Trim and Stability Booklet

M/S Falkskär II, SIEK

2010-06-06

Varberg 2010-06-06
Fladenbåtarna AB
0340-14095

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1. Introduction

This Trim and Stability Booklet has been prepared by M.Sc. Naval Architect A.H. using the computer software Autoship and Autohydro.

The vessels vertical centre of gravity must always be kept below the maximum VCG given in Chapter 3. For any loading condition deviating from the ones presented in Chapter 4 the actual VCG has to be calculated and corrected for the effect of free surface moments in order to make sure that the vessel comply with the stability criteria.

1 General Information

1.1 Main Data

Name	FALKSKÄR II
Call sign	SIEK
Port of registry	Varberg
IMO no.	5305302
MMSI no.	26 557 23 30
Type	Passenger Ship
Trade Area	Domestic (Area B)
Delivery date	1960 (Converted to Passenger Ship 1993)
Yard	F.A S. Seimonsbergen Scheepswerft
Yard no.	629
Material	Steel / Aluminum in superstructure
Class (newbuilding)	B. V. (post class)
Class notation (newbuilding)	B.V. I 3/3 F.1.1 (post class)
Owner	Fladenbåtarna AB
Main Engine	Caterpillar 3412, 405kW

1.2 Main Dimensions

LOA	26.82 m
Lpp	23.425 m
B (moulded)	6.40 m
Depth	3.08 m

1.3 Passenger Capacity

Passenger capacity	48 passengers

1.4 Light Ship Weight

Calculated light ship weight used in stability calculations:

Date:Event	Item	Weight [ton]	LCG fr. AP [m]	L. mom [tonm]	VCG ab. BL [m]	V. mom [tonm]
981217: Inclining test	Light Ship	116.230	11.283	1311.423	2.889	335.788
090101: Ballast removed	Fixed Ballast 1	-0.200	4.500	-0.900	1.910	-0.382
090101: Ballast removed	Fixed Ballast 2	-1.900	2.250	-4.275	1.310	-2.489
100701: New WT bhd in hold	WT Bulkhead	0.825	14.400	11.880	2.380	1.964
New Light Ship		**114.955**	**11.466**		**2.913**	

1.5 Intact Stability Criteria

1.5.1 Applicable Rules and Regulations

Sjöfartsverkets Författningssamling (SjöFS 1993:3),

1.5.2 Criteria used in intact stability calculations

Limit 1 The area under the GZ-curve should not be less than 0.055 mrad up to an angle of 30°.

Limit 2 The area under the GZ-curve should not be less than 0.090 mrad up to an angle of 40°, or the angle of flooding if this angle is less than 40°

Limit 3 The area under the GZ-curve between the angles of 30° and 40° or between 30° and the angle of flooding, should not be less than 0.030 mrad.

Limit 4 The righting lever (GZ) should be at least 0.20m at an angle of heel equal to or greater than 30°

Limit 5 The maximum righting lever (GZ_{max}) should occur at an angle of heel not less than 25°

Limit 6 The initial transverse metacentric height (GM_0) should not be less than 0.15 m.

Limit 7 The angle of heel due to passenger crowding on one side of the vessel should not exceed 12°

Assuming 48 passengers crowding on one side of the main deck:

$$\boldsymbol{Pass.mom = (38 \times 3 + 10 \times 2.5) \times 0.075 = 10.425 tonm}$$

1.6 Damage Stability Criteria

1.6.1 Applicable Rules and Regulations

Sjöfartsverkets Författningssamling (SjöFS 2006:1, Bilaga 6),
Sjöfartsverkets föreskrifter och allmänna råd om skrovkonstruktion, stabilitet och fribord.
Bilaga 6 – Indelning och skadestabilitet för passagerarfartyg på inrikes resa

Stability criteria SjöFS 2006:1, Appendix 6, Part 1, R10 §6-9 has not been applied since date of construction is before 1990. Ref. R10.

1.6.2 Criteria used in damage stability calculations

1.6.2.1 Final Stage of Flooding

Limit 1 – The positive residual metacenter height (GM) is to be at least 50 mm

Limit 2 – The angle of heel shall not exceed 12°

Limit 3 – In no case shall the margin line be submerged in the final stage of flooding.
The margin line is in the calculations defined as 14 protected flood points:

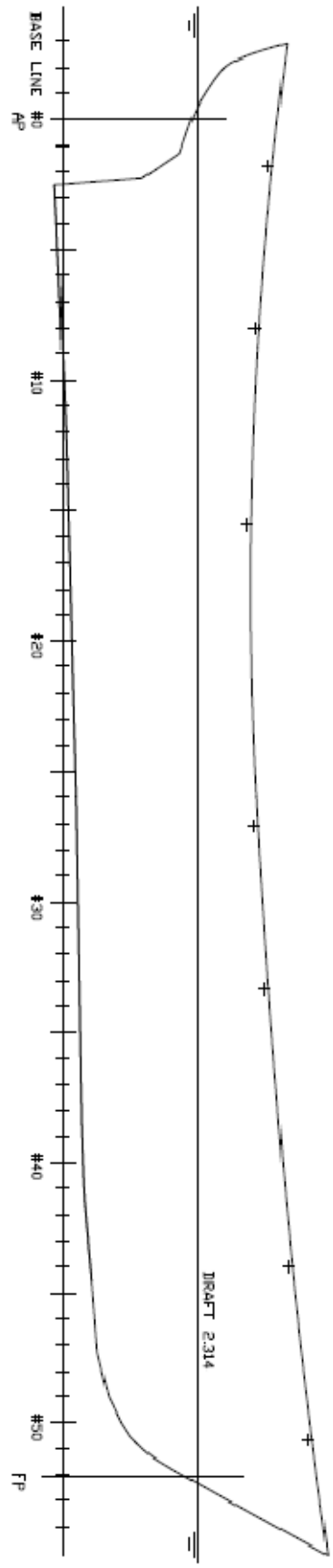
Name:	X	Y	Z
Marginline_pt1	22.8f	1.375	4.222
Marginline_pt1	22.8f	-1.375	4.222
Marginline_pt2	19.8f	2.690	3.879
Marginline_pt2	19.8f	-2.690	3.879
Marginline_pt3	15f	3.196	3.472
Marginline_pt3	15f	-3.196	3.472
Marginline_pt4	12.2f	3.185	3.287
Marginline_pt4	12.2f	-3.185	3.287
Marginline_pt5	7f	3.196	3.163
Marginline_pt5	7f	-3.196	3.163
Marginline_pt6	3.6f	3.036	3.302
Marginline_pt6	3.6f	-3.036	3.302
Marginline_pt7	0.8f	2.454	3.539
Marginline_pt7	0.8f	-2.454	3.539

Z coordinate is taken 76 mm below bhd deck

1.6.2.2 Extent of Damage

Longitudinal extent	0.1 x 23.70 = 2.37 m (10% of L)
Vertical extent	from base line and upwards without limitation
Transverse extent	1.28 m (B/5)

1.7 Reference points



1.8 Instructions to the Master

1. Compliance with the recognized stability criteria and approved stability documentation onboard does not ensure immunity against capsizing, regardless of the circumstances, or absolve the Master from his responsibilities with respect to loading, discharging and safe operation of this ship.
2. The Master should exercise good prudence and good seamanship with respect to weather, weather forecasts and geographical circumstances and should take appropriate action as to speed and course according to the prevailing circumstances.
3. The vessel should be loaded and ballasted in a way that the stability criteria are fulfilled during the voyage.
4. Before a voyage commences, care should be taken to prevent shifting of cargo and sizeable pieces.
5. All openings through which water can enter into the hull or deckhouses should be suitably closed in adverse weather conditions.
6. In the Stability Booklet it is included a set of typical loading conditions and additional information to make it possible for the master to calculate the ship stability during all possible loading conditions.
7. The ship is during the winter not allowed to sail in waters and weather conditions with risk of icing.

1.9 General Stability

1.9.1 General

If a rigid submerged body when subjected to small disturbance from a position of equilibrium tends to return to the equilibrium state the body is said to be in a state of stable equilibrium (positive stability).

If the body after the disturbance remains in its new position it is said to be in a state of neutral equilibrium (neutral stability).

If the body after the disturbance is not in stable condition the body is said to be in a state of unstable equilibrium (negative stability).

1.9.2 Initial Stability

When the body is floating in a state of equilibrium the centre of buoyancy B_0 and the centre of gravity G must lie on the same vertical line. If the body is subject to rotational disturbances by turning it through a small angle at constant displacement, the centre of buoyancy will move to a new position B_1.

The following formula can be applied:

The righting moment (M_R):

$M_R = \Delta \times GZ$

Righting lever (GZ):

$GZ = KY - KG \times sin\theta$

For small angle of heel GZ can be calculated as follows:

$GZ = GM \times sin\theta$

1.9.3 Dynamic Stability

The dynamic stability of a ship at a given angle of heel is defined as the work done in heeling the ship to a specific angle at a constant displacement.

The total work in heeling to an angle is given by:

$$\int_0^\theta M\theta \cdot d\theta = \int_0^\theta GZ\theta \cdot d\theta \cdot \Delta$$

The dynamic stability at an angle of heel is represented by the area under the stability curve up to that angle.

The righting lever at different angles and displacement are a function of hull form and the location of centre of gravity.

$$GZ_0 = MS + GM \times sin\theta = KN_\theta - KG \times sin\theta$$

1.9.4 Calculation of VCG (Vertical Centre of Gravity)

Every new load added onboard will affect the VCG of the ship. The change of VCG can be calculated using the following formula:

$$VCG_{NEW} = \frac{W1 \times VCG_{W1} + disp_{init} \times VCG_{init}}{disp_{new}}$$

VCG_{NEW} = new VCG of the ship after the new load has been taken onboard

W1 = the load taken onboard in metric tones

$disp_{init}$ = displacement of the ship before the new load is taken onboard

VCG_{init} = VCG of the ship before the new load is taken onboard

$displ_{new}$ = displacement of the ship after the new load is taken onboard

If the ship is loaded with partially filled tanks the VCG has to be corrected for free surface moments.

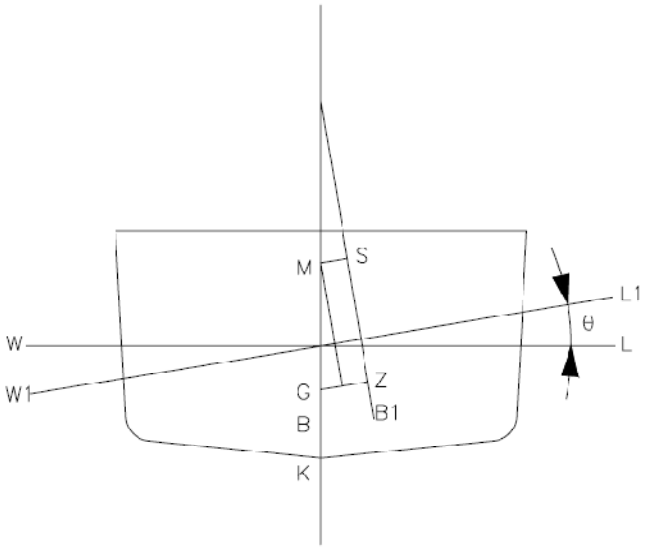
1.9.5 Free Surface Moment

The free surface moment effect is the effect partly loaded liquid tanks have on the ship's stability. This moment is generated when the ship is trimmed/heeled and will result in an increase of the VCG.

A single tanks contribution to the increase of VCG is calculated by the following formula:

$$FRSM_{CORR} = \frac{FRSM_{TANK}}{displ.}$$

$FRSM_{CORR}$ = decrease of VCG due to the free surface effect
$FRSM_{TANK}$ = free surface moment of tank
displ = displacement of vessel



1.10 Example calculation of a loading condition

This calculation example is using the loading condition "LC9 - 10% bunker and store + 48 passengers (Diesel in DB)" as an example. The empty form in Ch. 2.11 is used for calculation a loading condition and the table is to be used as shown below:

1. CONS. / TANKS

DESCRIPTION	RHO [ton/m3]	FILL [%]	MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
AFTPEAK.C			0.24	-0.268	0	2.666	0.24
DB_TANK.S							
DB_TANK.P							
DB_TANK.C			2.12	17.302	0	0.702	2.86
DEEP_TANK.S							
DEEP_TANK.P							
SUBTOTAL.TANKS			2.36	15.51522	0	0.901729	3.1

2. FIXED WEIGHTS

DESCRIPTION	MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
CREW AND STORE	1	2.715	0	4.7	
PASSENGERS	3.6	10.415	0	4.4	
SUBTOTAL FIXED	4.6	8.741	0	4.465	

3. CONSUMABLES + FIXED WEIGHT

		MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
TOTAL DEADWEIGHT		6.96	11.038	0	3.257	3.1

4. LIGHTSHIP

	MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
LIGHTSHIP WEIGHT	114.96	11.466	0	2.913	

5. DISPLACEMENT

	MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
TOTAL DISPLACEMENT	121.92	11.442	0	2.933	3.1

5. CALCULATED VALUES

DRAUGHT (average)	m ab. BL
HEEL	deg
TRIM	m/LWL

From the calculation form the following displacement data is obtained

Displacement	121.92 ton
VCG (KG)	2.933 m
LCG	11.442 m
TCG	0 m
Total Free Surface Moment	3.1 tonm

Use the different trim tables to identify the draught which gives a displacement higher than the one calculated. The data taken from each of the 5 trim tables is shown below. Next step is to choose the trim having a LCB closest to the LCG for the actual condition (in this case 0.1 m fwd trim).

Trim	Mean draft [m]	Displacement [ton]	LCB [m]
Even Keel	131.390	11.387	11.387
0.125 m / Lpp Fwd	131.362	11.524	**11.497**
0.250 m / Lpp Fwd	131.278	11.661	11.607
0.125 m / Lpp Aft	131.362	11.248	11.276
0.2 m Aft	131.274	11.108	11.164

The following hydrostatic data can be found in the hydrostatic table for trim 0.125 fwd.

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
2.100	120.207	11.531f	1.433	11.477f	1.10	1.43	27.883	3.738
	121.920							
2.200	131.362	11.524f	1.494	11.421f	1.13	1.52	27.189	3.702

In order to obtain the hydrostatic properties for a displacement of 121.92 ton it is necessary to interpolate between to lower and higher value in the table.

The interpolation factor (f) is calculated as follows:

$$f = \frac{121.92 - 120.207}{131.362 - 120.207} = 0.154$$

To obtain a hydrostatic value (X) at the given displacement use the following interpolation formula:

$$X = X_B + f \times (X_A - X_B)$$

X = Hydrostatic value for actual displacement.

XA = Hydrostatic value for the displacement above the actual value.

XB = Hydrostatic value for the displacement below the actual value.

Calculate the trim

$$LCB = 11.531 + 0.154 \times (11.524 - 11.531) = 11.530$$

$$MTcm = 1.43 + 0.154 \times (1.52 - 1.43) = 1.44$$

$$Trim = disp \times \frac{LCG - LCB}{MTcm \times 100} = 121.920 \times \frac{11.442 - 11.530}{1.44 \times 100} = -0.0745\ m$$

$$Total\ Trim = Trim - Trim\ of\ tables = -0.0745 - (-0.125) = \mathbf{0.051\ m}$$

Calculation of Draughts

$$Mean\ Draught = 2.100 + 0.154 \times (2.200 - 2.100) = \mathbf{2.115}\boldsymbol{m}$$

$$Draught\ at\ AP = 2.115 + \frac{0.051}{2} = 2.141\ m$$

$$Draught\ at\ FP = 2.115 - \frac{0.054}{2} = 2.090\ m$$

Check of stability criterias

Metacentric height (KMT):

$$KMT = 3.738 + 0.154 \times (3.702 - 3.738) = 3.733\ m$$

Metacentric height (GM):

VCG = 2.933 m (from loading condition)

$$GM = KMT - VCG = 3.733 - 2.933 = 0.800\ m$$

The GM value has to be corrected for free surface moments if applicable. Please note that the free surface moment (FSM) effect is always to be accounted for if a tank is not empty or pressed up completely. The free surface moment is listed for each tank in the Tank Capacity Tables. The free surface moment can also be calculated by hand using the formulas in Ch. 2.9.5.

$$FRSM_{CORR} = \frac{Total\ FRSM}{disp.} = \frac{3.1}{121.92} = 0.0254\ m$$

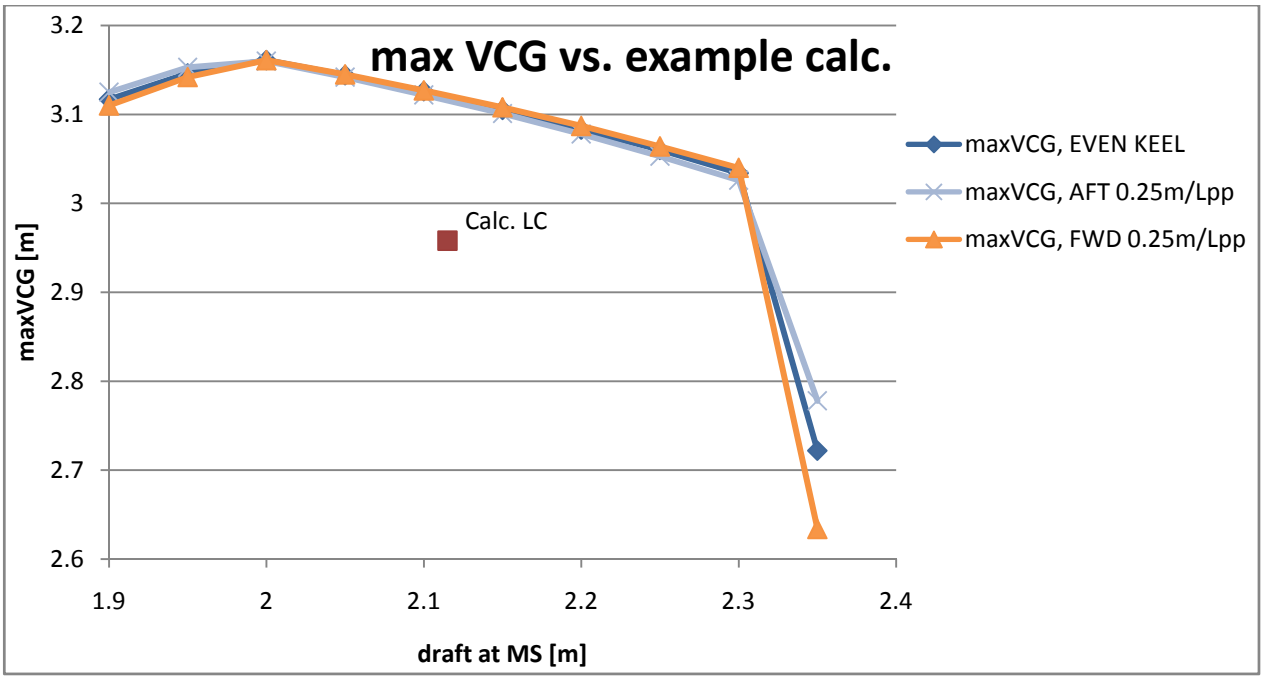
GM_{CORR} = GM – $FRSM_{corr}$ = 0.800 – 0.0254 = ***0.775 m***

VCG_{CORR} = VCG + $FRSM_{corr}$ = 2.933 + 0.0254 = ***2.958 m***

The final step is to check if the obtained draught, trim and VCG are within the allowed seagoing limits. This is done using limit curves presented in Ch. 3.1 – Maximum VCG Curve.

From the graph it is indicated that the maximum allowed VCG (corrected for free surface moments) for a draught of 2.115 m and trim 0.051 is approx. 3.126.

The calculated VCG corrected for free surface effects (2.958 m) should be compared to the maximum allowed VCG of 3.126 m. Since the calculated VCG (corrected for free surface moments) is below the maximum allowed value of VCG the calculated loading condition has been found to be within acceptable seagoing stability limits.


max VCG vs. example calc.
maxVCG [m]
draft at MS [m]
3.2
3.1
3
2.9
2.8
2.7
2.6
1.9
2
2.1
2.2
2.3
2.4
Calc. LC
maxVCG, EVEN KEEL
maxVCG, AFT 0.25m/Lpp
maxVCG, FWD 0.25m/Lpp

1.11 Form for calculation of loading conditions

1. CONS. / TANKS

DESCRIPTION	RHO [ton/m3]	FILL [%]	MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
AFTPEAK.C							
DB_TANK.S							
DB_TANK.P							
DB_TANK.C							
DEEP_TANK.S							
DEEP_TANK.P							
SUBTOTAL.TANKS							

2. FIXED WEIGHTS

DESCRIPTION	MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
CREW AND STORE					
PASSENGERS					
SUBTOTAL FIXED					

3. CONSUMABLES + FIXED WEIGHT

		MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
TOTAL DEADWEIGHT						

4. LIGHTSHIP

	MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
LIGHTSHIP WEIGHT					

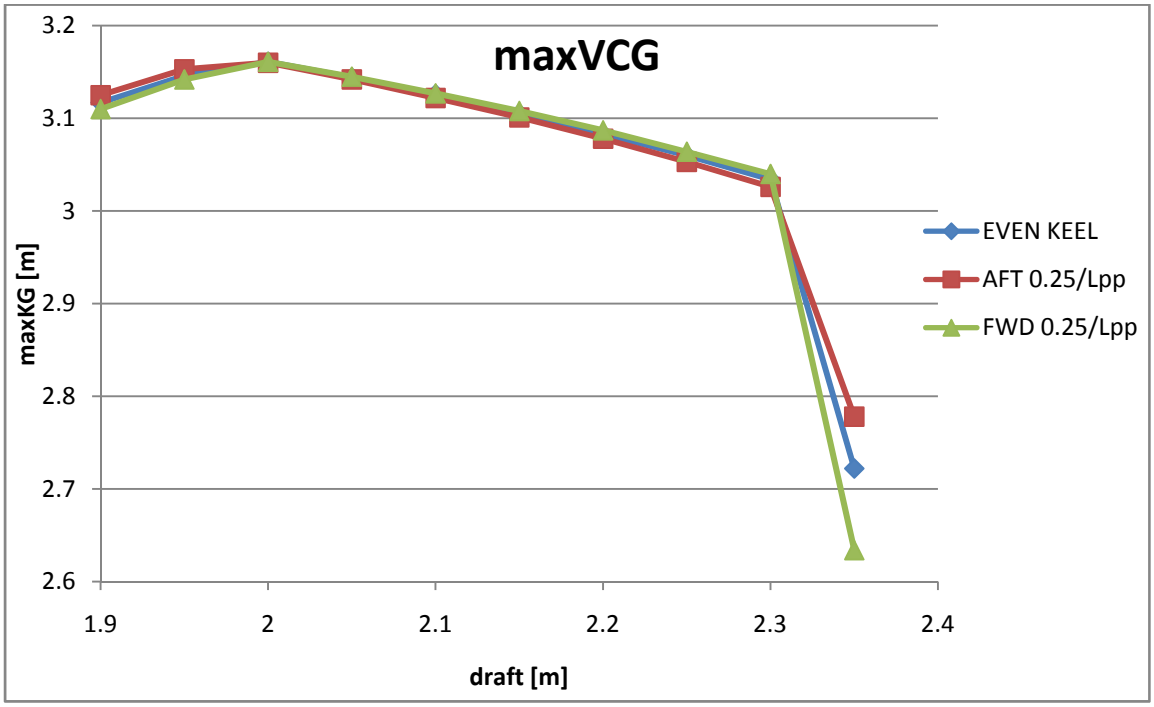
5. DISPLACEMENT

	MASS [ton]	LCG [m] fr.AP	TCG [m] fr.CL	VCG [m] ab.BL	FRSM [tonm]
TOTAL DISPLACEMENT					

5. CALCULATED VALUES	
DRAUGHT (average)	m ab. BL
HEEL	deg
TRIM	m/LWL

2 Maximum VCG tables

2.1 Maximum VCG – Curve



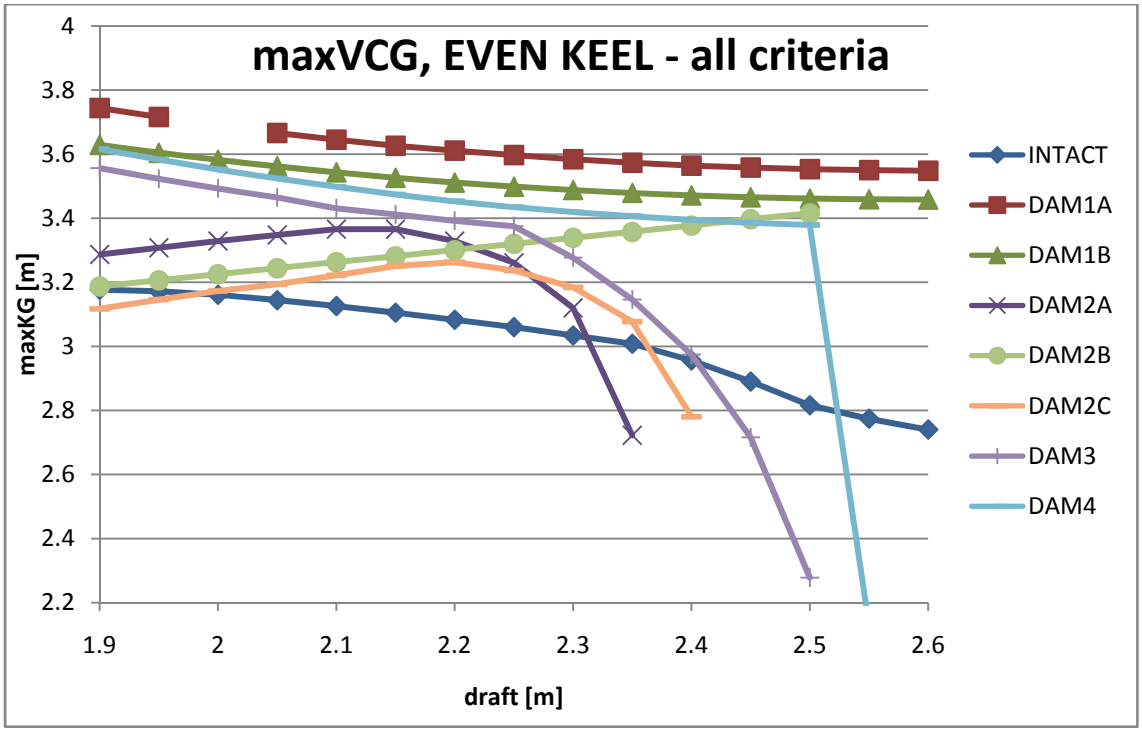
2.2 Maximum VCG – Curve Background / Consolidated Partial Results

This chapter is only to be used for information. The maximum VCG limit curve can be found in Ch. 3.3 Maximum VCG – Curve.

Maximum VCG tables for each damage condition including limiting criteria can be found in Ch. 8 and maximum VCG for intact criteria in Ch. 9.

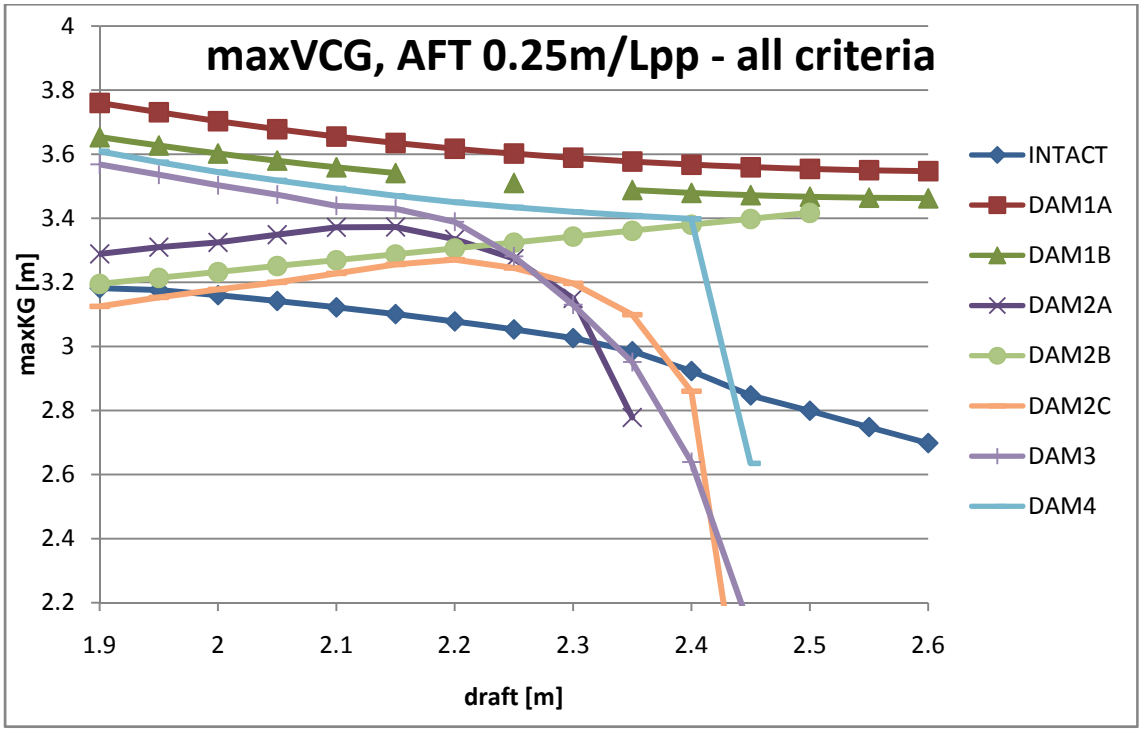
2.2.1 Consolidated maxVCG, EVEN KEEL – All Stability Criterias

Draft	INTACT	DAM1A	DAM1B	DAM2A	DAM2B	DAM2C	DAM3	DAM4	maxVCG
1.5	2.848	4.034	3.789	3.017	2.911	2.762	3.915	3.9	**2.762**
1.55	2.912	3.996	3.787	3.069	2.97	2.822	3.862	3.91	**2.822**
1.6	2.968	3.956	3.776	3.111	3.017	2.882	3.808	3.739	**2.882**
1.65	3.021	3.916	3.757	3.145	3.056	2.934	3.765	3.739	**2.934**
1.7	3.063	3.879	3.733	3.186	3.091	2.978	3.719	3.728	**2.978**
1.75	3.097	3.842	3.707	3.21	3.118	3.019	3.672	3.706	**3.019**
1.8	3.127	3.807	3.681	3.239	3.143	3.055	3.632	3.679	**3.055**
1.85	3.151	3.774	3.655	3.26	3.166	3.088	3.593	3.648	**3.088**
1.9	3.173	3.744	3.629	3.287	3.187	3.117	3.556	3.616	**3.117**
1.95	3.172	3.716	3.604	3.308	3.206	3.146	3.523	3.583	**3.146**
2	3.161		3.582	3.329	3.225	3.173	3.493	3.552	**3.161**
2.05	3.144	3.666	3.562	3.348	3.244	3.194	3.465	3.524	**3.144**
2.1	3.126	3.645	3.543	3.366	3.263	3.222	3.431	3.498	**3.126**
2.15	3.105	3.626	3.526	3.366	3.281	3.251	3.412	3.474	**3.105**
2.2	3.083	3.611	3.511	3.329	3.3	3.263	3.392	3.453	**3.083**
2.25	3.06	3.597	3.498	3.261	3.32	3.237	3.375	3.435	**3.06**
2.3	3.034	3.584	3.488	3.12	3.339	3.184	3.277	3.419	**3.034**
2.35	3.008	3.573	3.479	2.722	3.357	3.077	3.146	3.407	**2.722**
2.4	2.956	3.564	3.471		3.377	2.78	2.974	3.395	
2.45	2.89	3.558	3.465		3.397		2.716	3.386	
2.5	2.816	3.553	3.461		3.415		2.278	3.379	
2.55	2.774	3.55	3.459					2.129	
2.6	2.74	3.548	3.458						
2.65	2.674	3.547	3.459						
2.7	2.639	3.547							
2.75	2.602	3.55	3.463						
2.8		2.069	3.467						


maxVCG, EVEN KEEL - all criteria
maxKG [m]
draft [m]
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
1.9
2
2.1
2.2
2.3
2.4
2.5
2.6
INTACT
DAM1A
DAM1B
DAM2A
DAM2B
DAM2C
DAM3
DAM4

2.2.2 Consolidated maxVCG, AFT 0.25m/Lpp – All Stability Criterias

Draft	INTACT	DAM1A	DAM1B	DAM2A	DAM2B	DAM2C	DAM3	DAM4	maxVCG
1.5	2.862	4.057	3.807	3.03	2.936	2.776	3.929	3.735	**2.776**
1.55	2.927	4.022	3.812	3.081	2.991	2.839	3.87	3.757	**2.839**
1.6	2.991	3.982	3.804	3.122	3.036	2.898	3.828	3.764	**2.898**
1.65	3.038	3.942	3.788	3.155	3.072	2.948	3.776	3.758	**2.948**
1.7	3.08	3.904	3.764	3.19	3.104	2.997	3.73	3.739	**2.997**
1.75	3.114	3.865	3.737	3.217	3.131	3.03	3.682	3.71	**3.03**
1.8	3.144	3.828	3.709	3.244	3.153	3.064	3.644	3.678	**3.064**
1.85	3.168	3.793	3.681	3.267	3.175	3.098	3.606	3.644	**3.098**
1.9	3.182	3.76	3.653	3.289	3.195	3.125	3.568	3.609	**3.125**
1.95	3.176	3.731	3.627	3.31	3.214	3.153	3.536	3.575	**3.153**
2	3.16	3.703	3.602	3.325	3.232	3.178	3.503	3.544	**3.16**
2.05	3.142	3.678	3.58	3.349	3.251	3.2	3.474	3.518	**3.142**
2.1	3.122	3.655	3.559	3.372	3.269	3.228	3.439	3.493	**3.122**
2.15	3.101	3.635	3.541	3.373	3.287	3.256	3.43	3.47	**3.101**
2.2	3.078	3.617		3.335	3.306	3.271	3.389	3.45	**3.078**
2.25	3.053	3.602	3.51	3.274	3.324	3.245	3.281	3.434	**3.053**
2.3	3.026	3.589		3.15	3.343	3.197	3.13	3.42	**3.026**
2.35	2.985	3.577	3.488	2.778	3.361	3.099	2.951	3.408	**2.778**
2.4	2.923	3.567	3.479		3.38	2.86	2.639	3.398	
2.45	2.847	3.559	3.472		3.398	1.645	2.116	2.635	
2.5	2.799	3.554	3.467		3.417				
2.55	2.748	3.55	3.464						
2.6	2.698	3.547	3.462						
2.65	2.653	3.546	3.463						
2.7	2.618	3.546	3.464						
2.75	2.581	3.548	3.466						
2.8		3.551	3.469						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3.6
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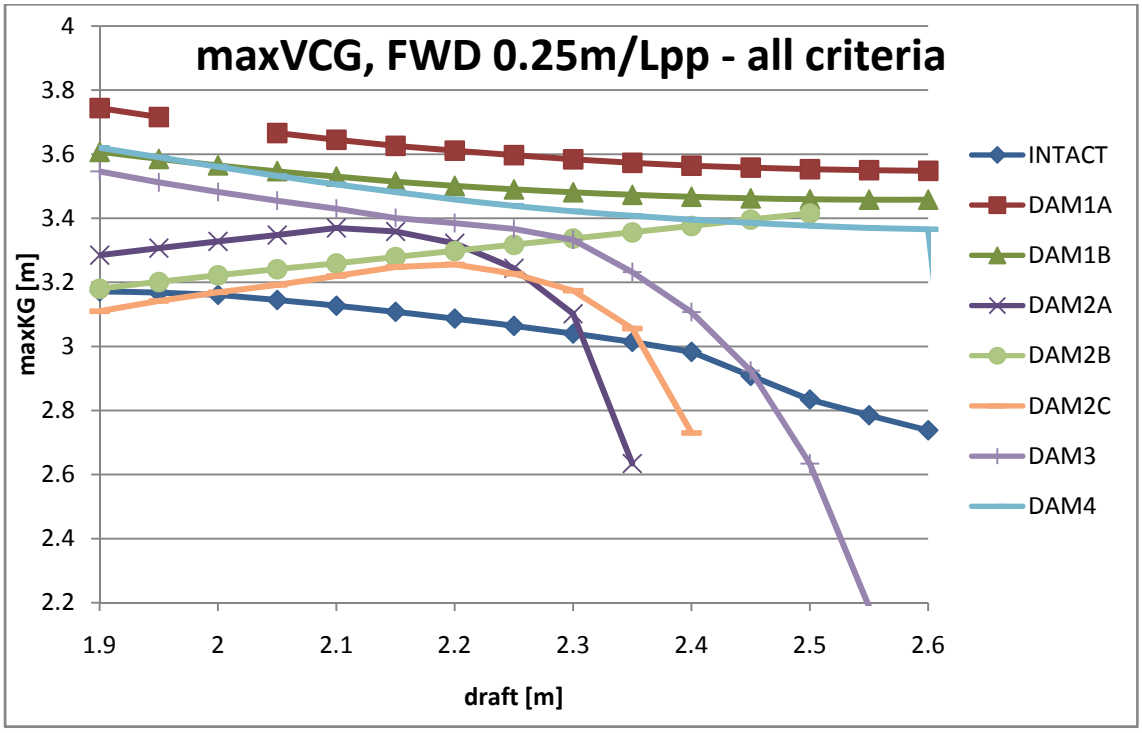
2.6
draft [m]
INTACT
DAM1A
DAM1B
DAM2A
DAM2B
DAM2C
DAM3
DAM4

2.2.3 Consolidated maxVCG, FWD 0.25m/Lpp – All Stability Criterias

Draft	INTACT	DAM1A	DAM1B	DAM2A	DAM2B	DAM2C	DAM3	DAM4	maxVCG
1.5	2.838	4.034	3.771	3.006	2.892	2.745	3.906	3.871	**2.745**
1.55	2.897	3.996	3.763	3.059	2.953	2.809	3.854	3.88	**2.809**
1.6	2.953	3.956	3.749	3.103	3.002	2.865	3.793	3.882	**2.865**
1.65	3.005	3.916	3.728	3.14	3.044	2.923	3.752	3.739	**2.923**
1.7	3.046	3.879	3.704	3.175	3.079	2.968	3.707	3.71	**2.968**
1.75	3.08	3.842	3.68	3.205	3.109	3.016	3.659	3.695	**3.016**
1.8	3.11	3.807	3.655	3.232	3.135	3.048	3.62	3.674	**3.048**
1.85	3.135	3.774	3.631	3.257	3.159	3.083	3.579	3.648	**3.083**
1.9	3.158	3.744	3.607	3.285	3.18	3.11	3.546	3.62	**3.11**
1.95	3.168	3.716	3.585	3.307	3.201	3.142	3.512	3.59	**3.142**
2	3.161		3.565	3.328	3.222	3.169	3.482	3.561	**3.161**
2.05	3.145	3.666	3.547	3.348	3.241	3.192	3.455	3.532	**3.145**
2.1	3.127	3.645	3.53	3.37	3.259	3.22	3.43	3.506	**3.127**
2.15	3.108	3.626	3.514	3.359	3.279	3.248	3.401	3.482	**3.108**
2.2	3.087	3.611	3.501	3.322	3.298	3.256	3.385	3.459	**3.087**
2.25	3.064	3.597	3.49	3.244	3.317	3.227	3.367	3.439	**3.064**
2.3	3.04	3.584	3.481	3.102	3.337	3.174	3.333	3.422	**3.04**
2.35	3.014	3.573	3.473	2.634	3.356	3.056	3.232	3.408	**2.634**
2.4	2.983	3.564	3.467		3.376	2.73	3.107	3.396	
2.45	2.908	3.558	3.462		3.396		2.924	3.386	
2.5	2.834	3.553	3.459		3.415		2.634	3.377	
2.55	2.785	3.55	3.458				2.187	3.37	
2.6	2.738	3.548	3.458					3.366	
2.65	2.715	3.547	3.459					1.729	
2.7	2.654	3.547	3.461						
2.75	2.619	3.55							
2.8		2.069	3.469						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3
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1.9
2
2.1
2.2
2.3
2.4
2.5
2.6
draft [m]
INTACT
DAM1A
DAM1B
DAM2A
DAM2B
DAM2C
DAM3
DAM4

3 Intact Stability

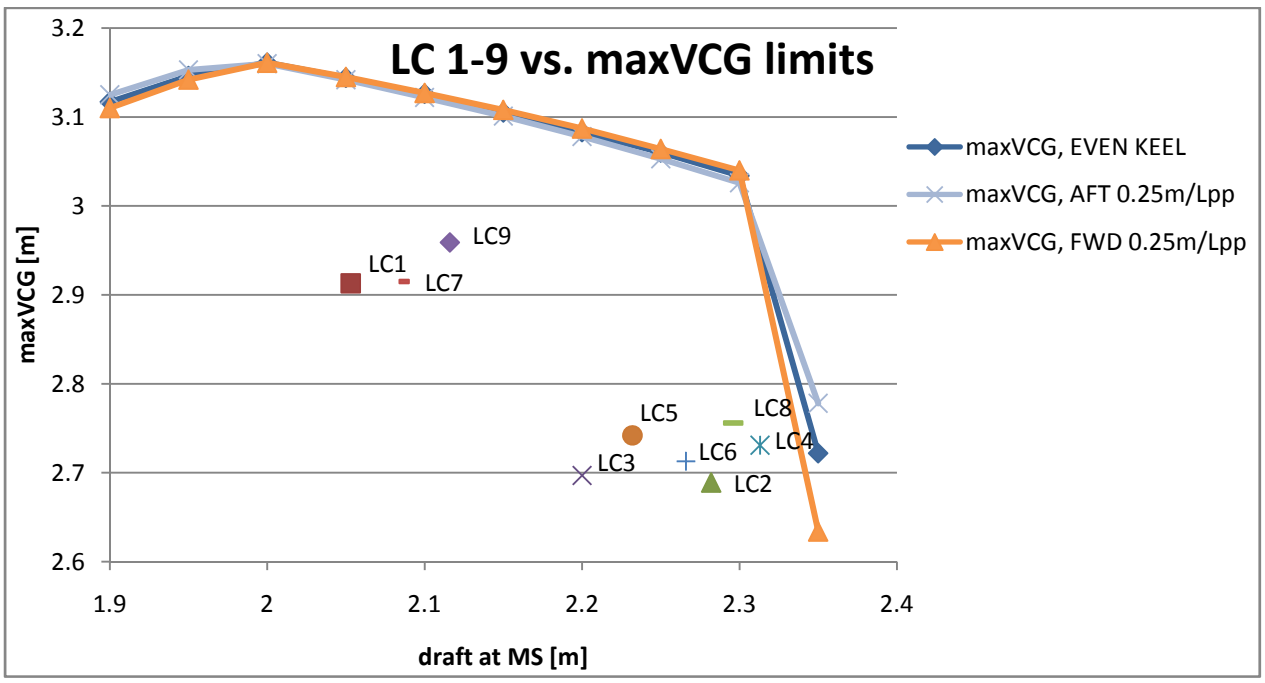
3.1 Loading Condition Summary

Nr.	Description	Mean Draft [m]	Displacement [ton]	Trim [m/Lpp]	VCG* [m]
LC1	Lightship	2.053	114.96	fwd 0.070	2.913
LC2	100% bunker and store	2.282	140.98	aft 0.075	2.689
LC3	10% bunker and store	2.200	131.08	fwd 0.275	2.697
LC4	100% bunker and store, 48 passengers	2.313	144.58	aft 0.093	2.731
LC5	10% bunker and store, 48 passengers	2.232	134.69	fwd 0.246	2.742
LC6	100% Bunker and Store (Fuel oil in DB)	2.266	139.15	aft 0.115	2.713
LC7	10% Bunker and Store (Fuel Oil in DB)	2.084	118.32	fwd 0.077	2.915
LC8	100% bunker and store, passengers (Fuel Oil in DB)	2.296	142.75	aft 0.113	2.756
LC9	10% bunker and store, passengers (Fuel Oil in DB)	2.116	121.92	fwd 0.049	2.959

Specific gravity of the sea water is assumed to be 1.025 t/m^2 for all loading conditions.
*Fluid KG (Corrected for free surface effect)

NOTE: ALL DRAFTS REFERS TO THE BASE LINE

3.2 Plot of Loading Conditions vs. VCG limit curve



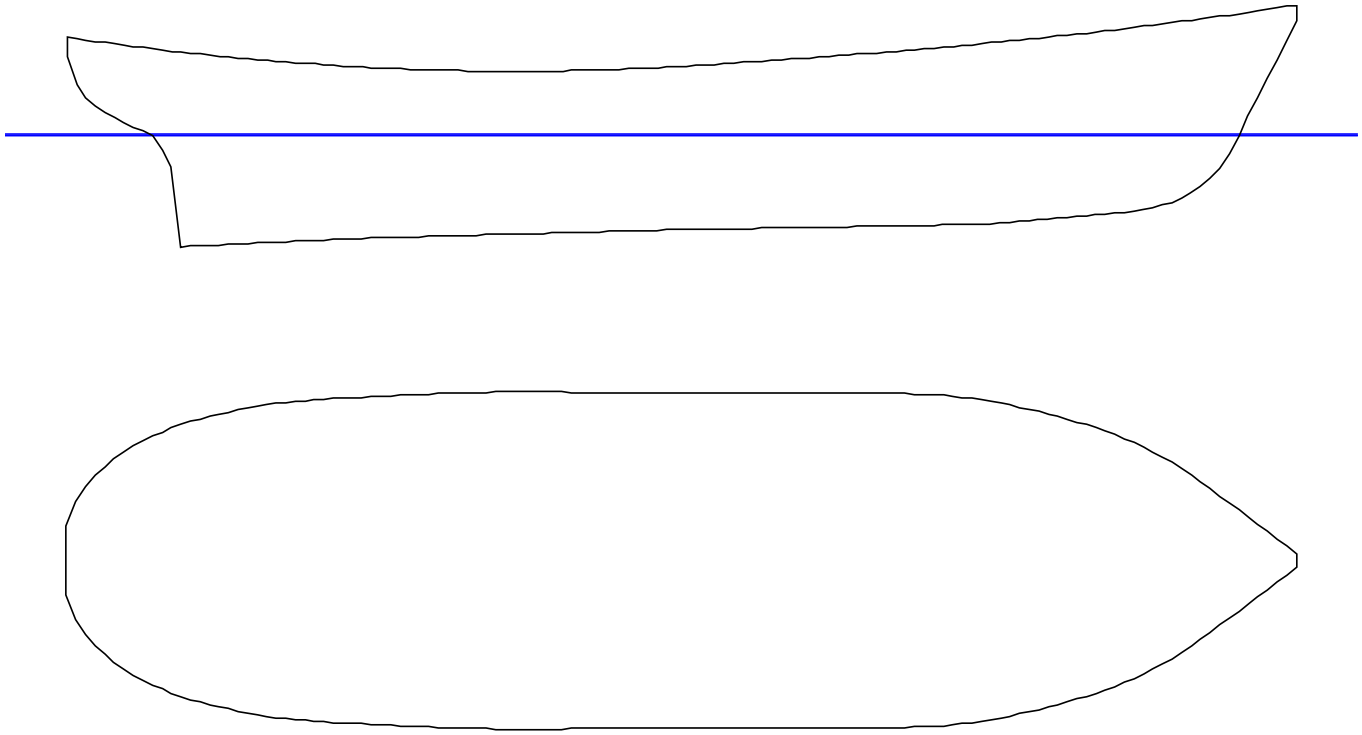
3.3 LC1 - Lightship

Floating Status

Draft FP	2.088m	Heel	zero	GM(Solid)	0.847m
Draft MS	2.053m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.018m	Wind	0.0 kn	GM(Fluid)	0.847m
Trim	fwd 0.070/23.425	Wave	No	KMT	3.760 m
LCG	11.466f	VCG	2.913 m	TPcm	1.08

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Displacement	114.96	11.466f	0.000	2.913



Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	114.96	11.466f	0.000	2.913
Total Weight	**114.96**	**11.466f**	**0.000**	**2.913**

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	5.149

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.17f	2.018	0.000	0.000	5.149 (1)	Equil
5.00s	0.18f	2.002	0.073	0.003	5.161 (1)	
10.00s	0.22f	1.956	0.143	0.013	5.144 (1)	
15.00s	0.27f	1.880	0.205	0.028	5.100 (1)	
20.00s	0.34f	1.772	0.259	0.048	5.031 (1)	
25.00s	0.42f	1.635	0.302	0.073	4.936 (1)	
30.00s	0.46f	1.488	0.320	0.100	4.808 (1)	
30.34s	0.47f	1.478	0.320	0.102	4.798 (1)	MaxRa
35.00s	0.47f	1.338	0.308	0.128	4.642 (1)	
40.00s	0.46f	1.183	0.271	0.153	4.437 (1)	
45.00s	0.42f	1.025	0.217	0.175	4.196 (1)	
50.00s	0.38f	0.865	0.149	0.191	3.920 (1)	
55.00s	0.32f	0.703	0.072	0.200	3.610 (1)	
59.33s	0.27f	0.562	0.000	0.203	3.317 (1)	RaZero
60.00s	0.26f	0.541	-0.011	0.203	3.270 (1)	
65.00s	0.18f	0.379	-0.097	0.198	2.901 (1)	
70.00s	0.09f	0.219	-0.185	0.186	2.508 (1)	
75.00s	0.02a	0.064	-0.272	0.166	2.093 (1)	
80.00s	0.16a	-0.088	-0.361	0.138	1.664 (1)	
85.00s	0.28a	-0.248	-0.455	0.103	1.228 (1)	
90.00s	0.40a	-0.411	-0.550	0.059	0.788 (1)	
95.00s	0.52a	-0.574	-0.643	0.007	0.346 (1)	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	5.149

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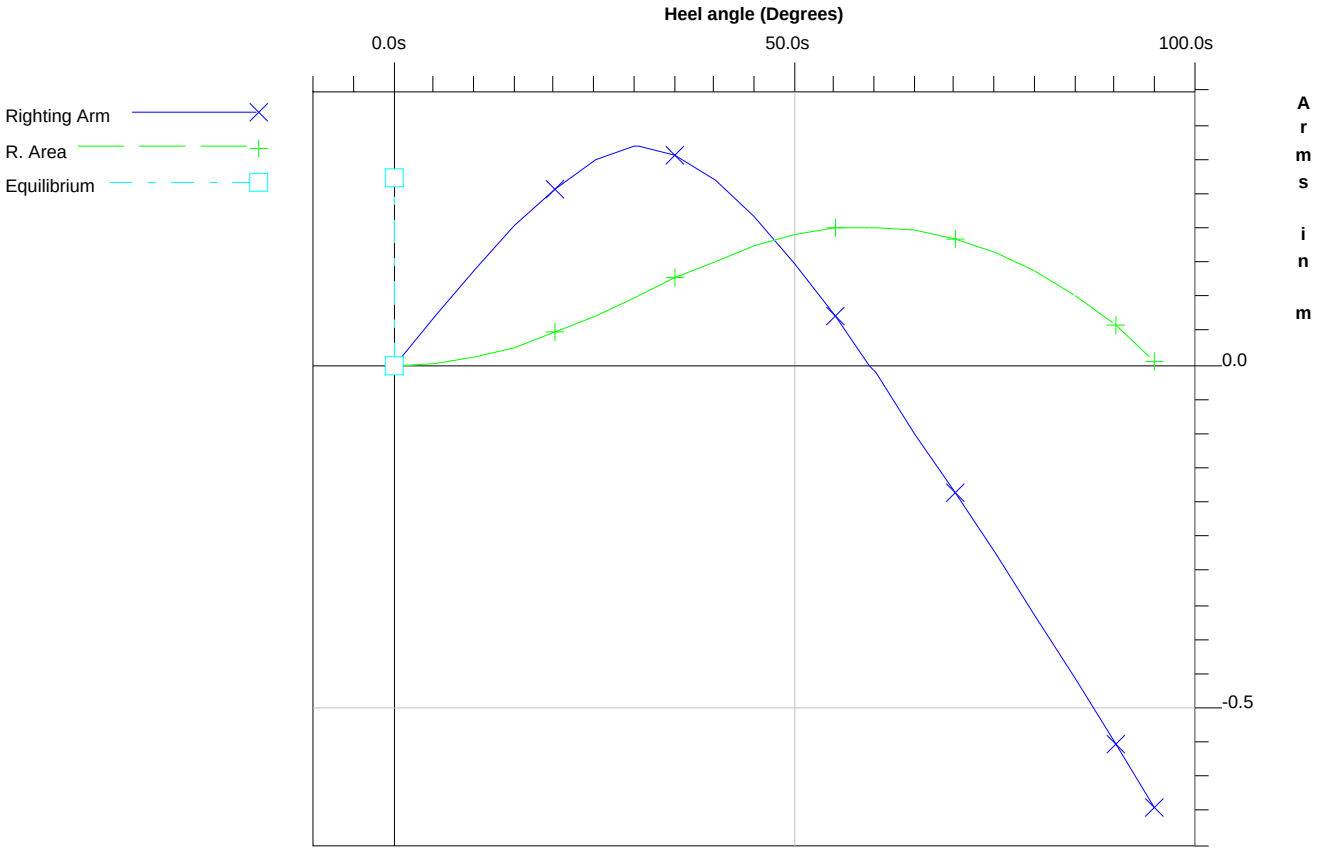
Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.100	0.045	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.153	0.063	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.053	0.023	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.320	0.120	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	30.34	5.34	Yes
(6) GM Upright	>0.150 m	0.847	0.697	Yes

