

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Index. No.

(For London Office only.)

MAY 31 1937

Computation of Freeboard for Steamer, RAISED QUARTER DECK AND FORECASTLE

having RAISED QUARTER DECK AND FORECASTLE

Port of Survey ROTTERDAM

Date of Survey BUILDING

Name of Surveyor C. LODDER

Particulars of Classification 100A1
(CONTEMP.)

MOGHEB (Type of Superstructures.)

Ship's Name M.S. "BOTHNIA" Nationality and Port of Registry DUTCH Official Number 490 Gross Tonnage 493.86 Date of Build 1937

Moulded Dimensions: Length 48.00 Breadth 8.30 Depth 3.55 M. ✓

Moulded displacement at moulded draught = 85 per cent. of moulded depth 906 M³

Coefficient of fineness for use with Tables .754 ✓

Depth for Freeboard (D)	Depth correction	Round of Beam correction
Moulded depth ... <u>3.55</u> <u>✓</u>	(a) Where D is greater than Table depth (D - Table depth) R = <u>8.33(3.56 - 3.20) 12.12 = + 36 m.m.</u>	Moulded Breadth (B) = <u>8.30</u> M.
Stringer plate ... <u>.01</u> <u>✓</u>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = <u>✓</u>	Standard Round of Beam = $\frac{B \times 22}{50} =$ <u>166 m.m.</u>
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$ <u>✓</u>	If restricted by superstructures <u>✓</u>	Ship's Round of Beam = <u>166 m.m.</u>
Depth for Freeboard (D) = <u>3.56</u> <u>✓</u>		Difference <u>NIL.</u>
		Restricted to
		Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right) =$ <u>NIL.</u>

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed ...					
" overhang ...					
R.Q.D. enclosed ...	<u>13.19</u> <u>✓</u>	<u>13.19</u> <u>✓</u>	<u>1.097</u>		<u>13.19</u> <u>✓</u>
" overhang ...					
Bridge enclosed ...					
" overhang aft ...					
" overhang forward ...					
F'cle enclosed ...	<u>5.38</u> <u>✓</u>	<u>5.38</u> <u>✓</u>	<u>2.156</u>		<u>5.38</u> <u>✓</u>
" overhang ...	<u>.55</u> <u>✓</u>	<u>.27</u> <u>✓</u>			<u>.27</u> <u>✓</u>
Trunk aft ...					
" forward ...					
Tonnage opening aft ...					
" forward ...					
Total ...	<u>19.12</u> <u>✓</u>	<u>18.84</u> <u>✓</u>			<u>18.84</u> <u>✓</u>

Standard Height of Superstructure 1830 ✓

" " R.Q.D. 1029 ✓

Deduction for complete superstructure 553 ✓

Percentage covered $\frac{S}{L} =$ 39.84 ✓

" " $\frac{S_1}{L} =$ 39.25 ✓

" " $\frac{E}{L} =$ 39.25 ✓

Percentage from Table, Line A. 22.86 ✓
(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 = 553 \times 22.86 = 126 m.m.

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	<u>654</u> <u>✓</u>	1		<u>654</u>	<u>800</u>	<u>800</u>	1		<u>800</u>
$\frac{1}{2}$ L from A.P. ...	<u>291</u> <u>✓</u>	4		<u>1164</u>	<u>366</u>	<u>366</u>	4		<u>1464</u>
$\frac{2}{3}$ L " ...	<u>73</u> <u>✓</u>	2		<u>146</u>	<u>93</u>	<u>93</u>	2		<u>186</u>
Amidships ...	<u>-</u>	4		<u>-</u>	<u>-</u>	<u>-</u>	4		<u>-</u>
$\frac{2}{3}$ L from F.P. ...	<u>145</u> <u>✓</u>	2		<u>290</u>	<u>207</u>	<u>207</u>	2		<u>414</u>
$\frac{1}{2}$ L " ...	<u>581</u> <u>✓</u>	4		<u>2324</u>	<u>730</u>	<u>730</u>	4		<u>2920</u>
F.P. ...	<u>1308</u> <u>✓</u>	1		<u>1308</u>	<u>1650</u>	<u>1650</u>	1		<u>1650</u>
Total ...	<u>5886</u> <u>✓</u>			<u>5886</u>					<u>7434</u>

$$\text{Correction} = \frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{1548}{18} (.75 - .1992) = -47 \text{ m.m.}$$

If limited on account of midship superstructure. Yes. Nil.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 = 3.56 ✓

Summer freeboard = .35 ✓

Moulded draught (d) = 3.21 ✓

Deduction for Tropical freeboard and addition for

Winter freeboard = $\frac{d}{48} = \frac{3.21}{48} = .067 = 6.7 \text{ c.m.s.}$

Addition for Winter North Atlantic Freeboard (if required) = 67 + 50 = 117 = 12 c.m.s.

