

Rpt. C.11.

# Lloyd's Register of Shipping.

## SURVEYS FOR FREEBOARD.

15 APR 1932

Index. No. 31385  
(For London Office only.)

21882.

31385

Computation of Freeboard for Steamer, ~~Sailing Ship~~, Tanker  
having Roop, bridge & forecastle.

Port of Survey Barny.

(Type of Superstructures.)

Date of Survey April 1932.

Ship's Name

Nationality and Port of Registry

Official Number

Gross Tonnage

Date of Build

BELLAILSA.

BRITISH.  
GLASGOW.

147925

4553.

1924.

Name of Surveyor

George R. Chappell

Moulded Dimensions: Length 384 Breadth 51.75 Depth 29  
Moulded displacement at moulded draught = 85 per cent. of moulded depth 11,040 tons  
Coefficient of fineness for use with Tables .789 FROM MARCELLA

Particulars of Classification 100 A.

Depth for Freeboard (D)				Depth correction		Round of Beam correction	
Moulded depth	...	...	29.00	(a) Where D is greater than Table depth (D - Table depth) R =		Moulded Breadth (B)	51.75
Stringer plate	...	...	.03	(29.03 - 25.6) 2.954 = +10.13		Standard Round of Beam = $\frac{B \times 12}{50}$	12.42
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	13
Depth for Freeboard (D) =	29.03			If restricted by superstructures		Difference	.58
						Restricted to	.503
						Correction = $\frac{\text{Diff}}{4} \times \left( 1 - \frac{S_1}{L} \right)$	$\frac{.58}{4} \times (1 - .497) = -.07$

### DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S <sub>1</sub> )	Height	Height Correction	Effective Length (E)	
Poop enclosed	33.42	33.33	7'9"		33.33	Standard Height of Superstructure <u>7.34</u>
" overhang						" " R.Q.D.
R.Q.D. enclosed						Deduction for complete superstructure <u>40.93</u>
" overhang						Percentage covered $\frac{S}{L} = 49.70\%$
Bridge enclosed	112.00	112.00	7'9"		112.00	" " $\frac{S_1}{L} = 49.70\%$
" overhang aft						" " $\frac{E}{L} = 49.70\%$
" overhang forward	45.50	45.50	7'9"		45.50	Percentage from Table, Line A.
Fore enclosed	44.10		7'9"			(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 = $40.93 \times .3575 = -14.63$
" forward	190.83					
Total	193.92	190.83			190.83	

### SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product	
A.P.	48.40	1		48.40	64.00	64.00	1		64.00	Mean actual sheer aft = Excess
1/4 L from A.P.	21.54	4		86.16	26.80	26.80	4		107.44	Mean actual sheer forward = Excess
1/2 L	5.32	2		10.64	6.70	6.70	2		13.42	
Amidships		4			0		4			Length of enclosed superstructure forward of amidships = .146
3/4 L from F.P.	10.65	2		21.30	13.20	13.20	2		26.46	" " aft of " = .146
1/4 L	43.07	4		172.28	52.90	52.90	4		211.72	
F.P.	96.80	1		96.80	120.00	120.00	1		120.00	
Total				435.58	283.60				543.04	.5015

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( .75 - \frac{S}{2L} \right) = \frac{107.46}{18} \times (.75 - .2485) = -2.99$

If limited on account of midship superstructure.

If limited to maximum allowance of 1 1/2 ins. per 100 ft.

Deduction for Tropical Freeboard.		Deduction for Fresh Water.		TABULAR FREEBOARD corrected for Fresh Deck (if required)	
Addition for Winter and Winter North Atlantic Freeboard.		Displacement in salt water at summer load water line		Correction for coefficient $\frac{.789 + .68}{1.36} = 1.469$	
Depth to Freeboard Deck	= 29.03	$\Delta =$	10.686	Depth Correction	10.13
Summer freeboard	= 5.37	Tons per inch immersion at summer load water line		Deduction for superstructures	14.63
Moulded draught (d)	= 23.66	T =	39.25	Sheer correction	2.99
Deduction for Tropical freeboard and addition for		Deduction = $\frac{\Delta}{40T}$ inches		Round of Beam correction	.07
Winter freeboard = $\frac{d}{4}$ inches	= 5.91 = 6	=	6.81	Correction for Thickness of Deck amidships	
Addition for Winter North Atlantic Freeboard (if required)		=	6 3/4	Other corrections, scantlings, etc.	
					10.13 17.69 - 7.56
					Summer Freeboard = 64.38