Righting Arms vs. Heel



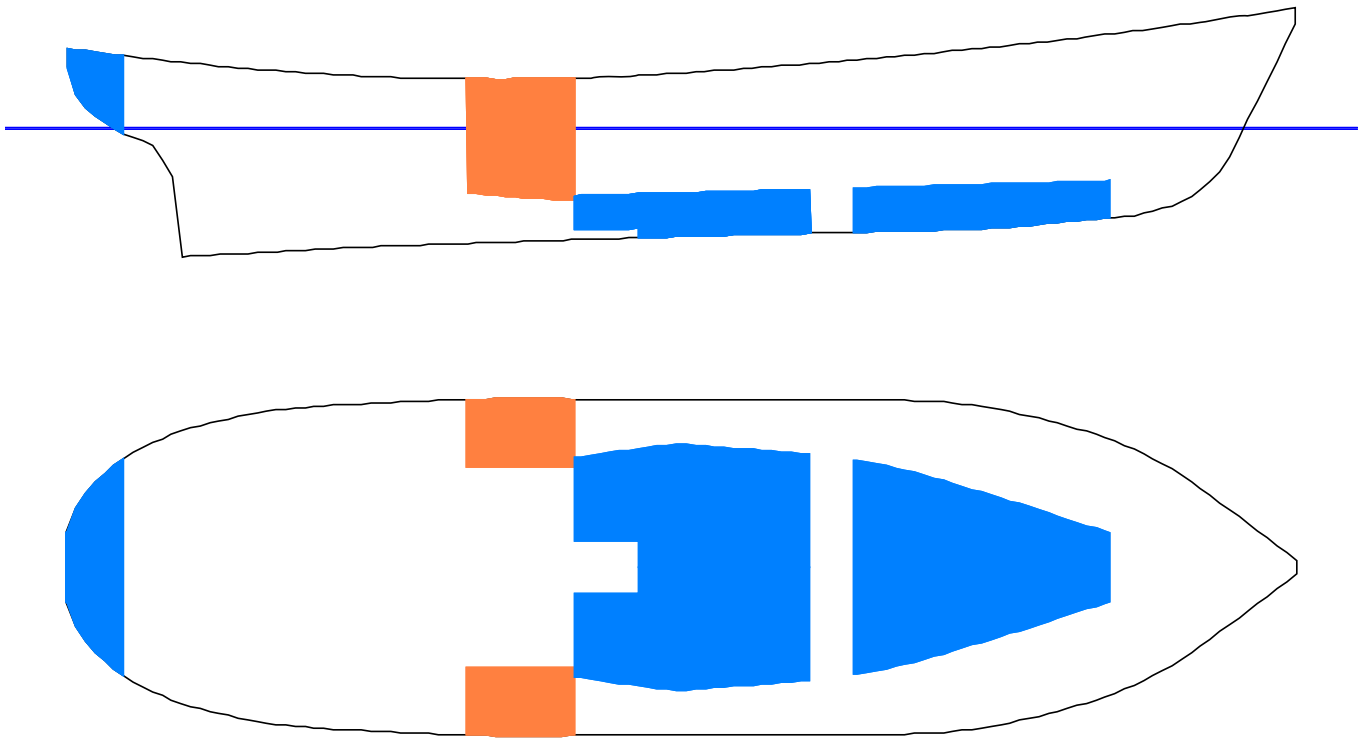
3.4 LC2 - 100% bunker and store

Floating Status

Draft FP	2.245m	Heel	zero	GM(Solid)	0.997m
Draft MS	2.282m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.320m	Wind	0.0 kn	GM(Fluid)	0.997m
Trim	aft 0.075/23.425	Wave	No	KMT	3.685 m
LCG	11.304f	VCG	2.689 m	TPcm	1.16

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Deadweight	26.02	10.590f	0.000	1.699
Displacement	140.98	11.304f	0.000	2.689



Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		16.44	100.00%
DIESEL OIL		8.58	100.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
CREW AND STORE	1.00	2.715f	0.000	4.700
LIGHT SHIP	114.96	11.466f	0.000	2.913
Total Fixed	**115.96**	**11.391f**	**0.000**	**2.928**

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
AFTPEAK.C	100.00%	2.40	0.447a	0.000	3.311	0.950
DB_TANK.S	100.00%	4.04	12.142f	0.825s	0.791	0.950
DB_TANK.P	100.00%	4.04	12.142f	0.825p	0.791	0.950
DB_TANK.C	100.00%	5.95	17.504f	0.000	0.904	0.950
Subtotals:	**100.00%**	**16.44**	**12.241f**	**0.000**	**1.200**	

DIESEL OIL (SpGr 0.870)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
DEEP_TANK.S	100.00%	4.29	8.347f	2.473s	2.304	0.950
DEEP_TANK.P	100.00%	4.29	8.347f	2.473p	2.304	0.950
Subtotals:	**100.00%**	**8.58**	**8.347f**	**0.000**	**2.304**	

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
Totals:		**25.02**	**10.905f**	**0.000**	**1.579**	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	**11.000f, 0.300p, 7.200**	**4.915**

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	**0.18a**	**2.320**	**0.000**	**0.000**	**4.915 (1)**	**Equil**
5.00s	**0.17a**	**2.305**	**0.087**	**0.004**	**4.926 (1)**	
10.00s	**0.14a**	**2.260**	**0.173**	**0.015**	**4.909 (1)**	
15.00s	**0.08a**	**2.184**	**0.256**	**0.034**	**4.864 (1)**	
20.00s	**0.01a**	**2.078**	**0.331**	**0.060**	**4.793 (1)**	
25.00s	**0.02f**	**1.963**	**0.378**	**0.091**	**4.686 (1)**	
30.00s	**0.00f**	**1.845**	**0.391**	**0.124**	**4.540 (1)**	
35.00s	**0.04a**	**1.721**	**0.377**	**0.158**	**4.356 (1)**	
40.00s	**0.09a**	**1.591**	**0.342**	**0.190**	**4.135 (1)**	
45.00s	**0.16a**	**1.455**	**0.292**	**0.218**	**3.878 (1)**	
50.00s	**0.23a**	**1.313**	**0.230**	**0.240**	**3.589 (1)**	
55.00s	**0.30a**	**1.165**	**0.161**	**0.257**	**3.269 (1)**	
60.00s	**0.38a**	**1.012**	**0.085**	**0.268**	**2.921 (1)**	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.915

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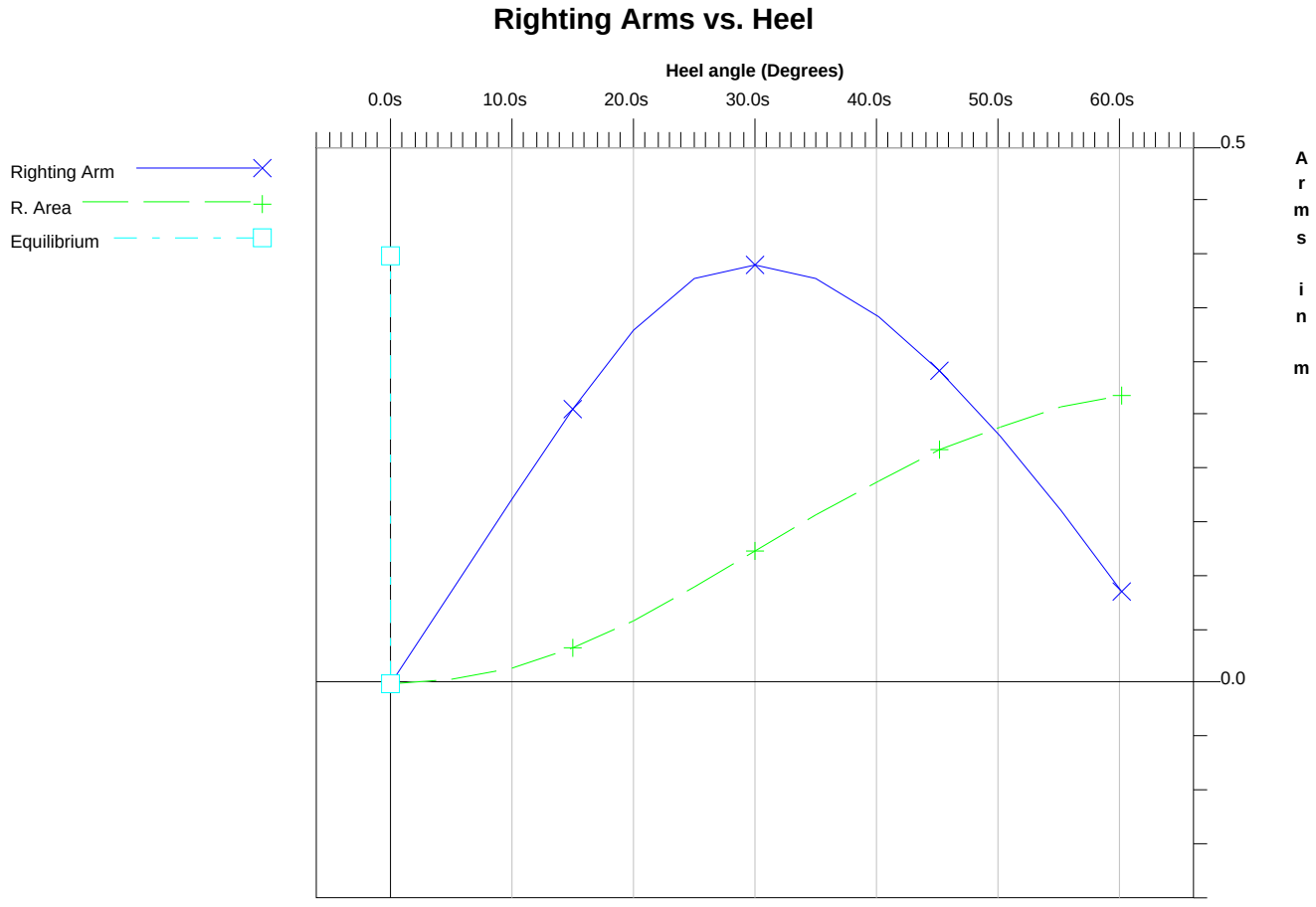
Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.124	0.069	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.190	0.100	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.065	0.035	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.391	0.191	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	30.00	5.00	Yes
(6) GM Upright	>0.150 m	0.997	0.847	Yes



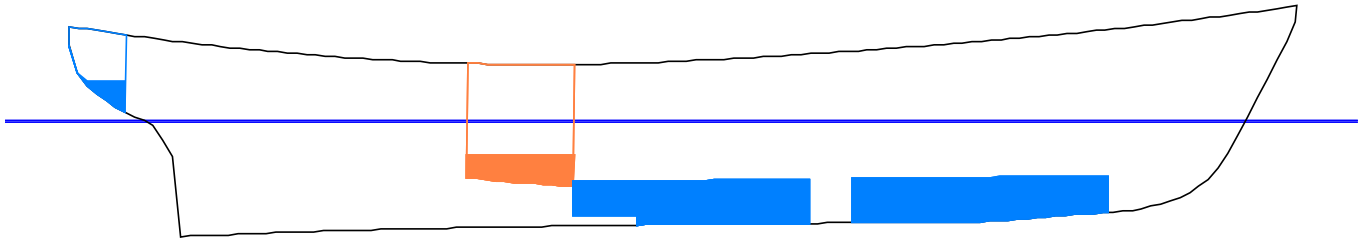
3.5 LC3 -10% bunker and store

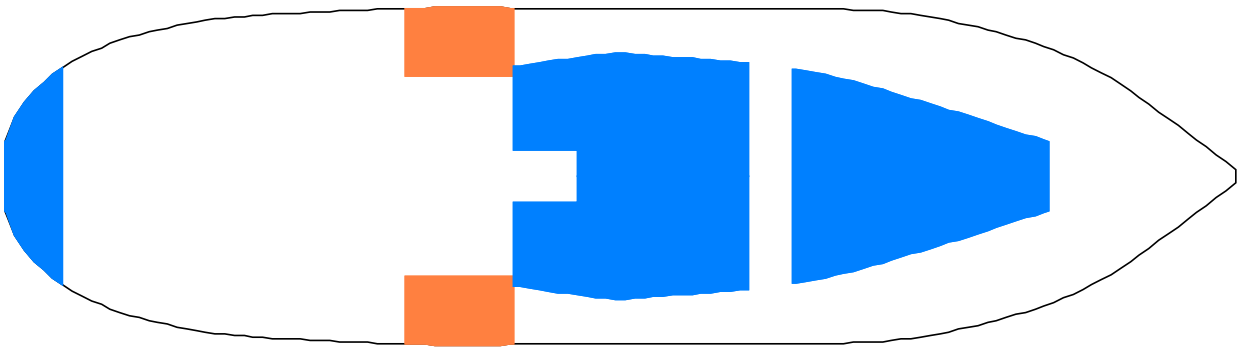
Floating Status

Draft FP	2.338m	Heel	zero	GM(Solid)	1.003m
Draft MS	2.200m	Equil	Yes	F/S Corr	0.003m
Draft AP	2.063m	Wind	0.0 kn	GM(Fluid)	1.000m
Trim	fwd 0.275/23.425	Wave	No	KMT	3.696 m
LCG	11.674f	VCG	2.694 m	TPcm	1.12

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Deadweight	16.13	13.155f	0.000	1.130
Displacement	131.08	11.674f	0.000	2.694





Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		14.27	86.83%
DIESEL OIL		.86	9.96%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
CREW AND STORE	1.00	2.715f	0.000	4.700
LIGHT SHIP	114.96	11.466f	0.000	2.913
Total Fixed	115.96	11.391f	0.000	2.928

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
AFTPEAK.C	9.97%	0.24	0.266a	0.000	2.665	0.950
DB_TANK.S	100.00%	4.04	12.142f	0.825s	0.791	0.950
DB_TANK.P	100.00%	4.04	12.142f	0.825p	0.791	0.950
DB_TANK.C	100.00%	5.95	17.504f	0.000	0.904	0.950
Subtotals:	86.83%	14.27	14.168f	0.000	0.869	

DIESEL OIL (SpGr 0.870)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
DEEP_TANK.S	9.96%	0.43	8.450f	2.184s	1.309	0.950
DEEP_TANK.P	9.96%	0.43	8.450f	2.184p	1.309	0.950
Subtotals:	9.96%	0.86	8.450f	0.000	1.309	

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
Totals:		15.13	13.845f	0.000	0.894	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	5.008

Righting Arms vs Heel Angle

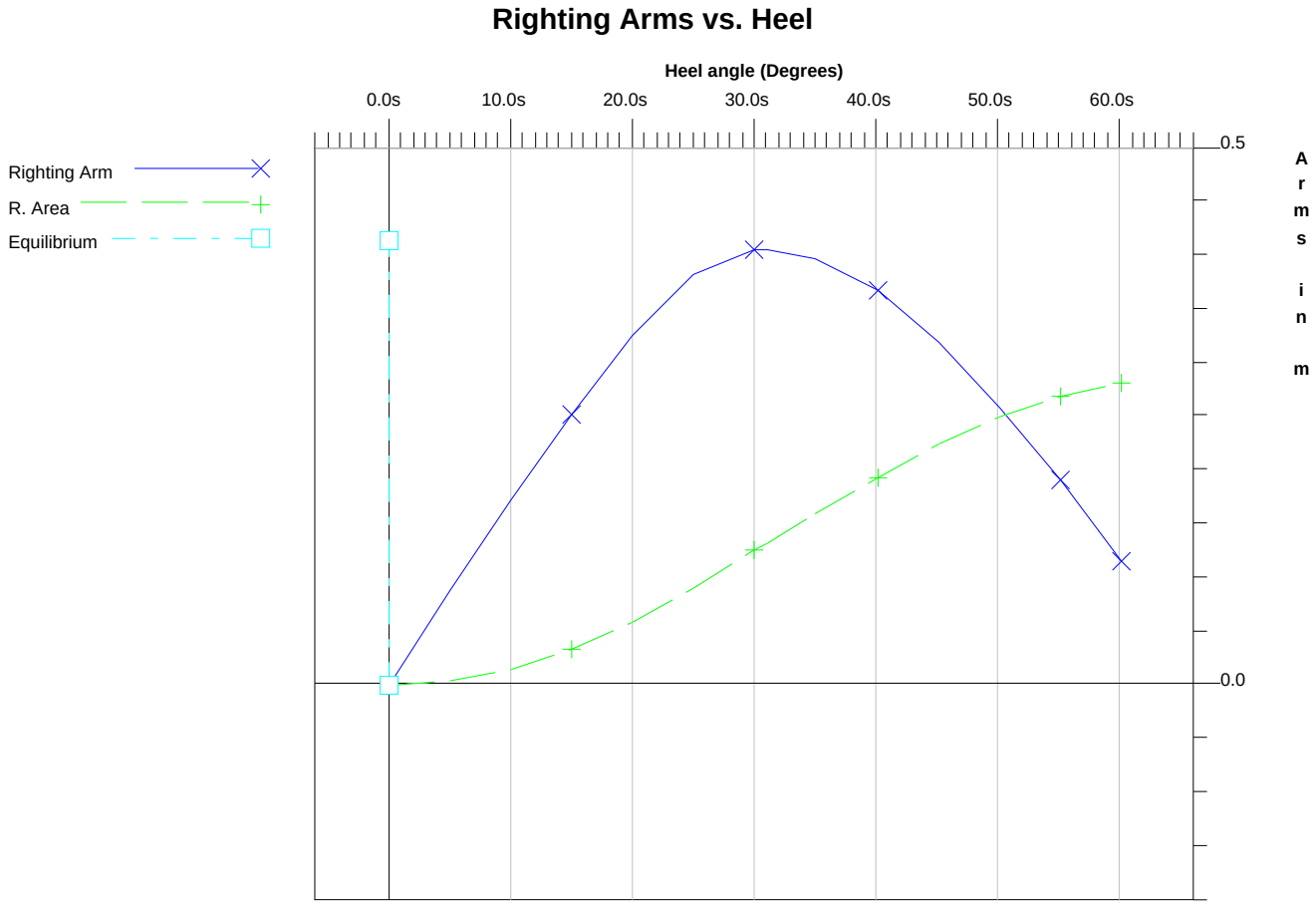
Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.67f	2.063	0.000	0.000	5.008 (1)	Equil
5.00s	0.68f	2.049	0.087	0.004	5.019 (1)	
10.00s	0.71f	2.004	0.172	0.015	5.001 (1)	
15.00s	0.76f	1.930	0.253	0.034	4.957 (1)	
20.00s	0.82f	1.824	0.327	0.059	4.886 (1)	
25.00s	0.87f	1.697	0.383	0.090	4.787 (1)	
30.00s	0.89f	1.564	0.406	0.125	4.650 (1)	
30.96s	0.89f	1.538	0.406	0.132	4.619 (1)	MaxRa
35.00s	0.89f	1.425	0.398	0.160	4.474 (1)	
40.00s	0.87f	1.281	0.367	0.194	4.260 (1)	
45.00s	0.83f	1.133	0.319	0.224	4.010 (1)	
50.00s	0.78f	0.981	0.259	0.249	3.727 (1)	
55.00s	0.72f	0.825	0.190	0.269	3.412 (1)	
60.00s	0.65f	0.668	0.115	0.282	3.068 (1)	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	5.008

SJÖFS 1993 3

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.125	0.070	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.194	0.104	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.069	0.039	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.406	0.206	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	30.96	5.96	Yes
(6) GM Upright	>0.150 m	1.000	0.850	Yes



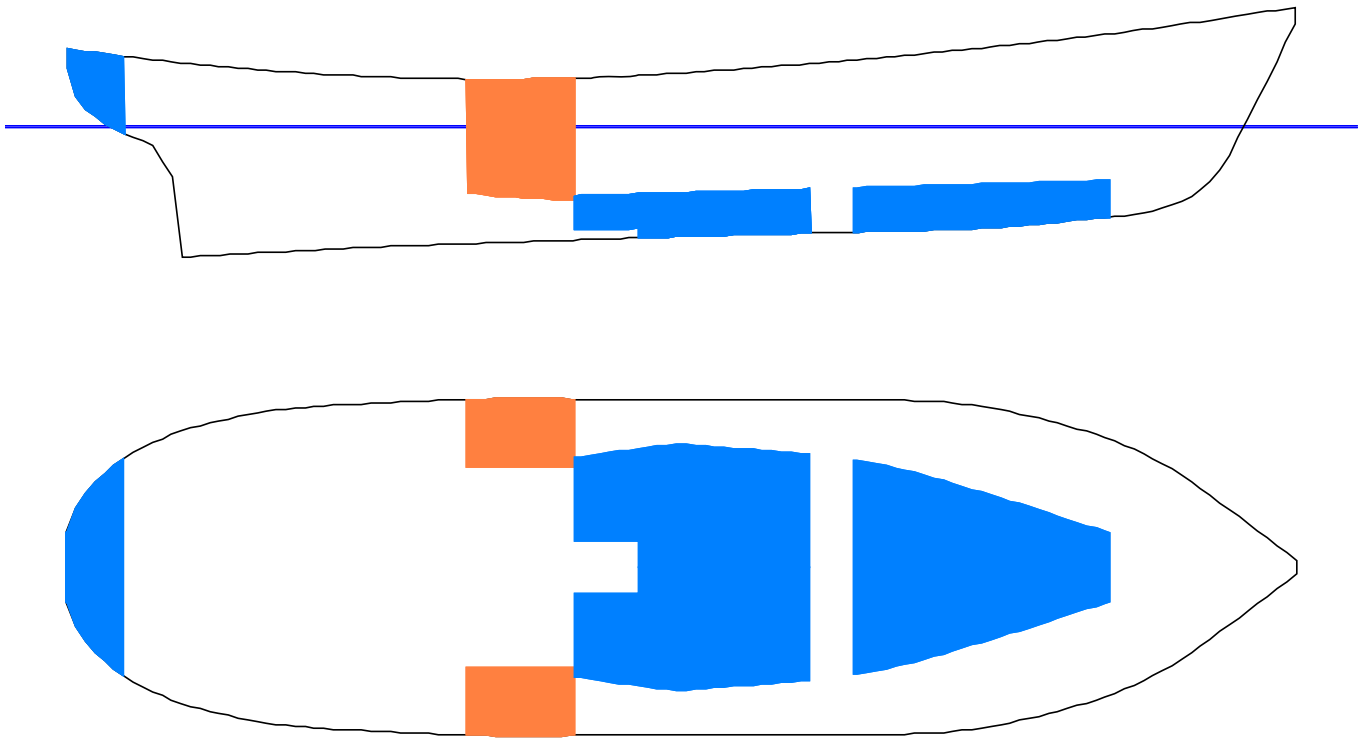
3.6 LC4 -100% bunker and store + 48 passengers

Floating Status

Draft FP	2.266m	Heel	zero	GM(Solid)	0.946m
Draft MS	2.313m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.360m	Wind	0.0 kn	GM(Fluid)	0.946m
Trim	aft 0.093/23.425	Wave	No	KMT	3.677 m
LCG	11.282f	VCG	2.731 m	TPcm	1.17

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Deadweight	29.62	10.569f	0.000	2.027
Displacement	144.58	11.282f	0.000	2.731



Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		16.44	100.00%
DIESEL OIL		8.58	100.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	114.96	11.466f	0.000	2.913
CREW AND STORE	1.00	2.715f	0.000	4.700
PASSENGERS	3.60	10.415f	0.000	4.400
Total Fixed	119.56	11.361f	0.000	2.973

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
AFTPEAK.C	100.00%	2.40	0.447a	0.000	3.311	0.950
DB_TANK.S	100.00%	4.04	12.142f	0.825s	0.791	0.950
DB_TANK.P	100.00%	4.04	12.142f	0.825p	0.791	0.950
DB_TANK.C	100.00%	5.95	17.504f	0.000	0.904	0.950
Subtotals:	100.00%	16.44	12.241f	0.000	1.200	

DIESEL OIL (SpGr 0.870)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
DEEP_TANK.S	100.00%	4.29	8.347f	2.473s	2.304	0.950
DEEP_TANK.P	100.00%	4.29	8.347f	2.473p	2.304	0.950
Subtotals:	100.00%	8.58	8.347f	0.000	2.304	

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
Totals:		25.02	10.905f	0.000	1.579	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.884

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.23a	2.360	0.000	0.000	4.884 (1)	Equil
5.00s	0.22a	2.345	0.082	0.004	4.895 (1)	
10.00s	0.18a	2.300	0.165	0.014	4.878 (1)	
15.00s	0.13a	2.224	0.244	0.032	4.833 (1)	
20.00s	0.06a	2.120	0.314	0.057	4.761 (1)	
25.00s	0.05a	2.009	0.355	0.086	4.652 (1)	
28.82s	0.06a	1.922	0.363	0.110	4.542 (1)	MaxRa
30.00s	0.07a	1.895	0.362	0.118	4.503 (1)	
35.00s	0.11a	1.776	0.343	0.149	4.316 (1)	
40.00s	0.18a	1.650	0.304	0.177	4.092 (1)	
45.00s	0.25a	1.518	0.250	0.201	3.833 (1)	
50.00s	0.33a	1.379	0.186	0.220	3.542 (1)	
55.00s	0.41a	1.233	0.114	0.233	3.220 (1)	
60.00s	0.49a	1.082	0.037	0.240	2.872 (1)	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.884

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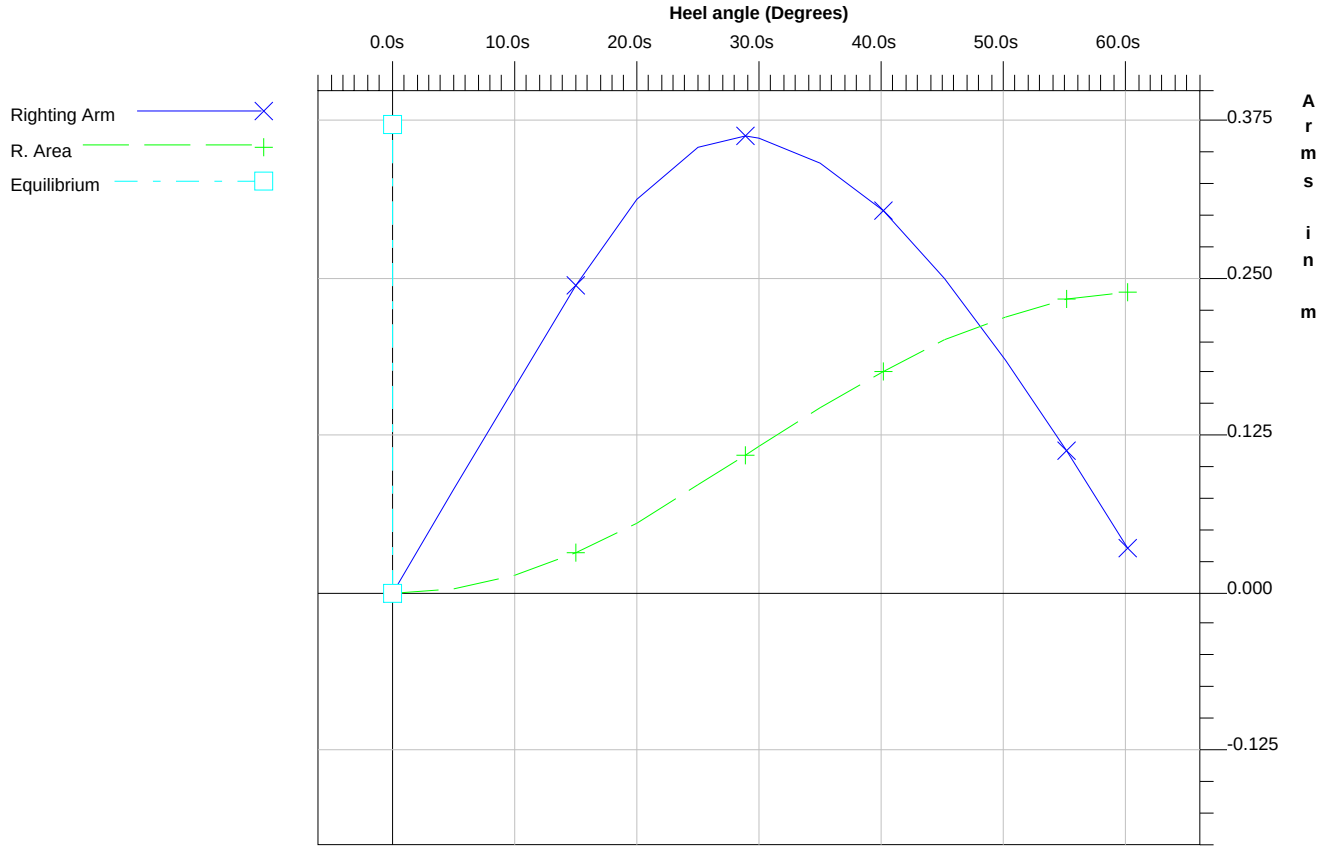
Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.118	0.063	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.177	0.087	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.059	0.029	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.362	0.162	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	28.82	3.82	Yes
(6) GM Upright	>0.150 m	0.946	0.796	Yes

Righting Arms vs. Heel



Limit 7 - Angle of heel due to passenger crowding

The angle of heel due to passenger crowding is:
4.37s degrees.
The angle of heel should not exceed 12 degrees - PASSED!
Applied passenger moment: 10.42500 tonm

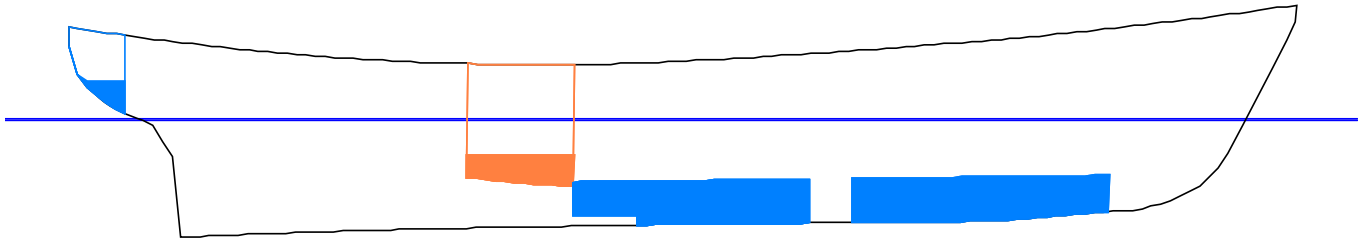
3.7 LC5 - 10% bunker and store + 48 passengers

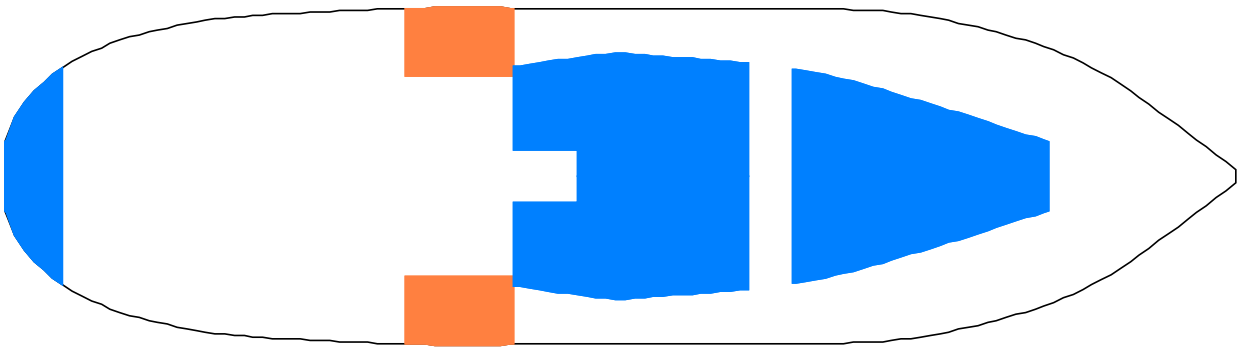
Floating Status

Draft FP	2.355m	Heel	zero	GM(Solid)	0.948m
Draft MS	2.232m	Equil	Yes	F/S Corr	0.003m
Draft AP	2.109m	Wind	0.0 kn	GM(Fluid)	0.945m
Trim	fwd 0.246/23.425	Wave	No	KMT	3.687 m
LCG	11.640f	VCG	2.739 m	TPcm	1.13

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Deadweight	19.73	12.654f	0.000	1.727
Displacement	134.69	11.640f	0.000	2.739





Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		14.28	86.84%
DIESEL OIL		.86	10.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	114.96	11.466f	0.000	2.913
CREW AND STORE	1.00	2.715f	0.000	4.700
PASSENGERS	3.60	10.415f	0.000	4.400
Total Fixed	119.56	11.361f	0.000	2.973

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
AFTPEAK.C	10.01%	0.24	0.266a	0.000	2.666	0.950
DB_TANK.S	100.00%	4.04	12.142f	0.825s	0.791	0.950
DB_TANK.P	100.00%	4.04	12.142f	0.825p	0.791	0.950
DB_TANK.C	100.00%	5.95	17.504f	0.000	0.904	0.950
Subtotals:	86.84%	14.28	14.167f	0.000	0.869	

DIESEL OIL (SpGr 0.870)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
DEEP_TANK.S	10.00%	0.43	8.448f	2.184s	1.309	0.950
DEEP_TANK.P	10.01%	0.43	8.448f	2.184p	1.310	0.950
Subtotals:	10.00%	0.86	8.448f	0.001p	1.310	

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
Totals:		15.13	13.843f	0.000	0.894	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.975

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.60f	2.109	0.000	0.000	4.975 (1)	Equil
5.00s	0.61f	2.095	0.082	0.004	4.986 (1)	
10.00s	0.64f	2.050	0.163	0.014	4.969 (1)	
15.00s	0.69f	1.976	0.240	0.032	4.924 (1)	
20.00s	0.75f	1.870	0.311	0.056	4.853 (1)	
25.00s	0.80f	1.746	0.361	0.085	4.752 (1)	
30.00s	0.81f	1.616	0.377	0.118	4.613 (1)	
35.00s	0.80f	1.481	0.363	0.150	4.434 (1)	
40.00s	0.78f	1.341	0.328	0.181	4.218 (1)	
45.00s	0.74f	1.196	0.276	0.207	3.966 (1)	
50.00s	0.68f	1.046	0.212	0.229	3.681 (1)	
55.00s	0.62f	0.892	0.140	0.244	3.364 (1)	
60.00s	0.55f	0.736	0.062	0.253	3.019 (1)	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.975

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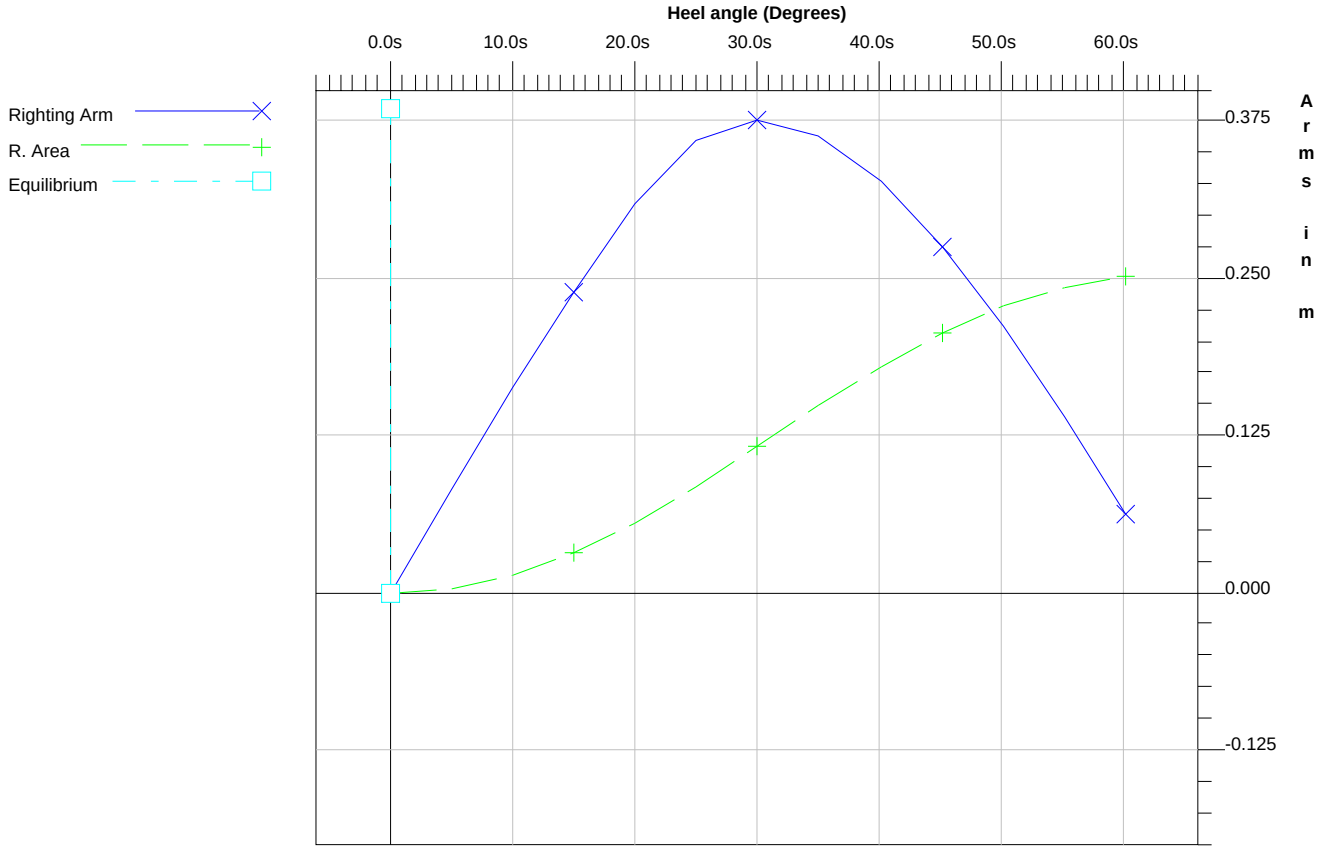
Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.118	0.063	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.181	0.091	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.063	0.033	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.377	0.177	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	30.00	5.00	Yes
(6) GM Upright	>0.150 m	0.945	0.795	Yes

Righting Arms vs. Heel



Limit 7 - Angle of heel due to passenger crowding

The angle of heel due to passenger crowding is:
4.71s degrees.
The angle of heel should not exceed 12 degrees - PASSED!
Applied passenger moment: 10.42500 tonm

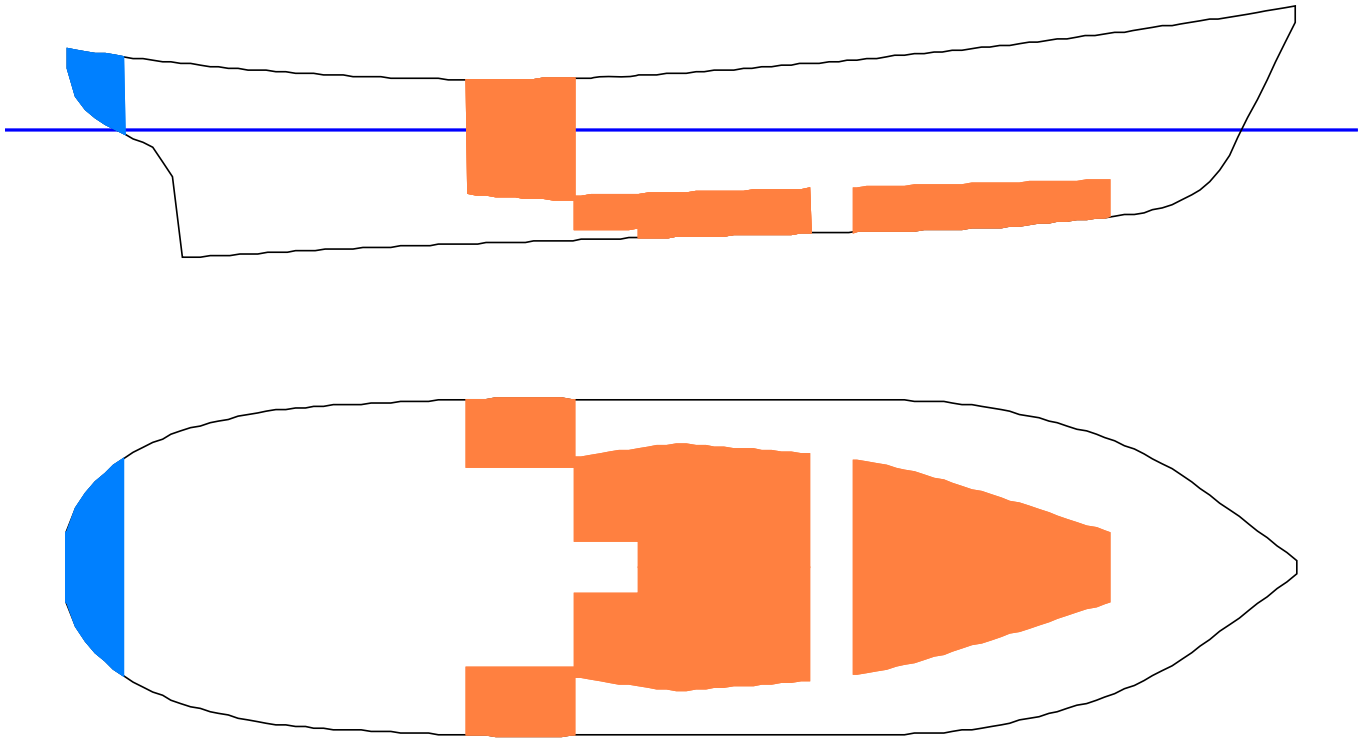
3.8 LC6 - 100% Bunker and Store (Diesel in DB)

Floating Status

Draft FP	2.208m	Heel	zero	GM(Solid)	0.979m
Draft MS	2.266m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.323m	Wind	0.0 kn	GM(Fluid)	0.979m
Trim	aft 0.115/23.425	Wave	No	KMT	3.692 m
LCG	11.264f	VCG	2.713 m	TPcm	1.15

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Deadweight	24.20	10.302f	0.000	1.764
Displacement	139.15	11.264f	0.000	2.713



Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		2.40	100.00%
DIESEL OIL		20.79	100.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
CREW AND STORE	1.00	2.715f	0.000	4.700
LIGHT SHIP	114.96	11.466f	0.000	2.913
Total Fixed	115.96	11.391f	0.000	2.928

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
AFTPEAK.C	100.00%	2.40	0.447a	0.000	3.311	0.950
Subtotals:	100.00%	2.40	0.447a	0.000	3.311	

DIESEL OIL (SpGr 0.870)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
DEEP_TANK.S	100.00%	4.29	8.347f	2.473s	2.304	0.950
DEEP_TANK.P	100.00%	4.29	8.347f	2.473p	2.304	0.950
DB_TANK.S	100.00%	3.52	12.142f	0.825s	0.791	0.950
DB_TANK.P	100.00%	3.52	12.142f	0.825p	0.791	0.950
DB_TANK.C	100.00%	5.17	17.504f	0.000	0.904	0.950
Subtotals:	100.00%	20.79	11.910f	0.000	1.443	

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
Totals:		23.20	10.629f	0.000	1.637	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.931

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.28a	2.323	0.000	0.000	4.931 (1)	Equil
5.00s	0.27a	2.308	0.085	0.004	4.942 (1)	
10.00s	0.23a	2.263	0.170	0.015	4.924 (1)	
15.00s	0.18a	2.186	0.251	0.033	4.880 (1)	
20.00s	0.11a	2.080	0.324	0.058	4.809 (1)	
25.00s	0.07a	1.964	0.370	0.089	4.703 (1)	
30.00s	0.08a	1.844	0.383	0.122	4.558 (1)	
35.00s	0.12a	1.719	0.368	0.155	4.375 (1)	
40.00s	0.18a	1.588	0.331	0.186	4.154 (1)	
45.00s	0.24a	1.451	0.280	0.212	3.899 (1)	
50.00s	0.32a	1.308	0.217	0.234	3.610 (1)	
55.00s	0.39a	1.160	0.146	0.250	3.291 (1)	
60.00s	0.47a	1.006	0.070	0.259	2.944 (1)	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.931

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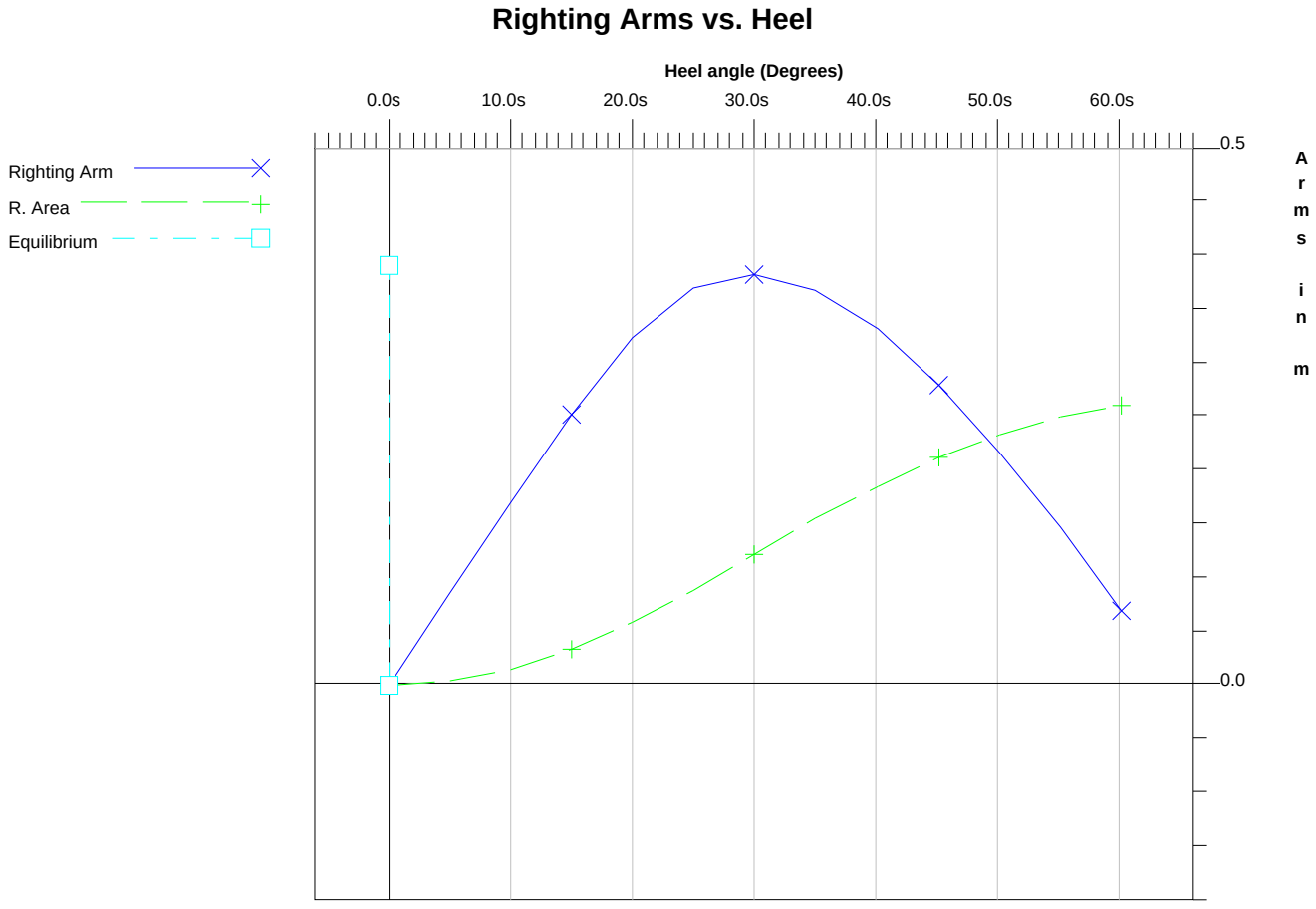
Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.122	0.067	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.186	0.096	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.064	0.034	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.383	0.183	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	30.00	5.00	Yes
(6) GM Upright	>0.150 m	0.979	0.829	Yes



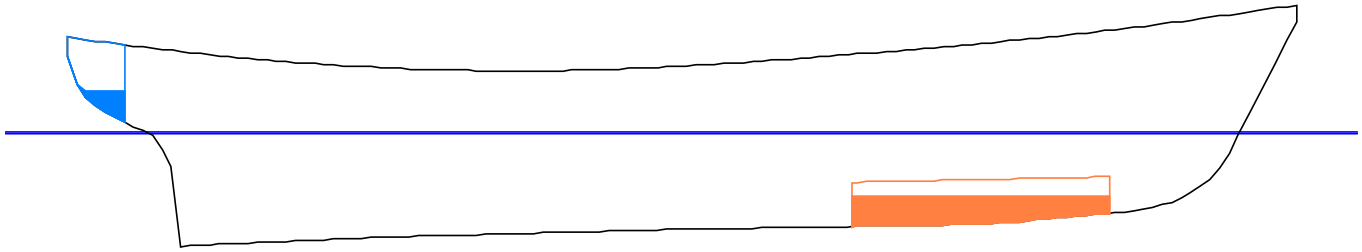
3.9 LC7 - 10% Bunker and Store (Diesel in DB)

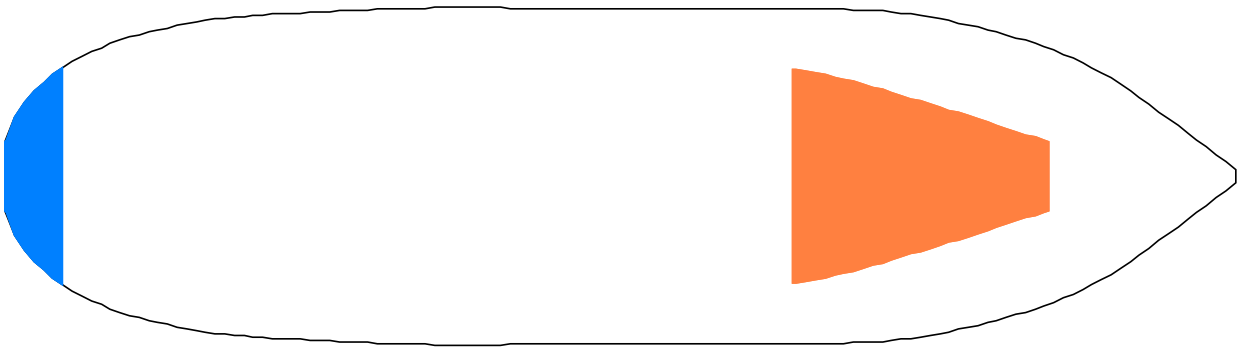
Floating Status

Draft FP	2.122m	Heel	zero	GM(Solid)	0.859m
Draft MS	2.084m	Equil	Yes	F/S Corr	0.027m
Draft AP	2.045m	Wind	0.0 kn	GM(Fluid)	0.833m
Trim	fwd 0.077/23.425	Wave	No	KMT	3.747 m
LCG	11.473f	VCG	2.888 m	TPcm	1.09

