

Rpt. C.11.

Bera 35631

# Lloyd's Register of Shipping.

## SURVEYS FOR FREEBOARD.

Computation of Freeboard for ~~Steamer, Sailing Ship, Tanker~~  
having Poop & Forecastle (open Bridge). Port of Survey Göteborg

"BELLONA" (Type of Superstructures.) Date of Survey 29.2.40 during construction

ex. Ship's Name M/s. K. J. Knudsen Nationality and Port of Registry Norwegian Göteborg Official Number 8430 Gross Tonnage 11,000 Date of Build 1940

Name of Surveyor H. J. Adams  
(Class contemplated)

Moulded Dimensions: Length 156.414 m Breadth 20.116 m Depth 11.811 m  
Moulded displacement at moulded draught = 85 per cent. of moulded depth 25,010 m tons  
Coefficient of fineness for use with Tables 792

Particulars of Classification +100A1  
Carrying Petroleum in Bulk.

Depth for Freeboard (D)		Depth correction		Round of Beam correction	
Moulded depth	11.811	(a) Where D is greater than Table depth (D - Table depth) R = $8.33(11.836 - 10.428)30 = 352 \text{ m/m}$ 1.408	Moulded Breadth (B)	20.116	
Stringer plate	257 m	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = $\checkmark$	Standard Round of Beam = $\frac{B \times R}{50} = \frac{20.116 \times 352}{50} = 402 \text{ m/m}$		
Sheathing on exposed deck $T \left( \frac{L-S}{L} \right) =$	$\checkmark$	If restricted by superstructures $\checkmark$	Ship's Round of Beam	420 m	
Depth for Freeboard (D) =	11.836		Difference	18 m/m	
			Restricted to	$\checkmark$	
			Correction = $\frac{\text{Diff}^{\circ}}{4} \times \left(1 - \frac{S_1}{L}\right) = \frac{18}{4} \times 0.675 = -3 \text{ m/m}$		

### DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S <sub>1</sub> )	Height	Height Correction	Effective Length (E)	
Poop enclosed <u>Equinox</u>	32.638 m	32.638	2440	$\checkmark$	32.638	Standard Height of Superstructure <u>22.90 m/m</u> R.Q.D. $\checkmark$
" overhang ...						Deduction for complete superstructure <u>1067 m/m</u>
R.Q.D. enclosed						Percentage covered $\frac{S}{L} = \frac{32.50}{32.50} = 1$
" overhang						" $\frac{S_1}{L} = \frac{32.50}{32.50} = 1$
Bridge enclosed...						" $\frac{E}{L} = \frac{32.50}{32.50} = 1$
" overhang aft						Percentage from Table, <u>Line A. Tanker</u> <u>12.50</u>
" overhang forward						(corrected for absence of forecastle (if required)) $\checkmark$
Fore enclosed	18.204 m	18.204	2440	$\checkmark$	18.204	Percentage from Table, Line B. $\checkmark$
" overhang						(corrected for absence of forecastle (if required)) $\checkmark$
Trunk aft						Interpolation for bridge less than 2L (if required) $\checkmark$
" forward						Deduction = $1067 \times 0.235 = 251 \text{ m/m}$
Tonnage opening aft						
" forward						
Total	50.842	50.842			50.842	

### SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product	
A.P.	1557	1		1557	1040	1040	1		1040	Mean actual sheer aft = <u>Deficient</u>
$\frac{1}{4}L$ from A.P.	692	4		2768	119	119	4		476	Mean actual sheer forward = <u>Deficient</u>
$\frac{2}{4}L$ "	173	2		346	0	-	2		-	Mean standard sheer aft
Amidships	-	4		-	0	-	4		-	Mean standard sheer forward
$\frac{3}{4}L$ from F.P.	346	2		692	0	-	2		-	Length of enclosed superstructure forward of amidships = <u>Deficient</u>
$\frac{1}{4}L$ "	1383	4		5532	572	572	4		2048	" aft of " = <u>Sheer</u>
F.P.	3114	1		3114	2024	2024	1		2024	
Total				14009					5588	

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( .75 - \frac{S}{2L} \right) = \frac{8421}{18} (.75 - .1625) = +275 \text{ m/m}$