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

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



# PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS									
ON FREEBOARD DECK					ON SUPERSTRUCTURE DECKS				
Description of Hatchway	No. 1	No. 2	No. 3	No. 4	No. 5	Bridge	Poop		
Dimensions of Hatchway	24'9" x 19'0"	28'0" x 19'0"	14'0" x 19'0"	35'0" x 19'0"	25'8" x 19'0"	14'0" x 19'0"	8'6" x 7'0"		
COAMINGS									
Height above Deck	30"	30"	9" B.A.	30"	30"	30"	18"		
Thickness	44"	44"	5"	44"	44"	44"	34"		
Stiffeners	7" x 3 1/2" x 1/2" B.A.				7" x 3 1/2" x 1/2"		NONE		
Brackets, Stays	2" 2" DIA.	2" 2" DIA.	NONE	3" 2" DIA.	2" 2" DIA.	NONE	NONE		
HATCH BEAMS									
Number	4	5	2	6	5	2	NONE		
Spacing	4'10" to 5'0"	4'8"	4'8"	5'0"	4'3 1/2"	4'8"			
Scantling and Sketch	17" x 36"	16" x 36"	15" x 36"	17" x 36"	15 1/2" x 36"	15 1/2" x 36"			
Bearing Surface			4" x 3" x 44" ANGLES						
FORE AND AFTERS									
Number									
Spacing									
Unsupported Lengths									
Scantling and Sketch									
Bearing Surface									
HATCH COVERS									
Material	WOOD								
Thickness	2 1/2" to 2 3/4"								
How fitted	F&A								
Bearing Surface	3"								
Spacing of Cleats	24"								
Number of Tarpaulins	2								
<p>*Are wood fore and afters steel shod at all bearing surfaces? NONE</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: — Stakehold grating covered by strong steel hinged covers. Fiddle funnel ventilators in efficient condition. Engine room skylights strongly constructed.

Particulars of Flush Bunker Scuttles: — NONE.

Particulars of Companionways: — NONE.

Particulars of Ventilators in exposed positions on freeboard and superstructure decks: — On fdb. dk. to fore pk. one 8" vent. coaming 8 1/2" x 31". On forewell dk. to holds, eight 18" vents coamings 36" x 36". Bridge dk. to holds two 18" vents coamings 36" x 36". After well dk. to holds, two 10" vents coamings 36" x 36" and two 18" vent. coamings 36" x 36". Poop dk. to holds two 21" vents coamings 36" x 36". No aft peak store space one 8" vent coaming 8 1/2" x 31". No funnel one 6" vent coaming 36" x 31". All closed by wood plugs and canvas covers.

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks: — Fore well dk. one 3" pipe ht. 36" to No. 1 tank. After well, two 2 1/2" pipes ht. 27" to No. 2 tank. No. 3 & two 3" pipes ht. 27" to No. 4 tank. All pipes 27" high have shifting holes in top of head. Closed by wood plugs.

Particulars of Gangway Cargo and Coaling Ports: — NONE.

Particulars of Scuppers and Sanitary Discharge Pipes — Sanitary discharge pipes discharge overboard above the freeboard dk. fitted with C.I. storm valves on ship's side. Scuppers from bridge space fitted with C.I. N.R. valves on ship's side.

Particulars of Side Scuttles: Side scuttles to crew spaces in fdb. 9" dia. 5'6" above fdb. dk. One 9" scuttle 19" below fdb. dk. in engine room P.S. side. All scuttles of sound construction, and fitted with deadlights.

Particulars of Guard Rails: — Steel bulwarks on freeboard deck in wells height 4'0" and on bridge deck height 3'3". Guard rails on fdb. poop 3'1" ht. with two rails 2 stanchions spaced 4'8" to 5'0" apart.

Particulars of Gangways, Lifelines, etc.: — NONE. Lifelines provided in wells for the protection of the crew.