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Deadweight	3.36	11.708f	0.000	2.032
Displacement	118.32	11.473f	0.000	2.888





Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		.24	9.97%
DIESEL OIL		2.12	10.20%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
CREW AND STORE	1.00	2.715f	0.000	4.700
LIGHT SHIP	114.96	11.466f	0.000	2.913
Total Fixed	115.96	11.391f	0.000	2.928

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
AFTPEAK.C	9.97%	0.24	0.268a	0.000	2.666	0.950
Subtotals:	9.97%	0.24	0.268a	0.000	2.666	

DIESEL OIL (SpGr 0.870)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
DB_TANK.C	40.98%	2.12	17.302f	0.000	0.702	0.950
Subtotals:	10.20%	2.12	17.302f	0.000	0.702	

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
Totals:		2.36	15.518f	0.000	0.902	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	5.119

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.19f	2.045	0.000	0.000	5.119 (1)	Equil
5.00s	0.20f	2.030	0.072	0.003	5.130 (1)	
10.00s	0.23f	1.985	0.141	0.012	5.113 (1)	
15.00s	0.28f	1.909	0.203	0.028	5.069 (1)	
20.00s	0.36f	1.801	0.258	0.048	4.999 (1)	
25.00s	0.43f	1.666	0.302	0.072	4.904 (1)	
30.00s	0.47f	1.521	0.318	0.099	4.774 (1)	
35.00s	0.47f	1.373	0.305	0.127	4.606 (1)	
40.00s	0.46f	1.221	0.267	0.152	4.400 (1)	
45.00s	0.42f	1.066	0.212	0.173	4.156 (1)	
50.00s	0.38f	0.907	0.145	0.189	3.878 (1)	
55.00s	0.32f	0.747	0.069	0.198	3.568 (1)	
59.16s	0.26f	0.612	0.000	0.201	3.285 (1)	RaZero
60.00s	0.25f	0.585	-0.014	0.201	3.226 (1)	
65.00s	0.17f	0.423	-0.099	0.196	2.858 (1)	
70.00s	0.08f	0.264	-0.186	0.183	2.464 (1)	
75.00s	0.02a	0.108	-0.271	0.163	2.049 (1)	
80.00s	0.16a	-0.042	-0.356	0.136	1.618 (1)	
85.00s	0.28a	-0.199	-0.446	0.101	1.180 (1)	
90.00s	0.41a	-0.360	-0.537	0.058	0.738 (1)	
95.00s	0.53a	-0.522	-0.626	0.007	0.295 (1)	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	5.119

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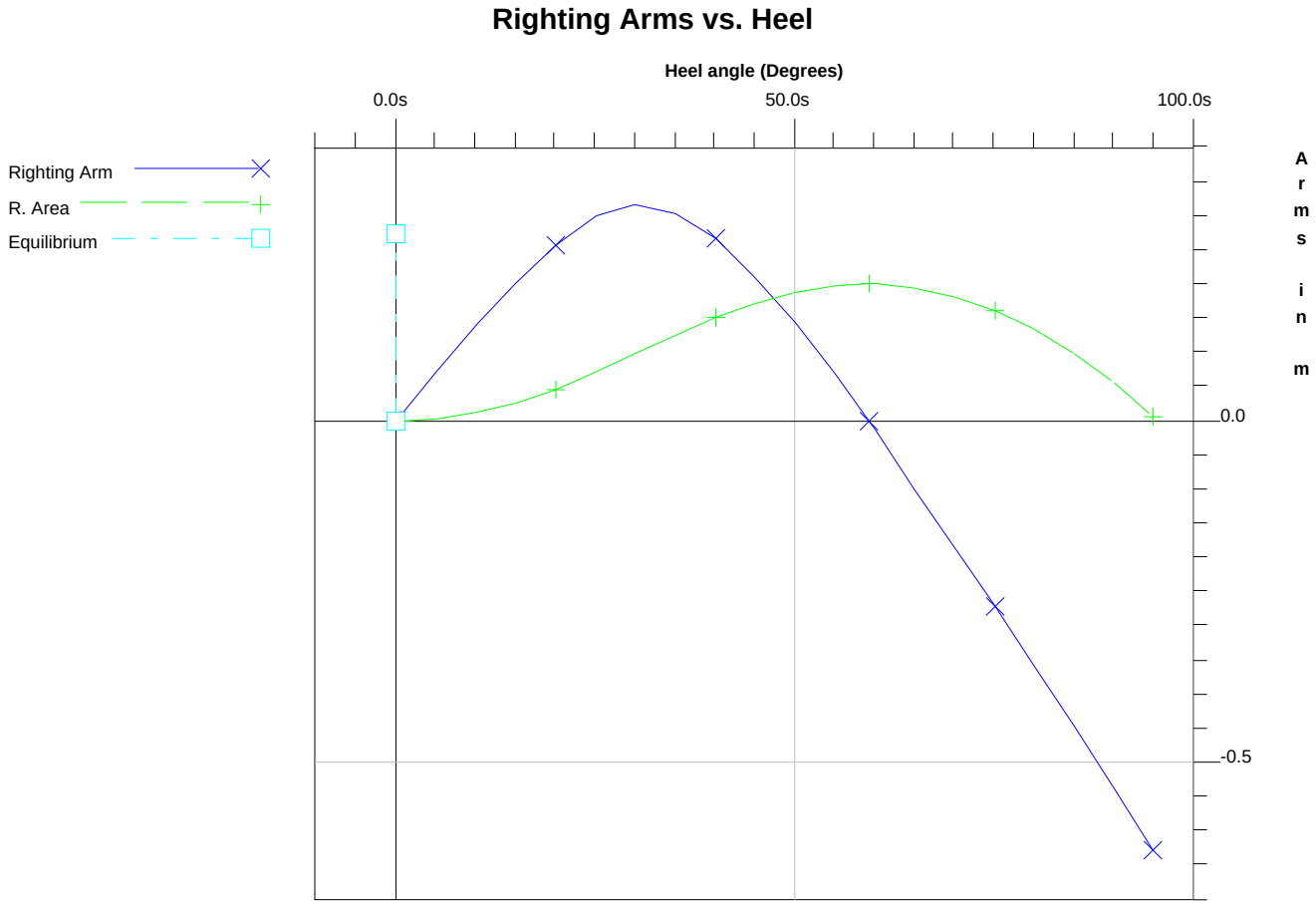
Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.099	0.044	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.152	0.062	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.053	0.023	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.318	0.118	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	30.00	5.00	Yes
(6) GM Upright	>0.150 m	0.833	0.683	Yes



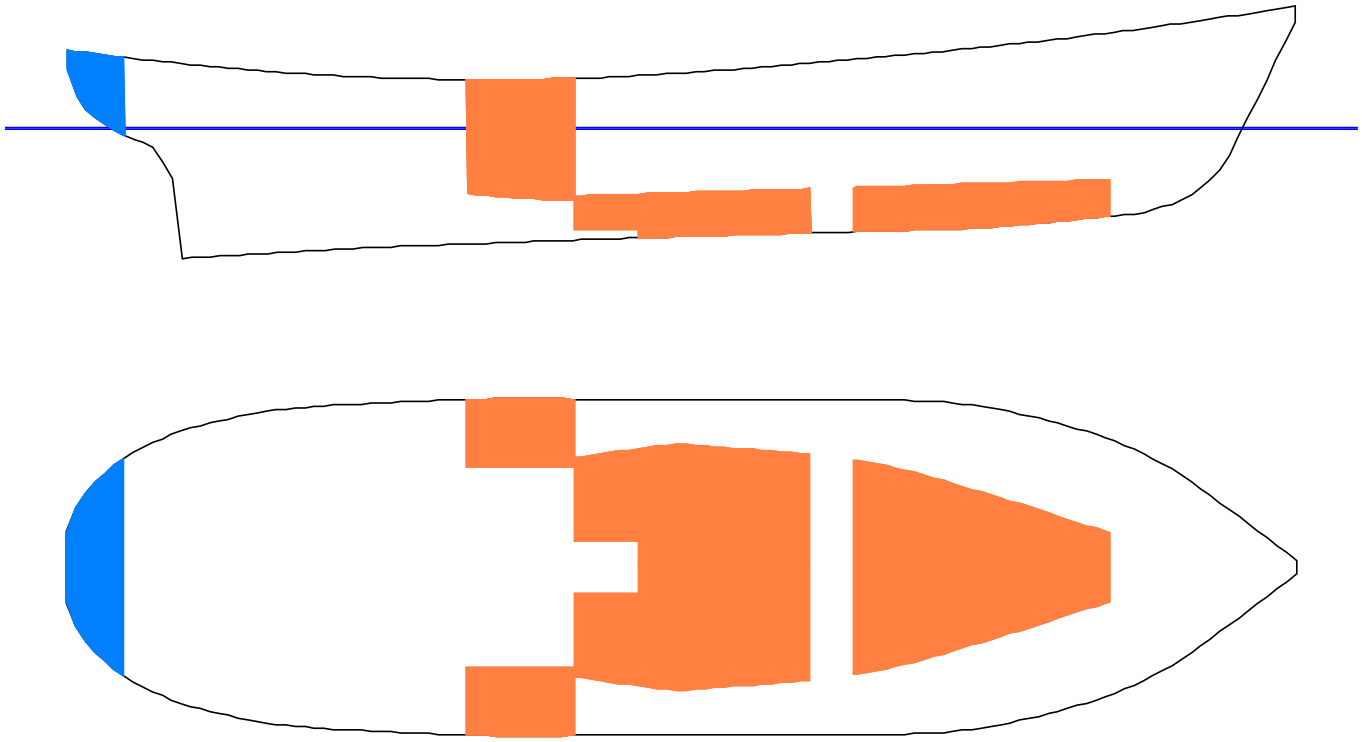
3.10 LC8 - 100% bunker and store + 48 passengers (Diesel in DB)

Floating Status

Draft FP	2.230m	Heel	zero	GM(Solid)	0.928m
Draft MS	2.296m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.363m	Wind	0.0 kn	GM(Fluid)	0.928m
Trim	aft 0.133/23.425	Wave	No	KMT	3.684 m
LCG	11.242f	VCG	2.756 m	TPcm	1.16

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Deadweight	27.80	10.317f	0.000	2.105
Displacement	142.75	11.242f	0.000	2.756



Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		2.40	100.00%
DIESEL OIL		20.79	100.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	114.96	11.466f	0.000	2.913
CREW AND STORE	1.00	2.715f	0.000	4.700
PASSENGERS	3.60	10.415f	0.000	4.400
Total Fixed	119.56	11.361f	0.000	2.973

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
AFTPEAK.C	100.00%	2.40	0.447a	0.000	3.311	0.950
Subtotals:	100.00%	2.40	0.447a	0.000	3.311	

DIESEL OIL (SpGr 0.870)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
DEEP_TANK.S	100.00%	4.29	8.347f	2.473s	2.304	0.950
DEEP_TANK.P	100.00%	4.29	8.347f	2.473p	2.304	0.950
DB_TANK.S	100.00%	3.52	12.142f	0.825s	0.791	0.950
DB_TANK.P	100.00%	3.52	12.142f	0.825p	0.791	0.950
DB_TANK.C	100.00%	5.17	17.504f	0.000	0.904	0.950
Subtotals:	100.00%	20.79	11.910f	0.000	1.443	

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
Totals:		23.20	10.629f	0.000	1.637	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.900

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.33a	2.363	0.000	0.000	4.900 (1)	Equil
5.00s	0.31a	2.348	0.081	0.004	4.911 (1)	
10.00s	0.28a	2.303	0.161	0.014	4.893 (1)	
15.00s	0.22a	2.227	0.239	0.032	4.848 (1)	
20.00s	0.16a	2.122	0.308	0.056	4.776 (1)	
25.00s	0.13a	2.010	0.347	0.084	4.668 (1)	
28.67s	0.15a	1.925	0.355	0.107	4.564 (1)	MaxRa
30.00s	0.15a	1.894	0.354	0.115	4.521 (1)	
35.00s	0.20a	1.774	0.334	0.145	4.335 (1)	
40.00s	0.26a	1.647	0.293	0.173	4.112 (1)	
45.00s	0.34a	1.514	0.238	0.196	3.854 (1)	
50.00s	0.41a	1.374	0.172	0.214	3.563 (1)	
55.00s	0.49a	1.228	0.099	0.226	3.243 (1)	
60.00s	0.58a	1.076	0.021	0.231	2.894 (1)	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.900

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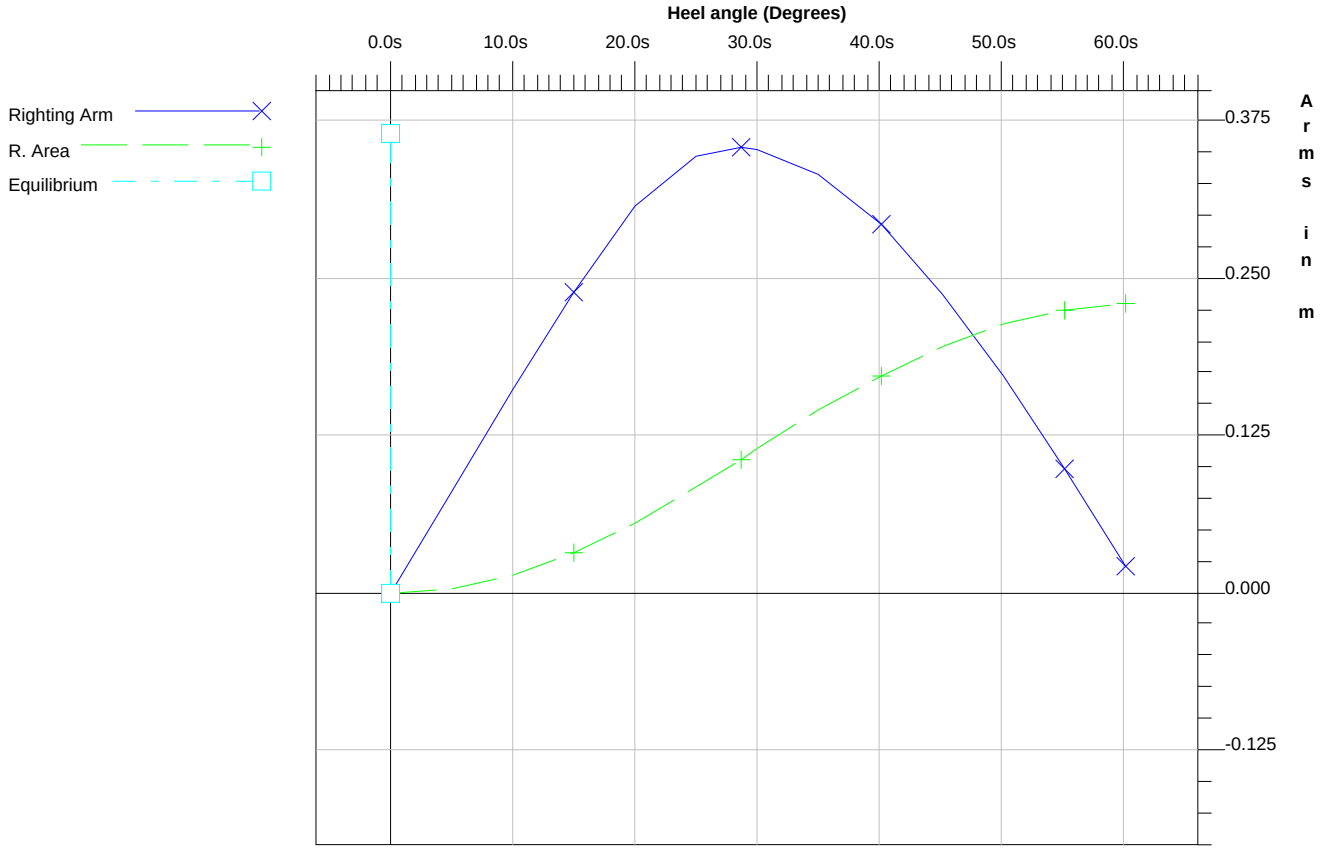
Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.115	0.060	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.173	0.083	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.058	0.028	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.354	0.154	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	28.67	3.67	Yes
(6) GM Upright	>0.150 m	0.928	0.778	Yes

Righting Arms vs. Heel



Limit 7 - Angle of heel due to passenger crowding

The angle of heel due to passenger crowding is:
4.51s degrees.
The angle of heel should not exceed 12 degrees - PASSED!
Applied passenger moment: 10.42500 tonm

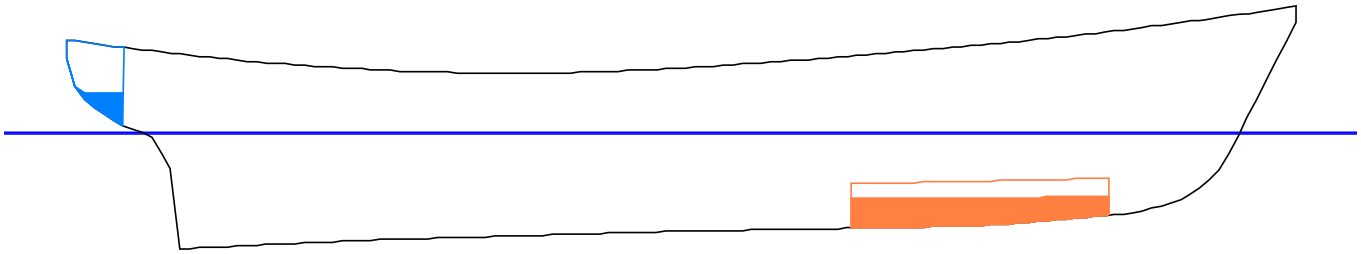
3.11 LC9 - 10% bunker and store + 48 passengers (Diesel in DB)

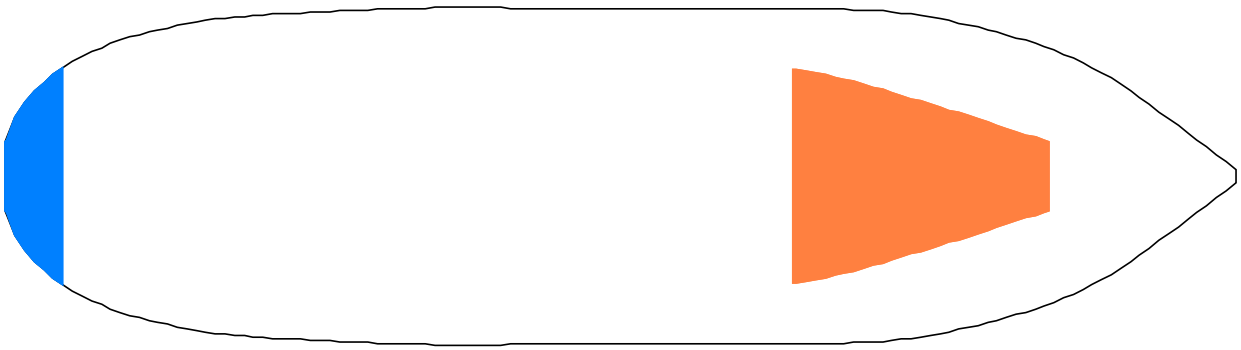
Floating Status

Draft FP	2.140m	Heel	0.02 deg.	GM(Solid)	0.803m
Draft MS	2.116m	Equil	Yes	F/S Corr	0.026m
Draft AP	2.091m	Wind	0.0 kn	GM(Fluid)	0.777m
Trim	fwd 0.049/23.425	Wave	No	KMT	3.736 m
LCG	11.441f	VCG	2.933 m	TPcm	1.10

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Deadweight	6.96	11.037f	0.000	3.257
Displacement	121.92	11.441f	0.000	2.933





Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		.24	9.96%
DIESEL OIL		2.12	10.20%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	114.96	11.466f	0.000	2.913
CREW AND STORE	1.00	2.715f	0.000	4.700
PASSENGERS	3.60	10.415f	0.000	4.400
Total Fixed	119.56	11.361f	0.000	2.973

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
AFTPEAK.C	9.96%	0.24	0.268a	0.000	2.665	0.950
Subtotals:	9.96%	0.24	0.268a	0.000	2.665	

DIESEL OIL (SpGr 0.870)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
DB_TANK.C	40.98%	2.12	17.292f	0.000	0.702	0.950
Subtotals:	10.20%	2.12	17.292f	0.000	0.702	

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
Totals:		2.36	15.511f	0.000	0.902	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	5.086

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.02p	0.12f	2.091	0.000	0.000	5.086 (1)	Equil
5.02p	0.13f	2.077	0.068	0.003	5.044 (1)	
10.02p	0.16f	2.032	0.132	0.012	4.975 (1)	
15.02p	0.22f	1.955	0.191	0.026	4.880 (1)	
20.02p	0.29f	1.847	0.243	0.045	4.760 (1)	
25.02p	0.36f	1.714	0.282	0.068	4.615 (1)	
28.77p	0.39f	1.608	0.293	0.087	4.485 (1)	MaxRa
30.02p	0.39f	1.573	0.292	0.093	4.436 (1)	
35.02p	0.39f	1.428	0.272	0.118	4.221 (1)	
40.02p	0.37f	1.279	0.229	0.140	3.971 (1)	
45.02p	0.33f	1.127	0.169	0.157	3.687 (1)	
50.02p	0.28f	0.971	0.098	0.169	3.372 (1)	
55.02p	0.22f	0.812	0.018	0.174	3.028 (1)	
56.07p	0.21f	0.779	0.000	0.174	2.952 (1)	RaZero
60.02p	0.15f	0.652	-0.067	0.172	2.658 (1)	
65.02p	0.07f	0.491	-0.155	0.163	2.264 (1)	
70.02p	0.01a	0.331	-0.243	0.145	1.850 (1)	
75.02p	0.11a	0.174	-0.330	0.120	1.419 (1)	
80.02p	0.24a	0.024	-0.415	0.088	0.976 (1)	
85.02p	0.38a	-0.128	-0.501	0.048	0.529 (1)	
90.02p	0.51a	-0.286	-0.589	0.000	0.083 (1)	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	5.086

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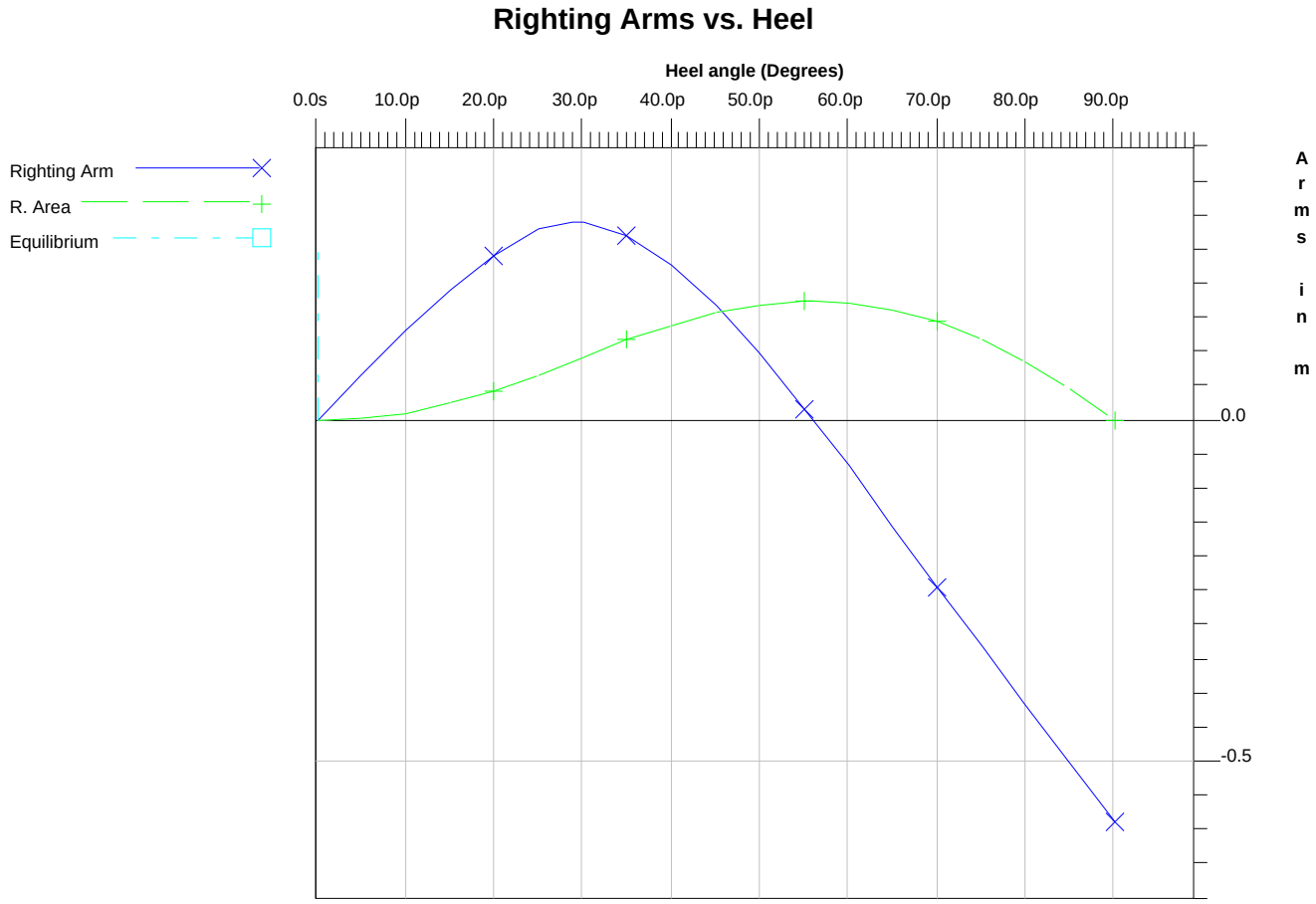
Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.093	0.038	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.140	0.050	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.047	0.017	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.292	0.092	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	28.75	3.75	Yes
(6) GM Upright	>0.150 m	0.777	0.627	Yes



Limit 7 - Angle of heel due to passenger crowding

The angle of heel due to passenger crowding is:
6.36s degrees.
The angle of heel should not exceed 12 degrees - PASSED!
Applied passenger moment: 10.42500 tonm

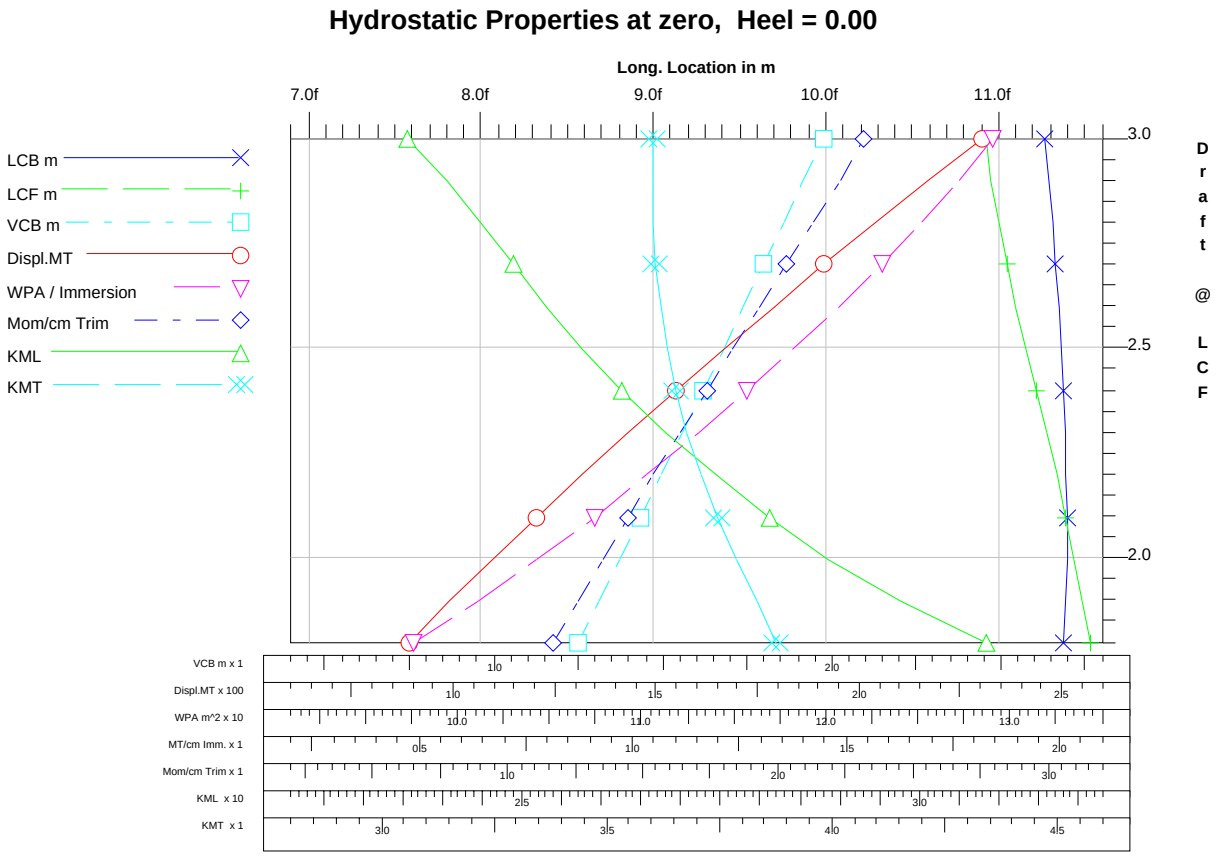
4 Hydrostatic Data

4.1 HYDROSTATICAL DATA, EVEN KEEL

Draft is from Baseline.
No Trim, No heel, VCG = 0.000

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.800	88.675	11.367f	1.248	11.522f	1.00	1.17	30.821	3.874
1.900	98.858	11.381f	1.310	11.481f	1.04	1.26	29.760	3.831
2.000	109.385	11.388f	1.371	11.435f	1.07	1.35	28.848	3.787
2.100	120.235	11.390f	1.433	11.381f	1.10	1.44	28.104	3.745
2.200	131.390	11.387f	1.494	11.327f	1.13	1.54	27.421	3.708
2.300	142.836	11.380f	1.554	11.271f	1.16	1.63	26.804	3.677
2.400	154.556	11.369f	1.615	11.214f	1.19	1.73	26.251	3.651
2.500	166.541	11.356f	1.675	11.156f	1.21	1.83	25.756	3.631
2.600	178.782	11.340f	1.735	11.097f	1.24	1.93	25.303	3.617
2.700	191.270	11.323f	1.794	11.041f	1.26	2.03	24.880	3.608
2.800	203.990	11.303f	1.854	10.990f	1.28	2.13	24.471	3.602
2.900	216.926	11.283f	1.914	10.947f	1.30	2.23	24.035	3.599
3.000	230.059	11.263f	1.973	10.918f	1.32	2.31	23.560	3.599

Water Specific Gravity = 1.025 kg/L.
Trim is per 23.425m



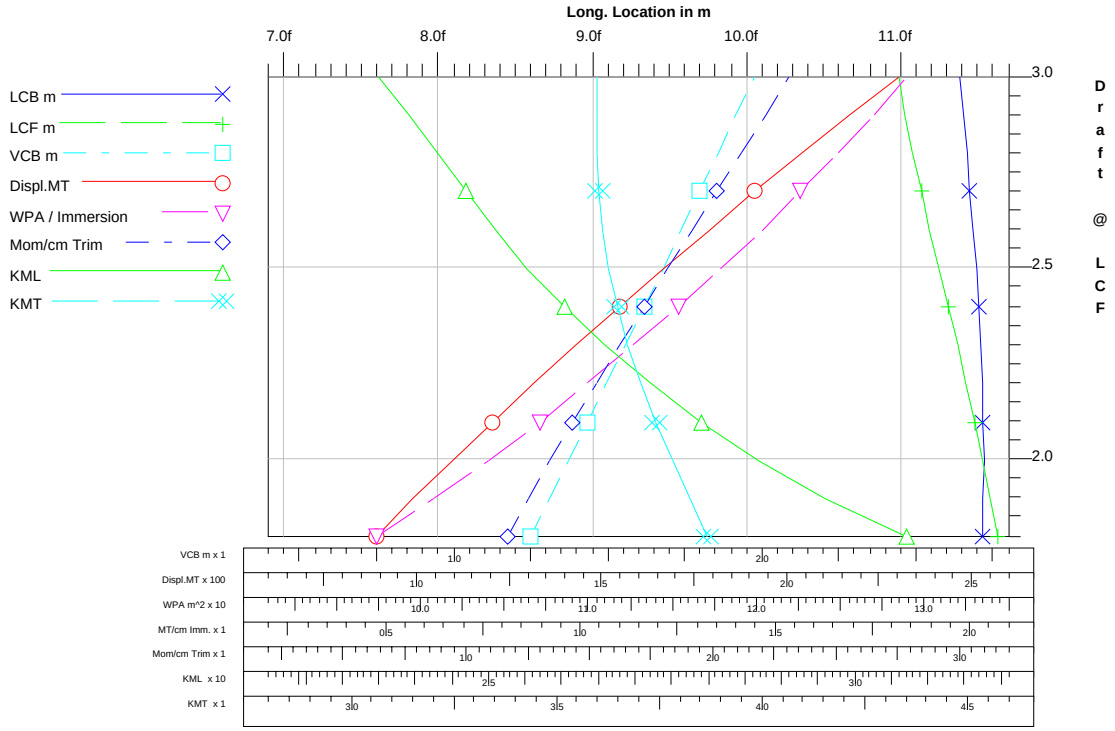
4.2 HYDROSTATICAL DATA, 0.125m / Lpp TRIM FORE

Draft is from Baseline.
Trim: fwd 0.125/23.425, No heel, VCG = 0.000

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.800	88.649	11.524f	1.248	11.621f	1.00	1.16	30.687	3.864
1.900	98.831	11.532f	1.310	11.579f	1.03	1.25	29.579	3.822
2.000	109.358	11.534f	1.372	11.530f	1.07	1.34	28.662	3.779
2.100	120.207	11.531f	1.433	11.477f	1.10	1.43	27.883	3.738
2.200	131.362	11.524f	1.494	11.421f	1.13	1.52	27.189	3.702
2.300	142.807	11.514f	1.554	11.364f	1.15	1.62	26.564	3.671
2.400	154.528	11.500f	1.615	11.305f	1.18	1.72	26.017	3.645
2.500	166.512	11.484f	1.675	11.246f	1.21	1.81	25.521	3.626
2.600	178.754	11.466f	1.735	11.184f	1.23	1.91	25.084	3.612
2.700	191.241	11.445f	1.795	11.126f	1.26	2.02	24.684	3.603
2.800	203.962	11.424f	1.854	11.071f	1.28	2.12	24.291	3.598
2.900	216.900	11.401f	1.914	11.022f	1.30	2.21	23.895	3.595
3.000	230.047	11.378f	1.973	10.983f	1.32	2.31	23.484	3.597

Water Specific Gravity = 1.025 kg/L.
Trim is per 23.425m

Hydrostatic Properties at fwd 0.125/23.425, Heel = 0.00



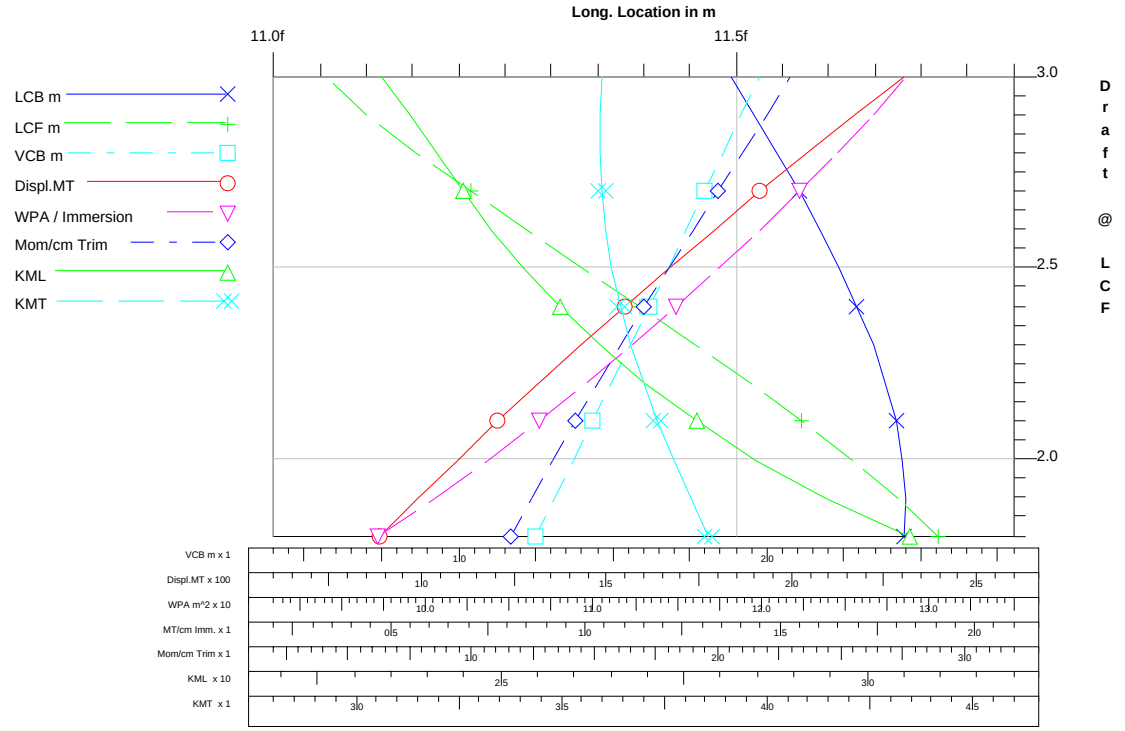
4.3 HYDROSTATICAL DATA, 0.250m / Lpp TRIM FORE

Draft is from Baseline.
Trim: fwd 0.250/23.425, No heel, VCG = 0.000

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.800	88.572	11.681f	1.249	11.717f	1.00	1.16	30.562	3.854
1.900	98.753	11.682f	1.311	11.674f	1.03	1.24	29.423	3.814
2.000	109.278	11.679f	1.372	11.625f	1.06	1.33	28.468	3.772
2.100	120.127	11.672f	1.434	11.570f	1.09	1.42	27.669	3.732
2.200	131.278	11.661f	1.494	11.515f	1.12	1.51	26.949	3.697
2.300	142.724	11.647f	1.555	11.455f	1.15	1.60	26.335	3.666
2.400	154.443	11.630f	1.615	11.395f	1.18	1.70	25.788	3.640
2.500	166.428	11.611f	1.676	11.334f	1.20	1.80	25.296	3.621
2.600	178.668	11.590f	1.735	11.273f	1.23	1.90	24.861	3.607
2.700	191.154	11.567f	1.795	11.213f	1.25	2.00	24.466	3.598
2.800	203.879	11.543f	1.855	11.153f	1.28	2.10	24.106	3.593
2.900	216.819	11.518f	1.914	11.100f	1.30	2.20	23.740	3.592
3.000	229.961	11.493f	1.973	11.055f	1.32	2.29	23.363	3.594

Water Specific Gravity = 1.025 kg/L.
Trim is per 23.425m

Hydrostatic Properties at fwd 0.250/23.425, Heel = 0.00



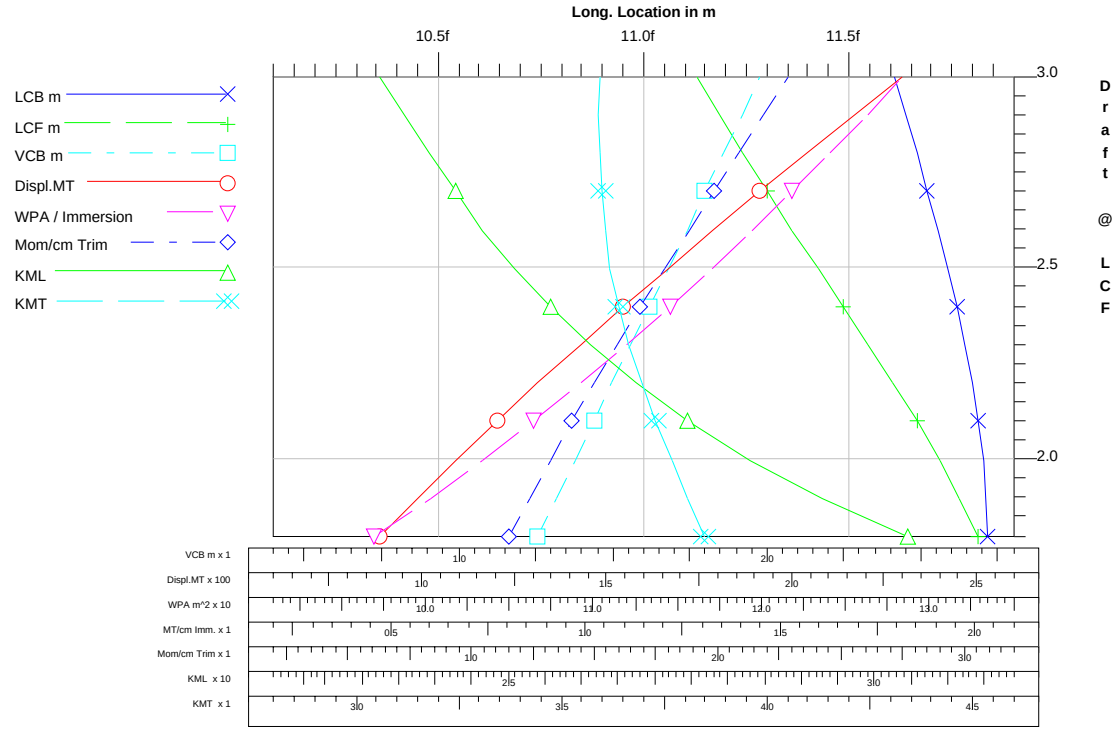
4.4 HYDROSTATICAL DATA, 0.375m / Lpp TRIM FORE

Draft is from Baseline.
Trim: fwd 0.375/23.425, No heel, VCG = 0.000

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.800	88.448	11.837f	1.250	11.811f	0.99	1.15	30.445	3.845
1.900	98.627	11.832f	1.312	11.767f	1.03	1.23	29.272	3.806
2.000	109.147	11.823f	1.373	11.718f	1.06	1.32	28.281	3.765
2.100	119.991	11.811f	1.435	11.665f	1.09	1.41	27.426	3.726
2.200	131.144	11.797f	1.496	11.605f	1.12	1.50	26.727	3.691
2.300	142.588	11.779f	1.556	11.544f	1.15	1.59	26.111	3.661
2.400	154.306	11.759f	1.616	11.483f	1.17	1.68	25.565	3.636
2.500	166.288	11.737f	1.677	11.422f	1.20	1.78	25.067	3.617
2.600	178.527	11.713f	1.736	11.360f	1.22	1.88	24.645	3.603
2.700	191.012	11.688f	1.796	11.299f	1.25	1.98	24.259	3.595
2.800	203.736	11.662f	1.856	11.237f	1.27	2.08	23.904	3.590
2.900	216.681	11.634f	1.915	11.181f	1.29	2.18	23.565	3.589
3.000	229.831	11.607f	1.974	11.130f	1.31	2.28	23.227	3.592

Water Specific Gravity = 1.025 kg/L.
Trim is per 23.425m

Hydrostatic Properties at fwd 0.375/23.425, Heel = 0.00



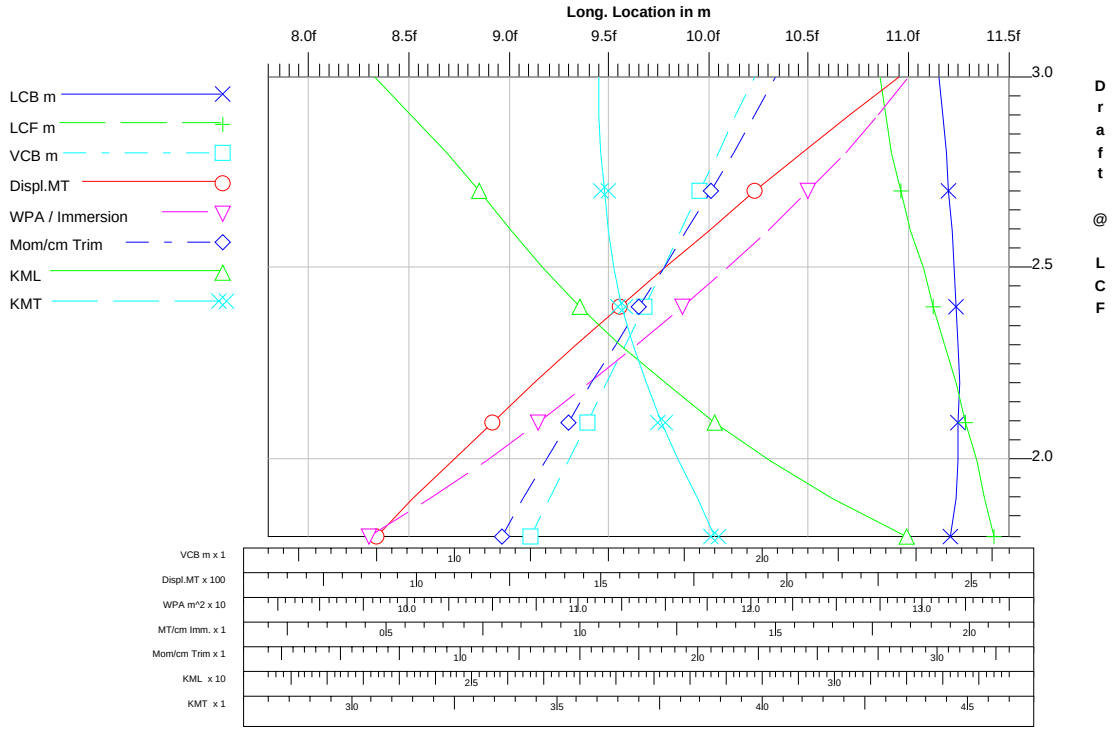
4.5 HYDROSTATICAL DATA, 0.125m / Lpp TRIM AFT

Draft is from Baseline.
Trim: aft 0.125/23.425, No heel, VCG = 0.000

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.800	88.648	11.209f	1.248	11.420f	1.00	1.17	30.972	3.884
1.900	98.829	11.228f	1.310	11.378f	1.04	1.26	29.962	3.840
2.000	109.356	11.241f	1.372	11.333f	1.07	1.36	29.097	3.795
2.100	120.207	11.247f	1.433	11.284f	1.10	1.45	28.329	3.752
2.200	131.362	11.248f	1.494	11.233f	1.13	1.55	27.652	3.715
2.300	142.807	11.244f	1.554	11.179f	1.16	1.65	27.037	3.683
2.400	154.527	11.237f	1.615	11.123f	1.19	1.75	26.479	3.657
2.500	166.513	11.227f	1.675	11.067f	1.22	1.85	25.980	3.638
2.600	178.753	11.214f	1.735	11.009f	1.24	1.95	25.529	3.623
2.700	191.240	11.199f	1.795	10.956f	1.26	2.05	25.079	3.613
2.800	203.962	11.182f	1.854	10.911f	1.29	2.14	24.630	3.607
2.900	216.915	11.165f	1.914	10.878f	1.31	2.23	24.134	3.603
3.000	230.045	11.148f	1.973	10.852f	1.32	2.32	23.641	3.602

Water Specific Gravity = 1.025 kg/L.
Trim is per 23.42m

Hydrostatic Properties at aft 0.125/23.425, Heel = 0.00



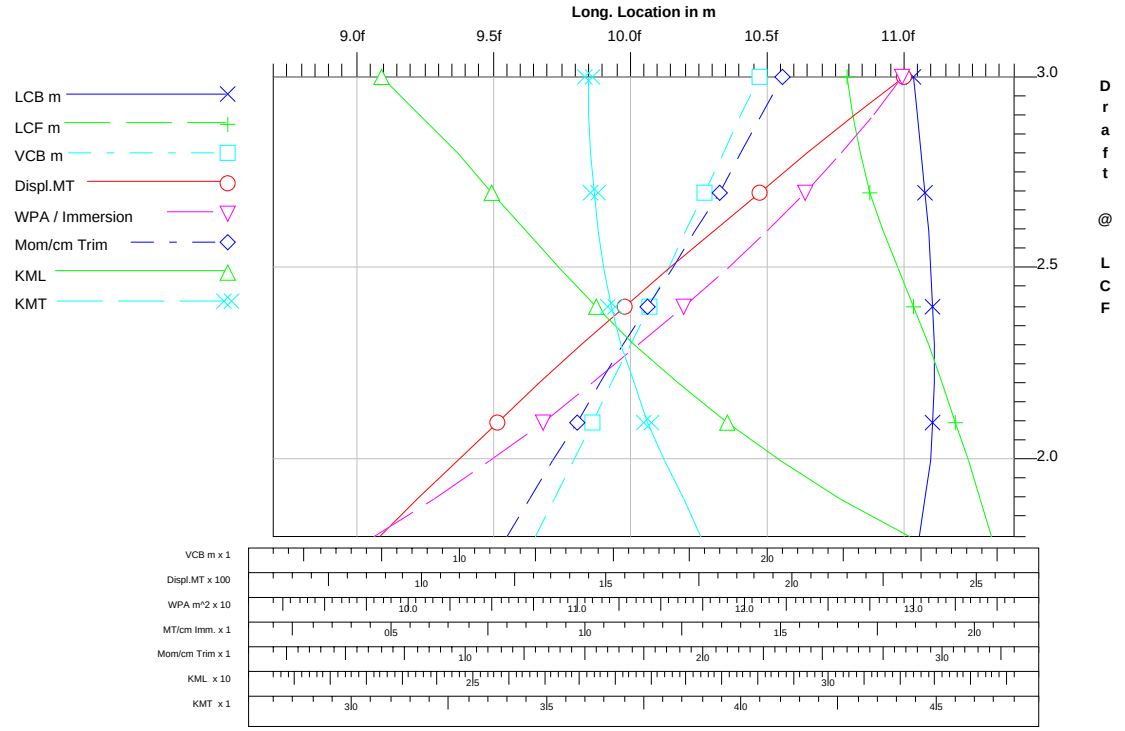
4.6 HYDROSTATICAL DATA, 0.250m / Lpp TRIM AFT

Draft is from Baseline.
Trim: aft 0.250/23.425, No heel, VCG = 0.000

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.800	88.565	11.049f	1.249	11.318f	1.00	1.18	31.119	3.896
1.900	98.744	11.075f	1.311	11.277f	1.04	1.27	30.142	3.850
2.000	109.268	11.092f	1.372	11.232f	1.07	1.37	29.309	3.804
2.100	120.119	11.103f	1.434	11.186f	1.11	1.46	28.555	3.760
2.200	131.274	11.108f	1.494	11.136f	1.14	1.56	27.876	3.722
2.300	142.720	11.108f	1.555	11.086f	1.16	1.66	27.266	3.691
2.400	154.438	11.104f	1.615	11.030f	1.19	1.76	26.719	3.664
2.500	166.423	11.097f	1.676	10.976f	1.22	1.86	26.216	3.644
2.600	178.668	11.087f	1.736	10.923f	1.24	1.96	25.735	3.630
2.700	191.157	11.074f	1.795	10.874f	1.27	2.06	25.259	3.619
2.800	203.884	11.061f	1.855	10.835f	1.29	2.16	24.770	3.612
2.900	216.832	11.046f	1.914	10.810f	1.31	2.24	24.235	3.607
3.000	229.969	11.032f	1.974	10.789f	1.33	2.33	23.710	3.605