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.	Deduction for Fresh Water.	TABULAR FREEBOARD
Addition for Winter and Winter North Atlantic Freeboard.	Displacement in salt water at summer load water line $\Delta = 12,390 \text{ tons}$	Corrected for Flush Deck (if required) $792 + 68 = 1472$
Depth to Freeboard Deck = <u>11.836</u>	Tons per inch immersion at summer load water line $T = 70.25$	Correction for coefficient $\frac{1.36}{1.36}$
Summer freeboard = <u>2.860</u>	Deduction = $\frac{\Delta}{40T} \text{ inches} = \frac{12390}{40 \times 70.25} = 7.97$	Depth Correction ...
Moulded draught (d) = <u>8.976</u>		Deduction for superstructures ...
Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{48} \text{ inches} = \frac{8.976}{48} = 0.187$		Sheer correction ...
Addition for Winter North Atlantic Freeboard (if required) = $187 + 128 = 315 = 12.40$		Round of Beam correction ...
		Correction for Thickness of Deck amidships ...
		Other corrections, scantlings, etc. ...
		627 254 + 373
		Summer Freeboard = $2860 = 9' - 4\frac{1}{2}"$

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

Tropical Fresh Water Line above Centre of Disc	15' 4"	387 m/m	Tropical Fresh Water Freeboard
Fresh Water Line	8' 4"	203 "	Fresh Water
Tropical Line	7' 4"	184 "	Tropical
Winter Line below	7' 4"	184 "	Winter
Winter North Atlantic Line	12' 1/2"	317 "	Winter North Atlantic

15 MAR 1940



# PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS.									
Description of Hatchway	Upper Deck					Poop Deck			Fore Deck
	To Cargo Tanks	To Side Tanks	To O.F. Bunker	To Appurtenances	To Peak	To Store	To Pk. Store	To Cargo Hold	To Store
Dimensions of Hatchway	710 x 1690	725 x 810	630 x 470	630 x 470	1230 x 1260	1130 x 1060	920 x 960	2025 x 3100	940 x 750
COAMINGS	Height above Deck	875	230 I	230 I	230 I	230 I	230 I	815	620
	Thickness	10	11	11	11	11	11	10	
	Stiffeners	10	11	11	11	11	11	10	
	Brackets, Stays	90 x 12 T	Welded	Welded	Welded	Welded	Welded	90 x 75 x 12 L & 735 x 50	Welded
HATCH BEAMS	Number								
	Spacing								
	Unsupported Lengths								
	Scantling* and Sketch								
FORE AND AFTERS	Number								
	Spacing								
	Unsupported Lengths								
	Scantling* and Sketch								
HATCH COVERS	Material	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
	Thickness	12.5	12.5	12.5	12.5	9.0	9.0	11.0	8.0
	How fitted	Hinged & closed	Hinged & closed	Hinged & closed	Hinged & closed	Hinged & closed	Hinged & closed	Hinged & closed	Hinged & closed
	Bearing Surface	closed	closed	closed	closed	closed	closed	closed	closed
Spacing of Cleats	by Toggles	by Toggles	by Toggles	by Toggles	by Toggles	by Toggles	by Toggles	by Toggles	by Toggles
Number of Tarpaulins	340 x 40	12 Toggles	10 Toggles	10 Toggles	4 Toggles	6 Toggles	6 Toggles	380 x 40	Hinged

Particulars of fiddle, funnel and ventilator coamings:— Funnel & ventilator coamings on top of casing 2440 mm above poop deck, efficiently constructed & supported. Engine Room skylight of steel. No fiddle openings.

Particulars of Flush Bunker Scuttles:—

Particulars of Companionways:—

Midships pumproom entrance house of steel (see page 3). Forward pumproom entrance house in forecabin of steel. Both strongly constructed with hinged steel doors closed W.T. & operated from both sides.

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

All ventilators on freeboard & superstructure decks are efficiently constructed & supported with coamings 36" high or above. All ventilators provided with steel covers & canvas covers for closing.

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

All air pipes on freeboard deck are 940 mm high or above, & air pipes on superstructure decks are 660 mm high or above. All air pipes are of steel, of jesse neck type & are provided with means of closing.

Particulars of Gangway Cargo and Coaling Ports:—

Bellona ex M/S. K.J. Knudsen.

