

Rpt. C.11.

Lloyd's Register of Shipping.
SURVEYS FOR FREEBOARD.

GLASGOW REPORT No

12 NOV 1936
Index. No. 35086
(For London Office only.)

57670

Computation of Freeboard for ~~Steamer, Sailing Ship, Tanker~~
MOTORSHIP.

having A COMPLETE SUPERSTRUCTURE WITH TONNAGE OPENING.

Port of Survey GLASGOW

Date of Survey 10th Nov. 1936

Name of Surveyor K. Johnson

Particulars of Classification + 10DA.1.
WITH FREEBOARD
(CLASS CONTINGENT)

Ship's Name	Nationality and Port of Registry	Official Number	Gross Tonnage	Date of Build
NA. CAMBRIDGE SUSSEX	BRITISH LONDON	165389	11063 11073 per M.O.I.	1937

Moulded Dimensions: Length 530.0 Breadth 70.0 Depth 39.0
Moulded displacement at moulded draught = 85 per cent. of moulded depth $32.1\frac{3}{4}$ = 24690 tons
Coefficient of fineness for use with Tables .703

Depth for Freeboard (D)		Depth correction		Round of Beam correction	
Moulded depth	39.0	(a) Where D is greater than Table depth (D-Table depth) R =		Moulded Breadth (B)	70.0
Stringer plate	.50	(39.04 - 35.33) 3.00 = + 11.13		Standard Round of Beam = $\frac{B \times 12}{50}$	16.80
Sheathing on exposed deck		(b) Where D is less than Table depth (if allowed) (Table depth-D) R =		Ship's Round of Beam	17.00
$T \left(\frac{L-S}{L} \right) =$				Difference	EXCESS 20
Depth for Freeboard (D) =	39.04	If restricted by superstructures		Restricted to	
				Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right)$	$= \frac{20}{4} \times 1.0044 = 5.018$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed	61.50	61.50	8'-6"		61.50
" overhang	.58	.29			.29
R.Q.D. enclosed					
" overhang					
Bridge enclosed	462.83	462.83	8'-6"		462.83
" overhang aft					
" overhang forward					
Fore enclosed					
" overhang	.59	.44			.44
Trunk aft					
" forward					
Tonnage opening aft	4.50	2.47			2.47
" forward					
Total	530.00	527.53			527.53

Standard Height of Superstructure 7'-6" ✓
" " R.Q.D. ✓
Deduction for complete superstructure 42.00 ✓
Percentage covered $\frac{S}{L} = 100\%$ ✓
" " $\frac{S_1}{L} = 99.54\%$ ✓
" " $\frac{E}{L} = 99.54\%$ ✓
Percentage from Table, Line A. 99.43 ✓
(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 = $42.00 \times 99.43 = - 41.76$ ✓

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P.	63.00	1		63.00	65.62	77.62	1		77.62
$\frac{1}{8}$ L from A.P.	28.03	4		112.12	29.62	34.55	4		138.20
$\frac{2}{8}$ L	6.93	2		13.86	7.37	8.53	2		17.06
Amidships	-	4		-	-	-	4		-
$\frac{2}{8}$ L from F.P.	13.86	2		27.72	17.00	17.86	2		35.72
$\frac{1}{8}$ L	56.06	4		224.24	66.50	72.25	4		289.00
F.P.	126.00	1		126.00	150.37	162.37	1		162.37
Total				566.94					719.99

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{153.05}{18} \times .25 = - 2.12$ ✓

If limited on account of midship superstructure.

Mean actual sheer aft = EXCESS ✓
Mean standard sheer aft =
Mean actual sheer forward = EXCESS ✓
Mean standard sheer forward =
Length of enclosed superstructure forward of amidships = } C.S.S. ✓
" " aft of " =

Deduction for Tropical Freeboard.
Addition for Winter and Winter North Atlantic Freeboard.

Depth to Freeboard Deck = 39.04 ✓
Summer freeboard = 6.67 ✓
Moulded draught (d) = 32.37 ✓

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 8.09 = 8 ✓

Addition for Winter North Atlantic Freeboard (if required) = ✓

Deduction for Fresh Water.