Water Specific Gravity = 1.025 kg/L.
Trim is per 23.42m

Hydrostatic Properties at aft 0.250/23.425, Heel = 0.00



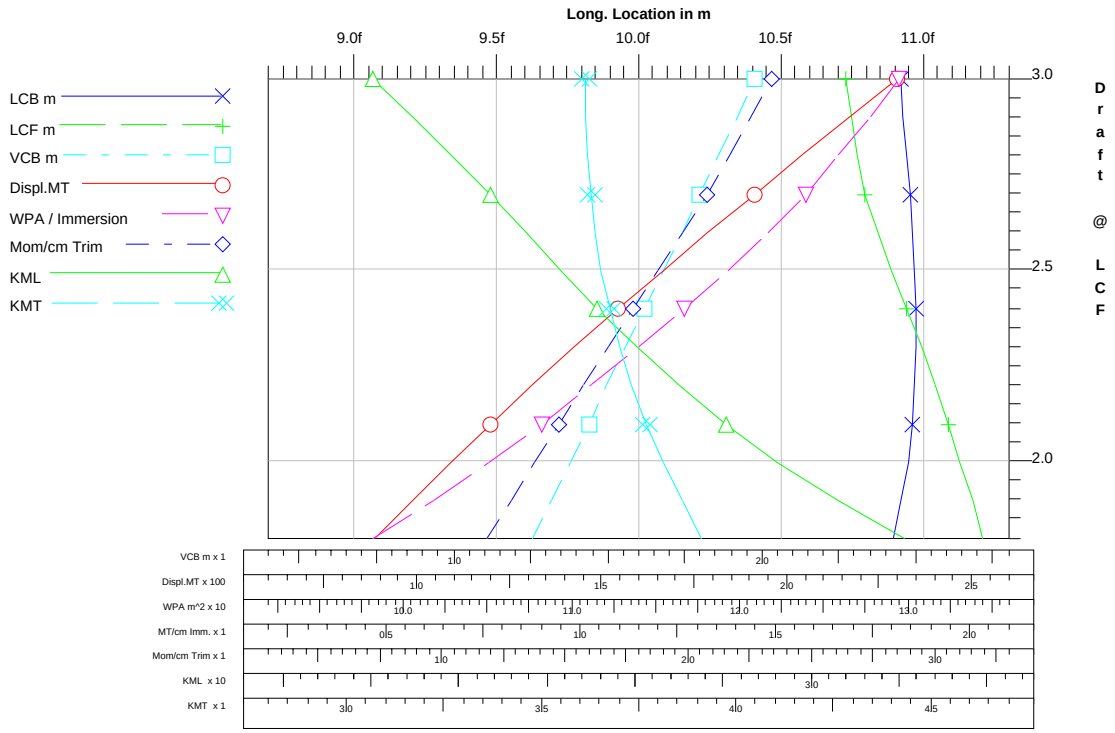
4.7 HYDROSTATICAL DATA, 0.375m / Lpp TRIM AFT

Draft is from Baseline.
Trim: aft 0.375/23.425, No heel, VCG = 0.000

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.800	88.418	10.889f	1.250	11.208f	1.01	1.18	31.326	3.907
1.900	98.596	10.920f	1.312	11.170f	1.04	1.28	30.360	3.861
2.000	109.120	10.942f	1.373	11.129f	1.08	1.38	29.517	3.813
2.100	119.970	10.957f	1.435	11.086f	1.11	1.47	28.783	3.769
2.200	131.125	10.966f	1.496	11.039f	1.14	1.57	28.109	3.730
2.300	142.570	10.970f	1.556	10.990f	1.17	1.67	27.506	3.698
2.400	154.290	10.970f	1.616	10.938f	1.20	1.78	26.951	3.672
2.500	166.273	10.965f	1.677	10.884f	1.22	1.88	26.442	3.652
2.600	178.524	10.958f	1.737	10.837f	1.25	1.98	25.941	3.637
2.700	191.022	10.949f	1.796	10.794f	1.27	2.07	25.422	3.625
2.800	203.763	10.938f	1.856	10.765f	1.29	2.16	24.862	3.617
2.900	216.715	10.927f	1.915	10.744f	1.31	2.25	24.317	3.612
3.000	229.860	10.916f	1.975	10.728f	1.33	2.33	23.770	3.609

Water Specific Gravity = 1.025 kg/L.
Trim is per 23.42m

Hydrostatic Properties at aft 0.375/23.425, Heel = 0.00



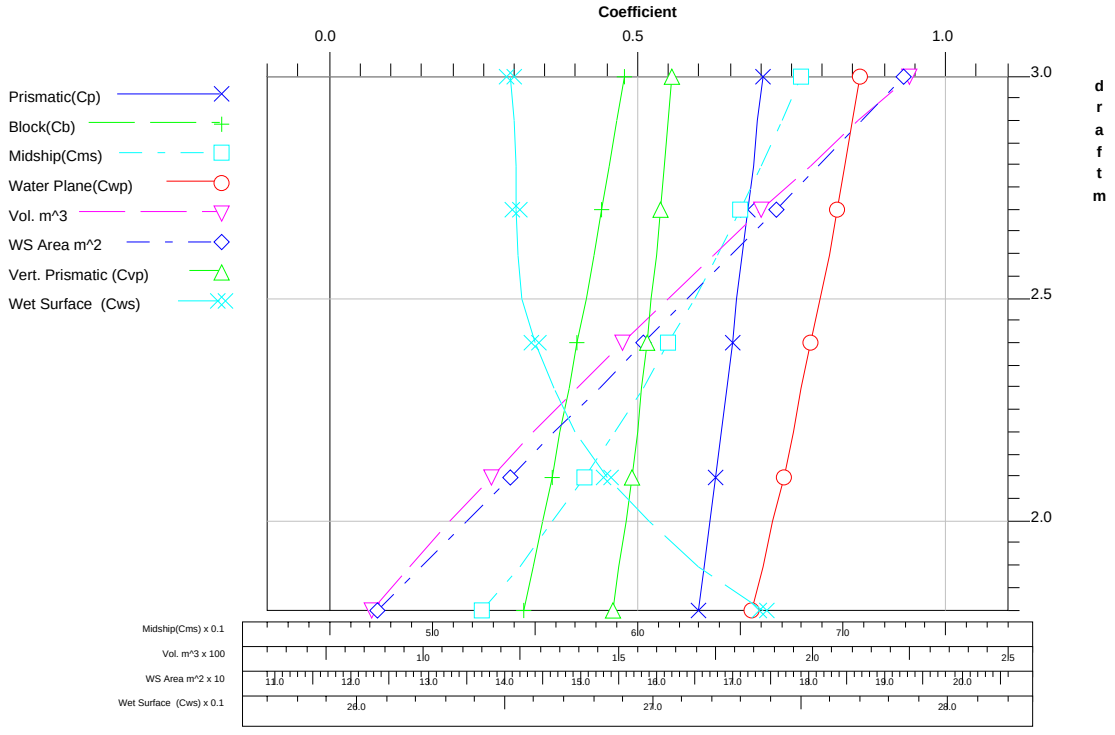
4.8 HULL FORM COEFFICIENTS

Draft is from Baseline
Trim: zero
Heel: zero

Draft	Volume	Coefficients						WS Area
m	m³	Cp	Cb	Cms	Cwp	Cvp	Cws	m²
1.800	86.51	0.598	0.313	0.523	0.684	0.458	2.737	123.21
1.900	96.45	0.607	0.329	0.542	0.702	0.468	2.715	129.06
2.000	106.72	0.616	0.344	0.558	0.718	0.479	2.698	134.91
2.100	117.30	0.625	0.359	0.574	0.735	0.488	2.685	140.73
2.200	128.18	0.634	0.373	0.589	0.751	0.497	2.674	146.50
2.300	139.35	0.643	0.387	0.602	0.765	0.506	2.666	152.34
2.400	150.79	0.652	0.401	0.615	0.780	0.514	2.660	158.09
2.500	162.48	0.660	0.414	0.627	0.795	0.521	2.656	163.83
2.600	174.42	0.669	0.427	0.639	0.809	0.528	2.654	169.65
2.700	186.60	0.677	0.440	0.649	0.822	0.535	2.654	175.46
2.800	199.01	0.685	0.452	0.660	0.836	0.541	2.654	181.18
2.900	211.63	0.693	0.465	0.670	0.848	0.548	2.653	186.79
3.000	224.45	0.701	0.476	0.680	0.859	0.554	2.652	192.30

Note: Coefficients calculated based on length of 23.425 m

Curves of Form (with appendages)



5 KN - Tables

5.1 KN VALUES, EVEN KEEL

Righting Arms(heel) for VCG = 0.00
Trim zero at heel = 0 (RA Trim = 0)

Displ (MT)	0.100s	5.000s	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
88.675	0.007s	0.336s	0.661s	1.261s	1.790s	2.209s	2.485s	2.643s
98.858	0.007s	0.333s	0.657s	1.259s	1.788s	2.185s	2.442s	2.586s
109.385	0.007s	0.329s	0.652s	1.257s	1.782s	2.158s	2.400s	2.535s
120.235	0.007s	0.326s	0.647s	1.255s	1.771s	2.129s	2.361s	2.489s
131.390	0.006s	0.323s	0.643s	1.253s	1.754s	2.099s	2.323s	2.448s
142.836	0.006s	0.320s	0.639s	1.249s	1.732s	2.066s	2.285s	2.409s
154.556	0.006s	0.318s	0.635s	1.240s	1.706s	2.031s	2.248s	2.374s
166.541	0.006s	0.317s	0.632s	1.227s	1.675s	1.994s	2.210s	2.339s
178.782	0.006s	0.316s	0.630s	1.208s	1.640s	1.954s	2.172s	2.306s
191.270	0.006s	0.315s	0.628s	1.183s	1.600s	1.911s	2.132s	2.273s
203.990	0.006s	0.314s	0.625s	1.153s	1.558s	1.866s	2.091s	2.239s
216.926	0.006s	0.314s	0.616s	1.118s	1.511s	1.817s	2.048s	2.204s
230.059	0.006s	0.314s	0.601s	1.077s	1.460s	1.766s	2.002s	2.167s

Water Specific Gravity = 1.025 kg/L.

5.2 KN VALUES, 0.125m / Lpp TRIM FORE

Righting Arms(heel) for VCG = 0.00
Trim fwd 0.125/23.425 at heel = 0 (RA Trim = 0)

Displ (MT)	0.100s	5.000s	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
88.600	0.007s	0.335s	0.659s	1.259s	1.788s	2.209s	2.487s	2.646s
98.757	0.007s	0.332s	0.655s	1.257s	1.787s	2.185s	2.443s	2.588s
109.254	0.007s	0.329s	0.651s	1.255s	1.781s	2.159s	2.402s	2.537s
120.069	0.007s	0.326s	0.646s	1.253s	1.771s	2.131s	2.363s	2.492s
131.187	0.006s	0.323s	0.642s	1.251s	1.755s	2.100s	2.325s	2.450s
142.592	0.006s	0.320s	0.638s	1.248s	1.733s	2.068s	2.288s	2.412s
154.271	0.006s	0.318s	0.634s	1.240s	1.707s	2.033s	2.251s	2.377s
166.212	0.006s	0.316s	0.631s	1.227s	1.677s	1.997s	2.214s	2.343s
178.407	0.006s	0.315s	0.629s	1.209s	1.643s	1.957s	2.176s	2.310s
190.848	0.006s	0.314s	0.628s	1.186s	1.604s	1.915s	2.137s	2.277s
203.524	0.006s	0.314s	0.625s	1.157s	1.562s	1.871s	2.097s	2.244s
216.420	0.006s	0.314s	0.618s	1.122s	1.516s	1.824s	2.054s	2.210s
229.523	0.006s	0.314s	0.604s	1.083s	1.466s	1.773s	2.009s	2.175s

5.3 KN VALUES, 0.250m / Lpp TRIM FORE

Righting Arms(heel) for VCG = 0.00
Trim fwd 0.250/23.425 at heel = 0 (RA Trim = 0)

Displ (MT)	0.100s	5.000s	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
88.577	0.007s	0.334s	0.658s	1.257s	1.786s	2.209s	2.488s	2.648s
98.710	0.007s	0.331s	0.654s	1.255s	1.786s	2.185s	2.444s	2.590s
109.178	0.007s	0.328s	0.650s	1.253s	1.781s	2.159s	2.403s	2.539s
119.960	0.007s	0.325s	0.645s	1.251s	1.770s	2.131s	2.364s	2.494s
131.041	0.006s	0.322s	0.641s	1.250s	1.755s	2.101s	2.327s	2.453s
142.407	0.006s	0.320s	0.637s	1.246s	1.734s	2.069s	2.290s	2.415s
154.043	0.006s	0.318s	0.633s	1.239s	1.709s	2.035s	2.253s	2.379s
165.941	0.006s	0.316s	0.631s	1.227s	1.679s	1.999s	2.217s	2.346s
178.091	0.006s	0.315s	0.629s	1.210s	1.645s	1.960s	2.179s	2.314s
190.486	0.006s	0.314s	0.627s	1.188s	1.607s	1.919s	2.141s	2.281s
203.116	0.006s	0.314s	0.625s	1.160s	1.566s	1.875s	2.101s	2.249s
215.971	0.006s	0.313s	0.619s	1.126s	1.521s	1.829s	2.060s	2.216s
229.037	0.006s	0.313s	0.606s	1.088s	1.472s	1.780s	2.016s	2.181s

Water Specific Gravity = 1.025 kg/L.

5.4 KN VALUES, 0.375m / Lpp TRIM FORE

Righting Arms(heel) for VCG = 0.00
Trim fwd 0.375/23.425 at heel = 0 (RA Trim = 0)

Displ (MT)	0.100s	5.000s	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
88.605	0.007s	0.334s	0.657s	1.255s	1.785s	2.209s	2.489s	2.650s
98.715	0.007s	0.331s	0.653s	1.253s	1.785s	2.185s	2.445s	2.592s
109.155	0.007s	0.328s	0.649s	1.252s	1.780s	2.159s	2.404s	2.541s
119.905	0.007s	0.325s	0.644s	1.250s	1.770s	2.132s	2.366s	2.496s
130.950	0.006s	0.322s	0.640s	1.248s	1.754s	2.102s	2.328s	2.455s
142.277	0.006s	0.319s	0.636s	1.245s	1.734s	2.071s	2.291s	2.417s
153.874	0.006s	0.317s	0.633s	1.239s	1.709s	2.037s	2.255s	2.382s
165.729	0.006s	0.316s	0.630s	1.228s	1.680s	2.001s	2.219s	2.349s
177.835	0.006s	0.314s	0.628s	1.211s	1.647s	1.963s	2.182s	2.317s
190.183	0.006s	0.314s	0.626s	1.189s	1.610s	1.922s	2.144s	2.285s
202.767	0.006s	0.313s	0.625s	1.162s	1.569s	1.879s	2.105s	2.253s
215.578	0.006s	0.313s	0.619s	1.129s	1.525s	1.833s	2.065s	2.221s
228.604	0.006s	0.313s	0.608s	1.092s	1.477s	1.785s	2.021s	2.187s

Water Specific Gravity = 1.025 kg/L.

5.5 KN VALUES, 0.125m / Lpp TRIM AFT

Righting Arms(heel) for VCG = 0.00
Trim aft 0.125/23.425 at heel = 0 (RA Trim = 0)

Displ (MT)	0.100s	5.000s	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
88.804	0.007s	0.337s	0.662s	1.263s	1.792s	2.209s	2.484s	2.640s
99.015	0.007s	0.333s	0.658s	1.261s	1.790s	2.184s	2.440s	2.583s
109.573	0.007s	0.330s	0.653s	1.260s	1.783s	2.157s	2.398s	2.532s
120.459	0.007s	0.327s	0.649s	1.257s	1.771s	2.128s	2.359s	2.486s
131.652	0.006s	0.324s	0.644s	1.255s	1.753s	2.097s	2.320s	2.445s
143.138	0.006s	0.321s	0.640s	1.250s	1.731s	2.063s	2.282s	2.406s
154.901	0.006s	0.319s	0.636s	1.240s	1.704s	2.028s	2.244s	2.370s
166.932	0.006s	0.317s	0.633s	1.226s	1.672s	1.990s	2.206s	2.335s
179.219	0.006s	0.316s	0.631s	1.206s	1.636s	1.949s	2.167s	2.301s
191.751	0.006s	0.315s	0.629s	1.180s	1.596s	1.906s	2.127s	2.267s
204.512	0.006s	0.315s	0.625s	1.149s	1.552s	1.859s	2.085s	2.232s
217.485	0.006s	0.314s	0.615s	1.113s	1.504s	1.810s	2.040s	2.196s
230.644	0.006s	0.313s	0.597s	1.071s	1.452s	1.757s	1.993s	2.159s

Water Specific Gravity = 1.025 kg/L.

5.6 KN VALUES, 0.250m / Lpp TRIM AFT

Righting Arms(heel) for VCG = 0.00
Trim aft 0.250/23.425 at heel = 0 (RA Trim = 0)

Displ (MT)	0.100s	5.000s	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
88.989	0.007s	0.338s	0.664s	1.265s	1.794s	2.208s	2.482s	2.636s
99.228	0.007s	0.334s	0.659s	1.264s	1.791s	2.183s	2.437s	2.579s
109.820	0.007s	0.331s	0.655s	1.262s	1.784s	2.156s	2.396s	2.529s
120.742	0.007s	0.327s	0.650s	1.260s	1.771s	2.126s	2.356s	2.483s
131.974	0.006s	0.324s	0.645s	1.257s	1.752s	2.094s	2.317s	2.441s
143.500	0.006s	0.321s	0.641s	1.251s	1.729s	2.061s	2.279s	2.403s
155.307	0.006s	0.319s	0.637s	1.240s	1.701s	2.024s	2.241s	2.366s
167.383	0.006s	0.318s	0.634s	1.224s	1.668s	1.986s	2.202s	2.331s
179.717	0.006s	0.316s	0.632s	1.203s	1.631s	1.944s	2.162s	2.296s
192.292	0.006s	0.316s	0.630s	1.176s	1.590s	1.900s	2.121s	2.261s
205.091	0.006s	0.315s	0.624s	1.144s	1.545s	1.852s	2.077s	2.225s
218.092	0.006s	0.315s	0.612s	1.106s	1.496s	1.801s	2.031s	2.188s
231.275	0.006s	0.313s	0.593s	1.063s	1.442s	1.748s	1.983s	2.149s

Water Specific Gravity = 1.025 kg/L.

5.7 KN VALUES, 0.375m / Lpp TRIM AFT

Righting Arms(heel) for VCG = 0.00
Trim aft 0.375/23.425 at heel = 0 (RA Trim = 0)

Displ (MT)	0.100s	5.000s	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
89.231	0.007s	0.338s	0.665s	1.268s	1.797s	2.208s	2.479s	2.631s
99.502	0.007s	0.335s	0.661s	1.266s	1.793s	2.182s	2.435s	2.575s
110.128	0.007s	0.331s	0.656s	1.264s	1.784s	2.154s	2.393s	2.525s
121.086	0.007s	0.328s	0.651s	1.262s	1.770s	2.124s	2.353s	2.479s
132.356	0.007s	0.325s	0.646s	1.259s	1.751s	2.092s	2.314s	2.438s
143.924	0.006s	0.322s	0.642s	1.251s	1.727s	2.057s	2.275s	2.399s
155.776	0.006s	0.320s	0.638s	1.239s	1.698s	2.020s	2.236s	2.362s
167.897	0.006s	0.318s	0.635s	1.222s	1.664s	1.981s	2.197s	2.326s
180.275	0.006s	0.317s	0.633s	1.200s	1.626s	1.938s	2.156s	2.290s
192.891	0.006s	0.316s	0.630s	1.172s	1.584s	1.893s	2.114s	2.254s
205.722	0.006s	0.315s	0.623s	1.138s	1.538s	1.844s	2.069s	2.217s
218.748	0.006s	0.315s	0.609s	1.099s	1.487s	1.792s	2.022s	2.179s
231.953	0.006s	0.311s	0.589s	1.054s	1.432s	1.737s	1.972s	2.139s

Water Specific Gravity = 1.025 kg/L.

6 Tank Capacities Tables

6.1 Fuel Oil Tanks

6.1.1 Tank Capacities for DEEP_TANK.S containing DIESEL OIL (0.870)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
1.50	10.00%	0.49	0.43	8.433f	2.184s	1.310	0.08
1.75	20.00%	0.99	0.86	8.400f	2.274s	1.468	0.17
1.96	30.00%	1.48	1.29	8.382f	2.333s	1.596	0.24
2.15	40.00%	1.97	1.72	8.371f	2.373s	1.710	0.28
2.34	50.00%	2.47	2.15	8.363f	2.401s	1.817	0.30
2.52	60.00%	2.96	2.58	8.358f	2.423s	1.920	0.32
2.70	70.00%	3.45	3.00	8.354f	2.439s	2.019	0.33
2.88	80.00%	3.95	3.43	8.350f	2.453s	2.115	0.34
3.06	90.00%	4.44	3.86	8.348f	2.464s	2.210	0.34
	100.00%	4.93	4.29	8.347f	2.473s	2.304	

6.1.2 Tank Capacities for DEEP_TANK.P containing DIESEL OIL (0.870)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
1.50	10.00%	0.49	0.43	8.433f	2.184p	1.310	0.08
1.75	20.00%	0.99	0.86	8.400f	2.274p	1.468	0.17
1.96	30.00%	1.48	1.29	8.382f	2.333p	1.596	0.24
2.15	40.00%	1.97	1.72	8.371f	2.373p	1.710	0.28
2.34	50.00%	2.47	2.15	8.363f	2.401p	1.817	0.30
2.52	60.00%	2.96	2.58	8.358f	2.423p	1.920	0.32
2.70	70.00%	3.45	3.00	8.354f	2.439p	2.019	0.33
2.88	80.00%	3.95	3.43	8.350f	2.453p	2.115	0.34
3.06	90.00%	4.44	3.86	8.348f	2.464p	2.210	0.34
	100.00%	4.93	4.29	8.347f	2.473p	2.304	

6.1.3 Tank Capacities for DB_TANK.S containing DIESEL OIL (0.870)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
0.51	10.00%	0.40	0.35	12.202f	0.298s	0.421	0.16
0.62	20.00%	0.81	0.70	12.140f	0.411s	0.493	0.40
0.70	30.00%	1.21	1.06	12.107f	0.493s	0.548	0.70
0.76	40.00%	1.62	1.41	12.086f	0.561s	0.593	1.03
0.82	50.00%	2.02	1.76	12.072f	0.618s	0.633	1.38
0.88	60.00%	2.43	2.11	12.062f	0.669s	0.669	1.75
0.93	70.00%	2.83	2.46	12.055f	0.714s	0.702	2.15
0.97	80.00%	3.23	2.81	12.049f	0.756s	0.733	2.57
1.02	90.00%	3.64	3.17	12.050f	0.795s	0.762	2.76
	100.00%	4.04	3.52	12.142f	0.825s	0.791	

6.1.4 Tank Capacities for DB_TANK.P containing DIESEL OIL (0.870)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
0.51	10.00%	0.40	0.35	12.202f	0.298p	0.421	0.16
0.62	20.00%	0.81	0.70	12.140f	0.411p	0.493	0.40
0.70	30.00%	1.21	1.06	12.107f	0.493p	0.548	0.70
0.76	40.00%	1.62	1.41	12.086f	0.561p	0.593	1.03
0.82	50.00%	2.02	1.76	12.072f	0.618p	0.633	1.38
0.88	60.00%	2.43	2.11	12.062f	0.669p	0.669	1.75
0.93	70.00%	2.83	2.46	12.055f	0.714p	0.702	2.15
0.97	80.00%	3.23	2.81	12.049f	0.756p	0.733	2.57
1.02	90.00%	3.64	3.17	12.050f	0.795p	0.762	2.76
	100.00%	4.04	3.52	12.142f	0.825p	0.791	

6.1.5 Tank Capacities for DB_TANK.C containing DIESEL OIL (0.870)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
0.61	10.00%	0.60	0.52	16.965f	0.000	0.516	0.40
0.72	20.00%	1.19	1.03	17.136f	0.000	0.593	1.05
0.81	30.00%	1.78	1.55	17.221f	0.000	0.650	1.87
0.88	40.00%	2.38	2.07	17.272f	0.000	0.698	2.86
0.94	50.00%	2.97	2.59	17.306f	0.000	0.740	3.98
0.99	60.00%	3.57	3.10	17.331f	0.a000	0.777	5.20
1.04	70.00%	4.16	3.62	17.350f	0.000	0.812	6.54
1.09	80.00%	4.76	4.14	17.366f	0.000	0.844	7.99
1.14	90.00%	5.36	4.66	17.380f	0.000	0.874	8.00
	100.00%	5.95	5.17	17.504f	0.000	0.904	

6.2 Fresh Water Ballast

6.2.1 Tank Capacities for DB_TANK.S containing FRESH WATER (1.000)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
0.51	10.00%	0.40	0.40	12.202f	0.298s	0.421	0.19
0.62	20.00%	0.81	0.81	12.140f	0.411s	0.493	0.46
0.70	30.00%	1.21	1.21	12.107f	0.493s	0.548	0.80
0.76	40.00%	1.62	1.62	12.086f	0.561s	0.593	1.19
0.82	50.00%	2.02	2.02	12.072f	0.618s	0.633	1.58
0.88	60.00%	2.43	2.43	12.062f	0.669s	0.669	2.01
0.93	70.00%	2.83	2.83	12.055f	0.714s	0.702	2.47
0.97	80.00%	3.23	3.23	12.049f	0.756s	0.733	2.96
1.02	90.00%	3.64	3.64	12.050f	0.795s	0.762	3.17
	100.00%	4.04	4.04	12.142f	0.825s	0.791	

6.2.2 Tank Capacities for DB_TANK.P containing FRESH WATER (1.000)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
0.51	10.00%	0.40	0.40	12.202f	0.298p	0.421	0.19
0.62	20.00%	0.81	0.81	12.140f	0.411p	0.493	0.46
0.70	30.00%	1.21	1.21	12.107f	0.493p	0.548	0.80
0.76	40.00%	1.62	1.62	12.086f	0.561p	0.593	1.19
0.82	50.00%	2.02	2.02	12.072f	0.618p	0.633	1.58
0.88	60.00%	2.43	2.43	12.062f	0.669p	0.669	2.01
0.93	70.00%	2.83	2.83	12.055f	0.714p	0.702	2.47
0.97	80.00%	3.23	3.23	12.049f	0.756p	0.733	2.96
1.02	90.00%	3.64	3.64	12.050f	0.795p	0.762	3.17
	100.00%	4.04	4.04	12.142f	0.825p	0.791	

6.2.3 Tank Capacities for DB_TANK.C containing FRESH WATER (1.000)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
0.61	10.00%	0.60	0.60	16.965f	0.000	0.516	0.46
0.72	20.00%	1.19	1.19	17.136f	0.000	0.593	1.21
0.81	30.00%	1.78	1.78	17.221f	0.000	0.650	2.15
0.88	40.00%	2.38	2.38	17.272f	0.000	0.698	3.28
0.94	50.00%	2.97	2.97	17.306f	0.000	0.740	4.57
0.99	60.00%	3.57	3.57	17.331f	0.000	0.777	5.98
1.04	70.00%	4.16	4.16	17.350f	0.000	0.812	7.52
1.09	80.00%	4.76	4.76	17.366f	0.000	0.844	9.19
1.14	90.00%	5.36	5.36	17.380f	0.000	0.874	9.20
	100.00%	5.95	5.95	17.504f	0.000	0.904	

6.3 Fresh Water

6.3.1 Tank Capacities for AFTPEAK.C containing FRESH WATER (1.000)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
2.83	10.00%	0.24	0.24	0.269a	0.000	2.666	0.21
3.01	20.00%	0.48	0.48	0.316a	0.000	2.797	0.54
3.15	30.00%	0.72	0.72	0.342a	0.000	2.893	0.88
3.26	40.00%	0.96	0.96	0.362a	0.000	2.972	1.23
3.36	50.00%	1.20	1.20	0.378a	0.000	3.041	1.58
3.45	60.00%	1.44	1.44	0.392a	0.000	3.103	1.92
3.54	70.00%	1.68	1.68	0.403a	0.000	3.160	2.25
3.62	80.00%	1.92	1.92	0.412a	0.000	3.213	2.59
3.69	90.00%	2.16	2.16	0.421a	0.000	3.262	2.91
	100.00%	2.40	2.40	0.447a	0.000	3.311	

6.4 Void Spaces

6.4.1 Tank Capacities for FOREPEAK.C containing SALT WATER (1.025)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
1.84	10.00%	1.08	1.10	21.472f	0.000	1.453	0.45
2.31	20.00%	2.14	2.20	21.552f	0.000	1.771	1.12
2.66	30.00%	3.22	3.30	21.603f	0.000	2.011	1.85
2.96	40.00%	4.29	4.40	21.643f	0.000	2.212	2.61
3.21	50.00%	5.36	5.49	21.677f	0.000	2.387	3.40
3.45	60.00%	6.43	6.59	21.708f	0.000	2.545	4.22
3.66	70.00%	7.50	7.69	21.737f	0.000	2.689	5.04
3.85	80.00%	8.57	8.79	21.763f	0.000	2.823	5.89
4.04	90.00%	9.65	9.89	21.787f	0.000	2.948	6.76
	100.00%	10.72	10.99	21.877f	0.000	3.071	

6.4.2 Tank Capacities for VOID.C containing SALT WATER (1.025)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
0.54	10.00%	0.15	0.16	14.835f	0.000	0.456	0.17
0.65	20.00%	0.30	0.31	14.838f	0.000	0.529	0.48
0.74	30.00%	0.45	0.47	14.839f	0.000	0.586	0.89
0.81	40.00%	0.61	0.62	14.840f	0.000	0.633	1.37
0.87	50.00%	0.76	0.78	14.840f	0.000	0.675	1.93
0.93	60.00%	0.91	0.93	14.841f	0.000	0.713	2.55
0.98	70.00%	1.06	1.09	14.841f	0.000	0.748	3.22
1.03	80.00%	1.21	1.24	14.841f	0.000	0.780	3.94
1.08	90.00%	1.36	1.40	14.842f	0.000	0.811	4.69
	100.00%	1.51	1.55	14.845f	0.000	0.840	

6.4.3 Tank Capacities for CARGO_FWD.C containing SALT WATER (1.025)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
1.61	10.00%	4.67	4.79	18.305f	0.000	1.413	15.46
1.93	20.00%	9.34	9.58	18.360f	0.000	1.594	24.09
2.22	30.00%	14.00	14.35	18.390f	0.000	1.755	31.93
2.48	40.00%	18.67	19.14	18.412f	0.000	1.904	38.60
2.73	50.00%	23.35	23.94	18.430f	0.000	2.044	44.38
2.96	60.00%	28.03	28.73	18.445f	0.000	2.178	49.43
3.19	70.00%	32.70	33.52	18.458f	0.000	2.307	53.97
3.41	80.00%	37.37	38.31	18.469f	0.000	2.431	58.00
3.63	90.00%	42.05	43.10	18.479f	0.000	2.553	61.45
	100.00%	46.72	47.89	18.547f	0.000	2.674	

6.4.4 Tank Capacities for CARGO_AFT.C containing SALT WATER (1.025)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
1.34	10.00%	9.66	9.90	12.357f	0.000	1.155	80.40
1.60	20.00%	19.28	19.76	12.654f	0.000	1.315	107.81
1.85	30.00%	28.92	29.64	12.760f	0.000	1.452	123.21
2.08	40.00%	38.57	39.54	12.819f	0.000	1.580	132.00
2.31	50.00%	48.22	49.42	12.857f	0.000	1.703	138.10
2.54	60.00%	57.86	59.31	12.884f	0.000	1.823	142.55
2.76	70.00%	67.51	69.19	12.905f	0.000	1.941	145.88
2.98	80.00%	77.15	79.08	12.921f	0.000	2.058	148.50
3.21	90.00%	86.79	88.97	12.934f	0.000	2.173	150.42
	100.00%	96.44	98.85	13.065f	0.000	2.291	

6.4.5 Tank Capacities for ENGINE.C containing SALT WATER (1.025)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
0.81	10.00%	4.59	4.71	6.683f	0.000	0.563	7.46
1.11	20.00%	9.18	9.41	6.722f	0.000	0.763	17.24
1.36	30.00%	13.77	14.12	6.678f	0.000	0.921	25.11
1.58	40.00%	18.35	18.81	6.617f	0.000	1.057	33.71
1.86	50.00%	22.95	23.53	6.714f	0.000	1.189	29.47
2.14	60.00%	27.54	28.23	6.796f	0.000	1.324	33.50
2.42	70.00%	32.14	32.94	6.852f	0.000	1.461	35.73
2.70	80.00%	36.73	37.65	6.893f	0.000	1.599	37.10
2.97	90.00%	41.32	42.35	6.924f	0.000	1.736	37.95
	100.00%	45.91	47.06	6.943f	0.000	1.874	

6.4.6 Tank Capacities for ACCOMODATION.C containing SALT WATER (1.025)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	Fsm (m-MT)
	0.00%	0.00	0.00				
1.87	10.00%	4.01	4.11	3.511f	0.000	1.660	21.43
2.13	20.00%	8.02	8.22	3.579f	0.000	1.831	32.31
2.34	30.00%	12.03	12.33	3.535f	0.000	1.967	41.99
2.53	40.00%	16.03	16.43	3.473f	0.000	2.084	50.77
2.70	50.00%	20.05	20.55	3.412f	0.000	2.192	58.86
2.86	60.00%	24.06	24.66	3.356f	0.000	2.290	65.94
3.01	70.00%	28.07	28.77	3.307f	0.000	2.383	71.87
3.16	80.00%	32.08	32.88	3.264f	0.000	2.471	76.76
3.31	90.00%	36.10	37.00	3.224f	0.000	2.556	66.24
	100.00%	40.10	41.10	3.065f	0.000	2.643	

7 Damage Stability Calculations

This chapter is not to be used for determine the maximum allowable VCG for an individual loading condition. The VCG limit curve is presented in Chapter 3.

This chapter presents the different damages and calculated limit curves for each damage condition. The chapter is included in order to verify the limit curve presented in Chapter 3 – Maximum VCG Tables.

For each damage case example calculations have been made to verify the presented limit curves. All limit curves have been calculated using empty tanks.

7.1 Damage Definition

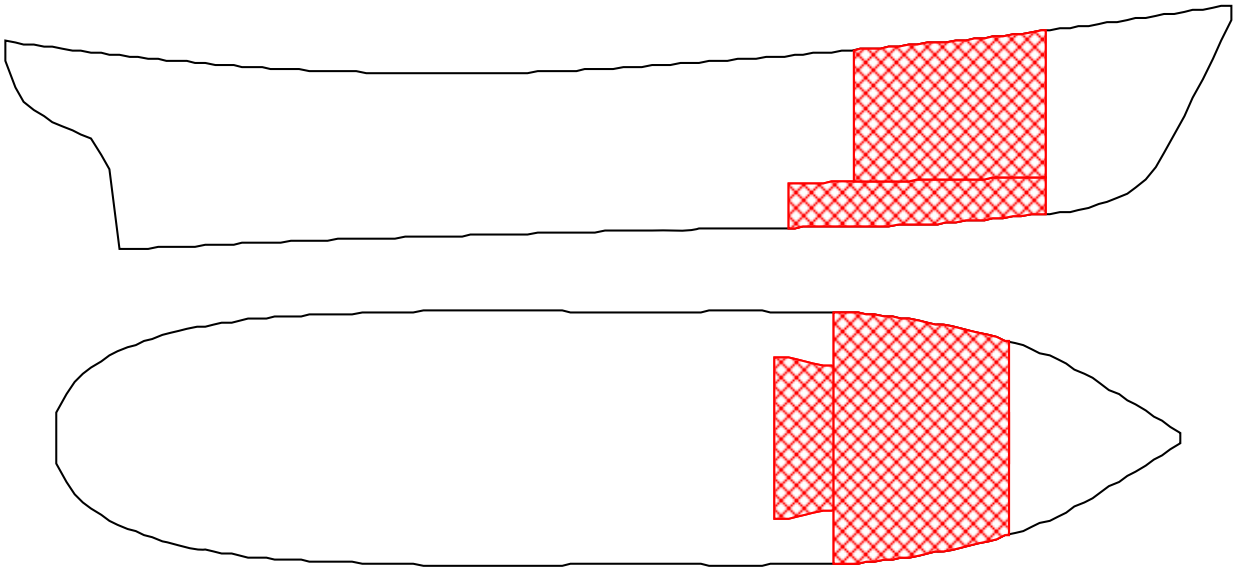
7.1.1 Extent of Damage

Longitudinal extent	0.1 x 23.7 = 2.37 m (10% of L)
Vertical extent	from base line and upwards without limitation
Transverse extent	1.28 m (B/5)

The transverse WT bulkhead in the cargo hold is stepped below Tank Top at #37 to #34. An additional damage case with extensive damage of the double bottom has therefore been considered. Reference is made to Damage Case 2A and 2C.

7.2 DAM1A - Damage Case 1A

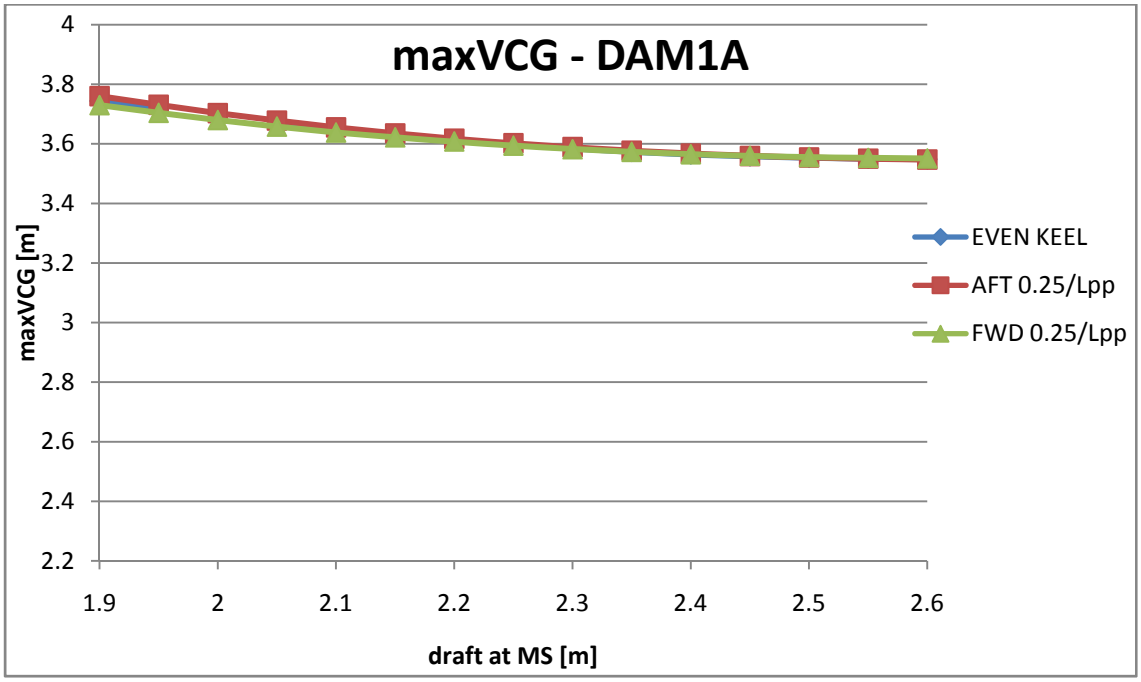
7.2.1 Damage Definition



Damaged Compartments

Compartment	Long. extent	Perm.
Cargo_FWD	**#37 - #46**	**0.95**
DB_Tank.c	**#34 - #46**	**0.95**

7.2.2 Max VCG Tables



Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	4.034	0.0%	7.0°	31.0°
64.9	1.55	3.996	0.0%	7.0°	29.6°
69.4	1.60	3.956	0.0%	7.0°	28.2°
74.1	1.65	3.916	0.0%	7.0°	26.8°
78.9	1.70	3.879	0.0%	7.0°	25.4°
83.7	1.75	3.842	0.0%	7.0°	24.1°
88.7	1.80	3.807	0.0%	7.0°	22.8°
93.7	1.85	3.774	0.0%	7.0°	21.6°
98.9	1.90	3.744	0.0%	7.0°	20.3°
104.1	1.95	3.716	0.0%	7.0°	19.1°
109.4	2.00	****	0.2%	7.0°	17.9°
114.8	2.05	3.666	0.1%	7.0°	16.7°
120.2	2.10	3.645	0.1%	7.0°	15.5°
125.8	2.15	3.626	0.0%	7.0°	14.4°
131.4	2.20	3.611	0.1%	7.0°	13.2°
137.1	2.25	3.597	0.0%	7.0°	12.1°
142.8	**2.30**	**3.584**	**0.0%**	**7.0°**	**10.9°**
148.7	2.35	3.573	0.0%	7.0°	9.8°
154.6	2.40	3.564	0.0%	7.0°	8.6°
160.5	2.45	3.558	0.0%	7.0°	7.5°
166.5	2.50	3.553	0.0%	7.0°	6.3°
172.6	2.55	3.550	0.0%	7.0°	5.2°
178.8	2.60	3.548	0.0%	7.0°	4.0°
185.0	2.65	3.547	0.0%	7.0°	2.9°
191.3	2.70	3.547	0.0%	7.0°	1.7°
197.6	2.75	3.550	0.0%	7.0°	0.6°
204.0	2.80	2.069	2972.8	7.0°	0.0°

Trim = aft 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.7	1.50	4.057	0.0%	7.0°	31.4°
65.1	1.55	4.022	0.0%	7.0°	30.0°
69.7	1.60	3.982	0.0%	7.0°	28.6°
74.3	1.65	3.942	0.0%	7.0°	27.2°
79.1	1.70	3.904	0.0%	7.0°	25.9°
84.0	1.75	3.865	0.0%	7.0°	24.6°
89.0	1.80	3.828	0.0%	7.0°	23.3°
94.1	1.85	3.793	0.0%	7.0°	22.1°
99.2	1.90	3.760	0.0%	7.0°	20.9°
104.5	1.95	3.731	0.0%	7.0°	19.7°
109.8	2.00	3.703	0.1%	7.0°	18.5°
115.2	2.05	3.678	0.1%	7.0°	17.3°
120.7	2.10	3.655	0.0%	7.0°	16.2°
126.3	2.15	3.635	0.0%	7.0°	15.0°
132.0	2.20	3.617	0.0%	7.0°	13.9°
137.7	2.25	3.602	0.0%	7.0°	12.8°
143.5	**2.30**	**3.589**	**0.0%**	**7.0°**	**11.7°**
149.4	2.35	3.577	0.0%	7.0°	10.6°
155.3	2.40	3.567	0.0%	7.0°	9.5°
161.3	2.45	3.559	0.0%	7.0°	8.3°
167.4	2.50	3.554	0.0%	7.0°	7.2°
173.5	2.55	3.550	0.0%	7.0°	6.1°
179.7	2.60	3.547	0.0%	7.0°	5.0°
186.0	2.65	3.546	0.0%	7.0°	3.8°
192.3	2.70	3.546	0.0%	7.0°	2.7°
198.7	2.75	3.548	0.0%	7.0°	1.6°

205.1	2.80	3.551	0.0%	7.0°	0.4°

Trim = fwd 0.250/23.425 at zero heel (Trim righting arm held at zero)

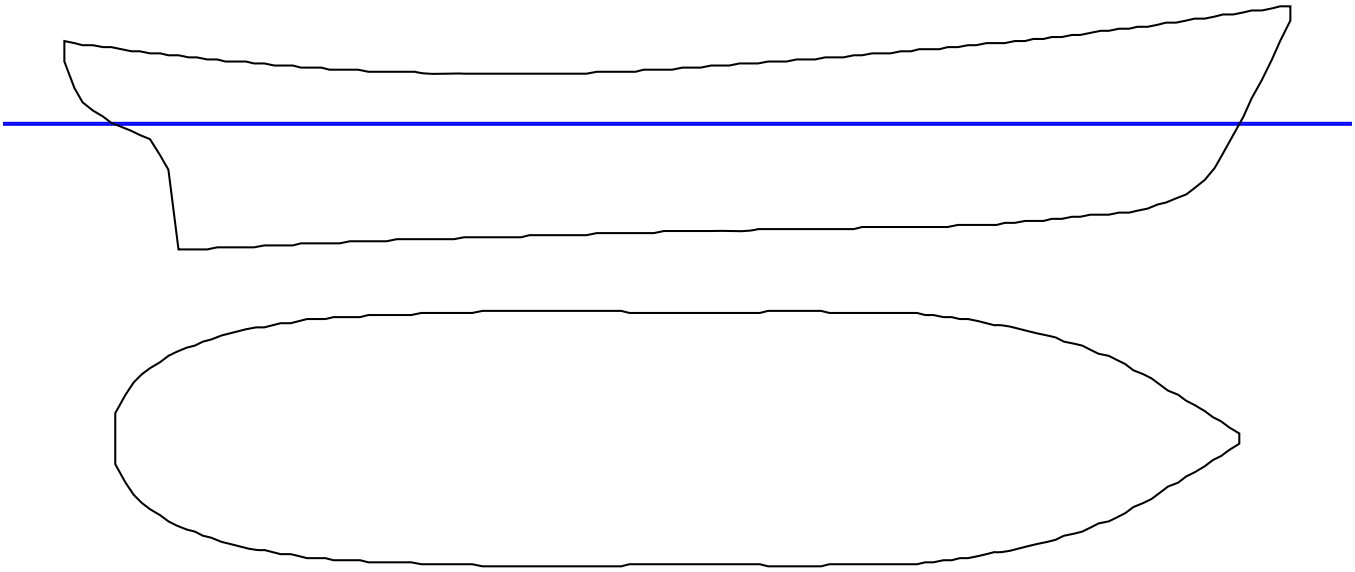
Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	4.012	0.0%	7.0°	30.0°
64.9	1.55	3.971	0.0%	7.0°	28.5°
69.4	1.60	3.930	0.0%	7.0°	27.1°
74.1	1.65	3.893	0.0%	7.0°	25.7°
78.8	1.70	3.857	0.0%	7.0°	24.4°
83.6	1.75	3.821	0.0%	7.0°	23.1°
88.6	1.80	3.788	0.0%	7.0°	21.8°
93.6	1.85	3.757	0.0%	7.0°	20.6°
98.7	1.90	3.730	0.0%	7.0°	19.3°
103.9	1.95	3.704	0.0%	7.0°	18.1°
109.2	2.00	3.680	0.1%	7.0°	16.9°
114.5	2.05	3.658	0.0%	7.0°	15.7°
120.0	2.10	3.638	0.1%	7.0°	14.6°
125.5	2.15	3.622	0.0%	7.0°	13.4°
131.0	2.20	3.608	0.1%	7.0°	12.3°
136.7	2.25	3.594	0.0%	7.0°	11.1°
142.4	2.30	3.582	0.0%	7.0°	10.0°
148.2	2.35	3.573	0.0%	7.0°	8.8°
154.0	2.40	3.565	0.1%	7.0°	7.6°
160.0	2.45	3.560	0.0%	7.0°	6.5°
165.9	2.50	3.556	0.1%	7.0°	5.4°
172.0	2.55	3.553	0.1%	7.0°	4.1°
178.1	2.60	3.551	0.0%	7.0°	2.6°
184.3	2.65	3.551	0.0%	7.0°	1.2°
190.5	2.70	3.270	566%	7.0°	0.1°
196.8	2.75	1.792	3531	7.0°	0.0°

The specified initial trim at zero heel refers to the undamaged state.
The transverse C.G. AFTER DAMAGE is assumed to be zero

7.2.4 Example Calculation – Intact Draft 2.30 m, EVEN KEEL

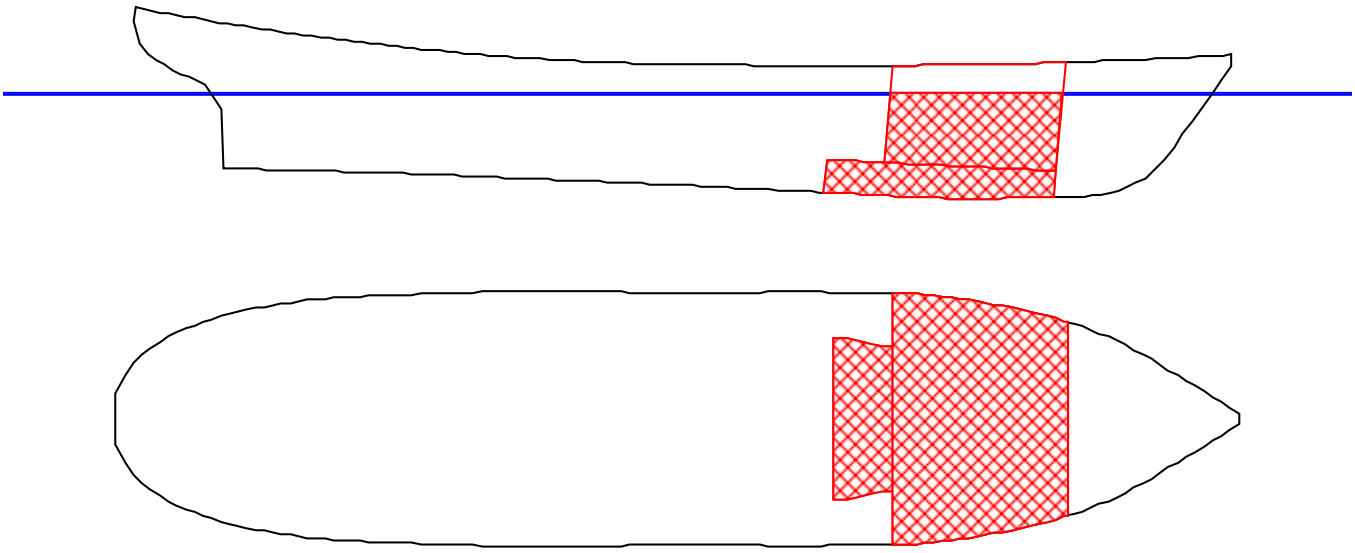
Floating Status – Intact Condition

Draft FP	2.300m	Heel	zero	GM(Solid)	0.093m
Draft MS	2.300m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.300m	Wind	0.0 kn	GM(Fluid)	0.093m
Trim	zero	Wave	No	KMT	3.677 m
LCG	11.380f	VCG	3.584 m	TPcm	1.16



Floating Status – Damaged Condition

Draft FP	3.488m	Heel	zero	GM(Solid)	0.050m
Draft MS	2.622m	Equil	Yes	F/S Corr	0.000m
Draft AP	1.755m	Wind	0.0 kn	GM(Fluid)	0.050m
Trim	fwd 1.734/23.425	Wave	No	KMT	3.634 m
LCG	11.380f	VCG	3.584 m	TPcm	0.98



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	181.09	12.961f	0.000	1.805	1.000
DB_TANK.C	Flooded	1.025	-6.10	17.504f	0.000	0.904	0.950
CARGO_FWD.C	Flooded	1.025	-32.14	18.519f	0.000	2.272	0.950
SubTotals:			**142.86**	**11.517f**	**0.000**	**1.738**	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	**11.000f, 1.500s, 4.200**	**1.627**

