

D.C. ANASTASSIADES & A.CH. TSORTANIDES

SHIPBUILDERS

PIRAEUS

PASSENGER          MOTORVESSEL  
OF 600 TONS .

F L O O D I N G      C A L C U L A T I O N  
STANDARD DIAGRAMS METHOD

FORMS

B.H.2A.

B.H.2.

CB.33.

C.B.34.

FLOODING CALCULATION  
DIMENSIONS, COEFFICIENTS OF FORM, ETC.

B.H.2.

Name of Ship . . . K. A. M. E. L. I. A. . . . . Builders and N° of Ship . . . . .

D.C. Anastassiades & A.Ch. Tsortanides, Piraeus . . . . . G.N.L.N° . . . . .

Subdivision Length (L)= m. 50,80	Freeboard to Margin Line (f)= m. 1,002	Freeboard Ratio (f/d)=0,367	Average Permeability ( $\mu$ ) (B.H.2A.)		
Subdivision Breadth (B)= m. 8,50	Subdivision Draft (d)= m. 2,73	Sheer Ratio	After End	Machy. Space	Forward End
Moulded Depth (D)= m. 3,800	Sheer of Margin Line Forward (Sf)= m. 1,500	Forward (Sf/d)=0,549			
Subdivision Depth (d+f)= m. 3,732	Sheer of Margin Line Aft (Sa)= m. 0,400	Sheer Ratio Aft (Sa/d)=0,147	92,85	85,00	87,16
Fall in Sheer (if any)	Criterion Numeral (B.H.2A) (Cs)= m.	Factor of Subdivision (F)=1			
Thickness of Bulkhead Deck = m. 0,008					

Block Coefficient	Coefficient of Mean Waterplane				
Volume of Displacement = $\frac{629}{1179}$ L x B x d = 0,534	al = $\frac{\text{Area}}{L \times B} = \frac{320}{432}$ = 0,741	nl = $\frac{\text{Long. Momt. of}}{L^3 \times B}$	Inertia = $\frac{38,369}{1,114.320}$ = 0,0344	Centre of Flotation aft of Amidships = m. 1,68 = 3,31 per cent. of L	

Ordinate from After Perpendicular (% of L)	Sectional Area Coefficients ( $\beta_1$ ) =						Area of Section to corrected Margin Line B x d							
	0	10	15	20	30	40	45	50	60	70	80	85	90	
Coefficient	0,112	0,500	0,664	0,834	1,097	1,224	1,237	1,232	1,168	1,017	0,793	0,664	0,504	

FLOODING CALCULATION

B.H.2A.

FACTOR OF SUBDIVISION, AVERAGE PERMEABILITIES

G.N.L. N° . . . . .

Name of Ship . . . . . **K A M E L I A** . . . . .  
 Builders and N° of Ship . . . . . **D.C. Anastassiades & A.Ch. Tsortanides**  
 Name of Owners . . . . . **G. Vatikiotis** . . . . .  
 Class under Construction Rules, 1952 . . . . .  
 Passenger Certificate required . . . . . **yes**  
 Intended Service . . . . . **Greek inter-island service** . . . . .  
 Classification Society . . . . . **Lloyd's Register of Shipping**  
 Loadline Assignment by . . . . . **Ministry of Mercantile Marine** . . . . .

FACTOR OF SUBDIVISION (F)

Subdivision Length (L) = m. 50,80

Factor of Subdivision (for Ship less than 260 ft. in length) (F) = 1

AVERAGE PERMEABILITY ( $\mu$ ) OF AFTER END

Compartment	Other Spaces (b)			Volume m <sup>3</sup>	Whole Volume of After End	
	Identification Measurements				Longitudinal Extent	Volume m <sup>3</sup>
	Length m.	Breadth m.	Depth m.			
Tanks 1-2	4,80	1,40	1,00	9,00	N° 31	328,8
Tanks 4-5	3,30	1,90	1,00	11,20		
	Total (b) =			20,20	Total (v) = 328,8	
					$\mu = 95 - 35 \frac{b}{v}$ $\mu = 95 - 35 \frac{20,20}{328,8}$ $\mu = 92,85$ P.F. = $\frac{100 - \mu}{\mu} = 1,5$ P.F. = $\frac{100 - 92,85}{92,85} = 1,5$ P.F. = 0,1155	

AVERAGE PERMEABILITY ( $\mu$ ) OF FORWARD END

Compartment	Other Spaces (b)			Volume m <sup>3</sup>	Whole Volume of Forward End	
	Identification Measurements				Longitudinal Extent	Volume m <sup>3</sup>
	Length m.	Breadth m.	Depth m.			
Tanks 12-13	2,00	1,80	0,50	4,00	N° 50	v = 361,6
Tanks 19-20	2,00	1,50	0,50	3,00		
Tank 21	3,00	2,00	0,50	3,00	$\mu = 95 - 35 \frac{b}{v}$ $\mu = 95 - 35 \frac{81}{361,6}$ $\mu = 87,16$	
Hold						
Chain Locker and Store	9,30	3,50	2,50	62,00	$\mu = 87,16$ P.F. = $\frac{100 - \mu}{\mu} = 1,5$ P.F. = $\frac{100 - 87,16}{87,16} = 1,5$ P.F. = 0,2210	
Upper Store	3,00	1,50	2,80	9,00		
	Total (b) =			81,00		

FLOODING CALCULATION  
FLOODABLE LENGTHS FOR SHIP OF STANDARD FORM

CB.33.

( expressed as a percentage of the Length (L) of the Ship)

Name of Ship . K A M E L I A . . . . . Builders and N° of Ship

D.C. Anastassiades & A.Ch. Tsortanides, Piraeus . . . . . G.N.L.N° . . . .