Displacement in salt water at summer load water line

 $\Delta = 24116$

Tons per inch immersion at summer load water line

 $T = 72.25$ Deduction = $\frac{\Delta}{40T}$ inches

= 8.34 ✓

8 $\frac{1}{4}$ ✓

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient $\frac{.703 + .68}{1.36} = \frac{1.383}{1.36} = 1.017$

Depth Correction	11.13	
Deduction for superstructures		41.76
Sheer correction		2.12
Round of Beam correction		
Correction for Thickness of Deck amidships		
Other corrections, scantlings, etc.		
	11.13	43.88

Summer Freeboard = 30.04

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

Tropical Fresh Water Line above Centre of Disc	16 $\frac{1}{4}$ ✓
Fresh Water Line	8 $\frac{1}{4}$ ✓
Tropical Line	8 ✓
Winter Line below	8 ✓
Winter North Atlantic Line	✓

Tropical Fresh Water Freeboard	5'-3 $\frac{3}{4}$ ✓
Fresh Water	5'-11 $\frac{3}{4}$ ✓
Tropical	6'-0" ✓
Winter	7'-4" ✓
Winter North Atlantic	✓

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PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS															
				← FREEBOARD DECK					X SUPERSTRUCTURE DECK →						
Description of Hatchway				Nº-1	Nº-2	Nº-3	Nº-4+5	Nº-6	Nº-1	Nº-2,4+5	Nº-3	Nº-6	TONNAGE HATCH.		
Dimensions of Hatchway				20'-0" x 20'-2 3/4"	31'-2" x 20'-2 3/4"	39'-8" x 20'-2 3/4"	31'-2" x 20'-0"	11'-4" x 11'-11"	20'-0" x 20'-0"	31'-2" x 20'-0"	39'-8" x 20'-0"	19'-10" x 15'-4"	4'-6" x 2'-0"		
COAMINGS	{	Height above Deck	9 ✓	{	AS Nº-1		8 x 3 x .44	11 x 3 1/2 x .44	{	AS Nº-1			9 ✓		
		Thickness { Sides44 ✓											.44 ✓	.44 ✓
		Thickness { Ends44 ✓											.44 ✓	.44 ✓
		Stiffeners	✓											✓	✓
Brackets, Stays		✓										✓			
HATCH BEAMS	{	Number	3 ✓	4	6	4	1	3	4	6	3				
		Spacing	6'-4" ✓	6'-4"	6'-4"	6'-4"	5'-8"	6'-4"	6'-4"	6'-4"	6'-4"	6'-4"			
		Scantling and Sketch	18 x .50 ✓				12 x .42	18 x .50 ✓			18 x .40 ✓				
		Bearing Surface	4 x 3 1/2 x .54 ✓	3 1/2 ✓	3 1/2 ✓	3 1/2 ✓	3 1/2 ✓	4 ✓	4 ✓	4 ✓	4 ✓				
FORE AND AFTERS	{	Number	← SMALL HATCHES ON SUPERSTRUCTURE DECK					X SMALL HATCHES ON FREEBOARD DECK →							
		Spacing	W.T. HATCH TO STORE FORD. 2'-6" x 3'-0"					ACCESS HATCHES TO TWEEN DECK 10 OFF. 2'-5 1/2" x 2'-6"							
		Unsupported Lengths	30" COAMING x .44 ✓					W.T. HATCH TO DECK TRUNK. (INSIDE STEEL HOUSE) 2'-3" x 3'-0"							
		Scantling* and Sketch	W.T. HINGED STEEL COVER. ✓					ACCESS HATCHES TO TWEEN DECK 10 OFF. 2'-6" x 3'-3"							
HATCH COVERS	{	Material	W.P.	W.T. HINGED STEEL COVER. ✓					9" COAMING x .44 ✓						
		Thickness	3	W.T. HINGED STEEL COVER. ✓					3" W.P. COVER. EFFICIENT BATTENING ARRANGEMENTS ✓						
		How fitted	F+A	W.T. HINGED STEEL COVER. ✓					1 TARPULIN. ✓						
		Bearing Surface	4	W.T. HINGED STEEL COVER. ✓					1 TARPULIN. ✓						
Spacing of Cleats				24 ✓	24 ✓	24 ✓	24 ✓	24 ✓	24 ✓	24 ✓	24 ✓	24 ✓	✓		
Number of Tarpaulins				1 ✓	1 ✓	1 ✓	1 ✓	1 ✓	3 ✓	3 ✓	3 ✓	3 ✓	✓		

