sill 24" weather boards full height.
Bridge, Forward Bulkhead	2 bolted plates 5'-3" x 2'-0" sill 15" (bolted through plating) spaced 6" apart
Forecastle Bulkhead	1 opening 6'-2" x 4'-0" sill 15" (weather boards full height).
Exposed Machinery Casings on Freeboard or Raised Quarter Decks	2 steel doors 5'-0" x 2'-0" " 18" operated both sides. 2 insulated doors 3'-0" x 3'-0" sill 3'-6" to sides.
Exposed Machinery Casings on Superstructure Decks	1 steel door 4'-6" x 2'-0" sill 18" operated both sides, in Bridge after Bulkhead, direct to engine room.
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	2 steel doors 4'-6" x 2'-0" sill 16" operated both sides, to engine room. 2 " " 4'-6" x 2'-0" " 16" " " " stokehold.
Deckhouses on Flush Deck Ships	2 steel doors 2'-3" x 2'-3" sill 22" operated outside only, to coal trunk. 2 " " 4'-6" x 2'-0" " 18" " both sides, " stokehold.



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:—



Sheathing on Poop deck 12½" P.P.

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

Small Hatches.

Small Hatches				
Fore deck hatch	1'-9" x 1'-8"	coamings	24" x 10	wood covers efficiently battened.
Upper deck fore peak	3'-3" x 3'-0"	"	9" x 25	" " & locking bar.
Bridge deck bunkers	2 @ 3'-6" x 3'-0"	"	18" x 10	" " efficiently battened.
" " "	2 @ 5'-8" x 3'-4"	"	18" x 10	" " " "
Upper " "	2 @ 2'-0" x 1'-9"	"	9" B.A.	" " " "
Coal shoot	15'-0" x 5'-0"	"	7" B.A.	" " " "

Vessel surveyed afloat, Special Survey N° 3 further advanced - it is intended to complete same on vessels return to this country.

Builder's name and yard number A. & J. Inglis Ltd. No 325.

Names of sister ships

OWNERS. Pacific Steam Nav. Co.

Fee £ 11 : 1 : 0

Received by me

Received  
y/c 15/6/32