Ratios from B.H.2.		For any permeability $\mu$ , the permeability factor (P.F.) is given by							
Block Coefficient	= 0,534	$1,5 \left\{ \frac{100 - \mu}{\mu} \right\}$							
Freeboard Ratio	= 0,367								
Sheer Ratio Forward	= 0,549								
Sheer Ratio Aft	= 0,147								
Distance of Ordinate from the after Perpendicular	Floodable Lengths from Cross Curves		Col.(2) - Col.(1)	After End $\mu = 92,85$ P.F.=0,1155		Machinery Space $\mu = 85$ P.F.=0,2647		Forward End $\mu = 87,16$ P.F.=0,221	
	$\mu = 100$	$\mu = 60$		Col.(3) x P.F.	Floodable Length	Col.(3) x P.F.	Floodable Length	Col.(3) x P.F.	Floodable Length
Per cent of L	(1)	(2)	(3)	Col.(4) + Col.(1)	(5)	(6)	(7)	(8)	(9)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A.10	18,8	28,4	9,6	1,109	19,909				
15	15,4	27,4	12,0	1,386	16,786				
20	13,6	24,1	10,5	1,213	14,813				
30	13,9	24,8	10,9	1,259	15,159				
40	17,8	31,4	13,6	1,571	19,371	2,885	16,785		
45	18,7	32,8	14,1			3,600	21,400		
50	17,6	31,0	13,4			3,732	22,432		
60	15,2	26,1	10,9			3,547	21,147	2,961	20,561
70	14,9	25,5	10,6			2,885	18,085	2,409	17,609
80	17,4	31,4	14,0					2,343	17,243
85	21,0	33,6	12,6					3,094	20,494
100	24,9	35,6	10,7					2,785	23,785
								2,365	27,267

FLOODING CALCULATION  
CORRECTED FLOODABLE AND PERMISSIBLE LENGTHS FOR

C.B.34.

SHIP

Name of Ship . . . K A M E L I A . . . . . Builders and N° of Ship . . . . . D.C. Anastassiades & A.Ch. Tsortanides, Piraeus . . . . . G.N.L.N° . . . . .

Ratios, etc. (from B.H.2 and B.H.2A)	Coefficients of Mean Waterplane		Constants
Block Coefficient = 0,534 Freeboard Ratio = 0,367 Sheer Ratio Forward = 0,549 Sheer Ratio Aft = 0,147 Factor of Subdivision F = 1	For Standard Form (from Cross Curves)	For Ship (from B.H.2)	$\frac{m a}{n} = 0,105$ $\frac{a l}{a} = 1,119$ $\frac{n l}{n} \frac{a}{a l} = 0,918$
	a = 0,662      n = 0,0335 Centre of Flotation Aft Amidships (per cent. of L) = 3,84	al = 0,741      nl = 0,0344 Centre of Flotation Aft Amidships (per cent. of L) = 3,31	
	Centre of Flotation of Ship Before that of Standard Form (per cent. of L) = 0,53 = 100 m		
	m = 0,0053		

For Standard Form			Values of $\beta$ $\left(\frac{m}{n} \times \beta\right)$	$\frac{n l}{n} \times \frac{a}{a l}$ divided by Figures in Col. (5)	Distances of New Ordinates from Centre of Flotation of Ship $(\bar{x}_l)$ Col. (2) x Col. (6)	Distance of New Ordinates from Amidships	Sectional Area Coefficients for Ship at New Ordinates $\beta_1$	Form Correction Factor = Col. (5) x $\frac{a_1}{a} \times \frac{\beta}{\beta_1}$	Forw. and After Ends		Machinery Space		
Distance of Ordinate from A.P.	Distance of Ordinate from Centre of Flotation $(\bar{x})$	Values of $\beta = +100$ Col. (2)							Sectional Area Coefficients from Cross Curves $\beta$	Standard Form Floodab. Lengths from C.B.33	Ship Floodab. Lengths at New Ordinates Col. (11) x Col. (10)	Standard Form Floodab. Lengths from C.B.33	Ship Floodab. Lengths at New Ordinates Col. (15) x Col. (10)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(15)	(16)
10	36,16	0,3616	0,480	0,9620	0,954	34,50	37,81	0,500	1,074	19,909	21,382		
15	31,16	0,3116	0,640	0,9673	0,949	29,57	32,88	0,664	1,079	16,786	18,112		
20	26,16	0,2616	0,810	0,9725	0,944	24,70	28,01	0,834	1,087	14,813	16,102		
30	16,16	0,1616	1,075	0,9830	0,934	15,09	18,40	1,097	1,097	15,159	16,629	16,785	18,413
40	6,16	0,0616	1,24	0,9935	0,924	5,69	9,00	1,224	1,134	19,371	21,967	21,400	24,268
45	1,16	0,0116	1,28	0,9988	0,919	1,07	4,38	1,237	1,158			22,432	25,976
50	3,84	0,0384	1,295	1,0040	0,914	3,51	0,20	1,232	1,176	20,561	24,180	21,147	24,869
60	13,84	0,1384	1,20	1,0145	0,905	12,53	9,22	1,168	1,149	17,609	20,233	18,085	20,780
70	23,84	0,2384	0,960	1,0250	0,896	21,36	18,05	1,017	1,056	17,243	18,209		
80	33,84	0,3384	0,665	1,0355	0,887	30,02	26,71	0,793	0,939	20,494	19,244		
85	38,84	0,3884	0,515	1,0408	0,882	34,26	30,95	0,664	0,868	23,785	20,645		
90	43,84	0,4384	0,355	1,0460	0,878	38,49	35,18	0,504	0,788	27,267	21,486		