Deduction for Fresh Water.

Displacement in salt water at summer load water line

$$\Delta = \frac{906 \times 1.025}{1.025} = 906 \text{ m.tons}$$

Tons per inch immersion at summer load water line

$$T = \frac{906}{3.50} = 259 \text{ m.tons}$$

$$\text{Deduction} = \frac{\Delta}{40T} = \frac{906}{40 \times 259} = .88 \text{ m.m.}$$

$$= 7.2 \text{ m.m.s}$$

TABULAR FREEBOARD corrected for Flush Deck (if required)

$$\text{Correction for coefficient} = \frac{.754 + .68}{1.36} = \frac{1.434}{1.36} \text{ ✓}$$

	+	-
Depth Correction ...	<u>36</u>	<u>-</u>
Deduction for superstructures ...	<u>-</u>	<u>126</u>
Sheer correction ...	<u>-</u>	<u>-</u>
Round of Beam correction ...	<u>-</u>	<u>-</u>
Correction for Thickness of Deck amidships ...	<u>-</u>	<u>-</u>
Other corrections, scantlings, etc. ...	<u>-</u>	<u>-</u>
	<u>36</u>	<u>126</u>

420 ✓ m.m.

443 ✓ m.m.

Summer Freeboard = 353 ✓ m.m.

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck: 353 35 c.m.s.Tropical Fresh Water Line above Centre of Disc ... 134 ✓ c.m.s.Fresh Water Line " " ... 67 ✓ c.m.s.Tropical Line " " ... 67 ✓ c.m.s.Winter Line below " " ... 67 ✓ c.m.s.Winter North Atlantic Line " " ... 117 ✓ c.m.s.Tropical Fresh Water Freeboard ... 219 ✓ c.m.s.Fresh Water " " ... 256 ✓ c.m.s.Tropical " " ... 286 ✓ c.m.s.Winter " " ... 420 ✓ c.m.s.Winter North Atlantic " " ... 470 ✓ c.m.s.

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MARKING FORM

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PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS.									
Description of Hatchway	...	...	Nº 1	Nº 2					
Dimensions of Hatchway	...	...	11.445 x 5.30	11.445 x 5.30					
COAMINGS	Height above Deck	...	1150	1150					
	Thickness	Sides	10	10					
	Stiffeners	...	180 x 75 x 9	180 x 75 x 9					
	Brackets, Stays	...	9 1/4 in.	9 1/4 in.					
HATCH BEAMS	Number	...	6	6					
	Spacing	...	1635	1635					
	Scantling and Sketch	...	410 x 9	410 x 9					
	Bearing Surface	...	75 x 75 x 11	75 x 75 x 11					
FORE AND AFTERS	Number	...							
	Spacing	...							
	Unsupported Lengths	...							
	Scantling* and Sketch	...							
HATCH COVERS	Material	...	PINE	PINE					
	Thickness	...	65	65					
	How fitted	...	F & D	F & D					
	Bearing Surface	...	100 x 75	100 x 75					
Spacing of Cleats	...	...	610	610					
Number of Tarpaulins	...	...	2	2					

Particulars of fiddle, funnel and ventilator coamings:—
 FIDDLE, FUNNEL & VENTILATOR COAMINGS IN EFFICIENT CONDITION.
 ENGINE ROOM SKYLIGHT OF STEEL, STRONGLY CONSTRUCTED AND FITTED WITH HINGED STEEL FLAPS. ✓

Particulars of Flush Bunker Scuttles:— NONE FITTED. ✓

Particulars of Companionways:—
 ON R.Q. DECK: IN EXTENSION OF CASING: ENTRANCE TO CREW SPACE; STL. HOUSE, STRONG HINGED TEAK DOOR OPERATED FROM BOTH SIDES; SILL 510 1/4 in. ✓
 ON FORECASTLE: STL. COMPANIONWAY TO CREW SPACE; STL. HINGED DOOR & TOP, OPERATED FROM BOTH SIDES; SILL 635 1/4 in. ✓

Particulars of Ventilators in exposed positions on freeboard and superstructure decks:—
 ON R.Q. DECK: 6 MUSHROOM VENTS TO CREW SPACE. ✓
 IN WELL: ON TRUNK AHEAD Nº 2 HATCH: 1 VENT 915 x 298 DIA. TO HOLD. ✓
 ON KEEL: 1 VENT 889 x 298 DIA TO HOLD; 2 VENTS 902 x 184 TO CREW SPACE. ✓
 WOOD PLUGS & CANVAS COVERS SUPPLIED AS REQUIRED. ✓