*Are wood fore and afters steel shod at all bearing surfaces? *none*

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? *yes*

Particulars of fiddle, funnel and ventilator coamings:—

Funnel, ventilator and engine room skylight of steel and strongly constructed

Particulars of Flush Bunker Scuttles:—

none.

Particulars of Companionways:—

Entrance to Freeboard deck in steel house amidships	Entrance to Freeboard deck P+S in steel house amidships	Entrance to steering gear in steel house aft.	Entrance to tunnel escape trunk in steel house aft.
Solid wood door 5'-0" x 2'-6"	Steel door in bulkhead 5'-1" x 2'-4"	Steel door 5'-3" x 2'-1"	Steel door 5'-3" x 2'-1"
sill 18" manipulated from both sides.	sill 18" manipulated from both sides.	sill 18" manipulated from both sides.	sill 18" manipulated from both sides.

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

6-8" x 4" S.N. VENTS TO STORES 2'-3" TO LIP.	1-6" M. VENT TO COOLER ROOM ON FREEBOARD DK. COAMING 36 x 15
5-24" COWL VENTS TO Nº 1, 2, 3 TWEEN DECK AND HOLDS COAMING 36 x 40	4-8" - - - STORE - - - 18 x 15
4-21" - - - 4+5 - - - 36 x 40	3-8" - - - SPACES BELOW - - - 18 x 15
12-12" - - - 2, 3, 4, 5+6 - - - 36 x 34	1-10" - - - - - - - 18 x 15
2-9" - - - 6 - - - 36 x 34	
4-9" - - - STORES - - - 36 x 25	
1-6" - - - - - - - 36 x 25	

Marked vents are W.T. screw down type
S.N. Vents closed with W.T. hinged steel plate covers
24" vents to Nº 1 hold have W.T. steel plate covers
Remainder of vents closed with wood plugs & canvas covers.