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	**22.800f, 1.363s, 4.222**	**0.778**
(2) Marginline_pt1	**22.800f, 1.363p, 4.222**	**0.778**
(3) Marginline_pt2	**19.800f, 2.697s, 3.879**	**0.657**
(4) Marginline_pt2	**19.800f, 2.697p, 3.879**	**0.657**
(5) Marginline_pt3	**15.000f, 3.197s, 3.472**	**0.605**
(6) Marginline_pt3	**15.000f, 3.197p, 3.472**	**0.605**
(7) Marginline_pt4	**12.200f, 3.187s, 3.287**	**0.628**
(8) Marginline_pt4	**12.200f, 3.187p, 3.287**	**0.628**
(9) Marginline_pt5	**7.000f, 3.196s, 3.163**	**0.888**
(10) Marginline_pt5	**7.000f, 3.196p, 3.163**	**0.888**
(11) Marginline_pt6	**3.600f, 3.035s, 3.302**	**1.277**
(12) Marginline_pt6	**3.600f, 3.035p, 3.302**	**1.277**
(13) Marginline_pt7	**0.800f, 2.452s, 3.539**	**1.720**
(14) Marginline_pt7	**0.800f, 2.452p, 3.539**	**1.720**

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
0.00	4.23f	1.750	0.000	0.605 (5)	Equil
5.00s	4.23f	1.737	0.004	0.327 (5)	
10.00s	4.25f	1.696	0.010	0.049 (5)	
10.91s	4.25f	1.686	0.011	0.000 (5)	PFldPt
13.13s	4.26f	1.656	0.014	-0.228 (5)	MaxRa
15.00s	4.28f	1.627	0.012	-0.228 (5)	
17.70s	4.34f	1.579	0.001	-0.520 (5)	RaZero
20.00s	4.39f	1.534	-0.016	-0.520 (5)	
25.00s	4.54f	1.426	-0.071	-0.823 (5)	
30.00s	4.70f	1.305	-0.147	-1.130 (5)	
35.00s	4.85f	1.175	-0.237	-1.437 (5)	
40.00s	4.99f	1.037	-0.337	-1.740 (5)	
45.00s	5.10f	0.892	-0.443	-2.033 (5)	
50.00s	5.20f	0.742	-0.553	-2.317 (5)	
55.00s	5.26f	0.588	-0.663	-2.588 (5)	
60.00s	5.29f	0.431	-0.773	-2.843 (5)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.605

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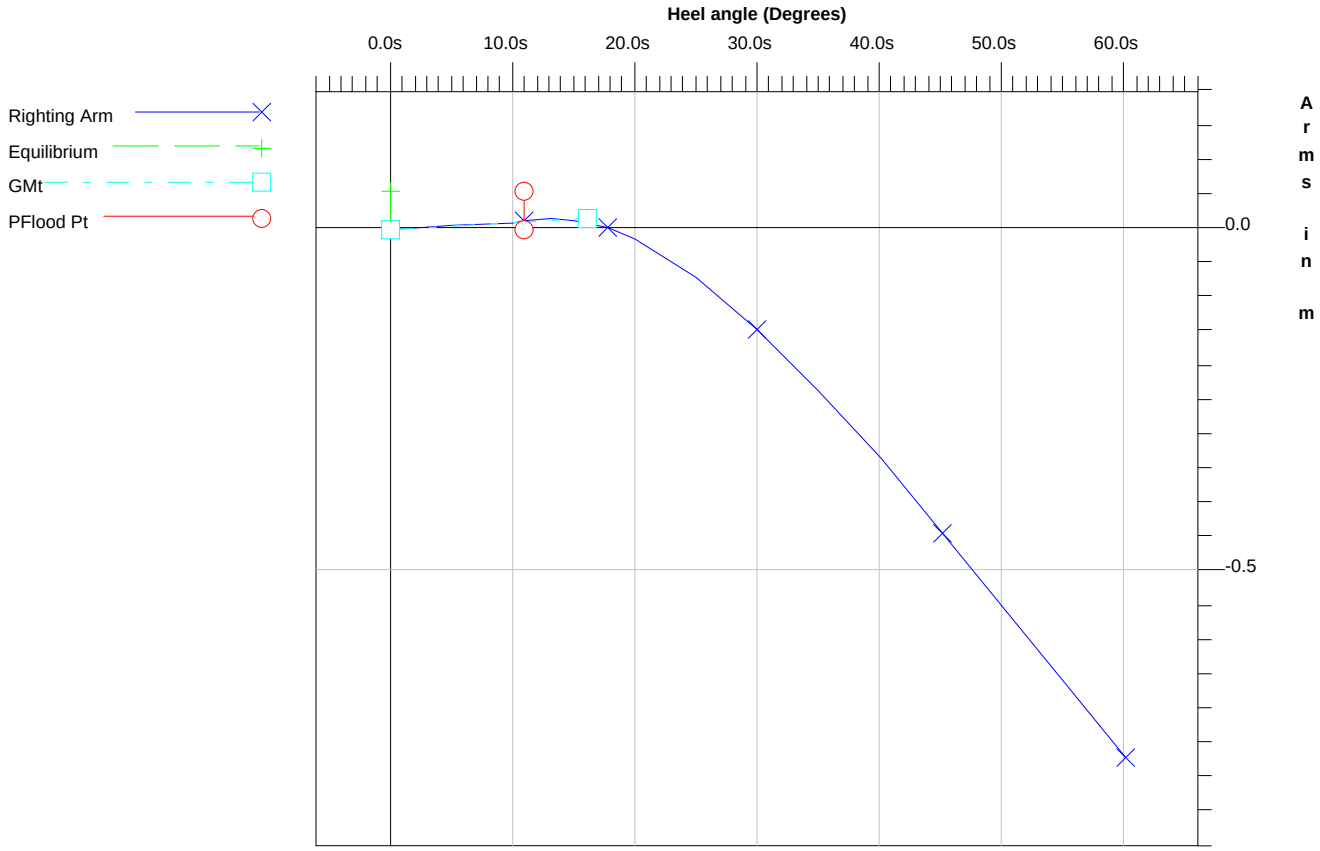
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.050	0.000	No
(2) Absolute Angle at Equilibrium	<7.00 deg	0.00	7.00	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	10.91	10.91	Yes

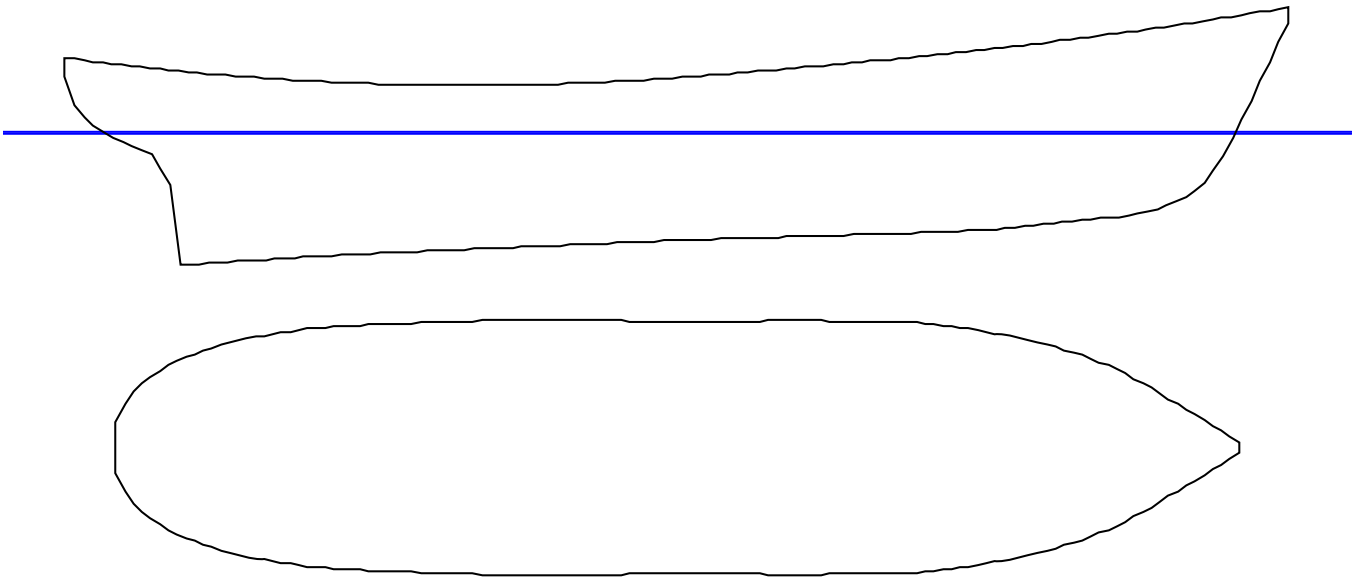
Righting Arms vs. Heel



7.2.5 Example Calculation – Intact Draft 2.3 m, AFT 0.25m / Lpp

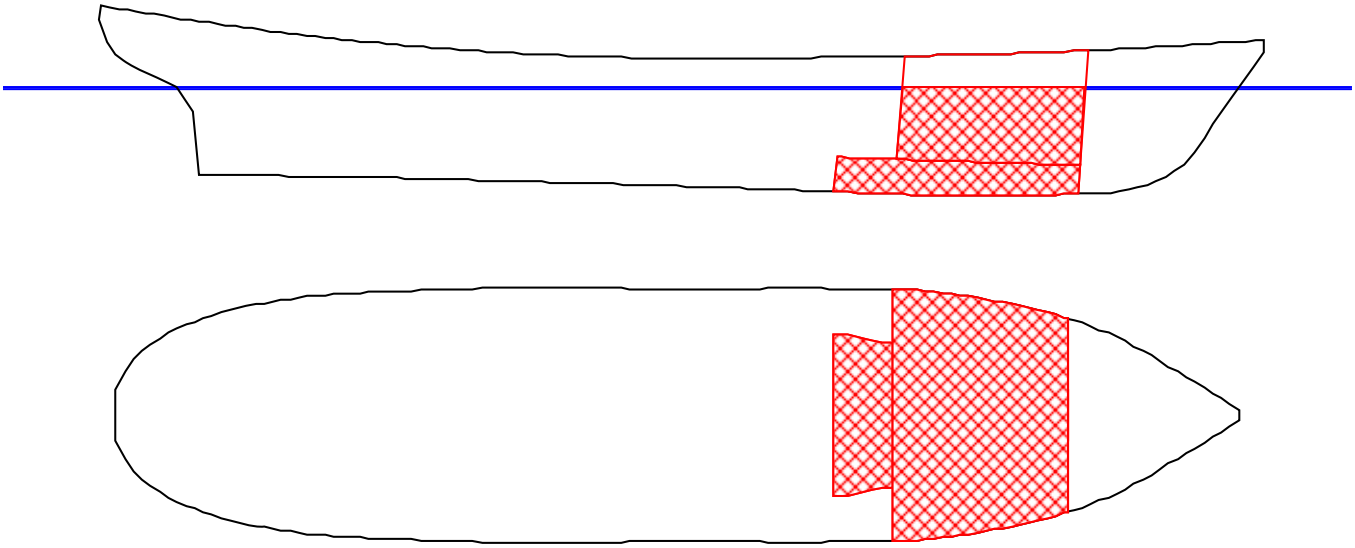
Floating Status – Intact Condition

Draft FP	**2.175m**	**Heel**	**zero**	**GM(Solid)**	**0.100m**
Draft MS	**2.300m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.425m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.100m**
Trim	**aft 0.250/23.425**	**Wave**	**No**	**KMT**	**3.689 m**
LCG	**11.129f**	**VCG**	**3.589 m**	**TPcm**	**1.17**



Floating Status – Damaged Condition

Draft FP	**3.308m**	**Heel**	**stbd 0.33 deg.**	**GM(Solid)**	**0.050m**
Draft MS	**2.614m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**1.919m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.050m**
Trim	**fwd 1.389/23.425**	**Wave**	**No**	**KMT**	**3.639 m**
LCG	**11.129f**	**VCG**	**3.589 m**	**TPcm**	**0.99**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	179.42	12.661f	0.011s	1.776	1.000
DB_TANK.C	Flooded	1.025	-6.10	17.504f	0.000	0.904	0.950
CARGO_FWD.C	Flooded	1.025	-29.85	18.503f	0.010s	2.210	0.950
SubTotals:			143.48	11.240f	0.011s	1.723	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.617

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	0.942
(2) Marginline_pt1	22.800f, 1.363p, 4.222	0.957
(3) Marginline_pt2	19.800f, 2.697s, 3.879	0.769
(4) Marginline_pt2	19.800f, 2.697p, 3.879	0.800
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.644
(6) Marginline_pt3	15.000f, 3.197p, 3.472	0.681
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.625
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.662
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.809
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.846
(11) Marginline_pt6	3.600f, 3.035s, 3.302	1.150
(12) Marginline_pt6	3.600f, 3.035p, 3.302	1.185
(13) Marginline_pt7	0.800f, 2.452s, 3.539	1.555
(14) Marginline_pt7	0.800f, 2.452p, 3.539	1.584

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
0.33s	3.39f	1.916	0.000	0.625 (7)	Equil
5.33s	3.40f	1.900	0.005	0.347 (7)	
10.33s	3.42f	1.856	0.010	0.073 (7)	
11.68s	3.43f	1.839	0.012	0.000 (7)	PFldPt
15.33s	3.47f	1.783	0.013	-0.198 (7)	
18.21s	3.53f	1.730	0.001	-0.485 (5)	RaZero
20.33s	3.59f	1.688	-0.016	-0.485 (5)	
25.33s	3.72f	1.581	-0.073	-0.787 (5)	
30.33s	3.85f	1.464	-0.150	-1.092 (5)	
35.33s	3.97f	1.340	-0.242	-1.396 (5)	
40.33s	4.06f	1.209	-0.345	-1.694 (5)	
45.33s	4.12f	1.071	-0.453	-1.982 (5)	
50.33s	4.15f	0.930	-0.564	-2.259 (5)	
55.33s	4.15f	0.784	-0.677	-2.522 (5)	
60.33s	4.12f	0.635	-0.788	-2.770 (5)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(5) Marginline_pt3	15.000f, 3.197s, 3.472	-0.485
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.625

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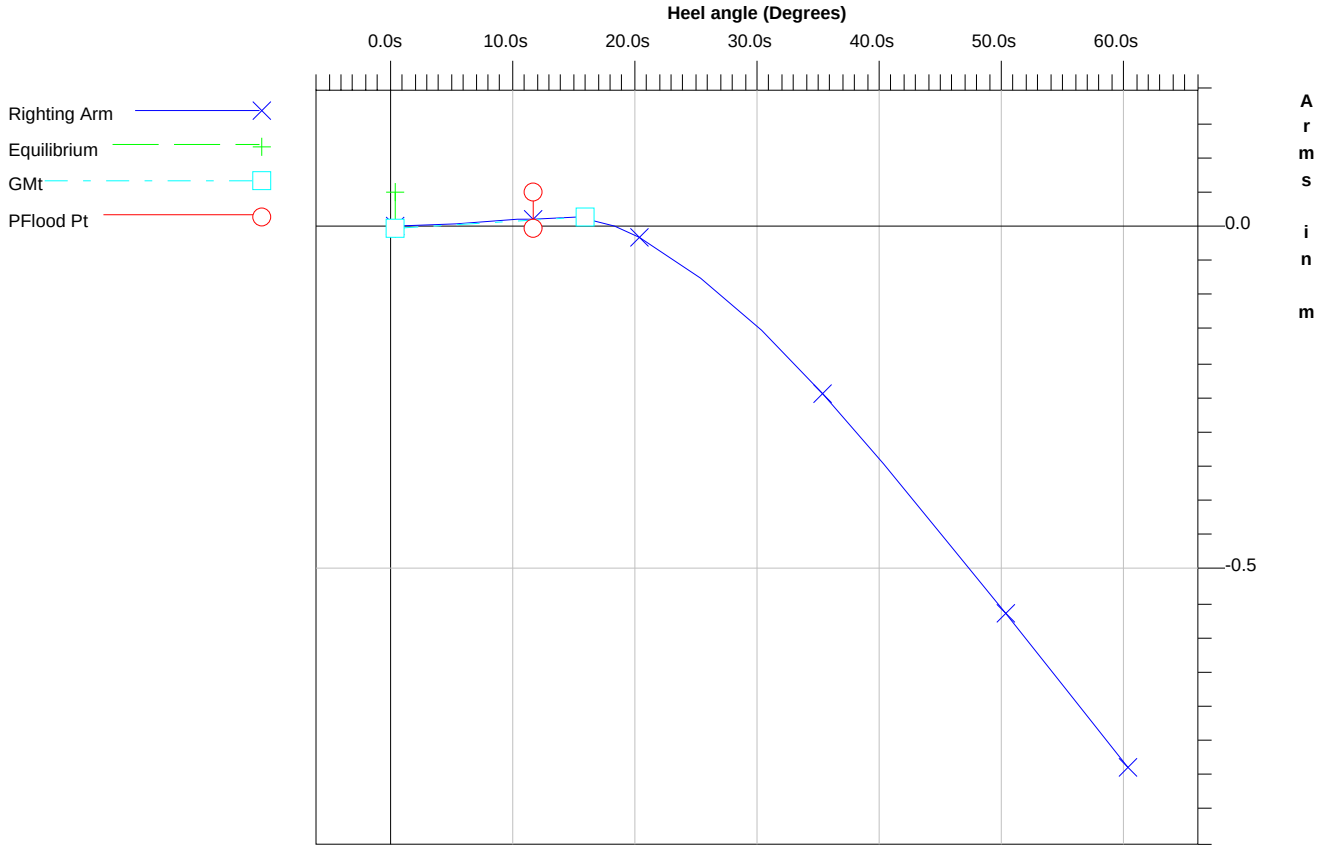
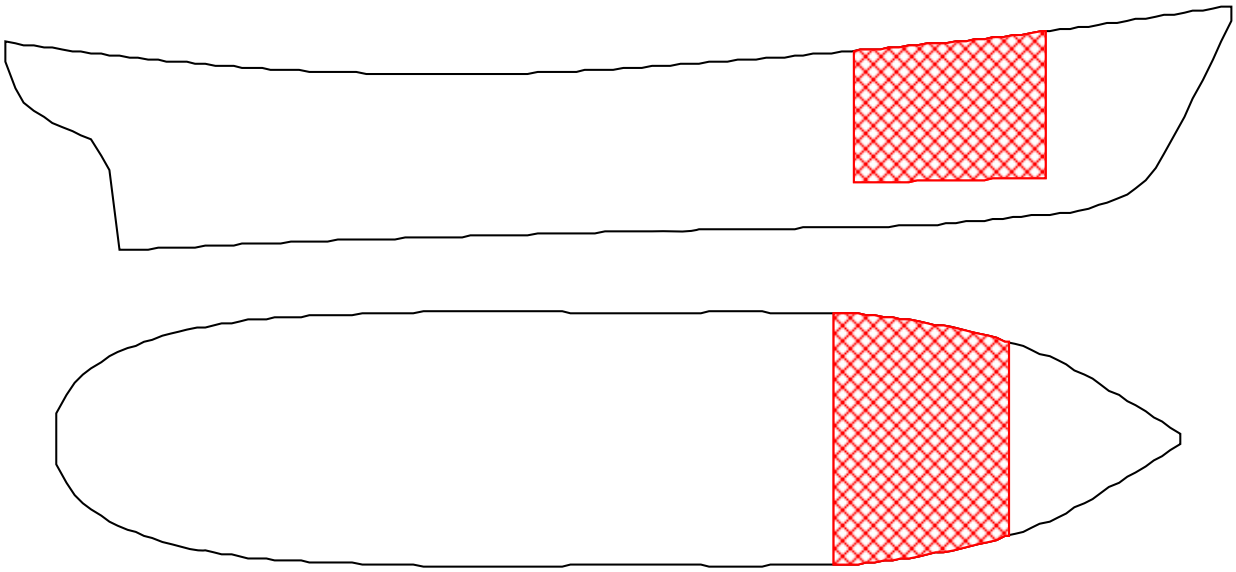
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.050	0.000	No
(2) Absolute Angle at Equilibrium	<7.00 deg	0.33	6.67	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	11.35	11.35	Yes

Righting Arms vs. Heel



7.3 DAM1B - Damage Case 1B

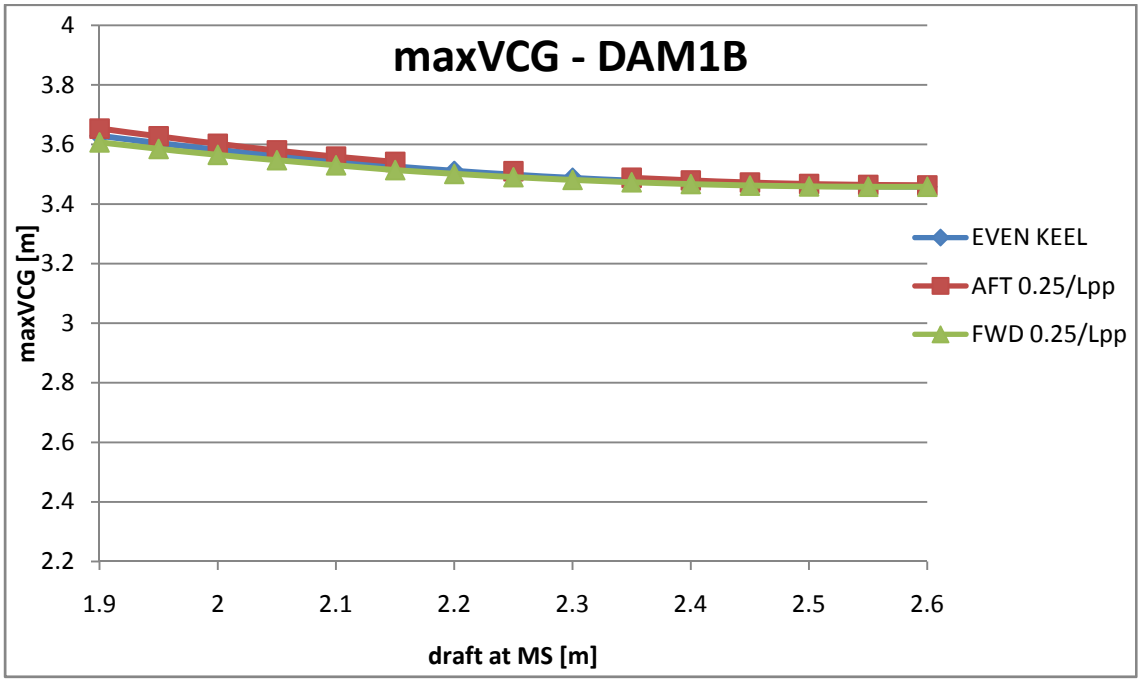
7.3.1 Damage Definition



Damaged Compartments

Compartment	Long. extent	Perm.
Cargo_FWD	**#37 - #46**	**0.95**

7.3.2 Max VCG Tables



Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	3.789	0.0%	7.0°	33.4°
64.9	1.55	3.787	0.0%	7.0°	32.0°
69.4	1.60	3.776	0.0%	7.0°	30.6°
74.1	1.65	3.757	0.0%	7.0°	29.2°
78.9	1.70	3.733	0.0%	7.0°	27.9°
83.7	1.75	3.707	0.0%	7.0°	26.5°
88.7	1.80	3.681	0.0%	7.0°	25.1°
93.7	1.85	3.655	0.1%	7.0°	23.8°
98.9	1.90	3.629	0.0%	7.0°	22.6°
104.1	1.95	3.604	0.0%	7.0°	21.3°
109.4	2.00	3.582	0.0%	7.0°	20.0°
114.8	2.05	3.562	0.0%	7.0°	18.8°
120.2	2.10	3.543	0.1%	7.0°	17.7°
125.8	2.15	3.526	0.1%	7.0°	16.5°
131.4	2.20	3.511	0.0%	7.0°	15.3°
137.1	2.25	3.498	0.1%	7.0°	14.2°
142.8	**2.30**	**3.488**	**0.0%**	**7.0°**	**13.0°**
148.7	2.35	3.479	0.0%	7.0°	11.9°
154.6	2.40	3.471	0.0%	7.0°	10.8°
160.5	2.45	3.465	0.1%	7.0°	9.6°
166.5	2.50	3.461	0.0%	7.0°	8.5°
172.6	2.55	3.459	0.0%	7.0°	7.4°
178.8	2.60	3.458	0.0%	7.0°	6.2°
185.0	2.65	3.459	0.1%	7.0°	5.1°
191.3	2.70	****	0.1%	7.0°	3.9°
197.6	2.75	3.463	0.1%	7.0°	2.7°
204.0	2.80	3.467	0.1%	7.0°	1.6°

Trim = aft 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.7	1.50	3.807	0.0%	7.0°	33.1°
65.1	1.55	3.812	0.0%	7.0°	31.9°
69.7	1.60	3.804	0.0%	7.0°	30.7°
74.3	1.65	3.788	0.0%	7.0°	29.6°
79.1	1.70	3.764	0.0%	7.0°	28.3°
84.0	1.75	3.737	0.0%	7.0°	26.9°
89.0	1.80	3.709	0.0%	7.0°	25.5°
94.1	1.85	3.681	0.0%	7.0°	24.2°
99.2	1.90	3.653	0.0%	7.0°	22.9°
104.5	1.95	3.627	0.0%	7.0°	21.6°
109.8	2.00	3.602	0.0%	7.0°	20.4°
115.2	2.05	3.580	0.0%	7.0°	19.2°
120.7	2.10	3.559	0.0%	7.0°	18.0°
126.3	2.15	3.541	0.0%	7.0°	16.8°
132.0	2.20	****	0.2%	7.0°	15.6°
137.7	2.25	3.510	0.0%	7.0°	14.5°
143.5	2.30	****	0.1%	7.0°	13.3°
149.4	2.35	3.488	0.0%	7.0°	12.2°
155.3	2.40	3.479	0.0%	7.0°	11.1°
161.3	2.45	3.472	0.0%	7.0°	10.0°
167.4	2.50	3.467	0.0%	7.0°	8.8°
173.5	2.55	3.464	0.0%	7.0°	7.7°
179.7	2.60	3.462	0.0%	7.0°	6.6°
186.0	2.65	3.463	0.0%	7.0°	5.4°
192.3	2.70	3.464	0.0%	7.0°	4.3°
198.7	2.75	3.466	0.0%	7.0°	3.2°
205.1	2.80	3.469	0.0%	7.0°	2.1°

Trim = fwd 0.250/23.425 at zero heel (Trim righting arm held at zero)

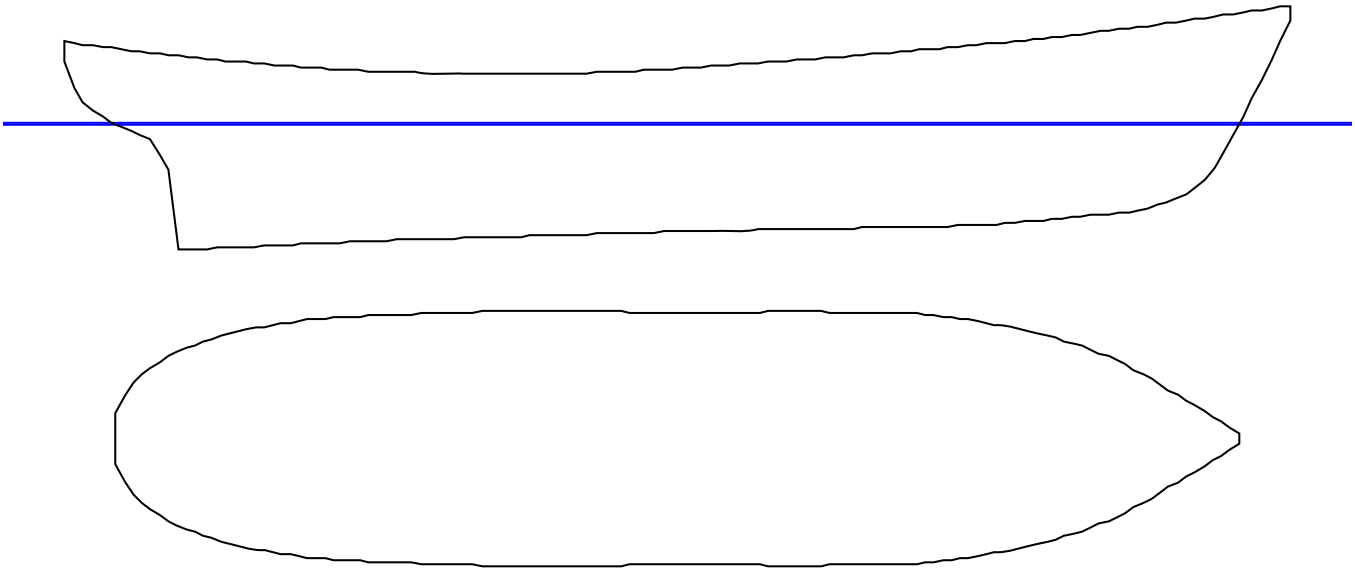
Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit1	Limit 2	Limit 3
60.5	1.50	3.771	0.0%	7.0°	33.0°
64.9	1.55	3.763	0.0%	7.0°	31.6°
69.4	1.60	3.749	0.0%	7.0°	30.2°
74.1	1.65	3.728	0.0%	7.0°	28.8°
78.8	1.70	3.704	0.1%	7.0°	27.5°
83.6	1.75	3.680	0.1%	7.0°	26.1°
88.6	1.80	3.655	0.0%	7.0°	24.8°
93.6	1.85	3.631	0.0%	7.0°	23.5°
98.7	1.90	3.607	0.0%	7.0°	22.2°
103.9	1.95	3.585	0.0%	7.0°	20.9°
109.2	2.00	3.565	0.0%	7.0°	19.6°
114.5	2.05	3.547	0.0%	7.0°	18.4°
120.0	2.10	3.530	0.1%	7.0°	17.1°
125.5	2.15	3.514	0.0%	7.0°	15.9°
131.0	**2.20**	**3.501**	**0.0%**	**7.0°**	**14.7°**
136.7	2.25	3.490	0.0%	7.0°	13.5°
142.4	**2.30**	**3.481**	**0.0%**	**7.0°**	**12.3°**
148.2	2.35	3.473	0.0%	7.0°	11.1°
154.0	2.40	3.467	0.0%	7.0°	10.0°
160.0	2.45	3.462	0.0%	7.0°	8.8°
165.9	2.50	3.459	0.0%	7.0°	7.6°
172.0	2.55	3.458	0.0%	7.0°	6.4°
178.1	2.60	3.458	0.0%	7.0°	5.2°
184.3	2.65	3.459	0.0%	7.0°	4.1°
190.5	2.70	3.461	0.0%	7.0°	2.9°
196.8	2.75	****	0.1%	7.0°	1.7°
203.1	2.80	3.469	0.0%	7.0°	0.6°

The specified initial trim at zero heel refers to the undamaged state.
The transverse C.G. AFTER DAMAGE is assumed to be zero

7.3.3 Example Calculation – Intact Draft 2.3 m, EVEN KEEL

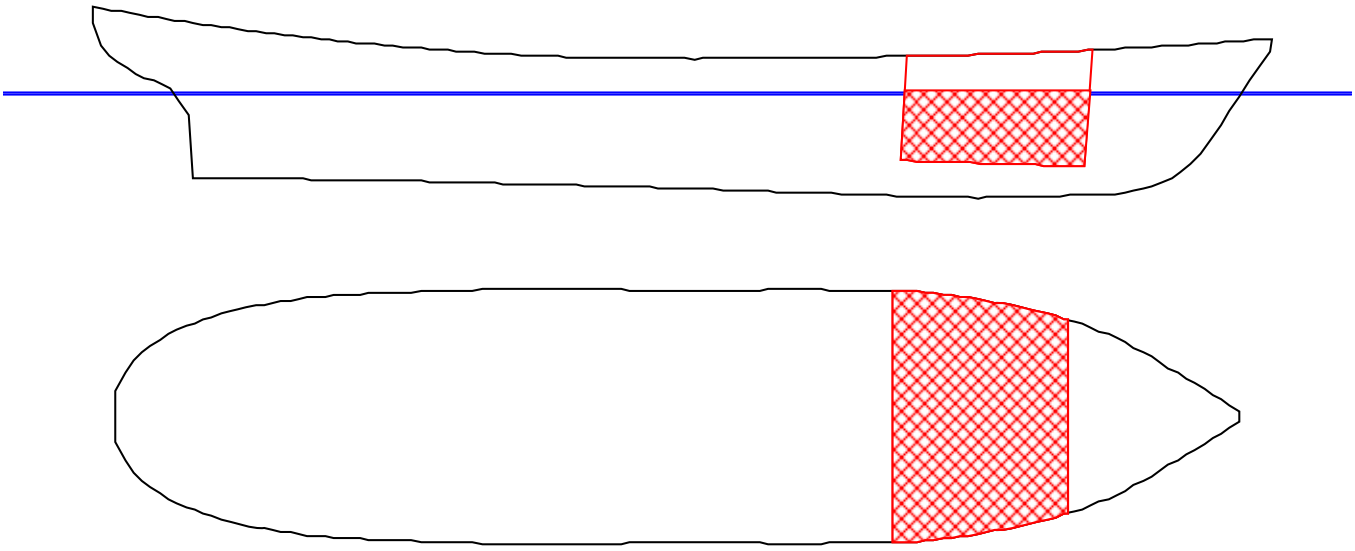
Floating Status – Intact Condition

Draft FP	**2.300m**	**Heel**	**stbd 0.33 deg.**	**GM(Solid)**	**0.189m**
Draft MS	**2.300m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.300m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.189m**
Trim	**zero**	**Wave**	**No**	**KMT**	**3.677 m**
LCG	**11.380f**	**VCG**	**3.488 m**	**TPcm**	**1.16**



Floating Status – Damaged Condition

Draft FP	**3.204m**	**Heel**	**stbd 0.19 deg.**	**GM(Solid)**	**0.050m**
Draft MS	**2.542m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**1.881m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.050m**
Trim	**fwd 1.323/23.425**	**Wave**	**No**	**KMT**	**3.538 m**
LCG	**11.380f**	**VCG**	**3.488 m**	**TPcm**	**0.97**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	170.83	12.632f	0.006s	1.731	1.000
CARGO_FWD.C	Flooded	1.025	-27.97	18.498f	0.006s	2.159	0.950
SubTotals:			142.86	11.484f	0.006s	1.648	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.691

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	1.048
(2) Marginline_pt1	22.800f, 1.363p, 4.222	1.056
(3) Marginline_pt2	19.800f, 2.697s, 3.879	0.870
(4) Marginline_pt2	19.800f, 2.697p, 3.879	0.888
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.733
(6) Marginline_pt3	15.000f, 3.197p, 3.472	0.753
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.706
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.727
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.875
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.896
(11) Marginline_pt6	3.600f, 3.035s, 3.302	1.206
(12) Marginline_pt6	3.600f, 3.035p, 3.302	1.226
(13) Marginline_pt7	0.800f, 2.452s, 3.539	1.603
(14) Marginline_pt7	0.800f, 2.452p, 3.539	1.619

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
0.19s	3.23f	1.878	0.000	0.706 (7)	Equil
5.19s	3.24f	1.862	0.005	0.429 (7)	
10.19s	3.27f	1.818	0.010	0.154 (7)	
13.03s	3.29f	1.780	0.013	-0.001 (7)	PFldPt
15.19s	3.31f	1.745	0.016	-0.116 (7)	
19.78s	3.40f	1.655	0.000	-0.391 (7)	RaZero
20.19s	3.42f	1.646	-0.003	-0.392 (7)	
25.19s	3.54f	1.534	-0.052	-0.683 (5)	
30.19s	3.66f	1.414	-0.123	-0.981 (5)	
35.19s	3.76f	1.286	-0.210	-1.277 (5)	
40.19s	3.84f	1.151	-0.308	-1.568 (5)	
45.19s	3.88f	1.013	-0.413	-1.850 (5)	
50.19s	3.89f	0.870	-0.522	-2.121 (5)	
55.19s	3.87f	0.725	-0.631	-2.378 (5)	
60.19s	3.82f	0.576	-0.739	-2.621 (5)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(5) Marginline_pt3	15.000f, 3.197s, 3.472	-0.683
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.706

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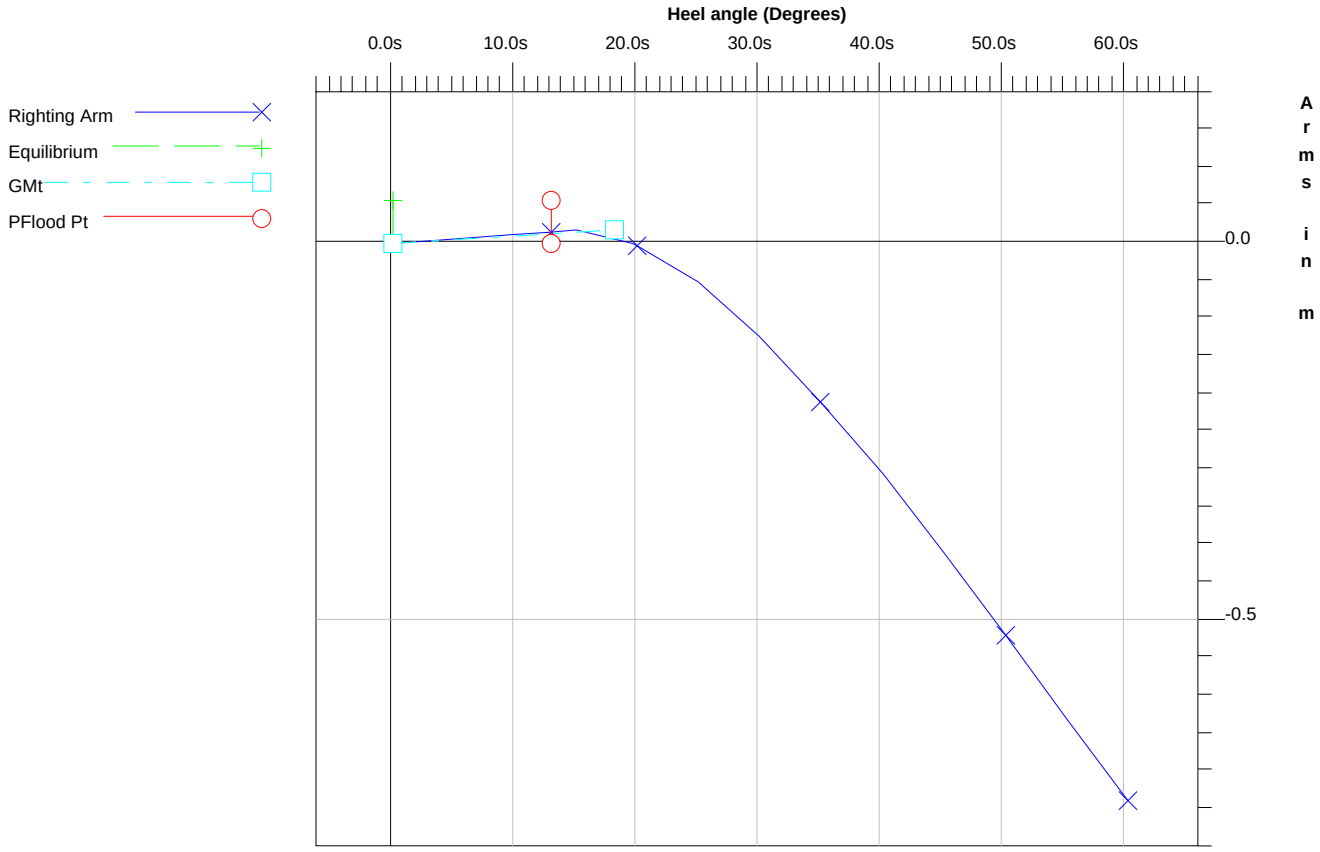
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.050	0.000	No
(2) Absolute Angle at Equilibrium	<7.00 deg	0.19	6.81	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	12.85	12.85	Yes

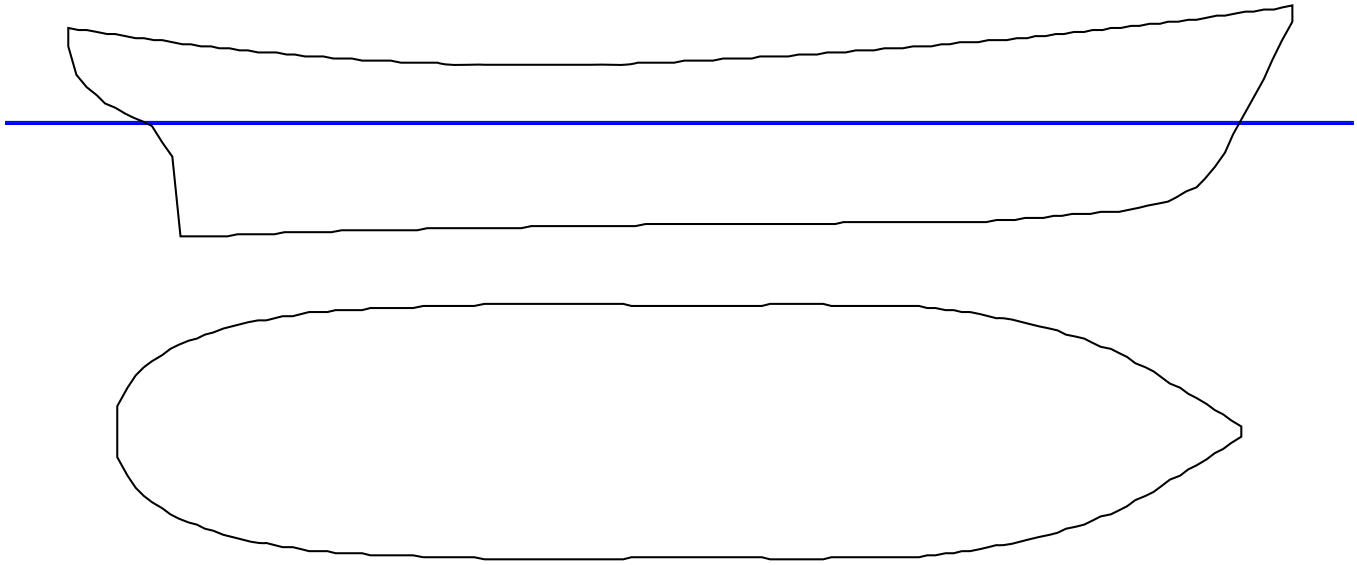
Righting Arms vs. Heel



7.3.4 Example Calculation – Intact Draft 2.3 m, FWD 0.25m / Lpp

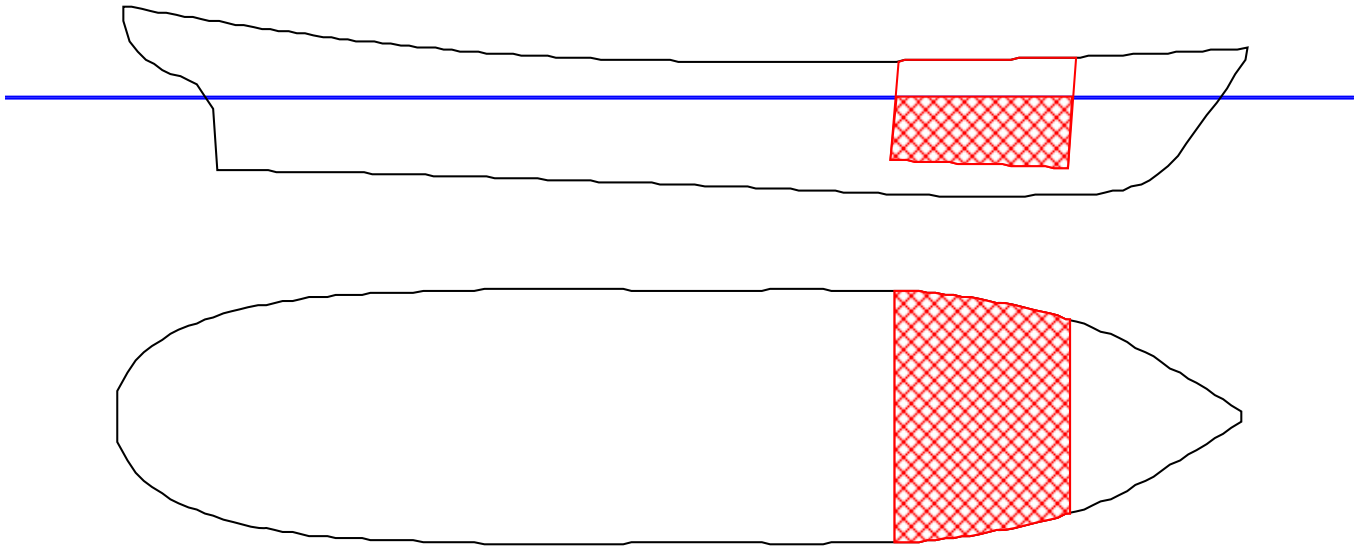
Floating Status – Intact Condition

Draft FP	**2.325m**	**Heel**	**stbd 0.19 deg.**	**GM(Solid)**	**0.196m**
Draft MS	**2.200m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.075m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.196m**
Trim	**fwd 0.250/23.425**	**Wave**	**No**	**KMT**	**3.697 m**
LCG	**11.640f**	**VCG**	**3.501 m**	**TPcm**	**1.12**



Floating Status

Draft FP	**3.228m**	**Heel**	**stbd 0.19 deg.**	**GM(Solid)**	**0.050m**
Draft MS	**2.430m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**1.632m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.050m**
Trim	**fwd 1.596/23.425**	**Wave**	**No**	**KMT**	**3.551 m**
LCG	**11.640f**	**VCG**	**3.501 m**	**TPcm**	**0.94**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	158.35	12.931f	0.006s	1.686	1.000
CARGO_FWD.C	Flooded	1.025	-27.29	18.508f	0.006s	2.141	0.950
SubTotals:			131.06	11.770f	0.006s	1.591	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.810

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	1.030
(2) Marginline_pt1	22.800f, 1.363p, 4.222	1.039
(3) Marginline_pt2	19.800f, 2.697s, 3.879	0.887
(4) Marginline_pt2	19.800f, 2.697p, 3.879	0.905
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.806
(6) Marginline_pt3	15.000f, 3.197p, 3.472	0.827
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.812
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.833
(9) Marginline_pt5	7.000f, 3.196s, 3.163	1.041
(10) Marginline_pt5	7.000f, 3.196p, 3.163	1.062
(11) Marginline_pt6	3.600f, 3.035s, 3.302	1.412
(12) Marginline_pt6	3.600f, 3.035p, 3.302	1.432
(13) Marginline_pt7	0.800f, 2.452s, 3.539	1.840
(14) Marginline_pt7	0.800f, 2.452p, 3.539	1.856

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
0.19s	3.90f	1.628	0.000	0.806 (5)	Equil
5.19s	3.91f	1.613	0.005	0.527 (5)	
10.19s	3.93f	1.569	0.009	0.248 (5)	
14.68s	3.96f	1.506	0.013	0.000 (5)	PFldPt
15.19s	3.96f	1.498	0.014	-0.028 (5)	
16.55s	3.97f	1.474	0.015	-0.303 (5)	MaxRa
20.19s	4.03f	1.398	0.006	-0.303 (5)	
21.11s	4.05f	1.377	0.000	-0.587 (5)	RaZero
25.19s	4.14f	1.280	-0.035	-0.587 (5)	
30.19s	4.26f	1.151	-0.100	-0.874 (5)	
35.19s	4.36f	1.013	-0.183	-1.161 (5)	
40.19s	4.44f	0.870	-0.279	-1.442 (5)	
45.19s	4.48f	0.722	-0.383	-1.715 (5)	
50.19s	4.49f	0.573	-0.491	-1.979 (5)	
55.19s	4.46f	0.423	-0.602	-2.230 (5)	
60.19s	4.39f	0.273	-0.711	-2.467 (5)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.806

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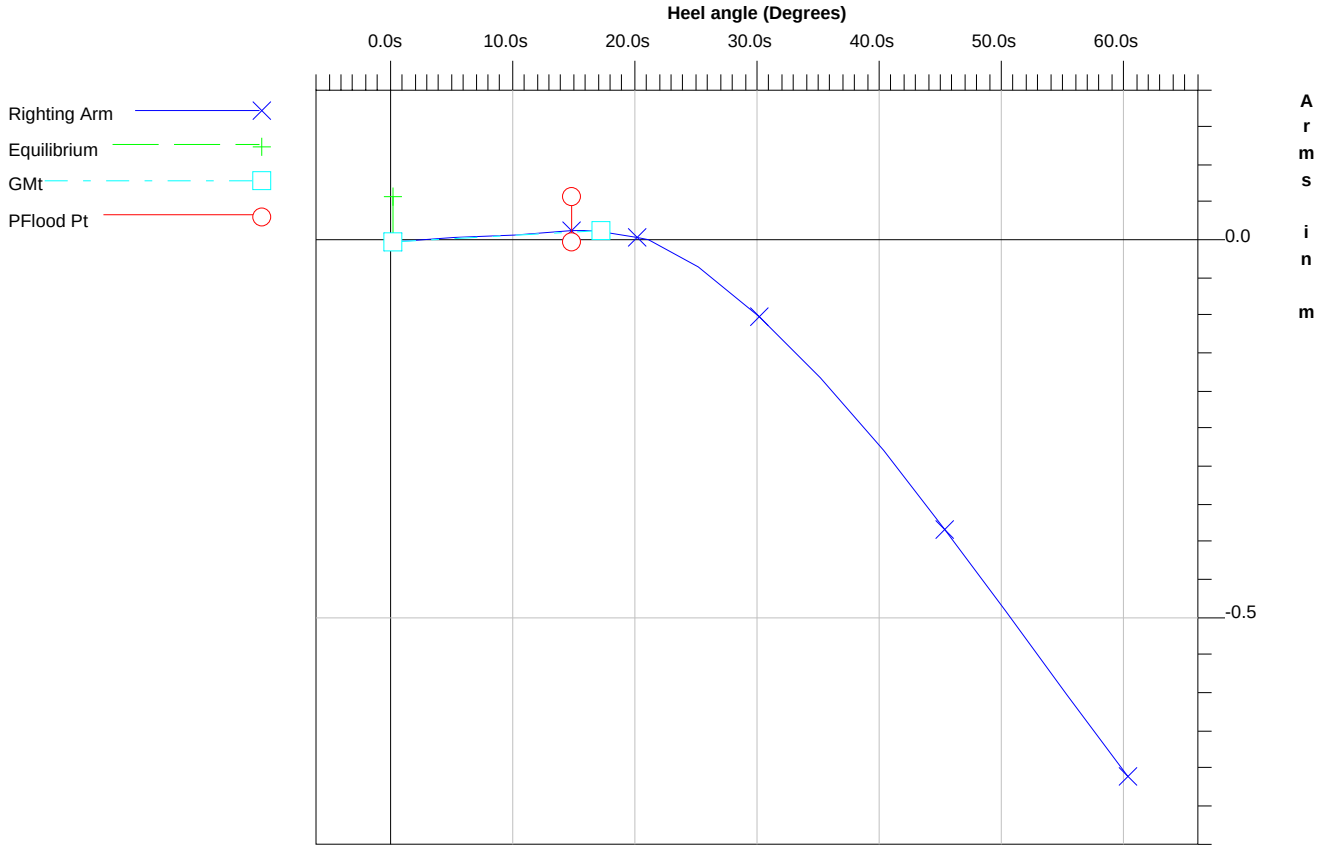
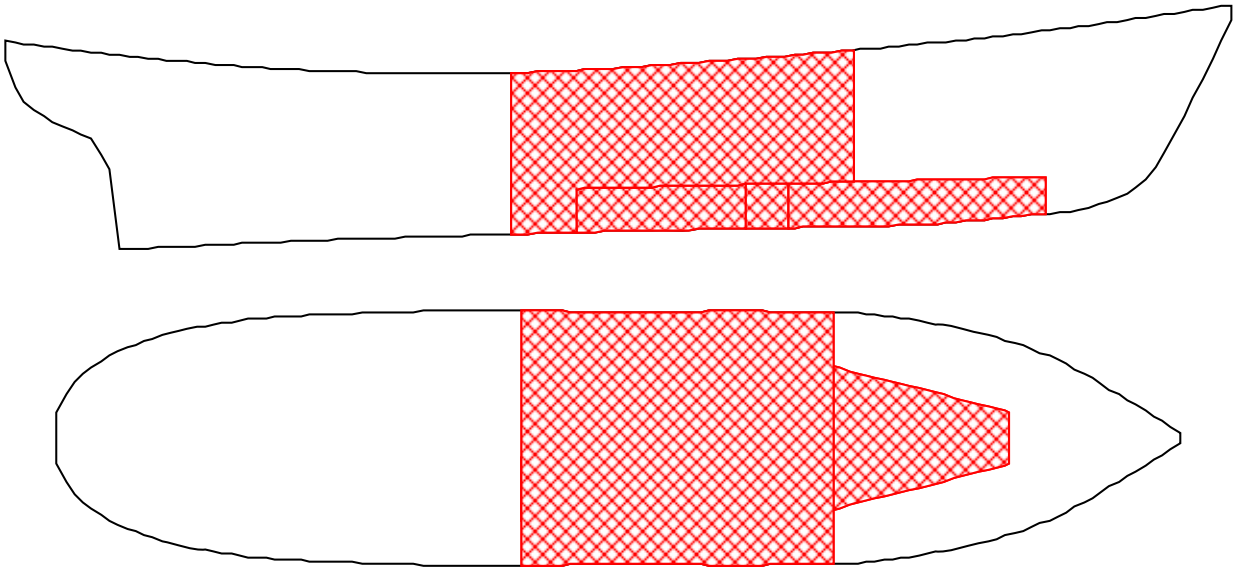
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.050	0.000	No
(2) Absolute Angle at Equilibrium	<7.00 deg	0.19	6.81	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	14.50	14.50	Yes