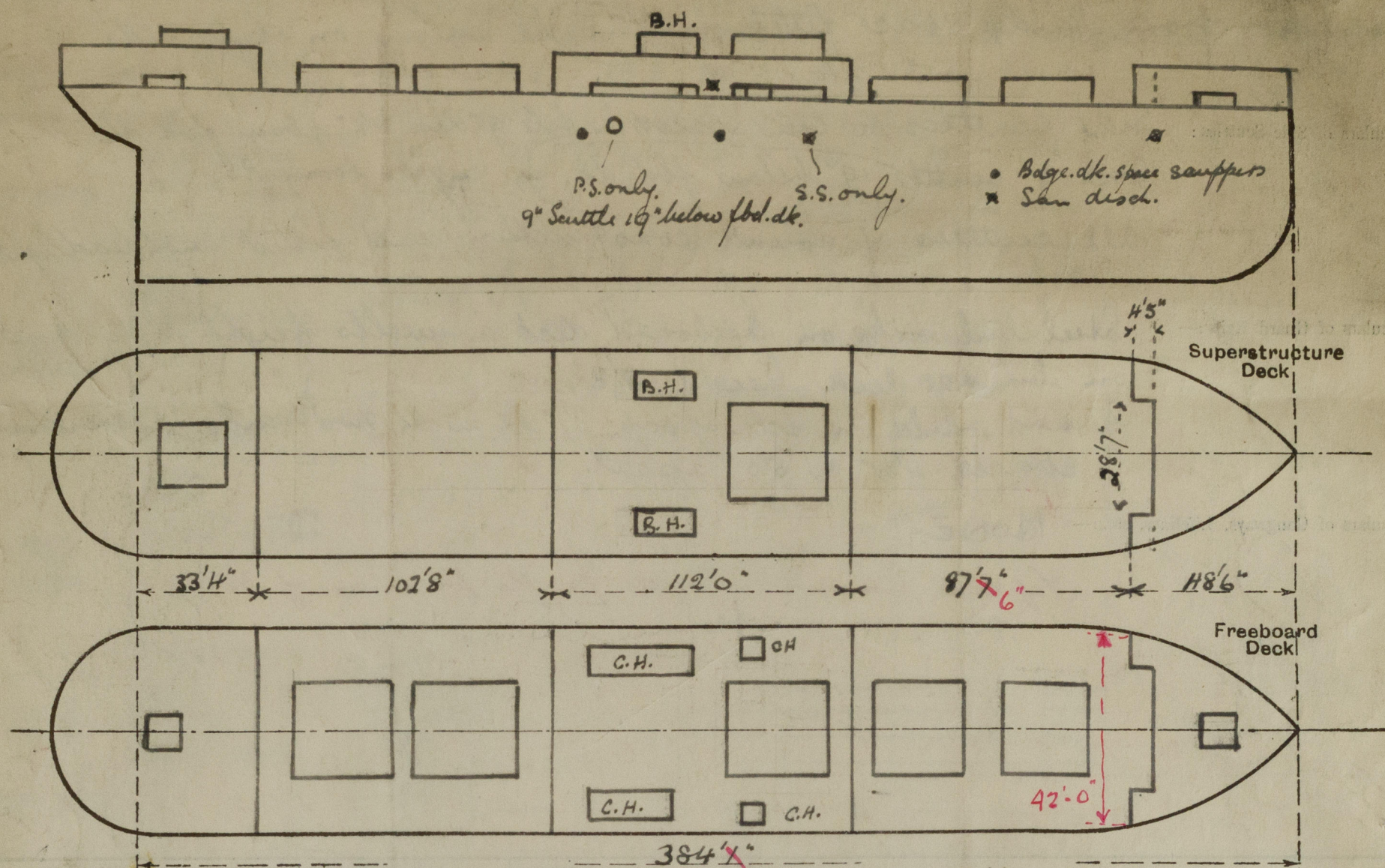
Particulars of Freeing Arrangements.						
	Length of Bulwark	Height of Bulwark	Size of Freeing Ports	Number each side	Area each side	Rule area each side
After Well	102'9"	4'0"	2'6" x 12" 4' x 1'6"	3	20.5	20.5
Forward Well	87'8"	4'0"	4' x 1'6"	3	18	17.5
<p>State position of each freeing port: — After Well: 7m. Bdg. aft. bulkhead 25'0" 24'2" 23'6" cr. to cl. (F. and A. position and height above deck edge). Forward Well: 7m. side houses 28'0" 24'9" 21'3" cr. to cl.</p> <p>State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such: — one 1" dia. bar.</p> <p>Additional area where sheer is less than standard.</p>						