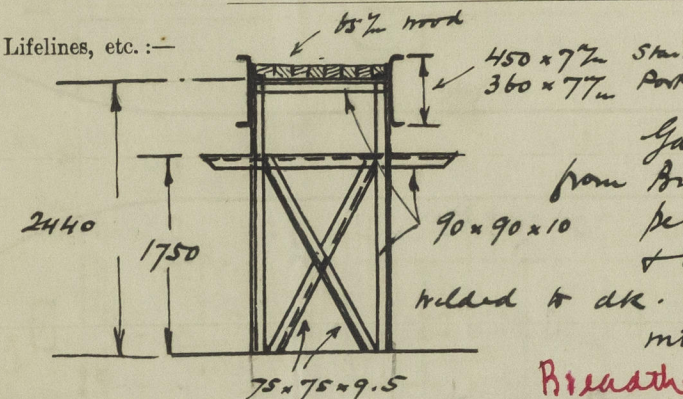
Particulars of Scuppers and Sanitary Discharge Pipes:— Sanitary discharges from spaces on the bridge are led overboard in the Pump Room about 250% above L.W.L. Scuppers & sanitary discharges from spaces on poop are led overboard in way of machinery space about 450% above L.W.L. Scuppers from poop space are led to Engine Room bilge. Sanitary discharges from poop space are led overboard in way of machinery space about 450% above L.W.L. and are fitted with storm valves.

Particulars of Side Scuttles:— Side scuttles in poop & forecabin are of substantial construction & fitted with hinged deadlights.

Particulars of Guard Rails:— Open rail on upper deck between poop & bridge, on poop deck & on forecabin deck, 1100 mm high with 3 rods & stanchions spaced 1500 to 1600 mm apart, welded to decks, of substantial construction & with supports in every 2nd stanchion.

Bulwark between bridge & forecabin. 82 mm high, 1060 mm wide, 150% L, 10% flanged, spaced about 1700 mm apart & welded.

Particulars of Gangways, Lifelines, etc.:—



Gangway fitted from bridge to forecabin deck with supports as per sketch spaced about 3300 mm apart & completely welded. Supports efficiently welded to deck. Guard rail with 2 rods, 1050 mm high with stanchions about 1600 mm apart.

Breadth of gangway 1050 mm

## 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 rail					
Forward Well	41.98 m	1060 mm	2500 x 220	5		

State position of each freeing port (F. and A. position and height above deck edge) After Well:— 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.