Righting Arms vs. Heel



7.5 DAM2A - Damage Case 2A

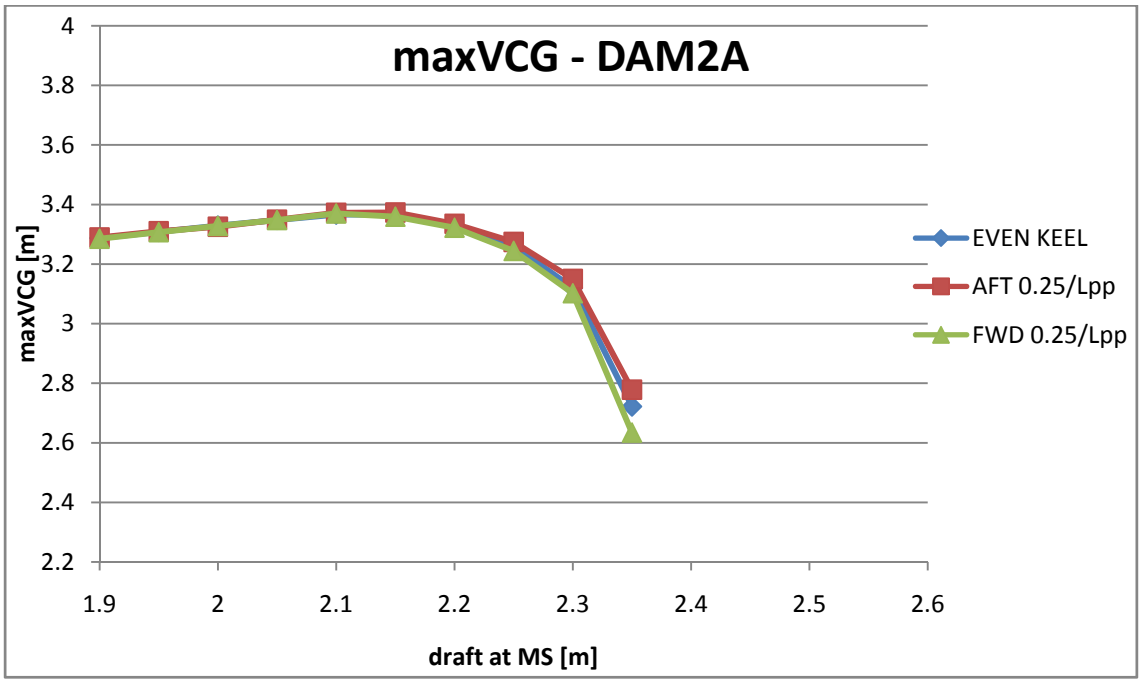
7.5.1 Damage Definition



Damaged Compartments

Compartment	Long. extent	Perm.
Cargo_AFT	**#21 - #37**	**0.95**
DB_Tank.c	**#34 - #46**	**0.95**
DB_Tank.s	**#21 - #32**	**0.95**
Void.c	**#32 - #34**	**0.95**

7.5.2 Max VCG Tables



Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	3.017	773.6%	0.1°	17.0°
64.9	1.55	3.069	707.7%	0.0°	15.5°
69.4	1.60	3.111	661.7%	0.0°	14.1°
74.1	1.65	3.145	627.0%	0.1°	12.8°
78.9	1.70	3.186	573.4%	0.1°	11.2°
83.7	1.75	3.210	552.9%	0.0°	10.0°
88.7	1.80	3.239	518.6%	0.1°	8.4°
93.7	1.85	3.260	498.4%	0.0°	7.2°
98.9	1.90	3.287	467.0%	0.1°	5.8°
104.1	1.95	3.308	442.9%	0.1°	4.5°
109.4	2.00	3.329	421.6%	0.0°	3.2°
114.8	2.05	3.348	404.7%	0.0°	2.0°
120.2	2.10	3.366	390.4%	0.1°	0.8°
125.8	2.15	3.366	407.0%	0.6°	0.0°
131.4	2.20	3.329	494.0%	1.9°	0.1°
137.1	**2.25**	**3.261**	**646.0%**	**3.1°**	**0.0°**
142.8	2.30	3.120	946.7%	4.4°	0.1°
148.7	2.35	2.722	1766.0%	5.6°	0.1°

Trim = aft 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.7	1.50	3.030	771.3%	0.1°	17.1°
65.1	1.55	3.081	705.4%	0.0°	15.6°
69.7	1.60	3.122	659.6%	0.0°	14.2°
74.3	1.65	3.155	625.4%	0.1°	12.8°
79.1	1.70	3.190	584.4%	0.0°	11.4°
84.0	1.75	3.217	553.3%	0.0°	10.0°
89.0	1.80	3.244	519.2%	0.1°	8.5°
94.1	1.85	3.267	494.4%	0.0°	7.3°
99.2	1.90	3.289	470.1%	0.1°	5.9°
104.5	1.95	3.310	446.4%	0.1°	4.6°
109.8	2.00	3.325	433.1%	0.1°	3.4°
115.2	2.05	3.349	404.8%	0.0°	2.1°
120.7	2.10	3.372	380.6%	0.0°	0.8°
126.3	2.15	3.373	396.6%	0.5°	0.0°
132.0	2.20	3.335	484.0%	1.8°	0.1°
137.7	2.25	3.274	623.1%	3.0°	0.0°
143.5	2.30	3.150	887.8%	4.2°	0.0°
149.4	2.35	2.778	1653.5%	5.5°	0.1°

Trim = fwd 0.250/23.425 at zero heel (Trim righting arm held at zero)

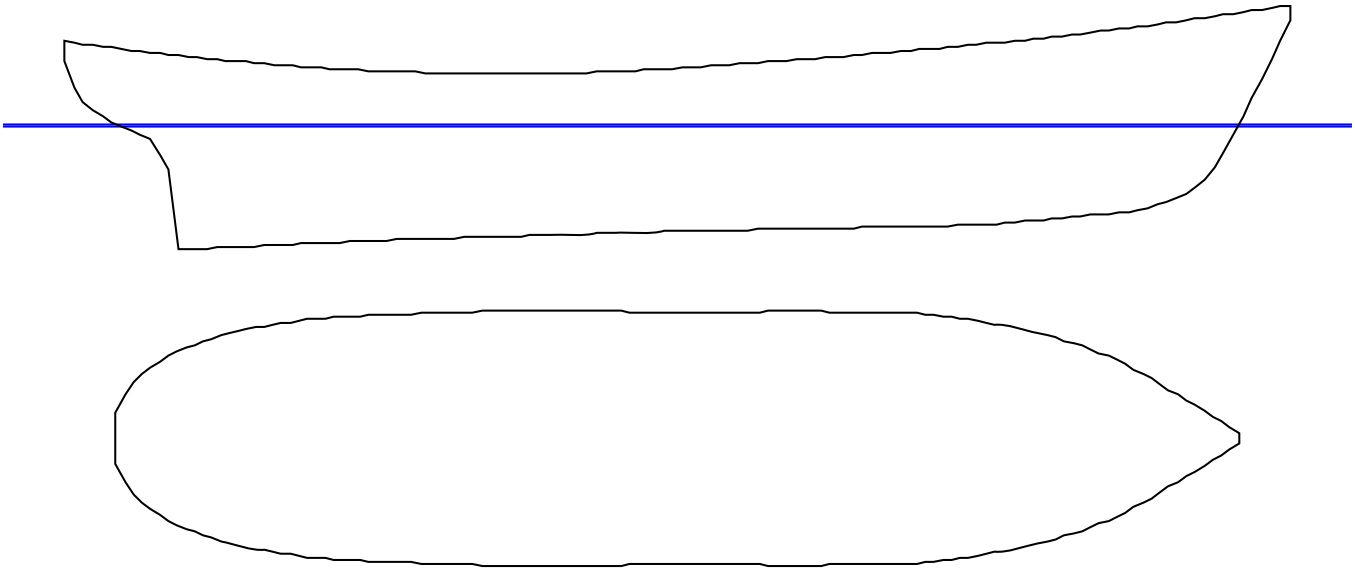
Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	3.006	775.5%	0.0°	16.9°
64.9	1.55	3.059	711.7%	0.0°	15.4°
69.4	1.60	3.103	663.0%	0.0°	14.0°
74.1	1.65	3.140	625.0%	0.1°	12.6°
78.8	1.70	3.175	584.1%	0.0°	11.2°
83.6	1.75	3.205	552.0%	0.0°	10.0°
88.6	1.80	3.232	525.9%	0.0°	8.4°
93.6	1.85	3.257	500.3%	0.0°	7.1°
98.7	1.90	3.285	465.8%	0.1°	5.7°
103.9	1.95	3.307	442.2%	0.1°	4.4°
109.2	2.00	3.328	422.3%	0.0°	3.1°
114.5	2.05	3.348	404.8%	0.0°	1.9°
120.0	2.10	3.370	383.2%	0.0°	0.6°
125.5	2.15	3.359	420.7%	0.8°	0.1°
131.0	2.20	3.322	510.6%	2.0°	0.1°
136.7	**2.25**	**3.244**	**683.7%**	**3.3°**	**0.1°**
142.4	2.30	3.102	987.2%	4.5°	0.0°
148.2	2.35	2.634	1948.0%	5.7°	0.1°

The specified initial trim at zero heel refers to the undamaged state.
The transverse C.G. AFTER DAMAGE is assumed to be zero

7.5.3 Example Calculation – Intact Draft 2.25 m, EVEN KEEL

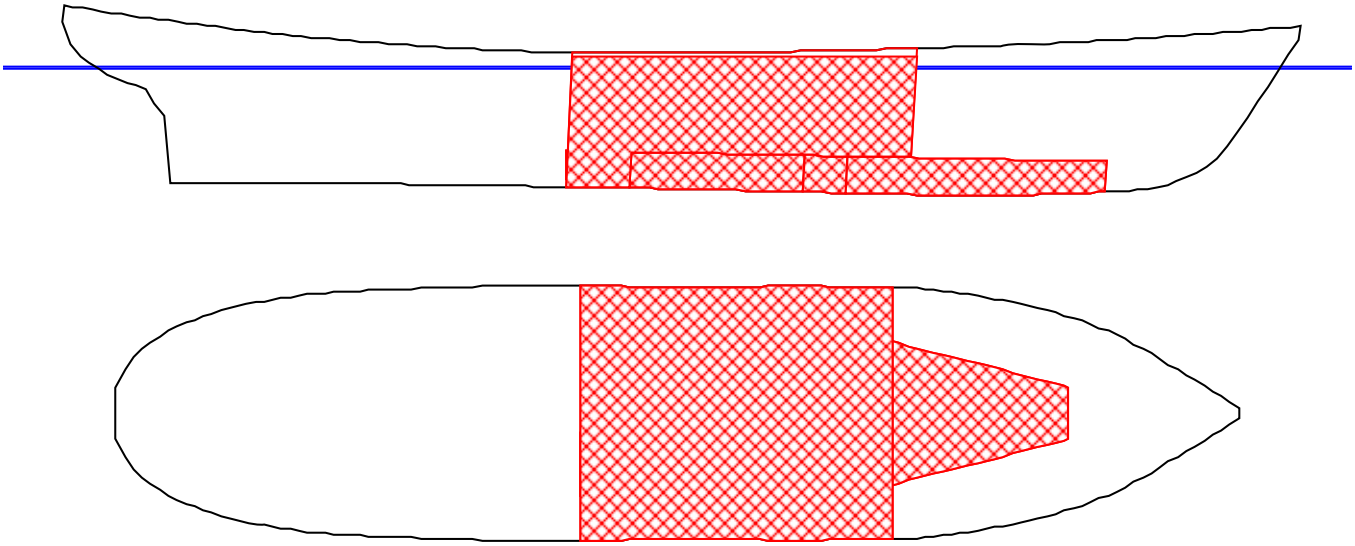
Floating Status – Intact Condition

Draft FP	**2.250m**	**Heel**	**stbd 0.19 deg.**	**GM(Solid)**	**0.431m**
Draft MS	**2.250m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.250m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.431m**
Trim	**zero**	**Wave**	**No**	**KMT**	**3.692 m**
LCG	**11.384f**	**VCG**	**3.261 m**	**TPcm**	**1.14**



Floating Status – Damaged Condition

Draft FP	**3.581m**	**Heel**	**stbd 3.89 deg.**	**GM(Solid)**	**0.373m**
Draft MS	**3.046m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.512m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.373m**
Trim	**fwd 1.067/23.425**	**Wave**	**No**	**KMT**	**3.637 m**
LCG	**11.384f**	**VCG**	**3.261 m**	**TPcm**	**0.86**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	233.43	12.209f	0.107s	2.013	1.000
DB_TANK.S	Flooded	1.025	-4.14	12.142f	0.825s	0.791	0.950
VOID.C	Flooded	1.025	-1.55	14.845f	0.000	0.840	0.950
DB_TANK.C	Flooded	1.025	-6.10	17.504f	0.000	0.904	0.950
CARGO_AFT.C	Flooded	1.025	-84.55	13.032f	0.120s	2.128	0.950
SubTotals:			137.09	11.439f	0.083s	2.041	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.081

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	0.575
(2) Marginline_pt1	22.800f, 1.363p, 4.222	0.760
(3) Marginline_pt2	19.800f, 2.697s, 3.879	0.279
(4) Marginline_pt2	19.800f, 2.697p, 3.879	0.645
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.058
(6) Marginline_pt3	15.000f, 3.197p, 3.472	0.491
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.002
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.434
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.114
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.547
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.418
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.829
(13) Marginline_pt7	0.800f, 2.452s, 3.539	0.821
(14) Marginline_pt7	0.800f, 2.452p, 3.539	1.153

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
3.89s	2.61f	2.503	0.000	0.002 (7)	Equil
3.93s	2.61f	2.503	0.000	0.000 (7)	PFldPt
8.89s	2.60f	2.470	0.028	-0.271 (7)	
11.48s	2.60f	2.447	0.033	-0.554 (7)	MaxRa
13.89s	2.60f	2.425	0.029	-0.554 (7)	
18.89s	2.61f	2.372	0.003	-0.851 (7)	
19.25s	2.61f	2.367	0.001	-1.154 (7)	RaZero
23.89s	2.62f	2.309	-0.041	-1.153 (7)	
28.89s	2.63f	2.236	-0.099	-1.458 (7)	
33.89s	2.62f	2.153	-0.165	-1.759 (7)	
38.89s	2.60f	2.058	-0.236	-2.053 (7)	
43.89s	2.56f	1.952	-0.310	-2.337 (7)	
48.89s	2.51f	1.835	-0.386	-2.617 (5)	
53.89s	2.45f	1.708	-0.461	-2.885 (5)	
58.89s	2.38f	1.571	-0.534	-3.137 (5)	
63.89s	2.31f	1.426	-0.604	-3.372 (5)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(5) Marginline_pt3	15.000f, 3.197s, 3.472	-2.617
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.002

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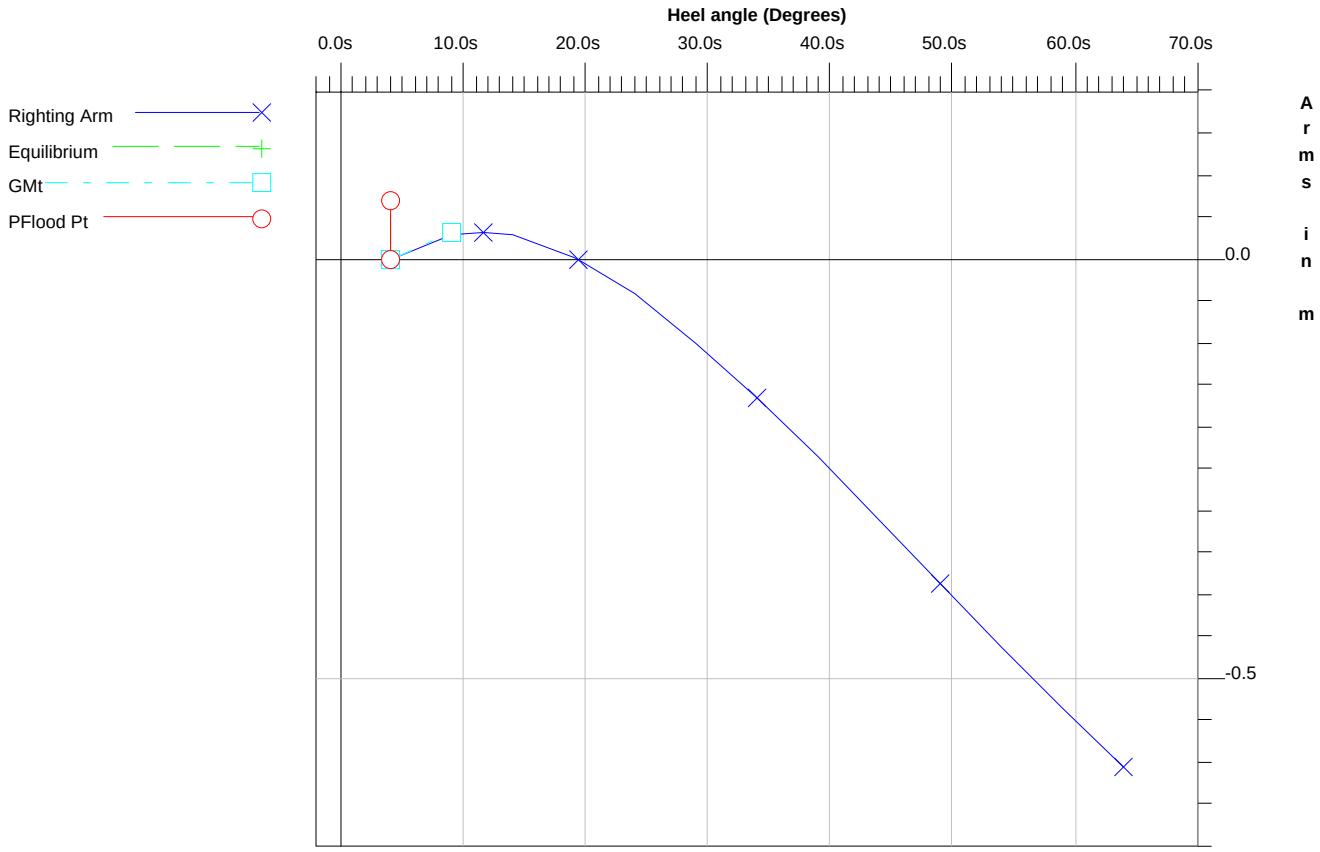
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.373	0.323	Yes
(2) Absolute Angle at Equilibrium	<7.00 deg	3.89	3.11	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	0.04	0.04	No

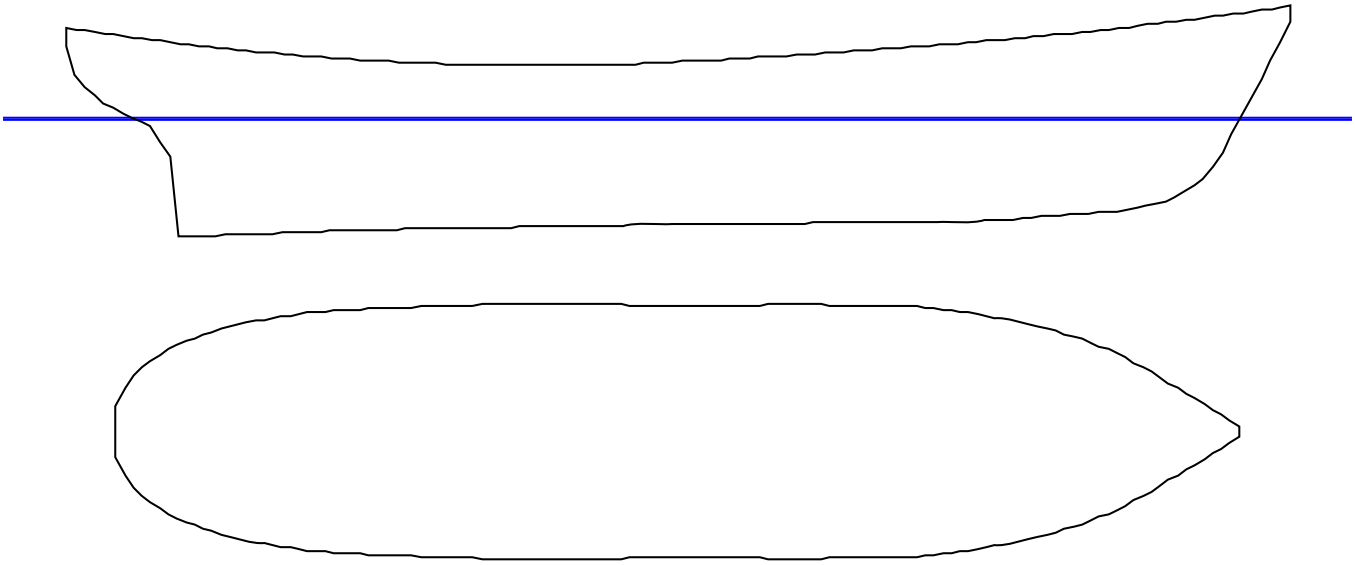
Righting Arms vs. Heel



7.5.4 Example Calculation – Intact Draft 2.25 m, FWD 0.25m / Lpp

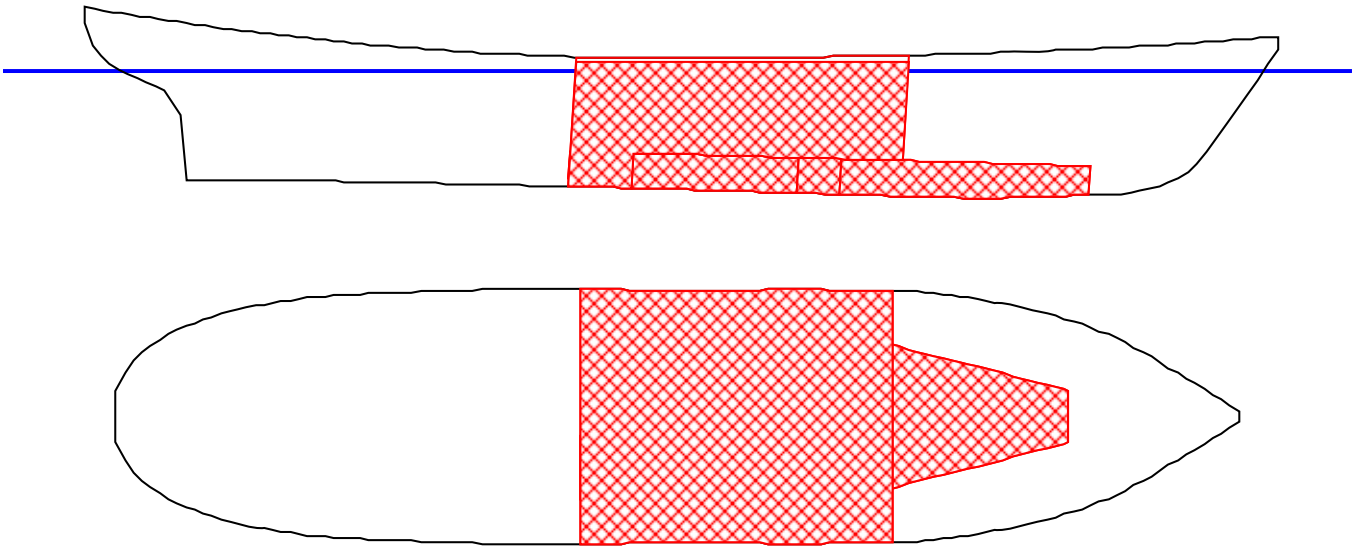
Floating Status – Intact Condition

Draft FP	**2.375m**	**Heel**	**stbd 3.89 deg.**	**GM(Solid)**	**0.437m**
Draft MS	**2.250m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.125m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.437m**
Trim	**fwd 0.250/23.425**	**Wave**	**No**	**KMT**	**3.685 m**
LCG	**11.634f**	**VCG**	**3.244 m**	**TPcm**	**1.14**



Floating Status – Damaged Condition

Draft FP	**3.682m**	**Heel**	**stbd 3.68 deg.**	**GM(Solid)**	**0.392m**
Draft MS	**3.052m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.422m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.392m**
Trim	**fwd 1.257/23.425**	**Wave**	**No**	**KMT**	**3.638 m**
LCG	**11.634f**	**VCG**	**3.244 m**	**TPcm**	**0.85**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	234.03	12.371f	0.101s	2.023	1.000
DB_TANK.S	Flooded	1.025	-4.14	12.142f	0.825s	0.791	0.950
VOID.C	Flooded	1.025	-1.55	14.845f	0.000	0.840	0.950
DB_TANK.C	Flooded	1.025	-6.10	17.504f	0.000	0.904	0.950
CARGO_AFT.C	Flooded	1.025	-85.27	13.051f	0.113s	2.137	0.950
SubTotals:			136.96	11.698f	0.077s	2.053	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.086

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	0.484
(2) Marginline_pt1	22.800f, 1.363p, 4.222	0.659
(3) Marginline_pt2	19.800f, 2.697s, 3.879	0.218
(4) Marginline_pt2	19.800f, 2.697p, 3.879	0.563
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.038
(6) Marginline_pt3	15.000f, 3.197p, 3.472	0.447
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.004
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.412
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.158
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.568
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.490
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.878
(13) Marginline_pt7	0.800f, 2.452s, 3.539	0.913
(14) Marginline_pt7	0.800f, 2.452p, 3.539	1.227

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
3.68s	3.07f	2.413	0.000	0.004 (7)	Equil
3.75s	3.07f	2.413	0.000	0.000 (7)	PFldPt
8.68s	3.07f	2.381	0.031	-0.269 (7)	
11.52s	3.07f	2.354	0.036	-0.553 (7)	MaxRa
13.68s	3.09f	2.332	0.033	-0.553 (7)	
18.68s	3.14f	2.272	0.009	-0.850 (7)	
19.71s	3.15f	2.259	0.001	-1.155 (7)	RaZero
23.68s	3.20f	2.201	-0.033	-1.154 (7)	
28.68s	3.25f	2.120	-0.089	-1.462 (5)	
33.68s	3.29f	2.028	-0.152	-1.775 (5)	
38.68s	3.32f	1.926	-0.221	-2.083 (5)	
43.68s	3.33f	1.812	-0.294	-2.381 (5)	
48.68s	3.34f	1.686	-0.369	-2.668 (5)	
53.68s	3.33f	1.551	-0.442	-2.941 (5)	
58.68s	3.31f	1.407	-0.514	-3.198 (5)	
63.68s	3.28f	1.256	-0.583	-3.438 (5)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(5) Marginline_pt3	15.000f, 3.197s, 3.472	-1.462
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.004

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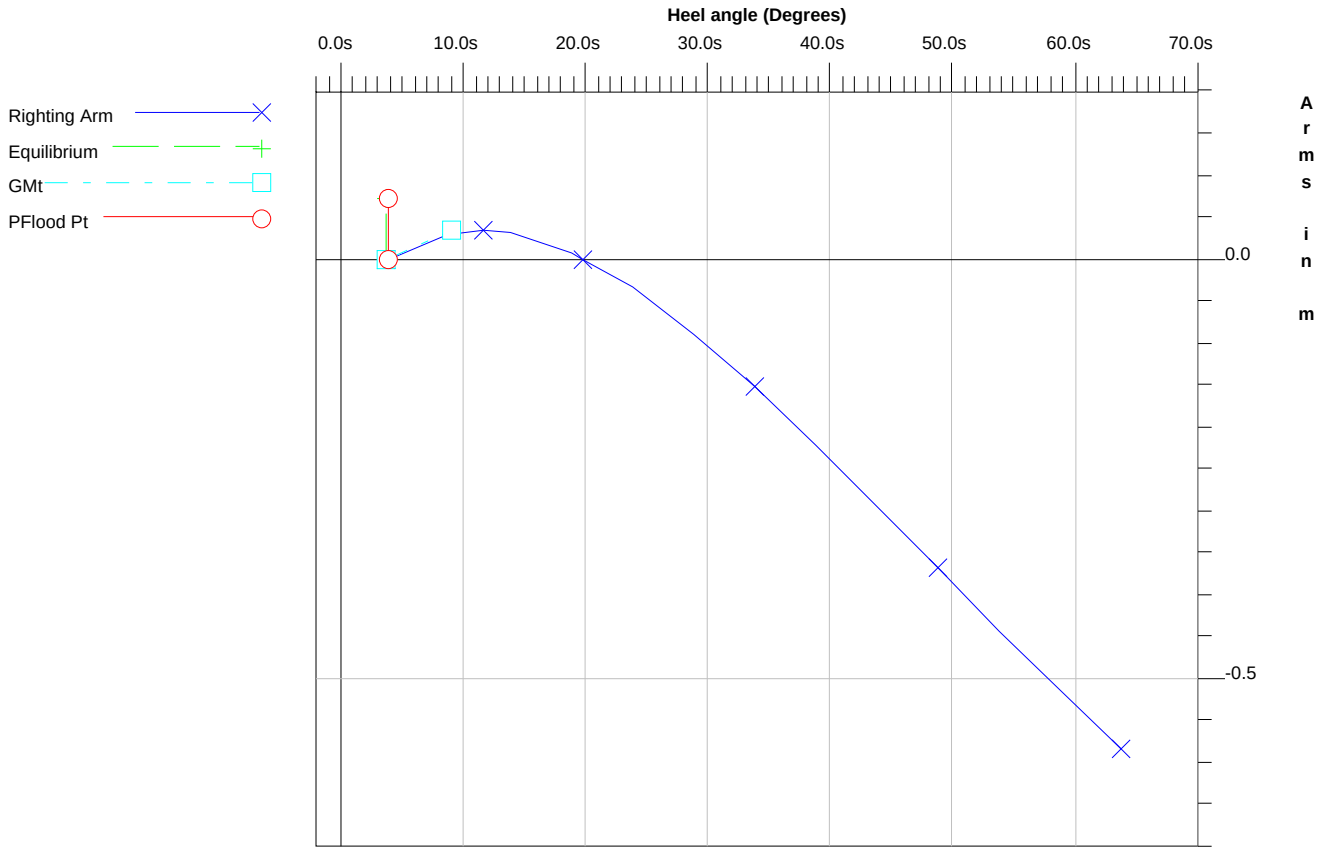
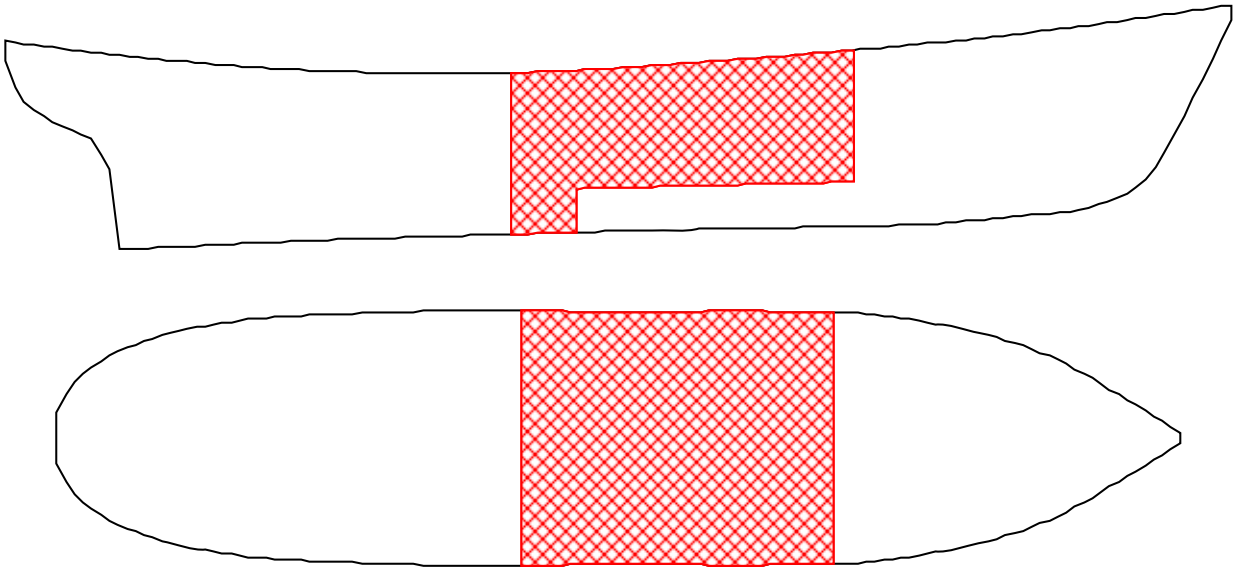
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.392	0.342	Yes
(2) Absolute Angle at Equilibrium	<7.00 deg	3.68	3.32	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	0.07	0.07	Yes

Righting Arms vs. Heel



7.7 DAM2B - Damage Case 2B

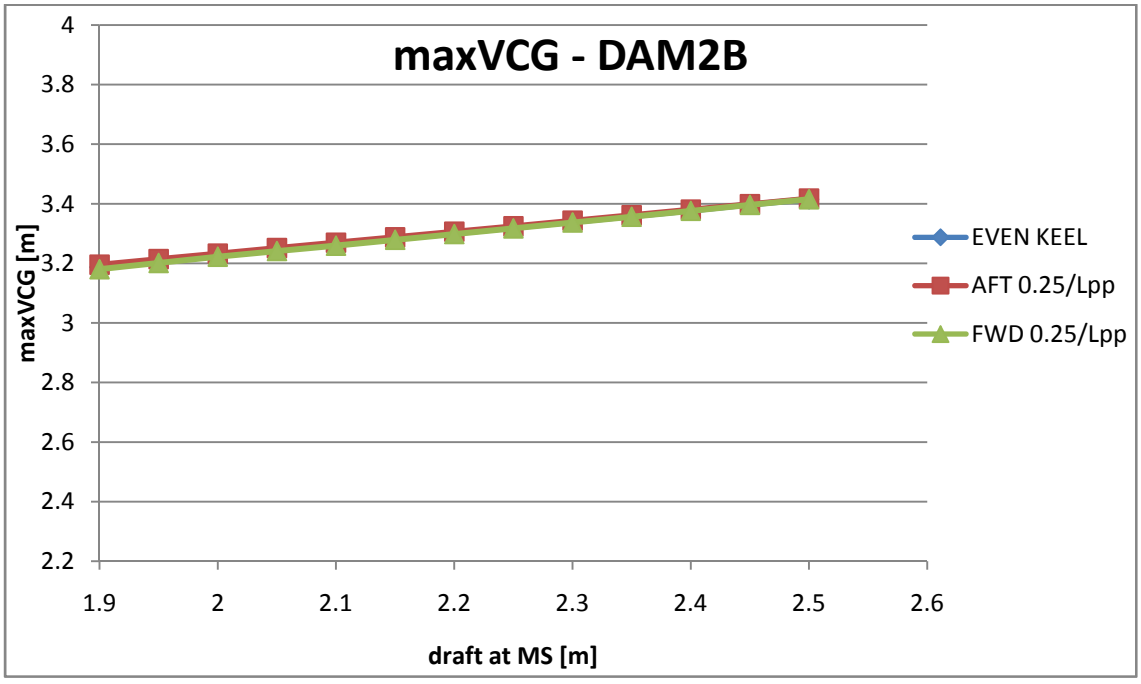
7.7.1 Damage Definition



Damaged Compartments

Compartment	Long. extent	Perm.
Cargo_AFT	**#21 - #37**	**0.95**

7.7.2 Max VCG Tables



Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	2.911	0.0%	7.0°	27.8°
64.9	1.55	2.970	0.0%	7.0°	26.4°
69.4	1.60	3.017	0.0%	7.0°	25.0°
74.1	1.65	3.056	0.0%	7.0°	23.6°
78.9	1.70	3.091	0.0%	7.0°	22.1°
83.7	1.75	3.118	0.0%	7.0°	20.6°
88.7	1.80	3.143	0.0%	7.0°	19.1°
93.7	1.85	3.166	0.0%	7.0°	17.7°
98.9	1.90	3.187	0.0%	7.0°	16.3°
104.1	1.95	3.206	0.0%	7.0°	15.0°
109.4	2.00	3.225	0.0%	7.0°	13.5°
114.8	2.05	3.244	0.0%	7.0°	12.1°
120.2	**2.10**	**3.263**	**0.0%**	**7.0°**	**10.8°**
125.8	2.15	3.281	0.1%	7.0°	9.5°
131.4	2.20	3.300	0.0%	7.0°	8.2°
137.1	2.25	3.320	0.0%	7.0°	6.9°
142.8	2.30	3.339	0.0%	7.0°	5.6°
148.7	2.35	3.357	0.0%	7.0°	4.3°
154.6	2.40	3.377	0.0%	7.0°	3.0°
160.5	2.45	3.397	0.0%	7.0°	1.7°
166.5	2.50	3.415	0.0%	7.0°	0.5°

Trim = aft 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.7	1.50	2.936	0.0%	7.0°	27.0°
65.1	1.55	2.991	0.0%	7.0°	25.6°
69.7	1.60	3.036	0.0%	7.0°	24.2°
74.3	1.65	3.072	0.0%	7.0°	22.8°
79.1	1.70	3.104	0.0%	7.0°	21.3°
84.0	1.75	3.131	0.0%	7.0°	18.4°
89.0	1.80	3.153	0.0%	7.0°	18.5°
94.1	1.85	3.175	0.0%	7.0°	17.1°
99.2	1.90	3.195	0.0%	7.0°	15.8°
104.5	1.95	3.214	0.0%	7.0°	14.5°
109.8	2.00	3.232	0.0%	7.0°	13.2°
115.2	2.05	3.251	0.0%	7.0°	11.9°
120.7	2.10	3.269	0.0%	7.0°	10.7°
126.3	2.15	3.287	0.0%	7.0°	9.4°
132.0	2.20	3.306	0.0%	7.0°	8.2°
137.7	2.25	3.324	0.0%	7.0°	7.0°
143.5	2.30	3.343	0.0%	7.0°	5.7°
149.4	2.35	3.361	0.0%	7.0°	4.4°
155.3	2.40	3.380	0.0%	7.0°	3.1°
161.3	2.45	3.398	0.0%	7.0°	1.9°
167.4	2.50	3.417	0.0%	7.0°	0.6°

Trim = fwd 0.250/23.425 at zero heel (Trim righting arm held at zero)

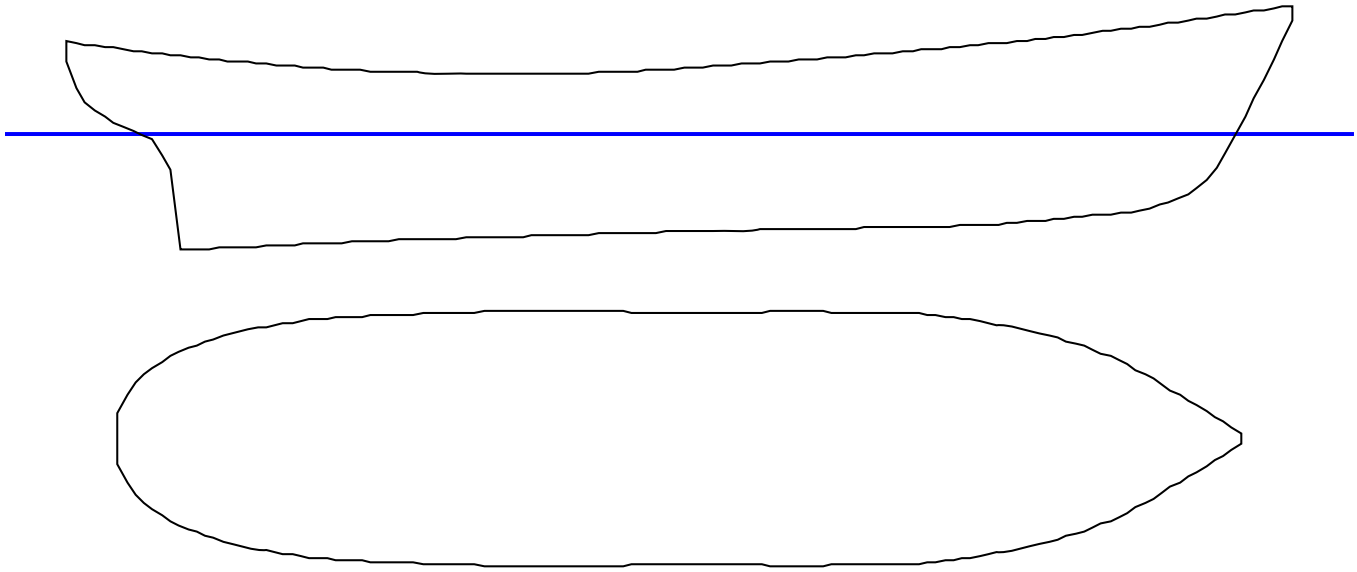
Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	2.892	0.0%	7.0°	27.9°
64.9	1.55	2.953	0.0%	7.0°	26.4°
69.4	1.60	3.002	0.0%	7.0°	25.0°
74.1	1.65	3.044	0.0%	7.0°	23.5°
78.8	1.70	3.079	0.0%	7.0°	22.0°
83.6	1.75	3.109	0.0%	7.0°	20.4°
88.6	1.80	3.135	0.0%	7.0°	19.0°
93.6	1.85	3.159	0.0%	7.0°	17.5°
98.7	1.90	3.180	0.0%	7.0°	16.1°
103.9	1.95	3.201	0.0%	7.0°	14.7°
109.2	2.00	3.222	0.0%	7.0°	13.3°
114.5	2.05	3.241	0.0%	7.0°	12.0°
120.0	2.10	3.259	0.0%	7.0°	10.6°
125.5	2.15	3.279	0.0%	7.0°	9.3°
131.0	2.20	3.298	0.0%	7.0°	8.0°
136.7	2.25	3.317	0.0%	7.0°	6.7°
142.4	**2.30**	**3.337**	**0.0%**	**7.0°**	**5.4°**
148.2	2.35	3.356	0.0%	7.0°	4.1°
154.0	2.40	3.376	0.0%	7.0°	2.9°
160.0	2.45	3.396	0.1%	7.0°	1.6°
165.9	2.50	3.415	0.0%	7.0°	0.4°

The specified initial trim at zero heel refers to the undamaged state.
The transverse C.G. AFTER DAMAGE is assumed to be zero

7.7.3 Example Calculation – Intact Draft 2.10 m, EVEN KEEL

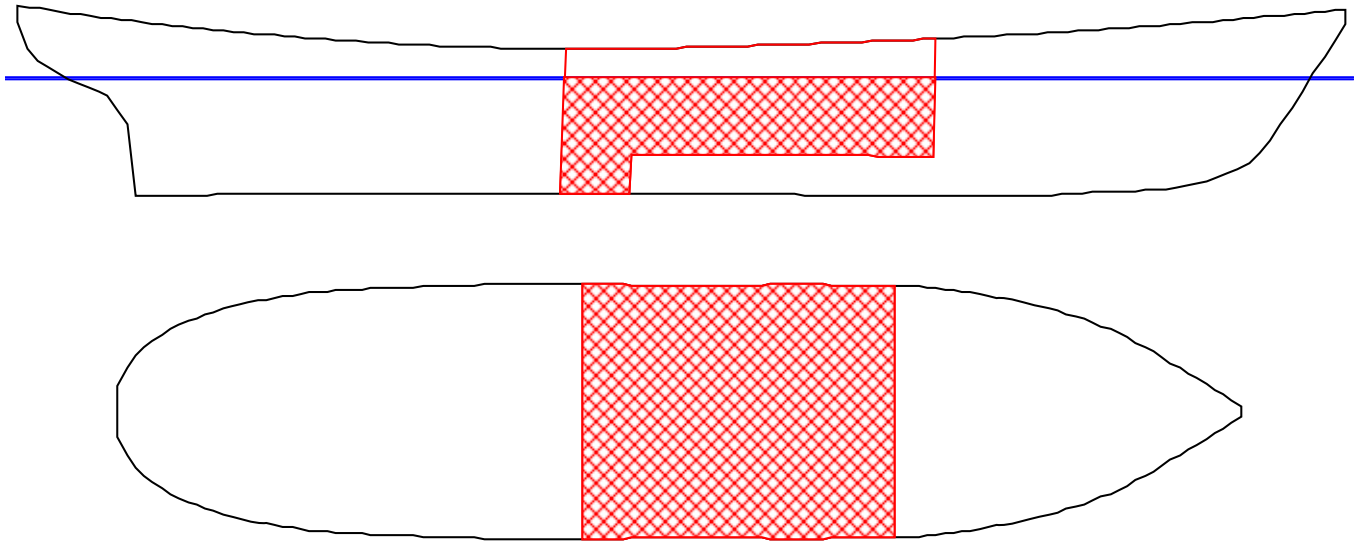
Floating Status – Intact Condition

Draft FP	**2.100m**	**Heel**	**zero**	**GM(Solid)**	**0.482m**
Draft MS	**2.100m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.100m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.482m**
Trim	**zero**	**Wave**	**No**	**KMT**	**3.745 m**
LCG	**11.390f**	**VCG**	**3.263 m**	**TPcm**	**1.10**



Floating Status – Damaged Condition

Draft FP	**3.028m**	**Heel**	**zero**	**GM(Solid)**	**0.050m**
Draft MS	**2.684m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.341m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.050m**
Trim	**fwd 0.688/23.425**	**Wave**	**No**	**KMT**	**3.313 m**
LCG	**11.390f**	**VCG**	**3.263 m**	**TPcm**	**0.79**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	187.76	11.992f	0.000	1.787	1.000
CARGO_AFT.C	Flooded	1.025	-67.51	12.984f	0.000	1.922	0.950
SubTotals:			120.25	11.435f	0.000	1.712	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.536

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	1.212
(2) Marginline_pt1	22.800f, 1.363p, 4.222	1.212
(3) Marginline_pt2	19.800f, 2.697s, 3.879	0.957
(4) Marginline_pt2	19.800f, 2.697p, 3.879	0.957
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.691
(6) Marginline_pt3	15.000f, 3.197p, 3.472	0.691
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.588
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.588
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.617
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.617
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.855
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.855
(13) Marginline_pt7	0.800f, 2.452s, 3.539	1.174
(14) Marginline_pt7	0.800f, 2.452p, 3.539	1.174

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
0.00	1.68f	2.340	0.000	0.588 (7)	Equil
5.00s	1.68f	2.325	0.004	0.312 (7)	
10.00s	1.69f	2.280	0.010	0.042 (7)	
10.79s	1.69f	2.270	0.011	0.000 (7)	PFldPt
15.00s	1.70f	2.209	0.012	-0.223 (7)	
18.91s	1.69f	2.144	0.000	-0.486 (7)	RaZero
20.00s	1.69f	2.125	-0.006	-0.486 (7)	
25.00s	1.66f	2.032	-0.047	-0.753 (7)	
30.00s	1.62f	1.930	-0.107	-1.022 (7)	
35.00s	1.57f	1.818	-0.181	-1.288 (7)	
40.00s	1.52f	1.698	-0.262	-1.552 (7)	
45.00s	1.45f	1.572	-0.345	-1.810 (7)	
50.00s	1.38f	1.439	-0.430	-2.061 (7)	
55.00s	1.30f	1.301	-0.515	-2.301 (7)	
60.00s	1.20f	1.157	-0.598	-2.528 (7)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.588

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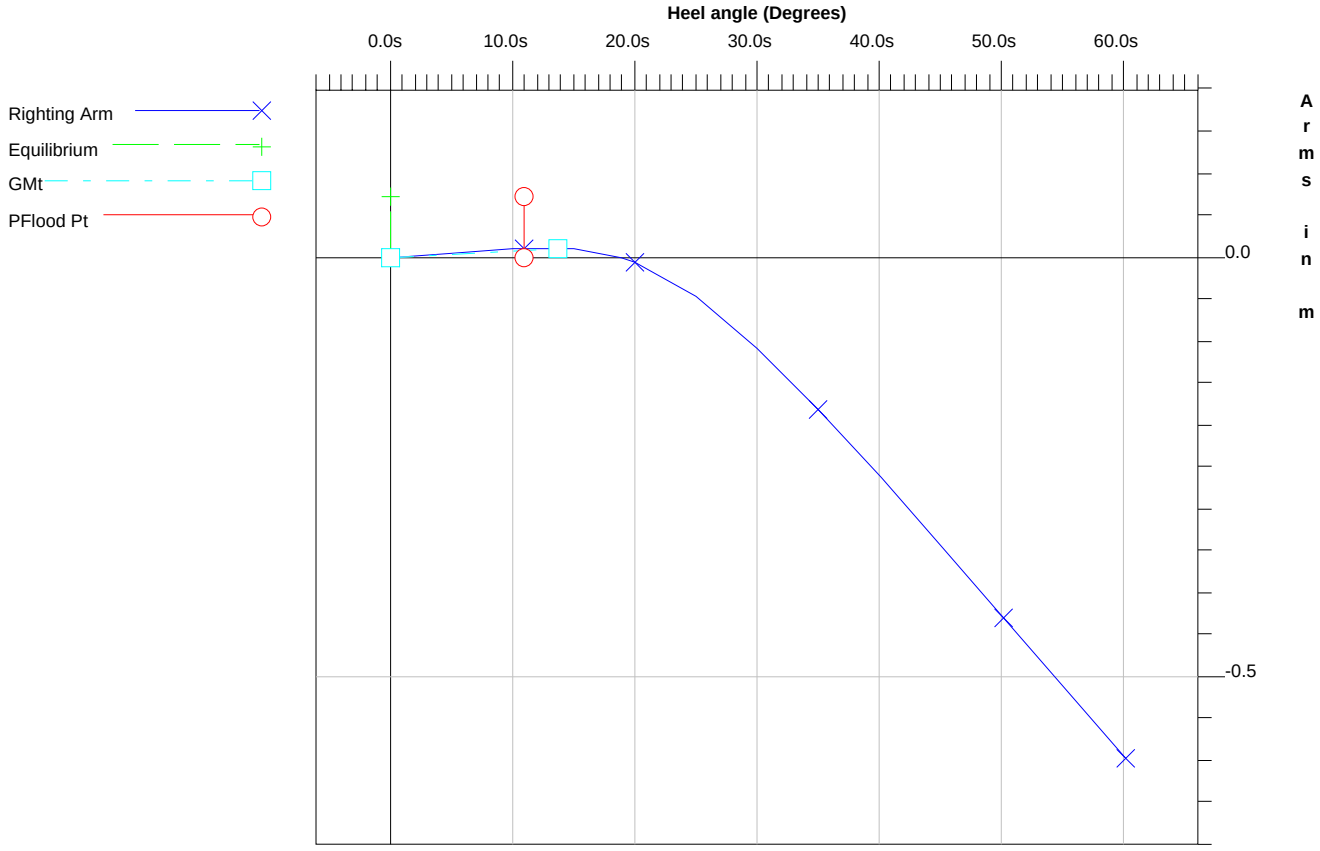
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.050	0.000	No
(2) Absolute Angle at Equilibrium	<7.00 deg	0.00	7.00	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	10.79	10.79	Yes