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks:—
 ON R.Q. DECK: 1 AIR PIPE TO A.R. TANK 775 IN HEIGHT. ✓
 4 AIR PIPES TO OIL FUEL DBM TANKS AND ONE TO PORTABLE O.R. TANK 840 IN HEIGHT AND FITTED WITH WIRE GAUZE & PATENT CAP. ✓
 1 AIR PIPE TO PORTABLE R.W. TANK 840 IN HEIGHT. ✓
 IN WELLS: 5 AIR PIPES TO DBM TANKS 940 IN HEIGHT. ✓
 ON KEEL: 1 AIR PIPE TO R.T. TANK 480 IN HEIGHT. ✓
 WOOD PLUGS SUPPLIED FOR ALL GOOSENECK VENTILATORS. ✓

Particulars of Gangway Cargo and Coaling Ports:— NONE FITTED. ✓

Particulars of Scuppers and Sanitary Discharge Pipes:—

CREW SPACE AFT: DISCHARGE PIPES FROM WASH BASINS LED TO E.R. BILGE. ✓
 PIPE W.C. FITTED WITH PATENT N.R. VALVE AND SLUICE VALVE AT SHIP'S SIDE CONTROLLED IN E.R. ✓
 CREW SPACE FORWARD: SANITARY DISCHARGES FITTED WITH N.R. VALVE AT SHIP'S SIDE. ✓

Particulars of Side Scuttles:—

ALL SIDE SCUTTLES SUBSTANTIALLY CONSTRUCTED AND FITTED WITH STRONG STEEL HINGED DEARLIGHTS. ✓

SILL OF LOWEST SIDE SCUTTLE 4.50 M. ABOVE TOP OF KEEL. ✓

Particulars of Guard Rails:—

ON R.Q. DECK: OPEN RAIL, 1016 HIGH, 3 RODS, STANCHIONS 1375 APART, RIVETED TO DECK. PART STRONG STEEL BULWARK.
 IN WELL: STL. BULWARK 1090 HIGH, STANCHIONS 3 FT. SPACES APART.
 ON KEEL: OPEN RAIL AS ON R.Q. DECK. ✓

Particulars of Gangways, Lifelines, etc.:—

SUITABLE PROVISION MADE FOR RIGGING LIFELINES IN ANY PART OF THE SHIP WHICH MIGHT HAVE TO BE USED BY THE CREW IN THE REGULAR WORKING OF THE VESSEL. ✓

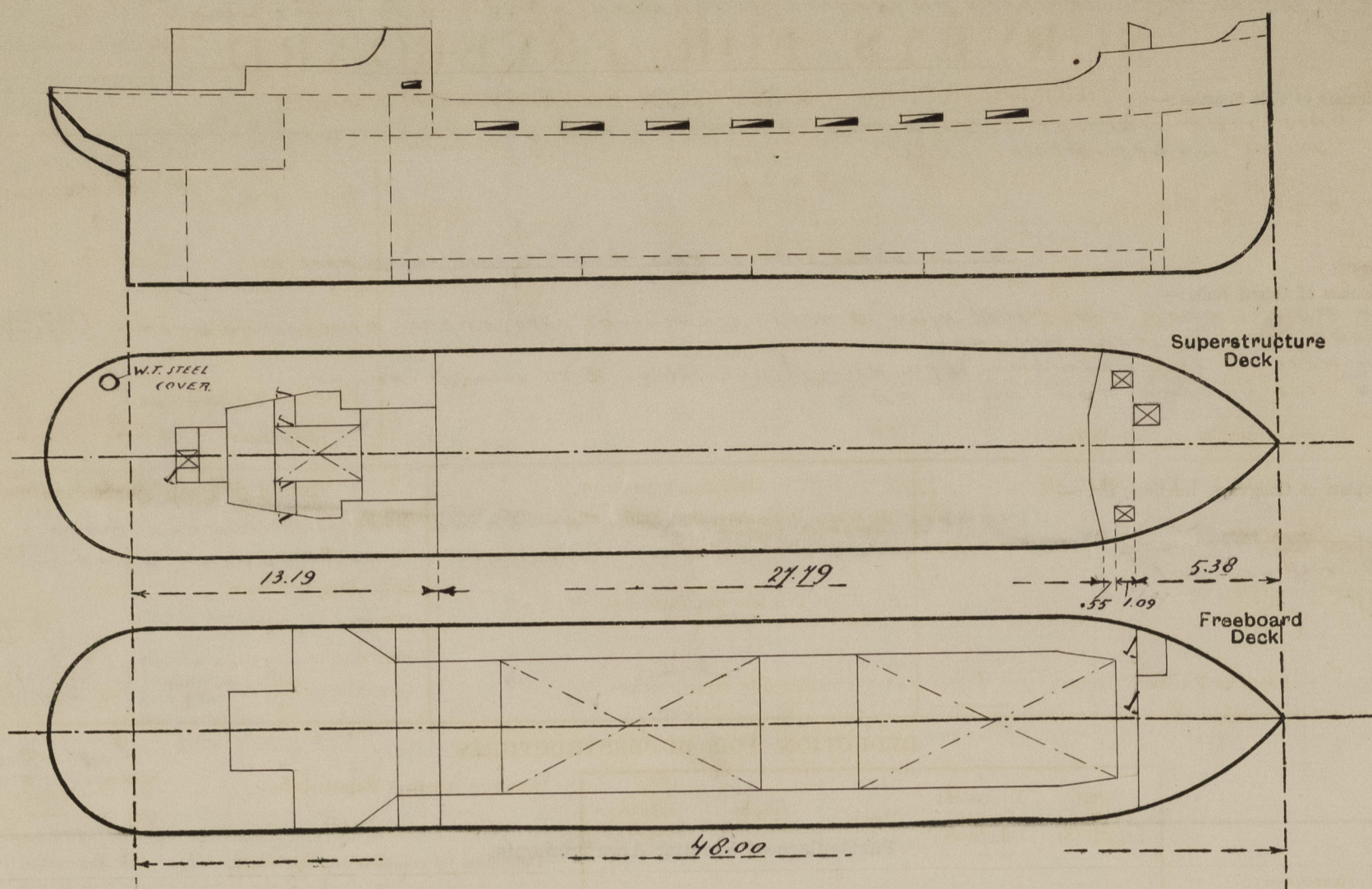
Particulars of Freeing Arrangements.						
	Length of Bulwark	Height of Bulwark	Size of Freeing Ports	Number each side	Area each side	Rule area each side
Well	24.79 Mr.	1.04 Mr.	1.635 x .24 Mr.	7	2.747 m ²	1.688 m ²
Forward Well						