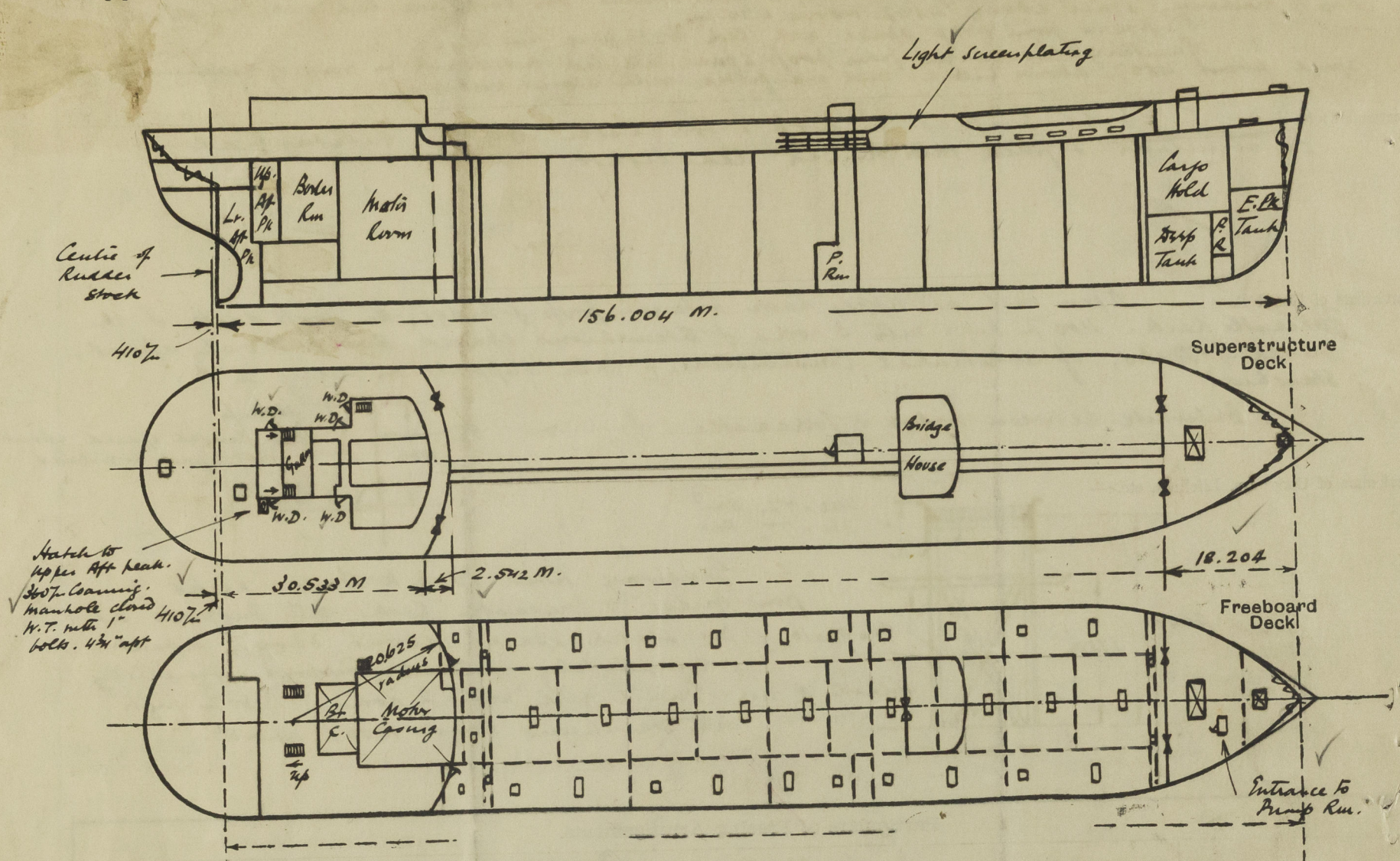
	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead	12.0	12.0	250 x 90 x 13 L	670 - 850	Bolt top of keel			2440
Raised Quarter Deck Bulkhead	11.0	11.0	250 x 90 x 13 L	750	By top of keel	1310 x 600	790	2440
Bridge, After Bulkhead								
Bridge, Forward Bulkhead								
Forecabin Bulkhead	8.0	8.0	90 x 75 x 9 L	820	None	1560 x 970	535	2440
Trunk, Aft			150 x 75 x 9 L	950				
Trunk, Forward								
Exposed Machinery Casings on Freeboard or Raised Quarter Decks								
Exposed Machinery Casings on Superstructure Decks	7.5	7.5	140 x 65 x 9 L	900	None			2440
Machinery Casings within Superstructures not fitted with Class I Closing Appliances								
Pump Room Entrance House	8	8	130 x 75 x 8.5 L	825	None at top	1520 x 620	1550	
Deckhouses on Flush Deck Ships								

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

Poop Bulkhead	Two hinged steel doors, operable from both sides & closed W.T.
Raised Quarter Deck Bulkhead	
Bridge, After Bulkhead	
Bridge, Forward Bulkhead	
Forecabin Bulkhead	Portable steel plates secured by hook bolts not passing through the bulkhead
Exposed Machinery Casings on Freeboard or Raised Quarter Decks	No opening
Exposed Machinery Casings on Superstructure Decks	No opening
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	
Pump Room Entrance House	Hinged steel door, operable from both sides & closed W.T.
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 shown on the following sketches:—



W.D. = wood door with sill 17" or more above steel deck.  
 Sills of all doors on the poop deck house giving access to the poop and tween deck are 18" high above wood deck

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

Displacement of Tons per inch at a draft of ✓  
 75% of moulded depth 21,940 tons / 70.09 tons/inch  
 85% " " 25,240 " - 71.65 " "  
 95% " " 28,610 " - 73.02 " "

Builder's name and yard number A/B Götaverken Yard no 540

Names of sister ships M/S "Bera" Yard no 529

Owners K. Knudsen, Norway

Fee kr 450 : Approx.

Received by me \_\_\_\_\_



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Foundation