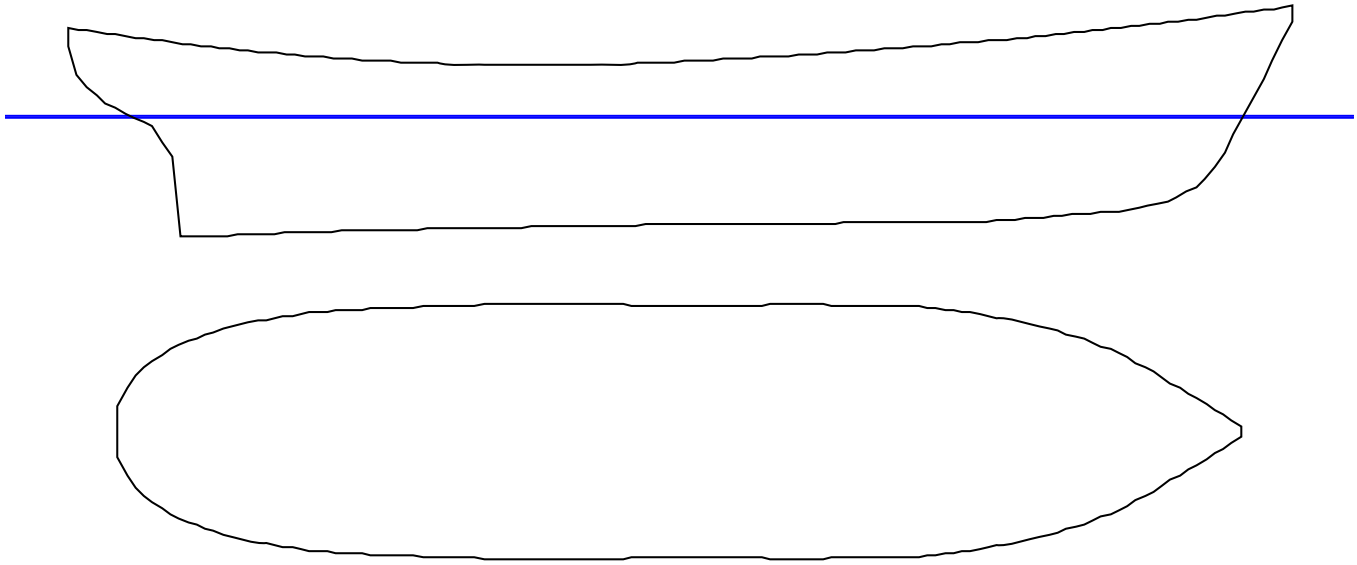
Righting Arms vs. Heel



7.7.4 Example Calculation – Intact Draft 2.30 m, FWD 0.25m / Lpp

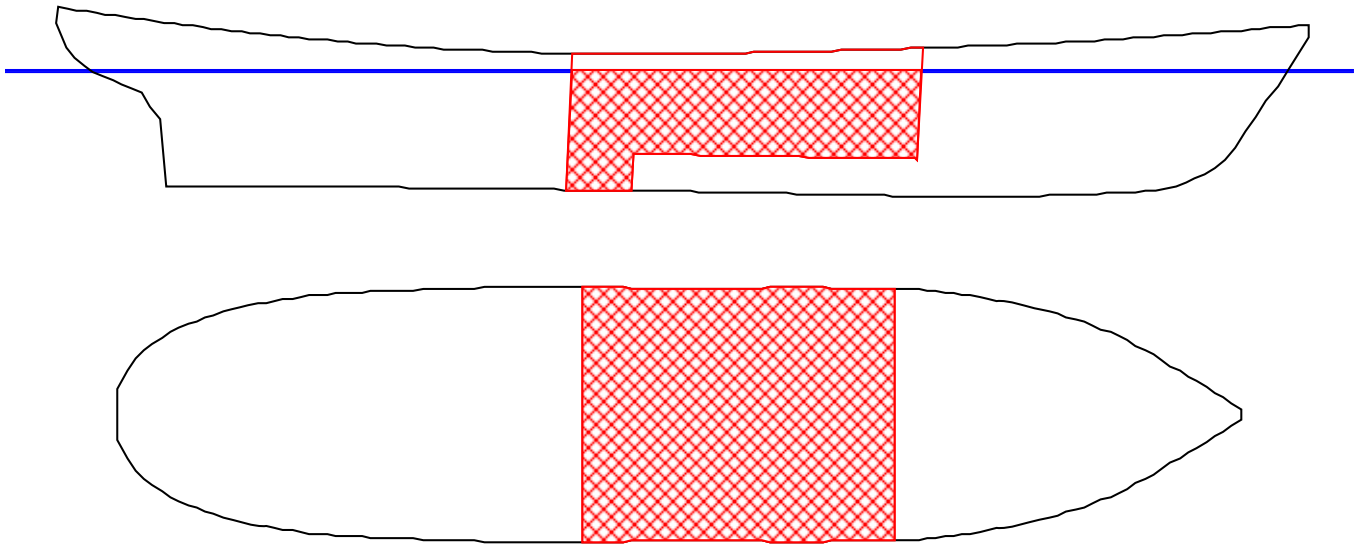
Floating Status – Intact Condition

Draft FP	**2.425m**	**Heel**	**zero**	**GM(Solid)**	**0.329m**
Draft MS	**2.300m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.175m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.329m**
Trim	**fwd 0.250/23.425**	**Wave**	**No**	**KMT**	**3.666 m**
LCG	**11.628f**	**VCG**	**3.337 m**	**TPcm**	**1.15**



Floating Status – Damaged Condition

Draft FP	**3.464m**	**Heel**	**zero**	**GM(Solid)**	**0.049m**
Draft MS	**2.969m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.473m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.049m**
Trim	**fwd 0.991/23.425**	**Wave**	**No**	**KMT**	**3.386 m**
LCG	**11.628f**	**VCG**	**3.337 m**	**TPcm**	**0.84**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	223.25	12.173f	0.000	1.961	1.000
CARGO_AFT.C	Flooded	1.025	-80.87	13.024f	0.000	2.081	0.950
SubTotals:			142.39	11.689f	0.000	1.893	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.260

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	0.784
(2) Marginline_pt1	22.800f, 1.363p, 4.222	0.784
(3) Marginline_pt2	19.800f, 2.697s, 3.879	0.568
(4) Marginline_pt2	19.800f, 2.697p, 3.879	0.568
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.364
(6) Marginline_pt3	15.000f, 3.197p, 3.472	0.364
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.298
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.298
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.393
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.393
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.676
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.676
(13) Marginline_pt7	0.800f, 2.452s, 3.539	1.031
(14) Marginline_pt7	0.800f, 2.452p, 3.539	1.031

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
0.00	2.42f	2.471	0.000	0.298 (7)	Equil
5.00s	2.42f	2.456	0.005	0.022 (7)	
5.40s	2.42f	2.454	0.005	0.000 (7)	PFldPt
10.00s	2.42f	2.415	0.007	-0.249 (7)	
12.30s	2.41f	2.393	0.001	-0.527 (7)	RaZero
15.00s	2.40f	2.364	-0.013	-0.527 (7)	
20.00s	2.40f	2.302	-0.058	-0.815 (7)	
25.00s	2.39f	2.231	-0.121	-1.109 (7)	
30.00s	2.38f	2.151	-0.196	-1.405 (7)	
35.00s	2.35f	2.059	-0.279	-1.696 (7)	
40.00s	2.31f	1.958	-0.366	-1.980 (7)	
45.00s	2.25f	1.846	-0.455	-2.254 (7)	
50.00s	2.18f	1.725	-0.543	-2.516 (7)	
55.00s	2.09f	1.595	-0.629	-2.770 (5)	
60.00s	2.00f	1.457	-0.711	-3.014 (5)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(5) Marginline_pt3	15.000f, 3.197s, 3.472	-2.770
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.298

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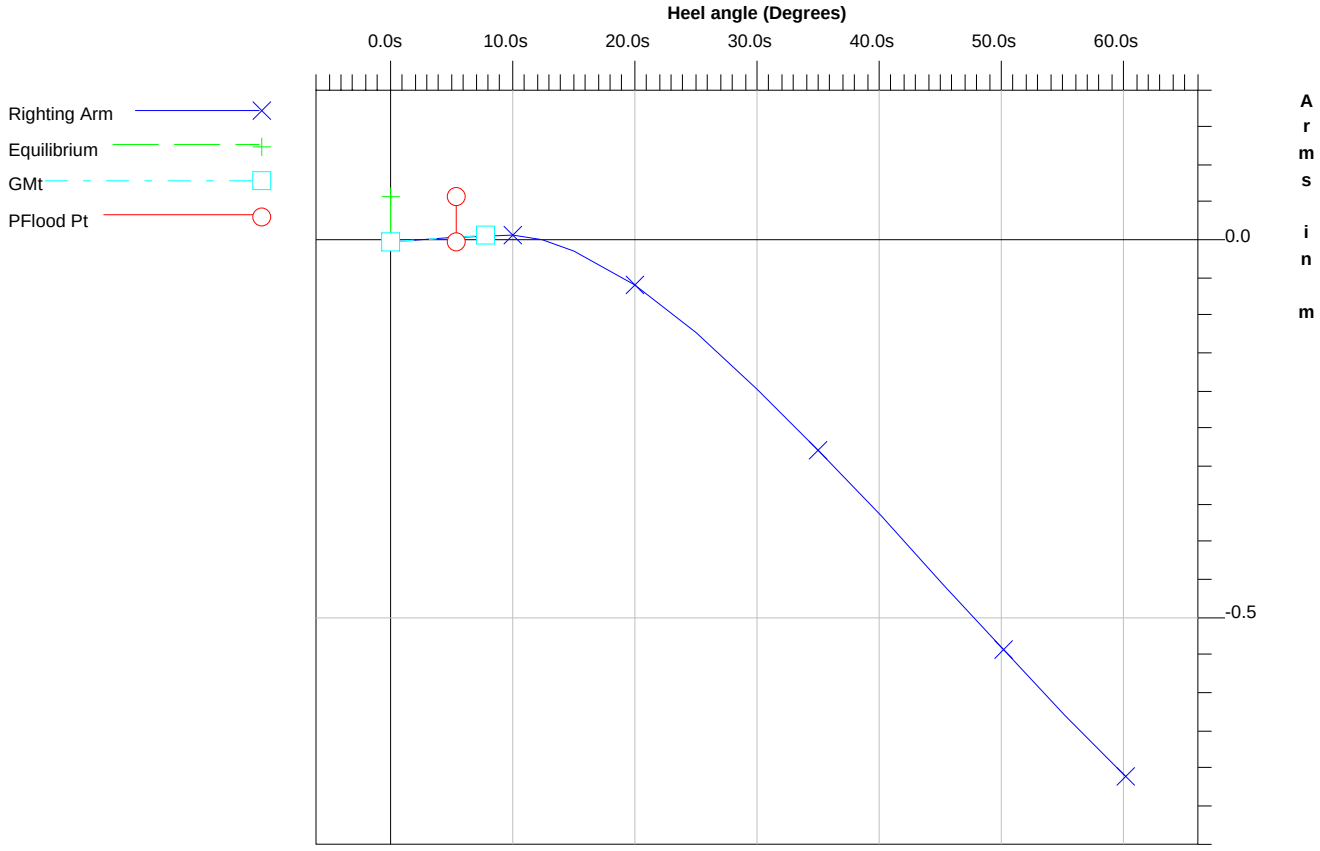
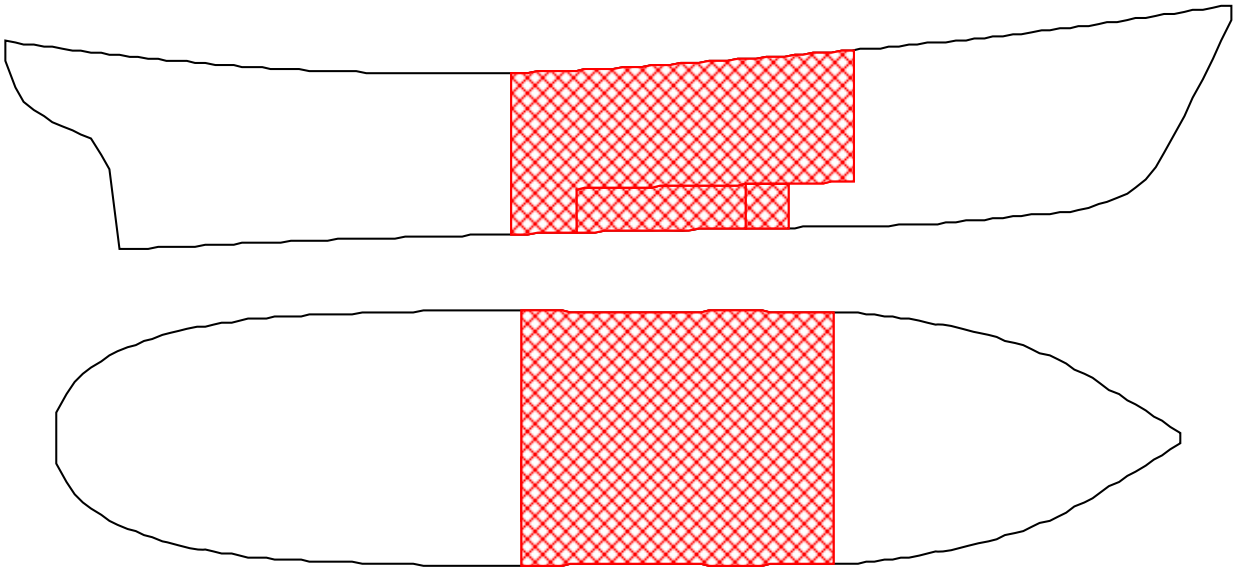
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.049	0.001	No
(2) Absolute Angle at Equilibrium	<7.00 deg	0.00	7.00	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	5.40	5.40	Yes

Righting Arms vs. Heel



7.9 DAM2C - Damage Case 2C

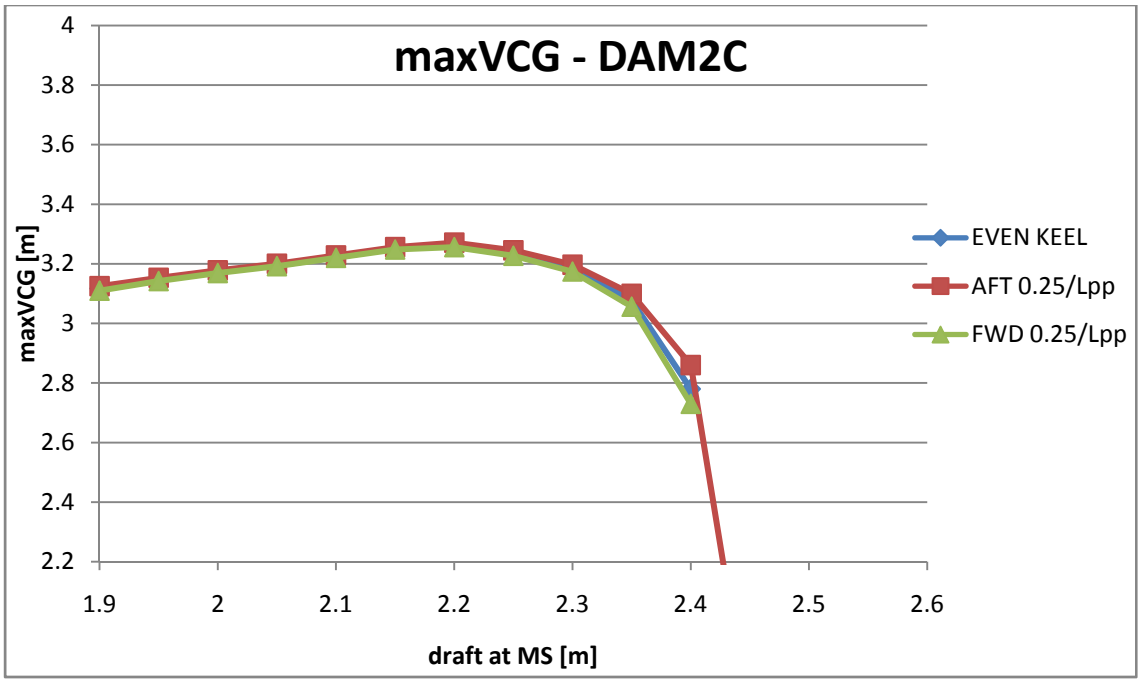
7.9.1 Damage Definition



Damaged Compartments

Compartment	Long. extent	Perm.
Cargo_AFT	**#21 - #37**	**0.95**
DB_Tank.s	**#21 - #32**	**0.95**
Void.c	**#32 - #34**	**0.95**

7.9.2 Max VCG Tables



Maximum VCG vs. Displacement with Damage
Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	2.762	751.4%	0.1°	19.1°
64.9	1.55	2.822	707.3%	0.0°	17.8°
69.4	1.60	2.882	651.5%	0.0°	16.3°
74.1	1.65	2.934	609.8%	0.0°	15.0°
78.9	1.70	2.978	575.5%	0.0°	13.4°
83.7	1.75	3.019	543.7%	0.0°	11.9°
88.7	1.80	3.055	516.6%	0.0°	10.5°
93.7	1.85	3.088	487.0%	0.1°	9.0°
98.9	1.90	3.117	465.3%	0.0°	7.7°
104.1	1.95	3.146	441.9%	0.1°	6.3°
109.4	2.00	3.173	421.1%	0.1°	5.0°
114.8	2.05	3.194	408.1%	0.1°	3.7°
120.2	2.10	3.222	382.6%	0.0°	2.3°
125.8	2.15	3.251	358.2%	0.1°	1.0°
131.4	2.20	3.263	361.6%	0.3°	0.1°
137.1	2.25	3.237	437.1%	1.5°	0.0°
142.8	2.30	3.184	567.0%	2.8°	0.1°
148.7	**2.35**	**3.077**	**806.4%**	**4.1°**	**0.1°**
154.6	2.40	2.780	1428.3%	5.3°	0.1°

Trim = aft 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.7	1.50	2.776	760.1%	0.0°	18.5°
65.1	1.55	2.839	703.9%	0.1°	17.2°
69.7	1.60	2.898	648.5%	0.0°	15.7°
74.3	1.65	2.948	609.1%	0.0°	14.3°
79.1	1.70	2.997	560.7%	0.1°	12.8°
84.0	1.75	3.030	543.9%	0.0°	11.5°
89.0	1.80	3.064	517.8%	0.0°	10.2°
94.1	1.85	3.098	485.7%	0.1°	8.7°
99.2	1.90	3.125	466.2%	0.0°	7.5°
104.5	1.95	3.153	441.2%	0.1°	6.2°
109.8	2.00	3.178	422.2%	0.0°	5.0°
115.2	2.05	3.200	407.9%	0.1°	3.8°
120.7	2.10	3.228	381.0%	0.0°	2.5°
126.3	2.15	3.256	354.2%	0.1°	1.1°
132.0	2.20	3.271	353.1%	0.2°	0.1°
137.7	2.25	3.245	427.3%	1.4°	0.1°
143.5	2.30	3.197	545.3%	2.7°	0.1°
149.4	2.35	3.099	766.9%	3.9°	0.1°
155.3	2.40	2.860	1271.6%	5.2°	0.0°
161.3	2.45	1.645	3731.6%	6.4°	0.1°

,Trim = fwd 0.250/23.425 at zero heel (Trim righting arm held at zero)

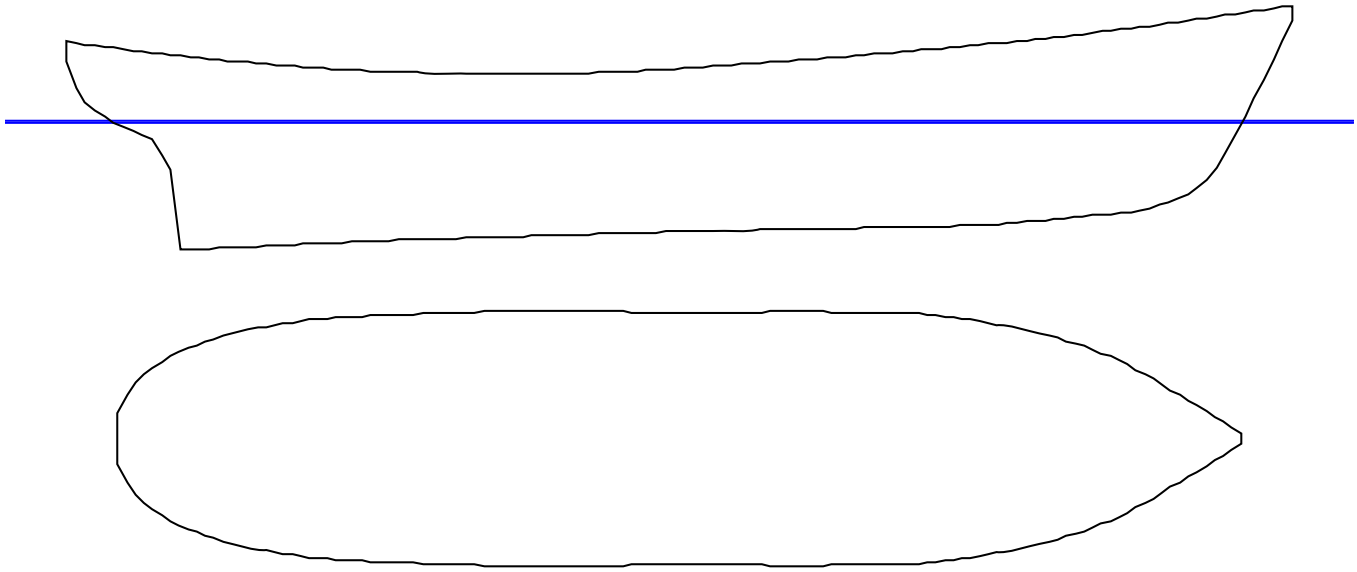
Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	2.745	761.4%	0.0°	18.9°
64.9	1.55	2.809	708.2%	0.0°	17.6°
69.4	1.60	2.865	664.6%	0.1°	16.2°
74.1	1.65	2.923	610.5%	0.0°	14.6°
78.8	1.70	2.968	576.6%	0.0°	13.2°
83.6	1.75	3.016	531.7%	0.1°	11.6°
88.6	1.80	3.048	515.0%	0.0°	10.3°
93.6	1.85	3.083	485.0%	0.1°	8.8°
98.7	1.90	3.110	467.7%	0.0°	7.5°
103.9	1.95	3.142	441.6%	0.1°	6.1°
109.2	2.00	3.169	419.9%	0.1°	4.8°
114.5	2.05	3.192	406.8%	0.1°	3.6°
120.0	2.10	3.220	383.1%	0.0°	2.2°
125.5	2.15	3.248	360.1%	0.1°	0.9°
131.0	2.20	3.256	371.4%	0.4°	0.1°
136.7	2.25	3.227	453.8%	1.7°	0.1°
142.4	**2.30**	**3.174**	**585.7%**	**2.9°**	**0.0°**
148.2	2.35	3.056	847.9%	4.2°	0.1°
154.0	2.40	2.730	1528.8%	5.4°	0.1°

The specified initial trim at zero heel refers to the undamaged state.
The transverse C.G. AFTER DAMAGE is assumed to be zero

7.9.3 Example Calculation – Intact Draft 2.35 m, EVEN KEEL

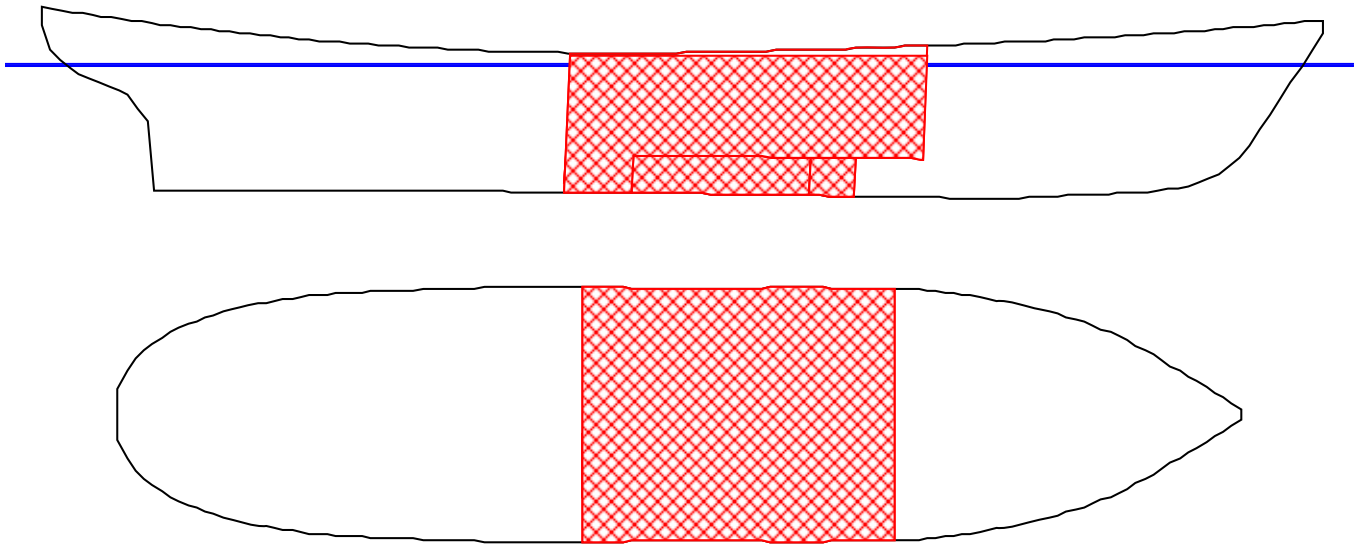
Floating Status – Intact Condition

Draft FP	**2.350m**	**Heel**	**zero**	**GM(Solid)**	**0.586m**
Draft MS	**2.350m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.350m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.586m**
Trim	**zero**	**Wave**	**No**	**KMT**	**3.663 m**
LCG	**11.375f**	**VCG**	**3.077 m**	**TPcm**	**1.17**



Floating Status – Damaged Condition

Draft FP	**3.540m**	**Heel**	**stbd 2.93 deg.**	**GM(Solid)**	**0.453m**
Draft MS	**3.102m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.664m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.453m**
Trim	**fwd 0.874/23.425**	**Wave**	**No**	**KMT**	**3.531 m**
LCG	**11.375f**	**VCG**	**3.077 m**	**TPcm**	**0.87**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	240.91	12.023f	0.080s	2.037	1.000
DB_TANK.S	Flooded	1.025	-4.14	12.142f	0.825s	0.791	0.950
VOID.C	Flooded	1.025	-1.55	14.845f	0.000	0.840	0.950
CARGO_AFT.C	Flooded	1.025	-86.54	13.014f	0.089s	2.149	0.950
SubTotals:			148.67	11.414f	0.054s	2.020	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.045

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	0.634
(2) Marginline_pt1	22.800f, 1.363p, 4.222	0.773
(3) Marginline_pt2	19.800f, 2.697s, 3.879	0.336
(4) Marginline_pt2	19.800f, 2.697p, 3.879	0.611
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.083
(6) Marginline_pt3	15.000f, 3.197p, 3.472	0.410
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.003
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.329
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.073
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.400
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.347
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.657
(13) Marginline_pt7	0.800f, 2.452s, 3.539	0.718
(14) Marginline_pt7	0.800f, 2.452p, 3.539	0.968

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
2.93s	2.14f	2.659	0.000	0.003 (7)	Equil
3.00s	2.14f	2.658	0.001	0.000 (7)	PFldPt
7.93s	2.13f	2.633	0.033	-0.272 (7)	
11.45s	2.11f	2.611	0.041	-0.559 (7)	MaxRa
12.93s	2.10f	2.601	0.039	-0.559 (7)	
17.93s	2.07f	2.564	0.020	-0.860 (7)	
20.80s	2.06f	2.540	0.000	-1.170 (7)	RaZero
22.93s	2.04f	2.520	-0.017	-1.170 (7)	
27.93s	2.00f	2.467	-0.066	-1.481 (7)	
32.93s	1.94f	2.403	-0.123	-1.790 (7)	
37.93s	1.87f	2.328	-0.185	-2.092 (7)	
42.93s	1.78f	2.240	-0.250	-2.384 (7)	
47.93s	1.69f	2.141	-0.317	-2.663 (7)	
52.93s	1.58f	2.030	-0.383	-2.927 (7)	
57.93s	1.47f	1.907	-0.448	-3.174 (7)	
62.93s	1.35f	1.773	-0.511	-3.403 (7)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.003

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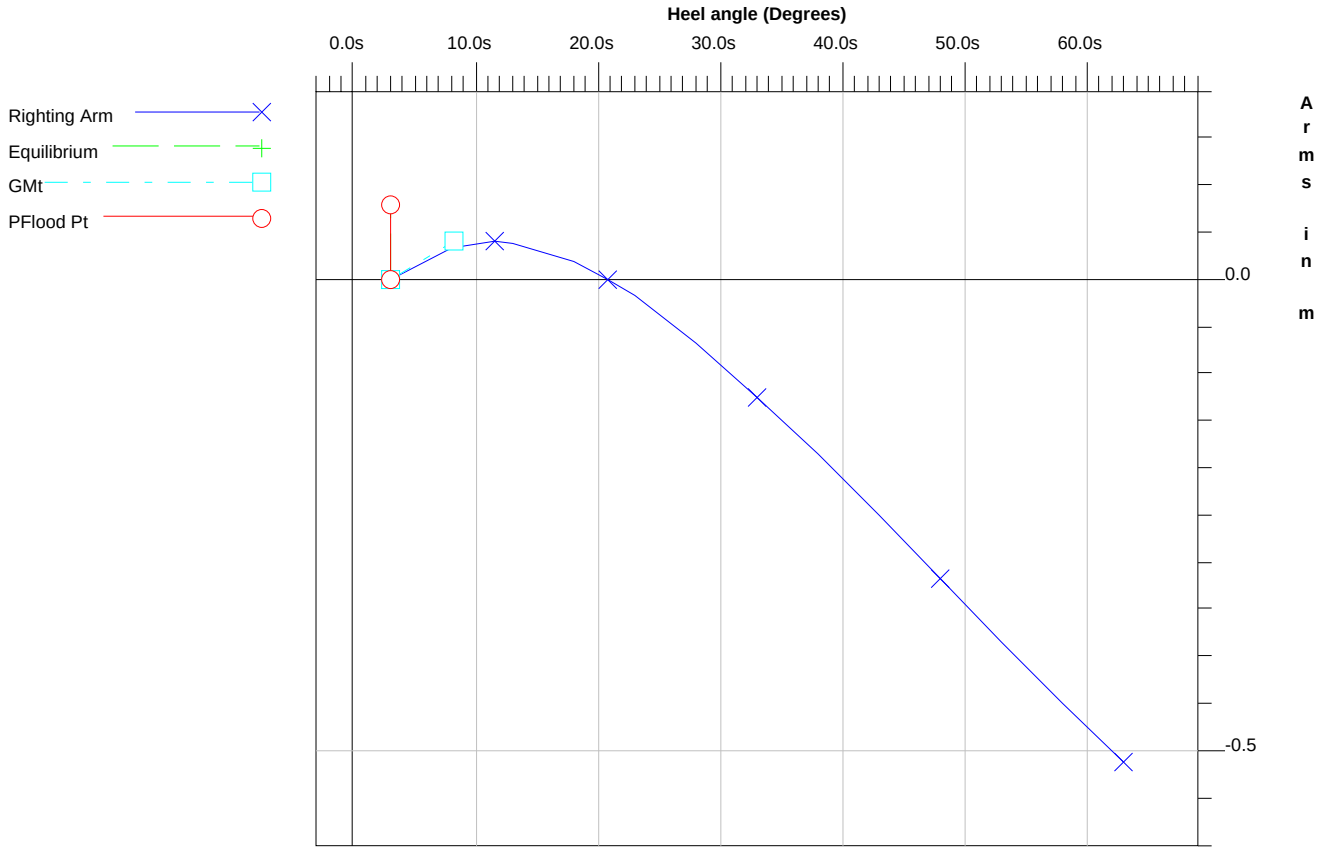
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.453	0.403	Yes
(2) Absolute Angle at Equilibrium	<7.00 deg	2.93	4.07	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	0.07	0.07	Yes

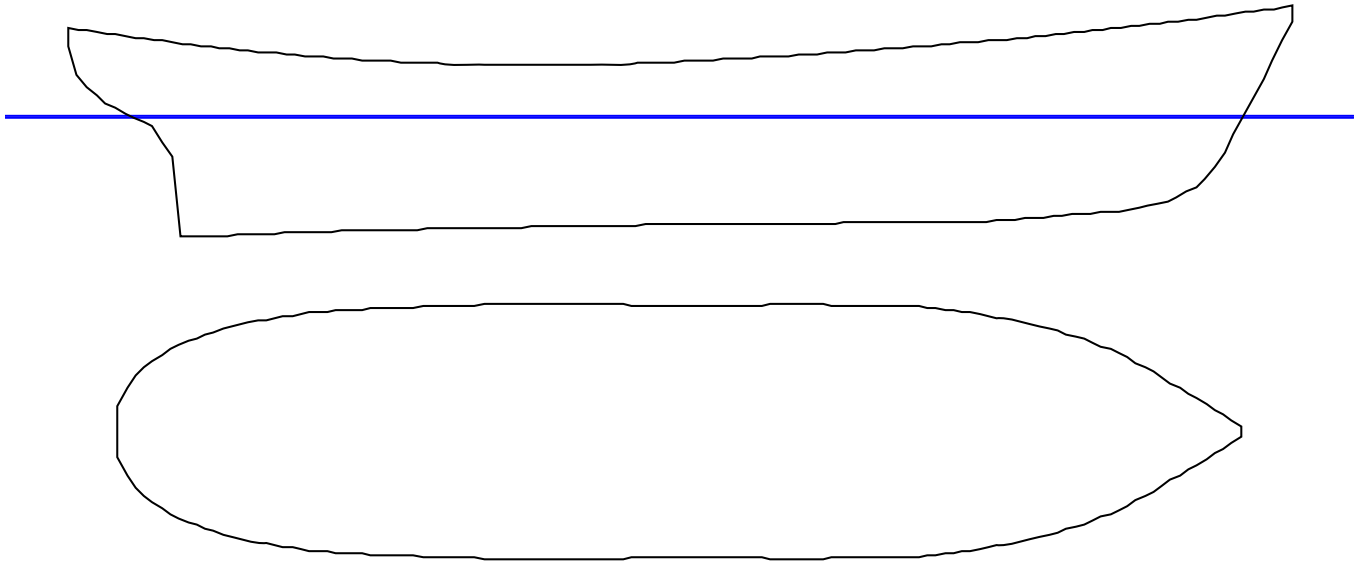
Righting Arms vs. Heel



7.9.4 Example Calculation – Intact Draft 2.30 m, FWD 0.25 m / Lpp

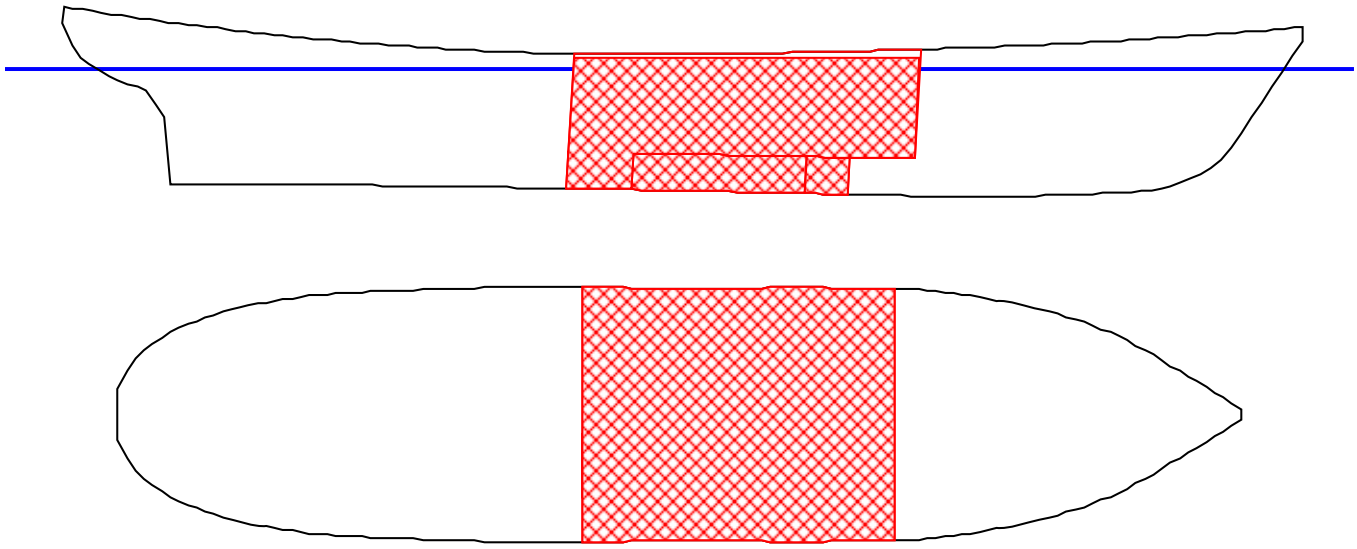
Floating Status – Intact Condition

Draft FP	**2.425m**	**Heel**	**zero**	**GM(Solid)**	**0.492m**
Draft MS	**2.300m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.175m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.492m**
Trim	**fwd 0.250/23.425**	**Wave**	**No**	**KMT**	**3.666 m**
LCG	**11.630f**	**VCG**	**3.174 m**	**TPcm**	**1.15**



Floating Status – Damaged Condition

Draft FP	**3.564m**	**Heel**	**stbd 4.09 deg.**	**GM(Solid)**	**0.342m**
Draft MS	**3.037m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.509m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.342m**
Trim	**fwd 1.052/23.425**	**Wave**	**No**	**KMT**	**3.519 m**
LCG	**11.630f**	**VCG**	**3.174 m**	**TPcm**	**0.85**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	232.20	12.200f	0.113s	2.007	1.000
DB_TANK.S	Flooded	1.025	-4.14	12.142f	0.825s	0.791	0.950
VOID.C	Flooded	1.025	-1.55	14.845f	0.000	0.840	0.950
CARGO_AFT.C	Flooded	1.025	-84.08	13.031f	0.127s	2.123	0.950
SubTotals:			142.43	11.683f	0.085s	1.987	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.084

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	0.587
(2) Marginline_pt1	22.800f, 1.363p, 4.222	0.781
(3) Marginline_pt2	19.800f, 2.697s, 3.879	0.284
(4) Marginline_pt2	19.800f, 2.697p, 3.879	0.669
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.058
(6) Marginline_pt3	15.000f, 3.197p, 3.472	0.514
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.000
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.455
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.109
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.565
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.412
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.845
(13) Marginline_pt7	0.800f, 2.452s, 3.539	0.815
(14) Marginline_pt7	0.800f, 2.452p, 3.539	1.165

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
4.09s	2.57f	2.500	0.000	0.000 (7)	Equil
4.11s	2.57f	2.500	0.000	0.000 (7)	PFldPt
9.09s	2.56f	2.465	0.026	-0.272 (7)	
11.50s	2.56f	2.444	0.029	-0.555 (7)	MaxRa
14.09s	2.56f	2.420	0.025	-0.555 (7)	
19.09s	2.57f	2.366	-0.001	-0.850 (7)	RaZero
24.09s	2.58f	2.302	-0.044	-1.152 (7)	
29.09s	2.58f	2.229	-0.101	-1.456 (7)	
34.09s	2.56f	2.144	-0.165	-1.755 (7)	
39.09s	2.54f	2.049	-0.234	-2.048 (7)	
44.09s	2.50f	1.942	-0.307	-2.330 (7)	
49.09s	2.44f	1.825	-0.381	-2.606 (5)	
54.09s	2.38f	1.697	-0.453	-2.872 (5)	
59.09s	2.31f	1.560	-0.524	-3.123 (5)	
64.09s	2.23f	1.415	-0.591	-3.356 (5)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(5) Marginline_pt3	15.000f, 3.197s, 3.472	-2.606
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.000

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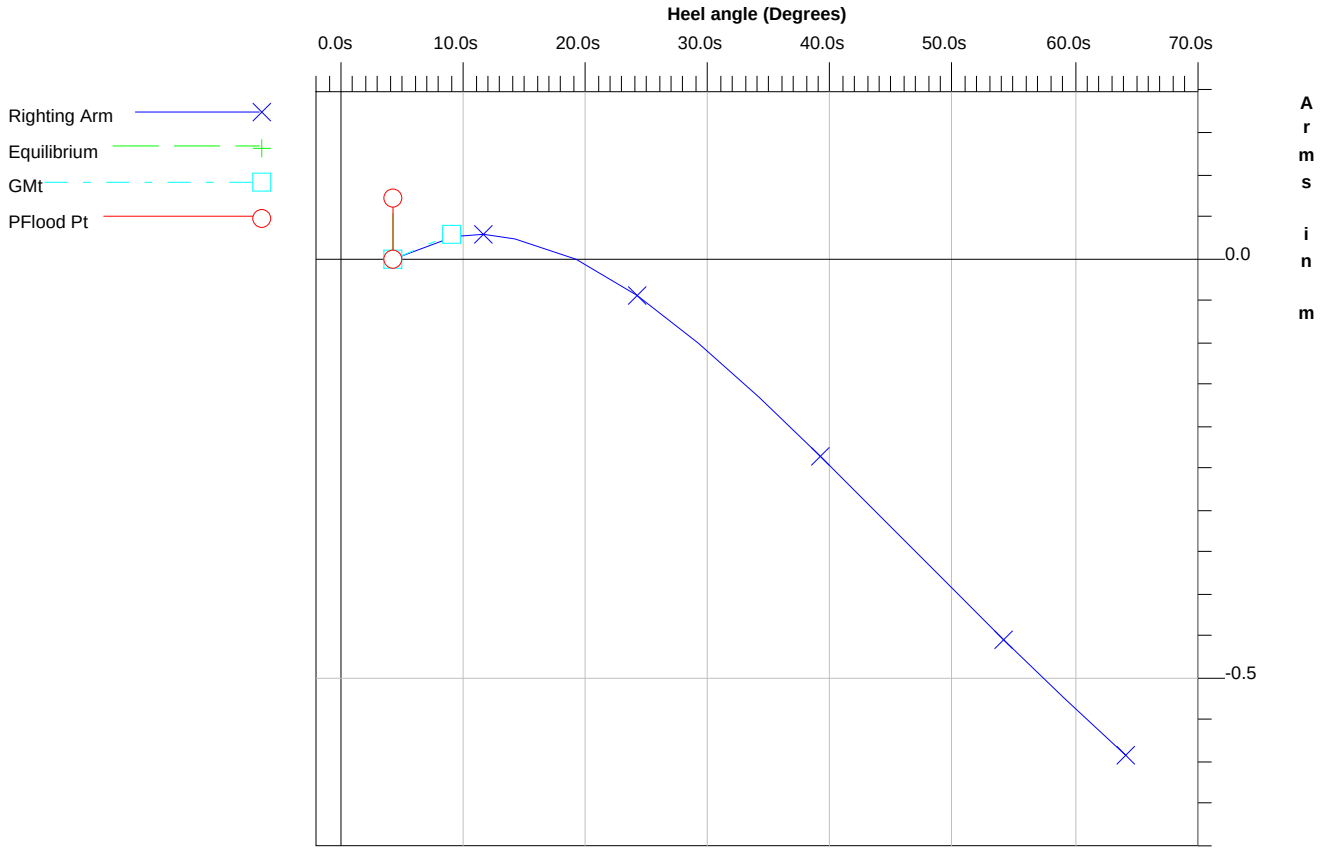
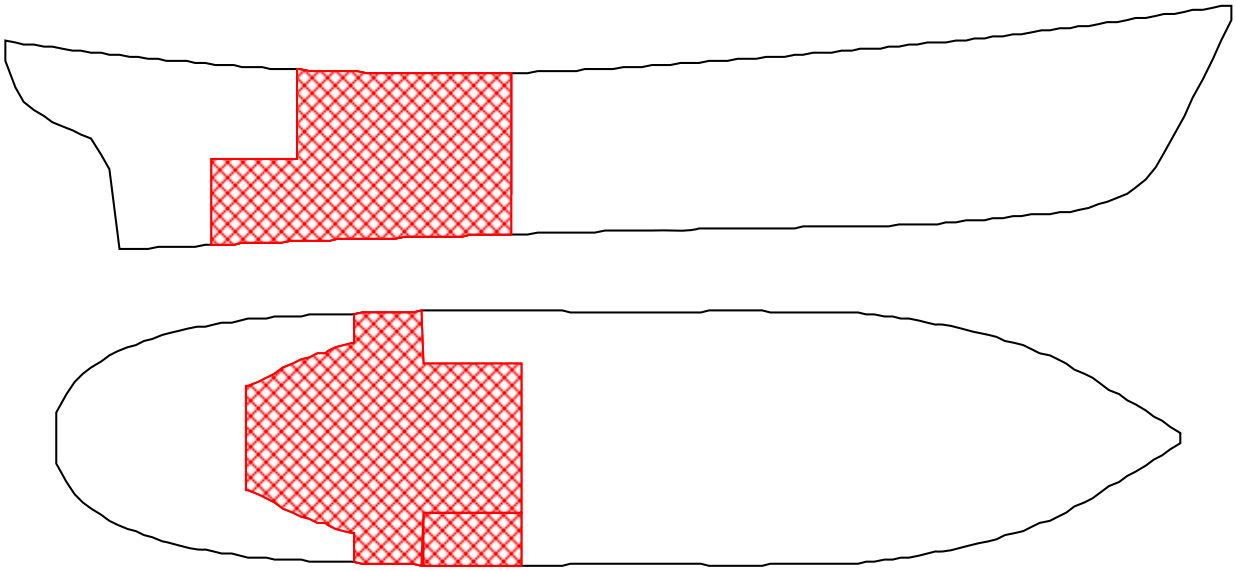
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.342	0.292	Yes
(2) Absolute Angle at Equilibrium	<7.00 deg	4.09	2.91	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	0.02	0.02	No

Righting Arms vs. Heel



7.10 DAM3 - Damage Case 3

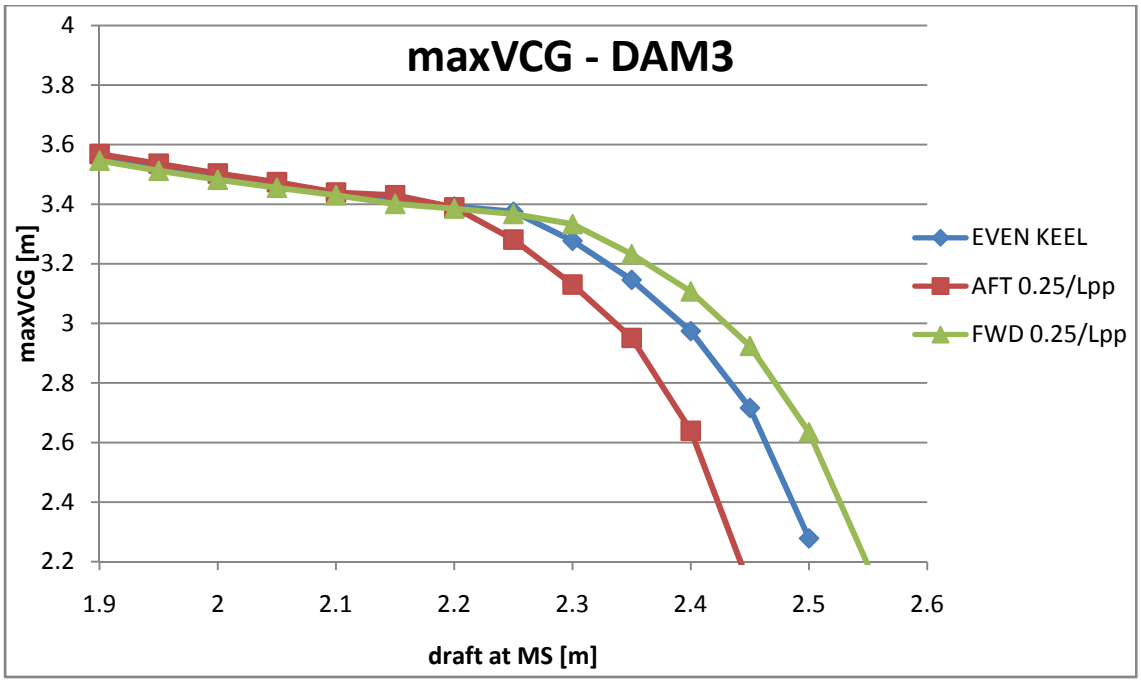
7.10.1 Damage Definition



Damaged Compartments

Compartment	Long. extent	Perm.
Engine.c	**#7 - #21**	**0.85**
Deep_Tank.s	**#16 - #21**	**0.95**

7.10.2 Max VCG Tables



Maximum VCG vs. Displacement with Damage
Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	3.915	628.7%	0.0°	15.5°
64.9	1.55	3.862	685.1%	0.0°	14.3°
69.4	1.60	3.808	746.0%	0.1°	13.2°
74.1	1.65	3.765	776.2%	0.0°	11.9°
78.9	1.70	3.719	817.1%	0.1°	10.8°
83.7	1.75	3.672	854.0%	0.0°	10.0°
88.7	1.80	3.632	879.4%	0.0°	8.8°
93.7	1.85	3.593	899.8%	0.1°	7.7°
98.9	1.90	3.556	915.5%	0.0°	6.8°
104.1	1.95	3.523	926.8%	0.0°	5.8°
109.4	2.00	3.493	937.1%	0.0°	4.8°
114.8	2.05	3.465	945.4%	0.0°	3.8°
120.2	2.10	3.431	966.6%	0.1°	3.0°
125.8	2.15	3.412	964.3%	0.0°	2.0°
131.4	2.20	3.392	966.3%	0.0°	1.0°
137.1	2.25	3.375	967.6%	0.0°	0.0°
142.8	**2.30**	**3.277**	**1122.0%**	**0.9°**	**0.0°**
148.7	2.35	3.146	1344.0%	1.9°	0.1°
154.6	2.40	2.974	1653.4%	2.8°	0.0°
160.5	2.45	2.716	2136.2%	3.7°	0.0°
166.5	2.50	2.278	2984.0%	4.6°	0.0°

Trim = aft 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.7	1.50	3.929	668.7%	0.0°	14.6°
65.1	1.55	3.870	742.0%	0.1°	13.5°
69.7	1.60	3.828	765.7%	0.1°	12.2°
74.3	1.65	3.776	822.1%	0.0°	11.1°
79.1	1.70	3.730	856.0%	0.0°	10.0°
84.0	1.75	3.682	892.5%	0.0°	9.0°
89.0	1.80	3.644	909.3%	0.0°	7.9°
94.1	1.85	3.606	924.2%	0.1°	6.8°
99.2	1.90	3.568	938.6%	0.0°	5.8°
104.5	1.95	3.536	947.3%	0.1°	5.0°
109.8	2.00	3.503	960.5%	0.0°	3.8°
115.2	2.05	3.474	968.7%	0.0°	2.9°
120.7	2.10	3.439	990.1%	0.1°	2.0°
126.3	2.15	3.430	966.3%	0.1°	0.8°
132.0	2.20	3.389	1006.9%	0.1°	0.1°
137.7	2.25	3.281	1176.3%	1.1°	0.0°
143.5	**2.30**	**3.130**	**1433.8%**	**2.1°**	**0.1°**
149.4	2.35	2.951	1751.7%	3.0°	0.0°
155.3	2.40	2.639	2339.9%	3.9°	0.1°
161.3	2.45	2.116	3352.2%	4.8°	0.1°