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	38	31	6 x 3 1/2 x 1/2	30"	BRACKETS T. & B.	TWO 4'0" x 5'10"	20"	7'9"
Raised Quarter Deck Bulkhead			4 x 3 x 3/4			TWO 4'0" x 5'10"	19"	7'9"
Bridge, After Bulkhead	31	31	3 x 3 x 3/4	27" to 30"	NONE	5' x 3'	18"	7'9"
Bridge, Forward Bulkhead	50	43	9 x 3 1/2 x 5	30"	BRACKETS T. & B.	5' x 2'8"	18"	7'9"
Forecastle Bulkhead	31	31	3 x 3 x 3/4	22" to 36"	NONE	5' x 2'0"	18"	7'9"
Trunk, Aft			4 x 3 x 3/4					
Trunk, Forward								
Exposed Machinery Casings on Freeboard or Raised Quarter Decks	43	31	3 x 3 x 3/4	30"	NONE	NONE		7'9"
Exposed Machinery Casings on Superstructure Decks	38	38	3 x 3 x 3/4	36"	NONE	FIVE 5' x 2'	18"	7'6"
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	43	31	3 x 3 x 3/4	30"	NONE	TWO 4' x 4' ONE 4' x 5' & 2' x 2' ONE 5' x 2' & 2' x 2'	18"	7'9"
Deckhouses on Flush Deck Ships								

Particulars of Closing Appliances (state if capable of being manipulated from both sides).	
Poop Bulkhead	Closed by shifting boards in channels full height.
Raised Quarter Deck Bulkhead	
Bridge, After Bulkhead	Closed by shifting boards in channels full height.
Bridge, Forward Bulkhead	Closed by steel doors hinges, and dogs 11" to 19" spacing.
Forecastle Bulkhead	Wood & steel doors, manipulated from both sides, also channels shifting boards full height in case.
Exposed Machinery Casings on Freeboard or Raised Quarter Decks	None.
Exposed Machinery Casings on Superstructure Decks	Wood & steel doors with hinges & locks, manipulated from both sides.
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	Closed by steel hinged doors with bolts & steel shutters, man. from one side.
Deckhouses on Flush Deck Ships	Only. NOTE. no means of closing openings 4' x 4' P.S. in way of saddleback.



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:—



Bunkers hatches 11'8" x 3'0" coaming 30" x 38" Rets 2 1/4" wood hatches 2 1/4"  
 Thwart, cleats 24" spacing, 2 tarpaulins. ✓  
 Fore coaling hatches 21" by 27" coaming 9" B.A. Rets 2", wood hatch 2 1/4"  
 on steel hinges, 2 tarpaulins slashing, ~~no~~ cleats & battens  
 Aft. coaling hatches port. 20'0" x 3'0" star. 16'0" x 3'0" coamings 9" x 3 1/2" x 1/2" B.A.  
 Rets 3" Wood hatches 2" Thwart, cleats 26" x 2 1/4" spacing two tarpaulins ✓  
 State any special features in the construction of the ship: Coal chutes 4' x 3' x 1/4" plating, from bunkers hatches  
 to after coaling hatches, in cl of hatch (W.T.)  
 Bridge dk. bulwarks length 112'0" height 3'3" one freeing port P. & S. 1' x 1'6"  
 51' feet from fore. End openings 4'0" fore & 4'6" aft. Area each  
 side 29 sq. ft. Rule area 22 sq. ft. ✓

From particulars on board vessel.

Displacement Scale.

23' 1/2"	7840 tons.
22' 3"	7000
20' 0 1/2"	6000
17' 11 1/2"	5000
15' 9 1/2"	4000
13' 7 1/2"	3000.

$$\begin{aligned} \text{F'CLE} &= 48.5' \\ \text{LEN} &= 48.5' \\ \text{DEDUCT. } \frac{28.58 \times 4.42}{42'} &= \frac{3.0}{45.5'} = \text{Equid} \end{aligned}$$

*ER.S.*

Builder's name and yard number

*Lithgows Ltd. Ft. Glasgow.*

Names of sister ships

Owners

*Bellairs S.S. Co. Ltd. (Bell Bros & Co)*

Fee £ 12 : 15 : 0

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