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

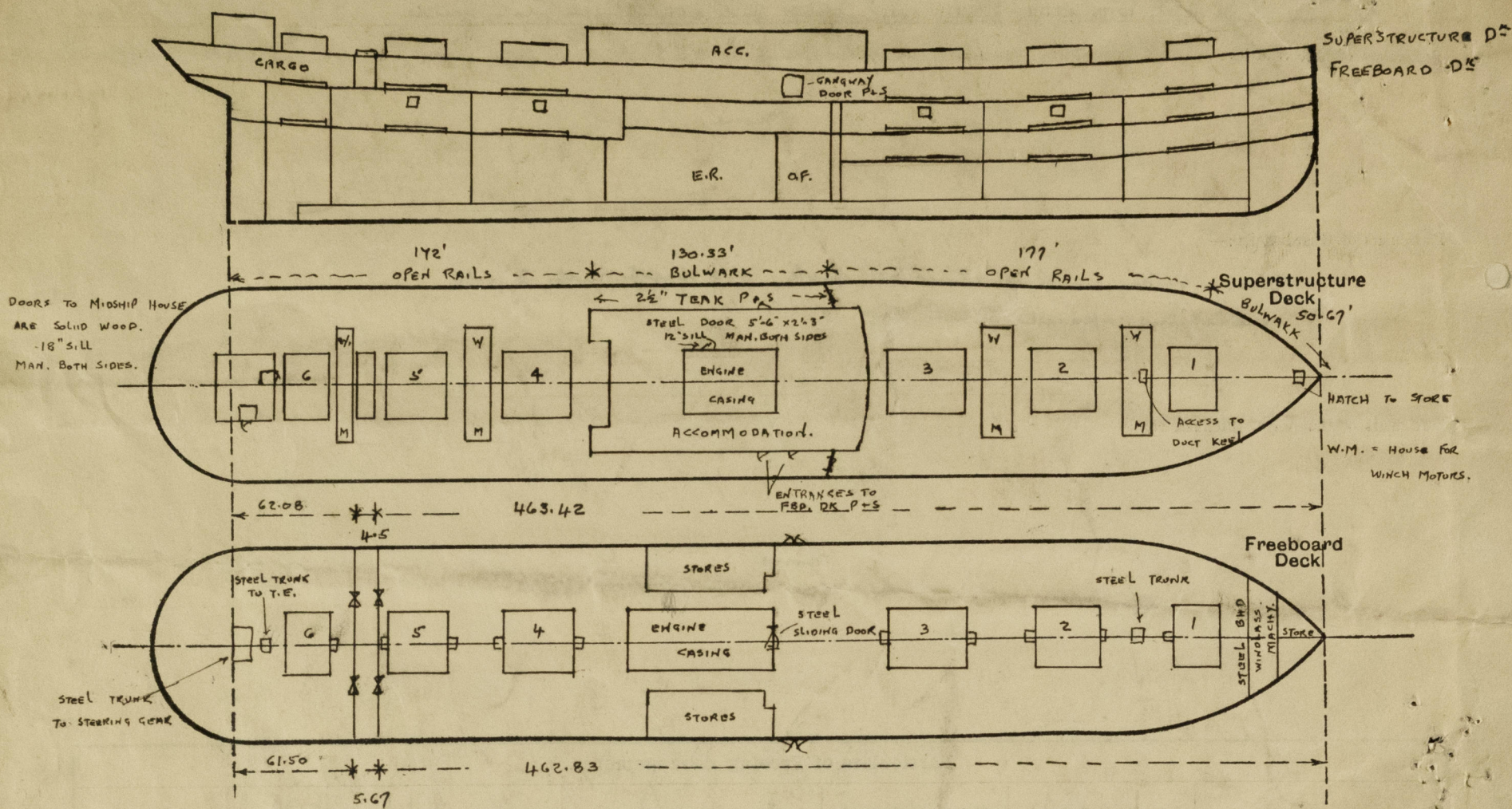
2-4" air pipes to fore peak.	Height above deck 27" to lip. all closed with wood plugs ... and canvas covers.	air pipes from oil fuel d. & tanks carried up mast and derrick ports and fitted with gauge at pump.
2-4" - - - Nº 1 d.b. tank		
4-4" - - - - 2 - - -		
2-2" - - - - - - -		
1-6" - - - - - - -		
2-2 1/2" - - - - - - -		
2-4" - - - - - - -		

Particulars of Gangway Cargo and Coaling Ports:—

W.T. gangway door P+S between superstructure deck and freeboard deck in way of engine room working passage
6'-9" x 6'-7" apparently constructed
4 off P+S W.T. mutton ports between freeboard deck and deck below
2'-3" x 1'-10" - apparently constructed
Lower edge of lowest port 35'-11 7/8" above base.

0273 $\frac{2}{2}$

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:—



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

Please see Preliminary arrangement 11th October 1936.

Deck breadth in way of tonnage opening = 64 FT.
Breadth of tonnage opening = 20 FT.

$$\frac{64 - 20}{64} = .687.$$

This vessel is a complete Superstructure with tonnage opening and has been built in accordance with the approved plans and in general conformity with the Society's Rules for the class contemplated.

attention is directed to the Secretary's letter of 31st Aug. 1936.

Additional scuppers have been provided in the bridge side bulwarks as required by Secretary's letter of 6th Nov. 1936.

Copies of all the approved plans are in the London office.

Builder's name and yard number *John Brown & Co Ltd N° 546*

Names of sister ships *M/S 'ESSEX'*

Owners *P & O STEAM NAV. CO LTD, Federal Steam Nav. Co Ltd*

Fee £ *will be charged later.* Received by me.



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