State position of each freeing port ... After Well:— SEE P. 4: 20 C.M. ABOVE DECK. ✓
 (E. 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:— NO.
 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	4.5	4.5	100 x 75 x 4.5	500				
Bridge, After Bulkhead								
Bridge, Forward Bulkhead								
Forecastle Bulkhead	6	6	4.75 x 65 x 8	460		1450 x 600	594	
Trunk, Aft								
Trunk, Forward								
Exposed Machinery Casings on Freeboard or Raised Quarter Decks								
Exposed Machinery Casings on Superstructure Decks								
Machinery Casings within Superstructures not fitted with Class I Closing Appliances								
Deckhouses on Flush Deck Ships								

Particulars of Closing Appliances (state if capable of being manipulated from both sides).	
Poop Bulkhead	
Raised Quarter Deck Bulkhead	NO OPENINGS. ✓
Bridge, After Bulkhead	
Bridge, Forward Bulkhead	
Forecastle Bulkhead	
Exposed Machinery Casings on Freeboard or Raised Quarter Decks	TWO STEEL HINGED DOORS OPERATED FROM BOTH SIDES. ✓
Exposed Machinery Casings on Superstructure Decks	
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	TWO STEEL HINGED DOORS OPERATED FROM BOTH SIDES (2 ON EACH SIDE). ✓
Deckhouses on Flush Deck Ships	

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:—

THIS VESSEL HAS BEEN BUILT IN ACCORDANCE WITH THE APPROVED PLANS.

PARTICULARS FOR TIMBER FREEBOARDS:

DISPLACEMENT AT 3.42 MR. MLD. DRAUGHT: $1052.3 M^3$; $3.53 M^3/C.M.$

AN OUTFIT FOR TIMBER DECK CARGOES IS FITTED ON THE FREEBOARD DECK.

STRONG ANGLE SOCKETS FOR UPRIGHTS ARE RIVETED TO THE STRINGER PLATE AND ARE SPACED AS REQUIRED BY THE REGULATIONS. "BULWARK STANCHIONS AND RAIL FITTED WITH HOLES TO RECEIVE THE LASHINGS FOR UPRIGHTS." OVERALL LASHINGS ARE FASTENED TO STRONG EYEPLATES RIVETED TO THE SHEER STRAKE.

IN CONNECTION WITH THE OVERALL LASHINGS STRETCHING SCREWS WITH SLIPHOOKS AND LENGTHS OF LONG LINK CHAIN ARE FITTED, ENABLING A QUICK RELEASE OF THE DECK CARGO.

A HAND STEERING GEAR IS FITTED ON THE R.Q.D. CENTRE GIRDER WATERTIGHT IN NOS. 2-3-4 DBM TANKS AND SIDE GIRDERS W.T. IN N°4 DBM. TANK.

ENTRANCES FOR CREW ON R.Q.D. AND FLE. ✓

Builder's name and yard number WERF JAN SMIT (Z.N. N°521.

Names of sister ships _____

Owners A. LETTINGA & J. SJOUWKE.

Fee fl. 42.- : WILL BE Received by me Ch. Oddeh.



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