Trim = fwd 0.250/23.425 at zero heel (Trim righting arm held at zero)

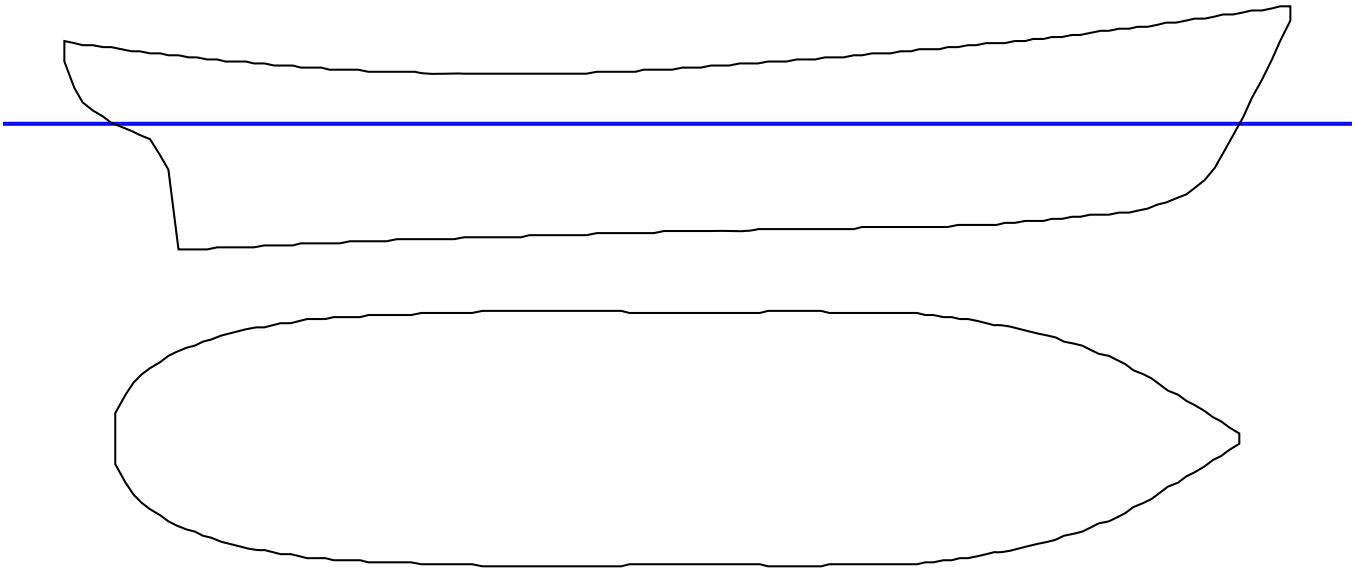
Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	3.906	569.8%	0.1°	16.4°
64.9	1.55	3.854	623.6%	0.1°	15.0°
69.4	1.60	3.793	707.8%	0.1°	14.0°
74.1	1.65	3.752	736.1%	0.0°	12.7°
78.8	1.70	3.707	776.4%	0.1°	11.6°
83.6	1.75	3.659	820.8%	0.0°	10.6°
88.6	1.80	3.620	846.6%	0.1°	9.4°
93.6	1.85	3.579	873.4%	0.0°	8.5°
98.7	1.90	3.546	885.6%	0.1°	7.4°
103.9	1.95	3.512	902.3%	0.0°	6.5°
109.2	2.00	3.482	913.0%	0.0°	5.5°
114.5	2.05	3.455	921.4%	0.0°	4.5°
120.0	2.10	3.430	929.1%	0.0°	3.6°
125.5	2.15	3.401	948.8%	0.1°	2.7°
131.0	2.20	3.385	945.3%	0.0°	1.7°
136.7	2.25	3.367	950.6%	0.0°	0.8°
142.4	2.30	3.333	985.9%	0.2°	0.1°
148.2	2.35	3.232	1150.9%	1.2°	0.0°
154.0	2.40	3.107	1365.3%	2.0°	0.0°
160.0	2.45	2.924	1702.5%	3.0°	0.0°
165.9	2.50	2.634	2254.1%	3.9°	0.1°
172.0	2.55	2.187	3124.3%	4.8°	0.0°

The specified initial trim at zero heel refers to the undamaged state.
The transverse C.G. AFTER DAMAGE is assumed to be zero

7.10.3 Example Calculation – Intact Draft 2.30 m, EVEN KEEL

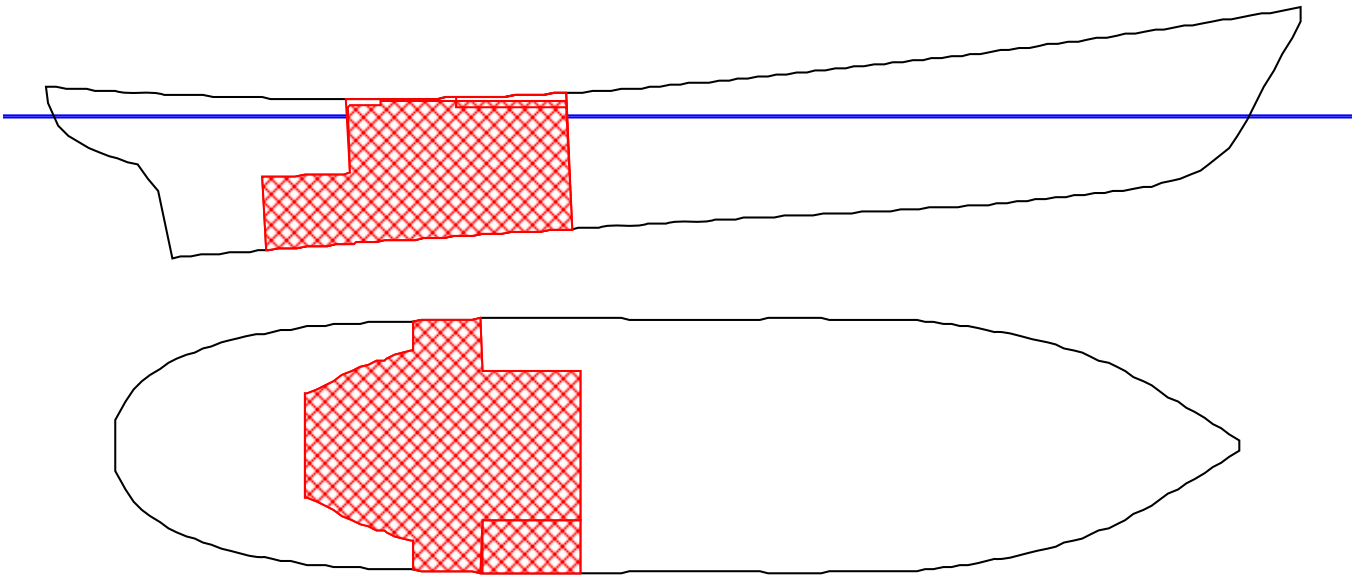
Floating Status – Intact Condition

Draft FP	**2.300m**	**Heel**	**zero**	**GM(Solid)**	**0.400m**
Draft MS	**2.300m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.300m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.400m**
Trim	**zero**	**Wave**	**No**	**KMT**	**3.677 m**
LCG	**11.380f**	**VCG**	**3.277 m**	**TPcm**	**1.16**



Floating Status – Damaged Condition

Draft FP	**2.118m**	**Heel**	**stbd 6.09 deg.**	**GM(Solid)**	**0.611m**
Draft MS	**2.619m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**3.120m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.611m**
Trim	**aft 0.996/23.425**	**Wave**	**No**	**KMT**	**3.896 m**
LCG	**11.380f**	**VCG**	**3.277 m**	**TPcm**	**1.07**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	186.91	10.307f	0.199s	1.806	1.000
DEEP_TANK.S	Flooded	1.025	-4.49	8.337f	2.472s	2.199	0.950
ENGINE.C	Flooded	1.025	-39.61	6.881f	0.101s	1.662	0.850
SubTotals:			142.81	11.319f	0.154s	1.834	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.381

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	1.919
(2) Marginline_pt1	22.800f, 1.363p, 4.222	2.208
(3) Marginline_pt2	19.800f, 2.697s, 3.879	1.309
(4) Marginline_pt2	19.800f, 2.697p, 3.879	1.881
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.648
(6) Marginline_pt3	15.000f, 3.197p, 3.472	1.326
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.346
(8) Marginline_pt4	12.200f, 3.187p, 3.287	1.022
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.001
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.679
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.012
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.655
(13) Marginline_pt7	0.800f, 2.452s, 3.539	0.190
(14) Marginline_pt7	0.800f, 2.452p, 3.539	0.710

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
6.09s	2.44a	3.100	0.000	0.001 (9)	Equil
6.11s	2.44a	3.100	0.000	0.000 (9)	PFldPt
11.09s	2.45a	3.066	0.047	-0.280 (9)	
16.09s	2.56a	3.040	0.069	-0.576 (9)	
17.73s	2.62a	3.034	0.071	-0.887 (9)	MaxRa
21.09s	2.78a	3.025	0.065	-0.887 (9)	
26.09s	3.06a	3.013	0.035	-1.207 (9)	
29.80s	3.29a	3.003	0.000	-1.530 (9)	RaZero
31.09s	3.37a	2.998	-0.014	-1.530 (9)	
36.09s	3.70a	2.974	-0.079	-1.864 (11)	
41.09s	4.03a	2.939	-0.154	-2.194 (11)	
46.09s	4.33a	2.886	-0.236	-2.511 (11)	
51.09s	4.61a	2.815	-0.322	-2.812 (11)	
56.09s	4.85a	2.722	-0.410	-3.092 (11)	
61.09s	5.06a	2.612	-0.498	-3.352 (11)	
66.09s	5.21a	2.484	-0.583	-3.587 (11)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.001
(11) Marginline_pt6	3.600f, 3.035s, 3.302	-1.864

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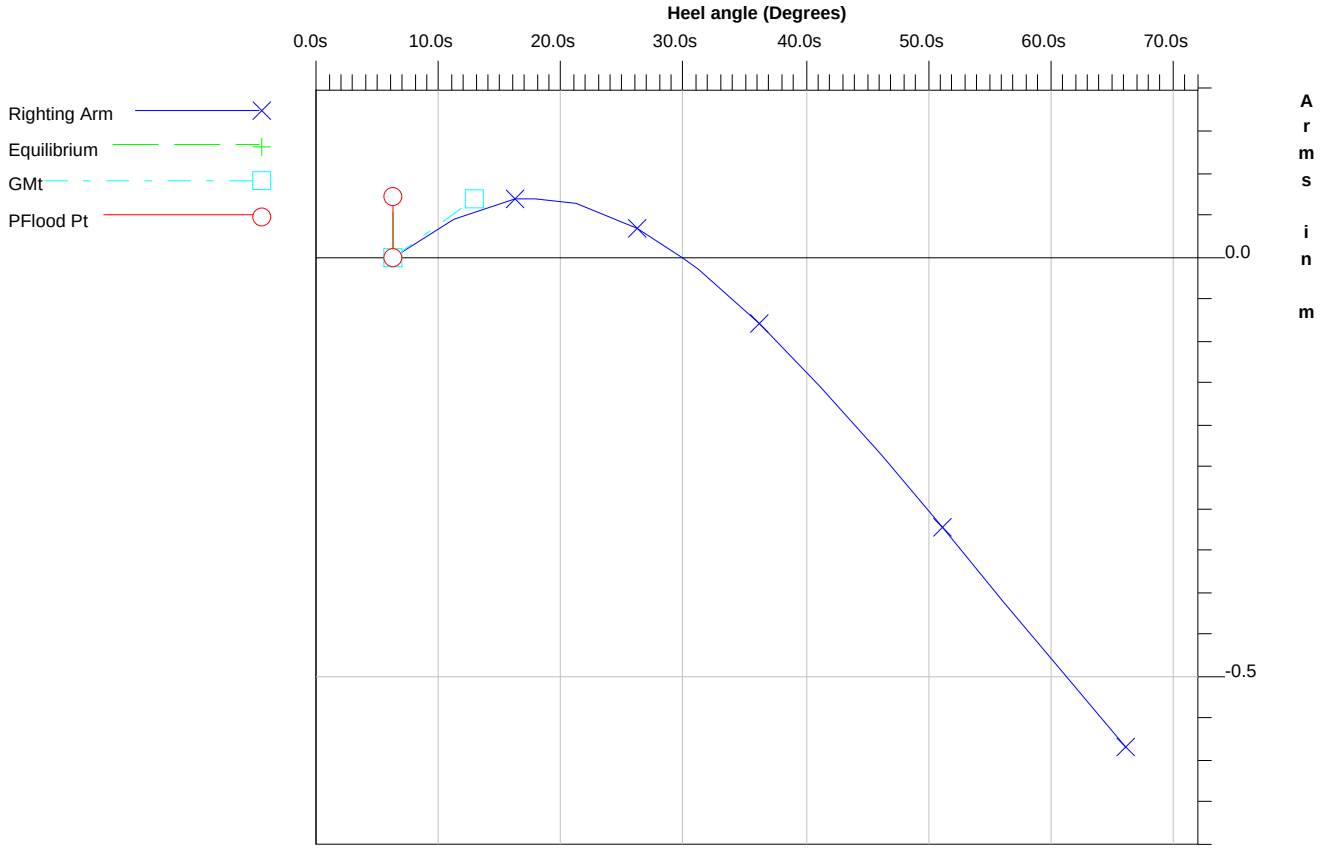
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.611	0.561	Yes
(2) Absolute Angle at Equilibrium	<7.00 deg	6.09	0.91	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	0.01	0.01	No

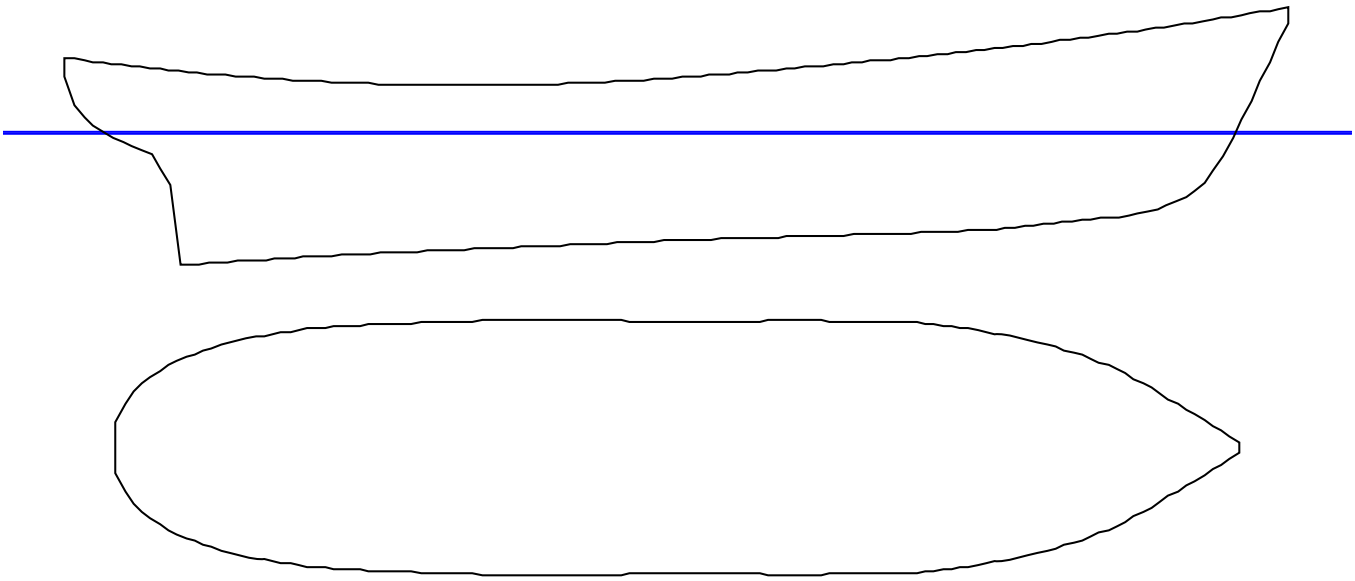
Righting Arms vs. Heel



7.10.4 Example Calculation – Intact Draft 2.30 m, AFT 0.25 m / Lpp

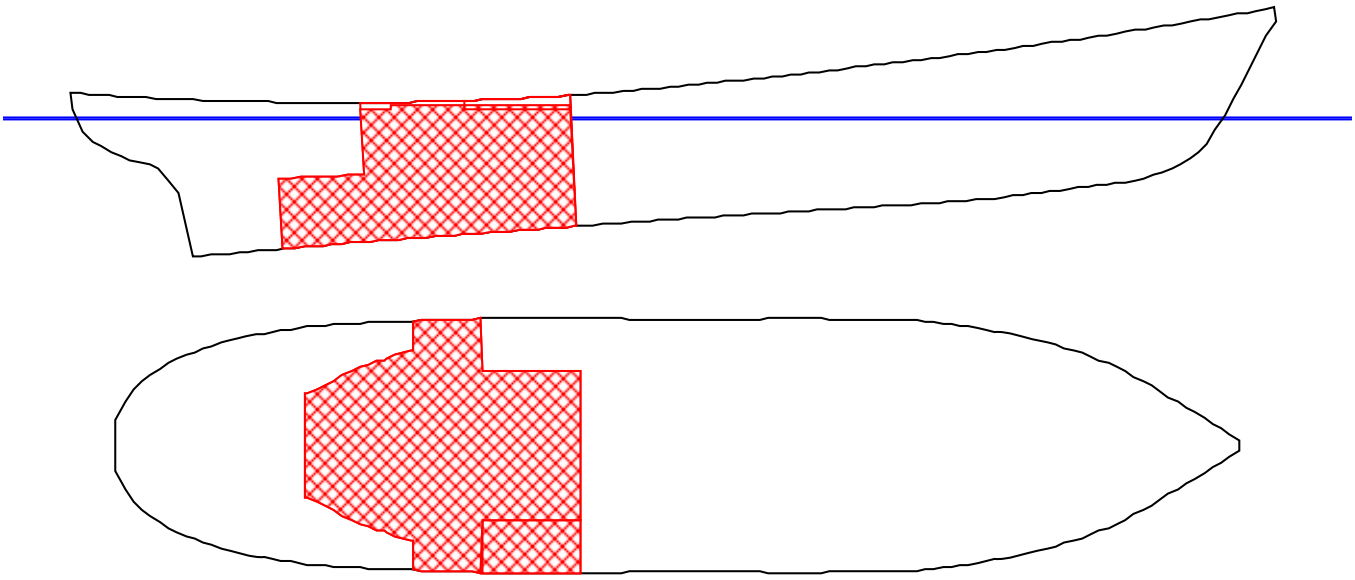
Floating Status – Intact Condition

Draft FP	**2.175m**	**Heel**	**zero**	**GM(Solid)**	**0.559m**
Draft MS	**2.300m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.425m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.559m**
Trim	**aft 0.250/23.425**	**Wave**	**No**	**KMT**	**3.689 m**
LCG	**11.124f**	**VCG**	**3.130 m**	**TPcm**	**1.17**



Floating Status – Damaged Condition

Draft FP	**2.018m**	**Heel**	**stbd 4.91 deg.**	**GM(Solid)**	**0.767m**
Draft MS	**2.620m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**3.221m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.767m**
Trim	**aft 1.200/23.425**	**Wave**	**No**	**KMT**	**3.900 m**
LCG	**11.124f**	**VCG**	**3.130 m**	**TPcm**	**1.07**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	188.21	10.101f	0.159s	1.819	1.000
DEEP_TANK.S	Flooded	1.025	-4.42	8.334f	2.469s	2.187	0.950
ENGINE.C	Flooded	1.025	-40.28	6.881f	0.080s	1.680	0.850
SubTotals:			143.50	11.059f	0.111s	1.846	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.408

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	2.045
(2) Marginline_pt1	22.800f, 1.363p, 4.222	2.278
(3) Marginline_pt2	19.800f, 2.697s, 3.879	1.436
(4) Marginline_pt2	19.800f, 2.697p, 3.879	1.897
(5) Marginline_pt3	15.000f, 3.197s, 3.472	0.743
(6) Marginline_pt3	15.000f, 3.197p, 3.472	1.290
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.417
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.961
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.027
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.573
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.005
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.524
(13) Marginline_pt7	0.800f, 2.452s, 3.539	0.147
(14) Marginline_pt7	0.800f, 2.452p, 3.539	0.566

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
4.91s	2.93a	3.206	0.000	0.005 (11)	Equil
5.00s	2.93a	3.205	0.001	0.000 (11)	PFldPt
9.91s	2.95a	3.181	0.060	-0.268 (11)	
14.91s	3.10a	3.168	0.094	-0.567 (11)	
19.04s	3.31a	3.169	0.102	-0.891 (11)	MaxRa
19.91s	3.36a	3.170	0.102	-0.891 (11)	
24.91s	3.70a	3.177	0.087	-1.232 (11)	
29.91s	4.07a	3.182	0.051	-1.580 (11)	
34.91s	4.47a	3.179	0.000	-1.931 (11)	RaZero
39.91s	4.86a	3.165	-0.062	-2.276 (11)	
44.91s	5.24a	3.134	-0.133	-2.610 (11)	
49.91s	5.59a	3.085	-0.208	-2.929 (11)	
54.91s	5.90a	3.015	-0.285	-3.227 (11)	
59.91s	6.15a	2.921	-0.364	-3.500 (11)	
64.91s	6.35a	2.807	-0.442	-3.749 (11)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.005

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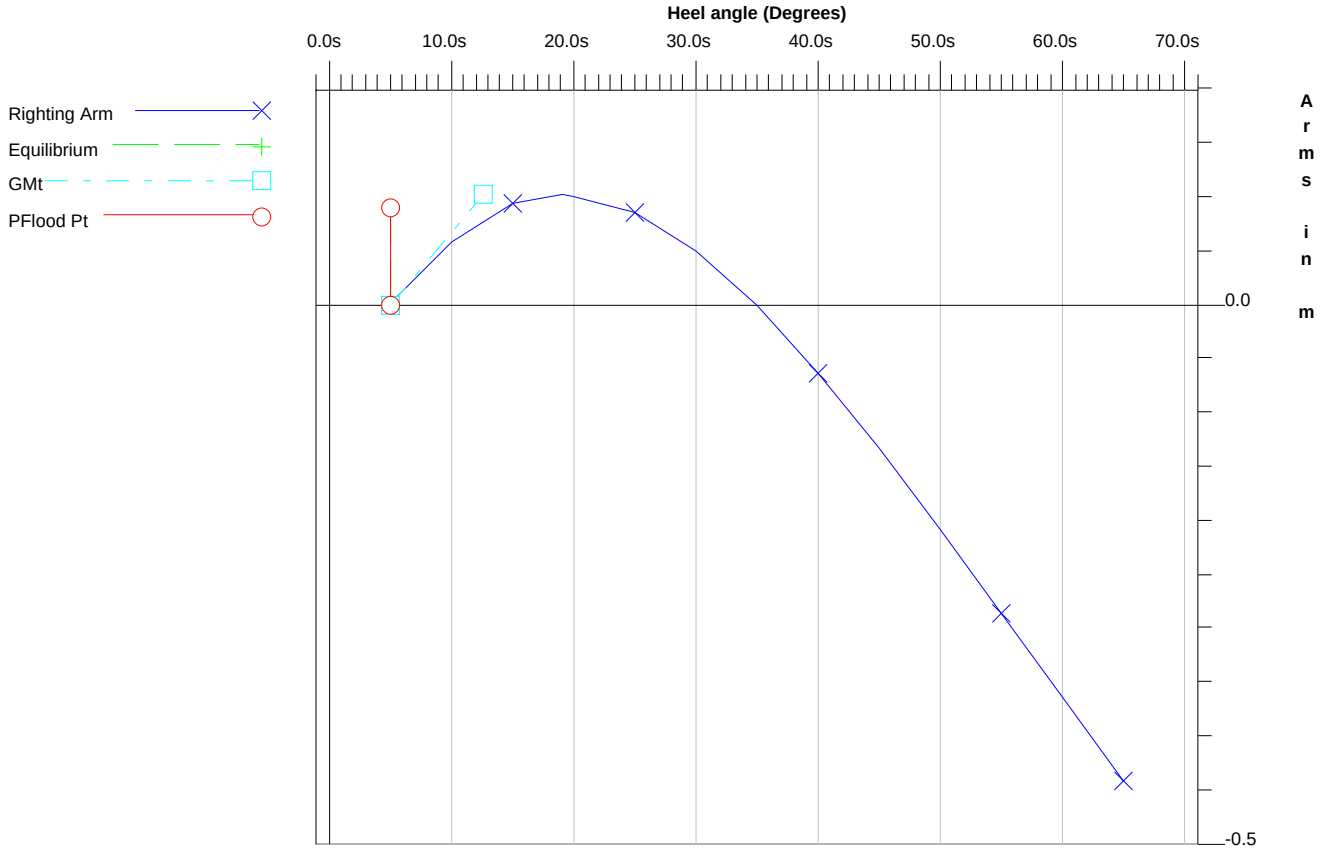
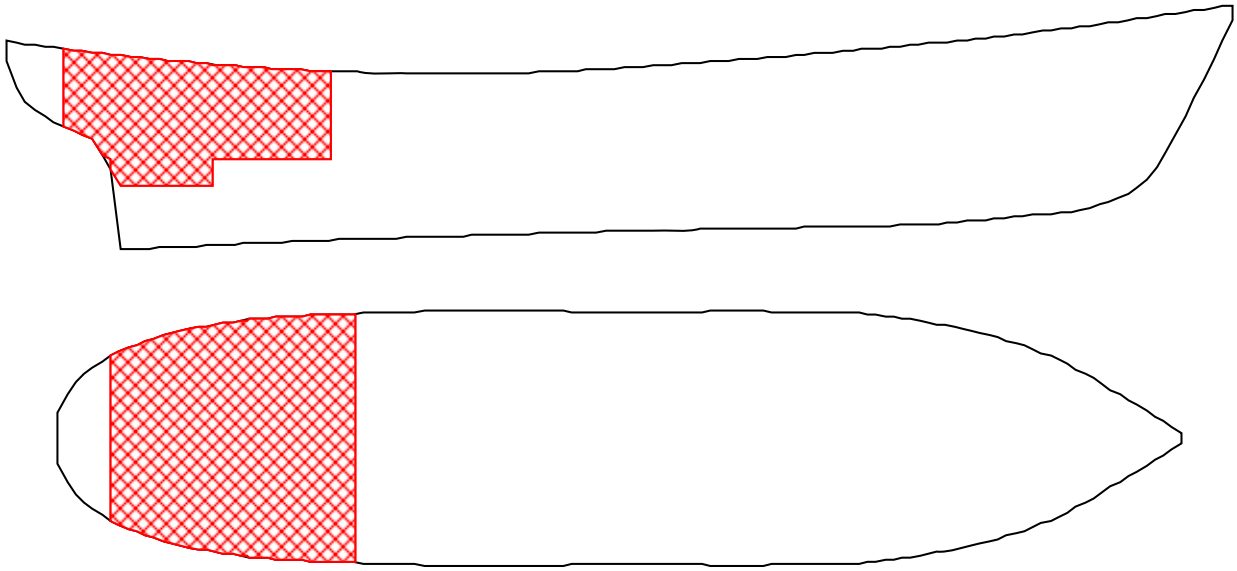
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.767	0.717	Yes
(2) Absolute Angle at Equilibrium	<7.00 deg	4.91	2.09	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	0.09	0.09	Yes

Righting Arms vs. Heel



7.11 DAM4 - Damage Case 4

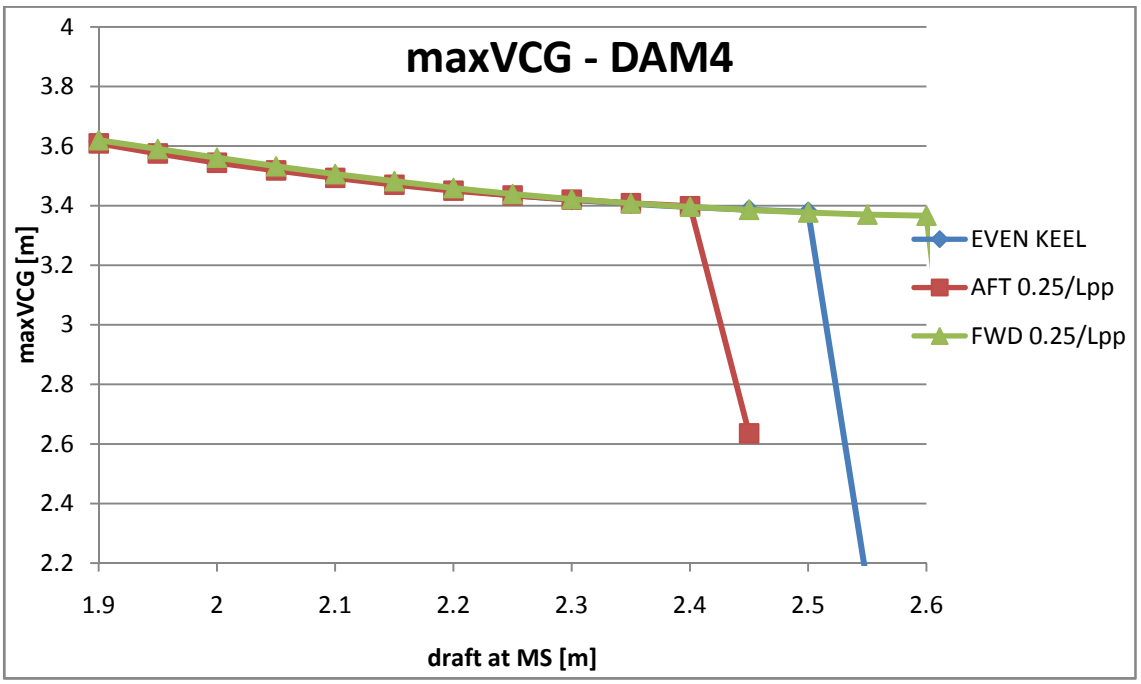
7.11.1 Damage Definition



Damaged Compartments

Compartment	Long. extent	Perm.
Accomodation.c	**#0 - #10 (11)**	**0.95**

7.11.2 Max VCG Tables



Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	3.900	0.0%	7.0°	31.6°
64.9	1.55	3.910	0.0%	7.0°	30.1°
69.4	1.60	3.739	0.0%	7.0°	28.6°
74.1	1.65	3.739	0.0%	7.0°	27.1°
78.9	1.70	3.728	0.0%	7.0°	25.6°
83.7	1.75	3.706	0.0%	7.0°	24.1°
88.7	1.80	3.679	0.1%	7.0°	22.6°
93.7	1.85	3.648	0.0%	7.0°	21.0°
98.9	1.90	3.616	0.0%	7.0°	19.5°
104.1	1.95	3.583	0.0%	7.0°	18.0°
109.4	2.00	3.552	0.0%	7.0°	16.4°
114.8	2.05	3.524	0.0%	7.0°	11.8°
120.2	2.10	3.498	0.0%	7.0°	13.4°
125.8	2.15	3.474	0.0%	7.0°	12.0°
131.4	2.20	3.453	0.0%	7.0°	10.6°
137.1	2.25	3.435	0.0%	7.0°	9.0°
142.8	**2.30**	**3.419**	**0.0%**	**7.0°**	**7.4°**
148.7	2.35	3.407	0.1%	7.0°	5.7°
154.6	2.40	3.395	0.0%	7.0°	4.1°
160.5	2.45	3.386	0.0%	7.0°	2.4°
166.5	2.50	3.379	0.0%	7.0°	0.8°
172.6	2.55	2.129	2490.7 %	7.0°	0.1°

Trim = aft 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.7	1.50	3.735	0.1%	7.0°	30.0°
65.1	1.55	3.757	0.0%	7.0°	28.4°
69.7	1.60	3.764	0.0%	7.0°	26.9°
74.3	1.65	3.758	0.0%	7.0°	25.3°
79.1	1.70	3.739	0.0%	7.0°	23.8°
84.0	1.75	3.710	0.0%	7.0°	22.2°
89.0	1.80	3.678	0.0%	7.0°	20.6°
94.1	1.85	3.644	0.0%	7.0°	19.1°
99.2	1.90	3.609	0.0%	7.0°	17.5°
104.5	1.95	3.575	0.0%	7.0°	16.0°
109.8	2.00	3.544	0.0%	7.0°	14.4°
115.2	2.05	3.518	0.0%	7.0°	12.7°
120.7	2.10	3.493	0.0%	7.0°	11.0°
126.3	2.15	3.470	0.0%	7.0°	9.3°
132.0	**2.20**	**3.450**	**0.0%**	**7.0°**	**7.7°**
137.7	2.25	3.434	0.0%	7.0°	6.0°
143.5	2.30	3.420	0.1%	7.0°	4.4°
149.4	2.35	3.408	0.0%	7.0°	2.7°
155.3	2.40	3.398	0.0%	7.0°	1.1°
161.3	2.45	2.635	1510.9 %	7.0°	0.0°

Trim = fwd 0.250/23.425 at zero heel (Trim righting arm held at zero)

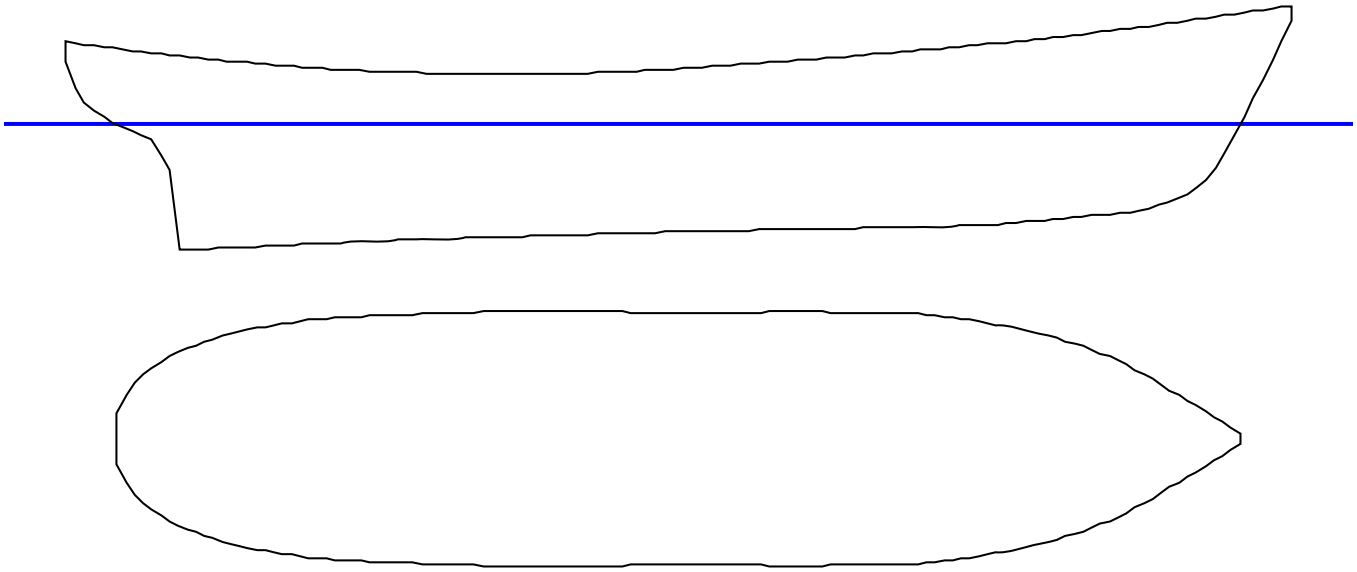
Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3
60.5	1.50	3.871	0.0%	7.0°	33.2°
64.9	1.55	3.880	0.0%	7.0°	31.7°
69.4	1.60	3.882	0.0%	7.0°	30.3°
74.1	1.65	3.739	0.0%	7.0°	28.8°
78.8	1.70	3.710	0.0%	7.0°	27.3°
83.6	1.75	3.695	0.0%	7.0°	25.8°
88.6	1.80	3.674	0.1%	7.0°	24.3°
93.6	1.85	3.648	0.0%	7.0°	22.8°
98.7	1.90	3.620	0.0%	7.0°	21.4°
103.9	1.95	3.590	0.0%	7.0°	20.0°
109.2	2.00	3.561	0.0%	7.0°	18.4°
114.5	2.05	3.532	0.0%	7.0°	16.9°
120.0	2.10	3.506	0.0%	7.0°	15.3°
125.5	2.15	3.482	0.1%	7.0°	13.9°
131.0	2.20	3.459	0.0%	7.0°	12.4°
136.7	2.25	3.439	0.1%	7.0°	11.0°
142.4	2.30	3.422	0.0%	7.0°	9.6°
148.2	2.35	3.408	0.0%	7.0°	8.2°
154.0	2.40	3.396	0.0%	7.0°	6.9°
160.0	2.45	3.386	0.0%	7.0°	5.4°
165.9	2.50	3.377	0.0%	7.0°	3.7°
172.0	2.55	3.370	0.0%	7.0°	2.1°
178.1	2.60	3.366	0.0%	7.0°	0.5°
184.3	2.65	1.729	3271.5 %	7.0°	0.1°

The specified initial trim at zero heel refers to the undamaged state.
The transverse C.G. AFTER DAMAGE is assumed to be zero

7.11.3 Example Calculation – Intact Draft 2.30 m, EVEN KEEL

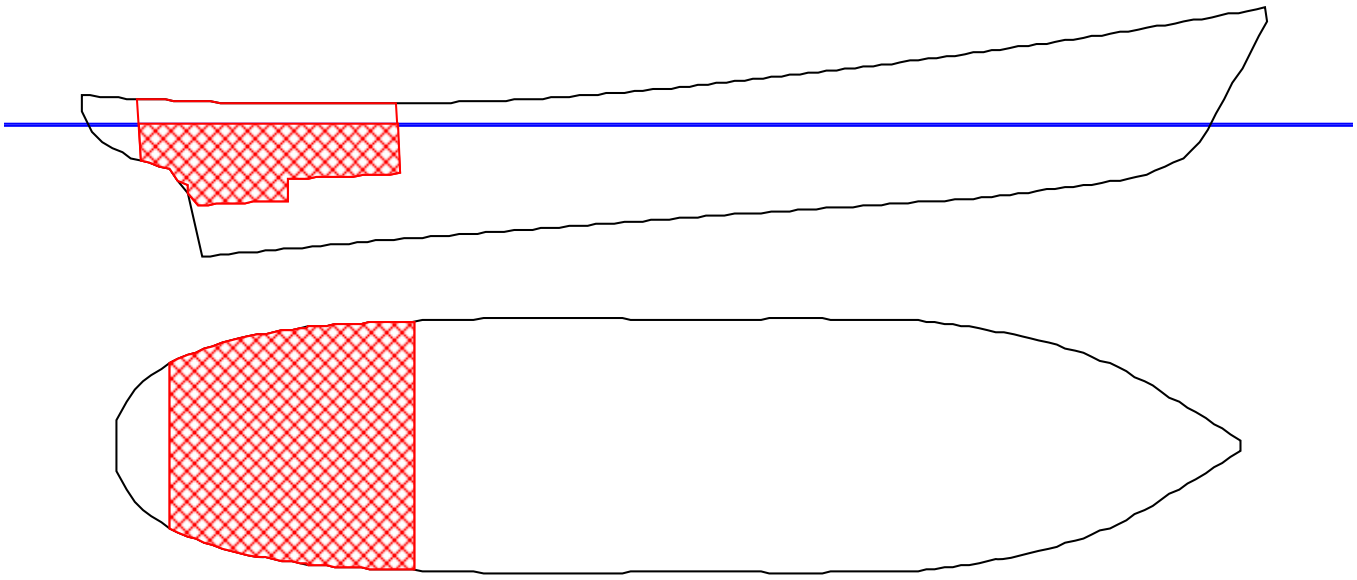
Floating Status – Intact Condition

Draft FP	**2.300m**	**Heel**	**zero**	**GM(Solid)**	**0.258m**
Draft MS	**2.300m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.300m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.258m**
Trim	**zero**	**Wave**	**No**	**KMT**	**3.677 m**
LCG	**11.380f**	**VCG**	**3.419 m**	**TPcm**	**1.16**



Floating Status – Damaged Condition

Draft FP	**1.834m**	**Heel**	**zero**	**GM(Solid)**	**0.050m**
Draft MS	**2.470m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**3.107m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.050m**
Trim	**aft 1.273/23.425**	**Wave**	**No**	**KMT**	**3.469 m**
LCG	**11.380f**	**VCG**	**3.419 m**	**TPcm**	**0.97**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	169.67	10.003f	0.000	1.727	1.000
ACCOMODATION.C	Flooded	1.025	-26.86	3.201f	0.000	2.344	0.950
SubTotals:			142.81	11.282f	0.000	1.611	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.688

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	2.351
(2) Marginline_pt1	22.800f, 1.363p, 4.222	2.351
(3) Marginline_pt2	19.800f, 2.697s, 3.879	1.845
(4) Marginline_pt2	19.800f, 2.697p, 3.879	1.845
(5) Marginline_pt3	15.000f, 3.197s, 3.472	1.178
(6) Marginline_pt3	15.000f, 3.197p, 3.472	1.178
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.842
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.842
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.436
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.436
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.390
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.390
(13) Marginline_pt7	0.800f, 2.452s, 3.539	0.475
(14) Marginline_pt7	0.800f, 2.452p, 3.539	0.475

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
0.00	3.11a	3.103	0.000	0.390 (11)	Equil
5.00s	3.11a	3.091	0.005	0.125 (11)	
7.36s	3.12a	3.078	0.007	0.000 (11)	PFldPt
10.00s	3.12a	3.056	0.010	-0.140 (11)	
10.71s	3.12a	3.051	0.010	-0.425 (11)	MaxRa
15.00s	3.22a	3.028	0.002	-0.425 (11)	
15.37s	3.24a	3.026	0.001	-0.737 (11)	RaZero
20.00s	3.46a	3.016	-0.028	-0.737 (11)	
25.00s	3.81a	3.015	-0.081	-1.070 (11)	
30.00s	4.23a	3.021	-0.153	-1.417 (11)	
35.00s	4.72a	3.031	-0.240	-1.774 (11)	
40.00s	5.22a	3.036	-0.338	-2.132 (11)	
45.00s	5.74a	3.033	-0.441	-2.485 (11)	
50.00s	6.24a	3.017	-0.547	-2.827 (11)	
55.00s	6.71a	2.988	-0.654	-3.155 (11)	
60.00s	7.16a	2.943	-0.758	-3.464 (11)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.390

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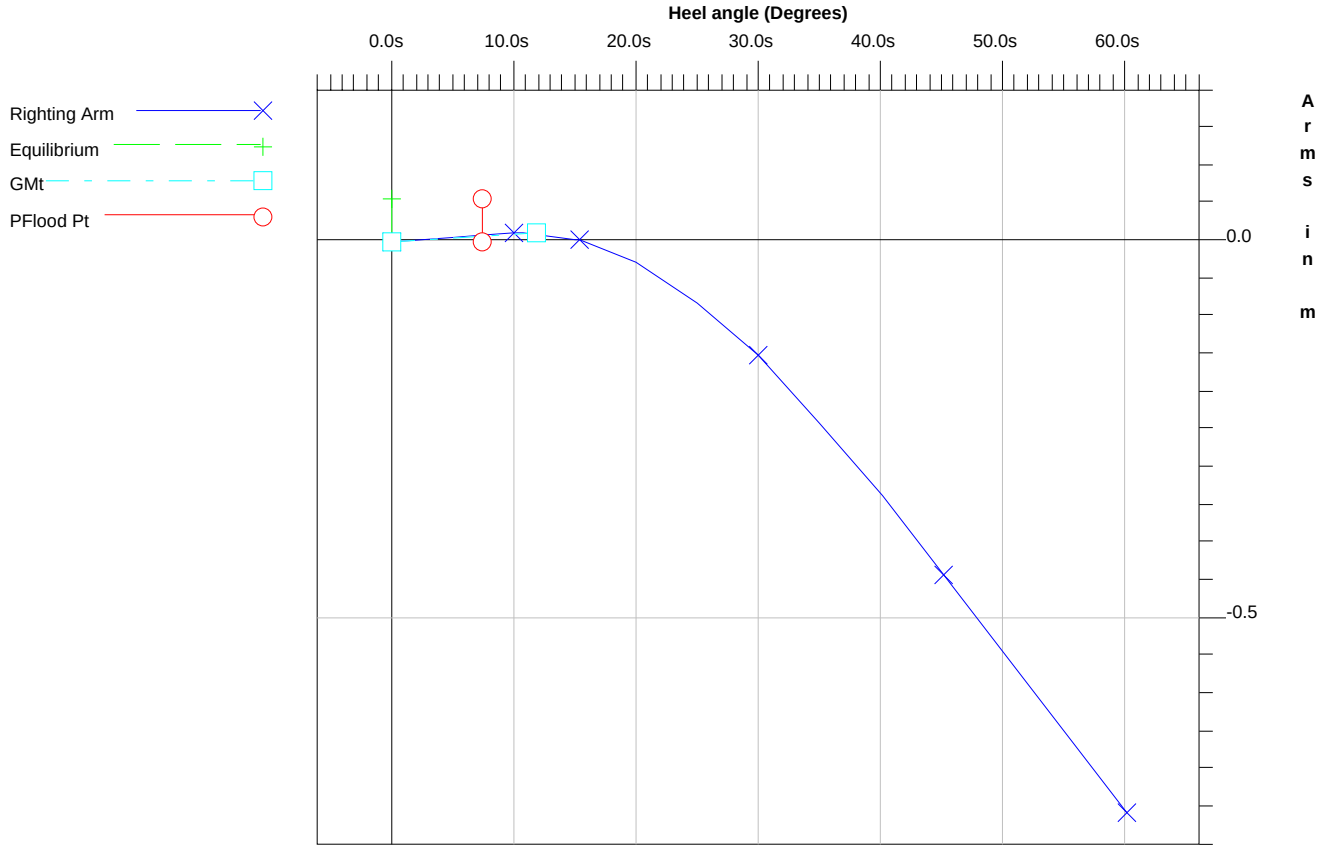
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.050	0.000	No
(2) Absolute Angle at Equilibrium	<7.00 deg	0.00	7.00	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	7.36	7.36	Yes

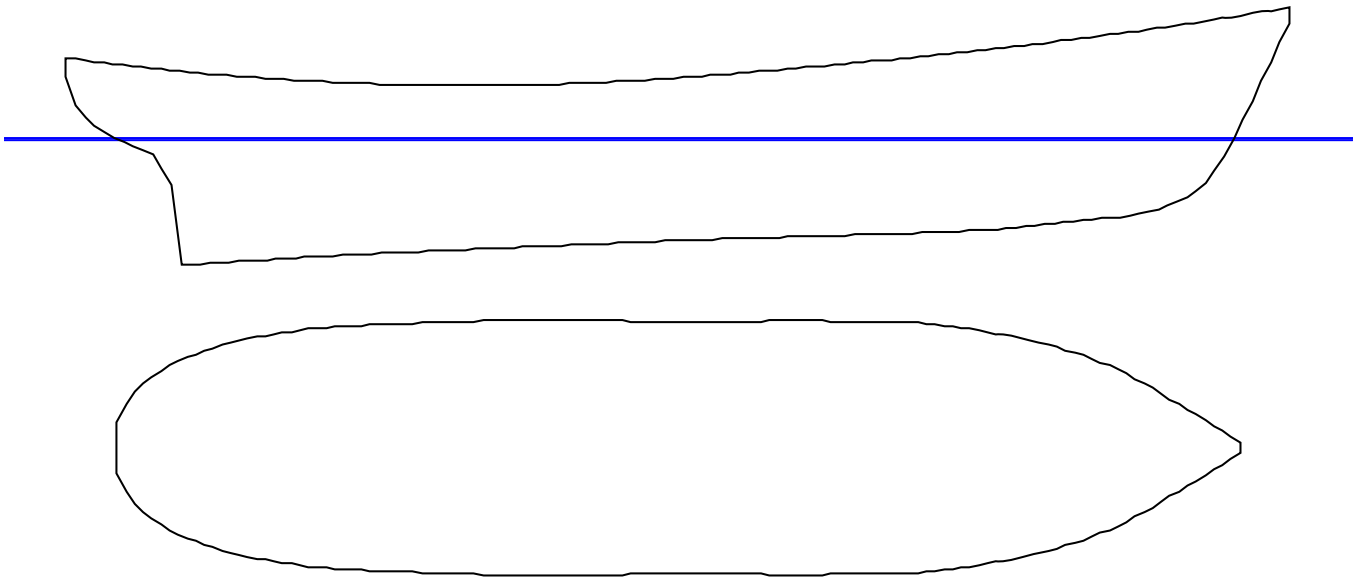
Righting Arms vs. Heel



7.11.4 Example Calculation – Intact Draft 2.20 m, AFT 0.25 m / Lpp

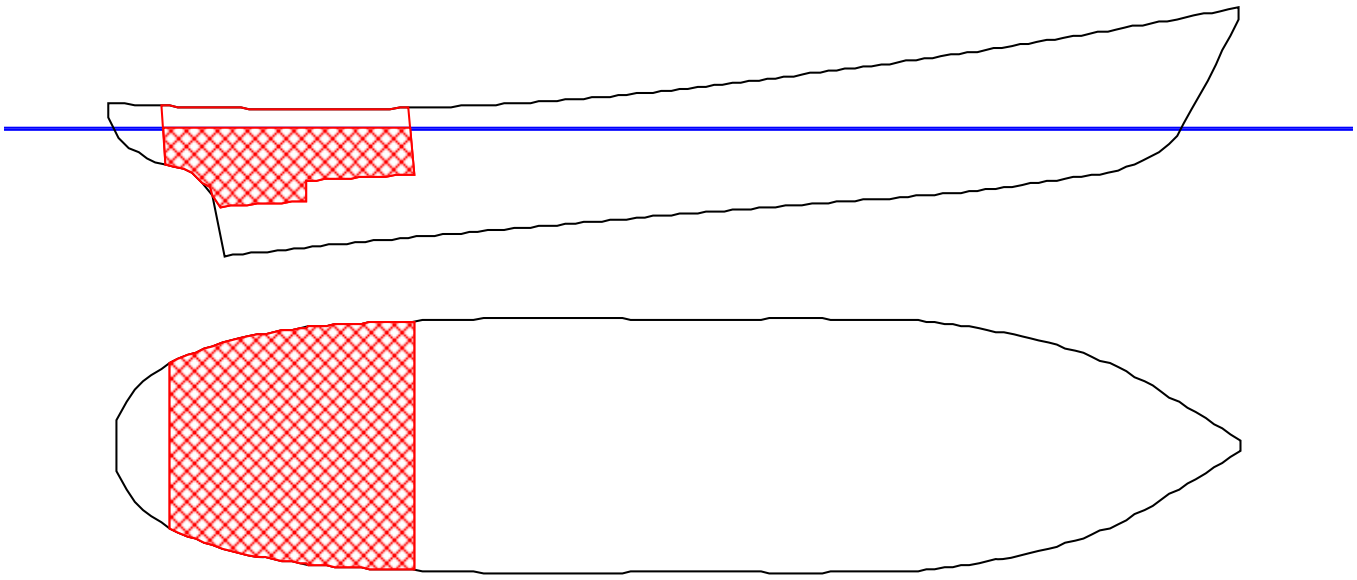
Floating Status – Intact Condition

Draft FP	**2.075m**	**Heel**	**zero**	**GM(Solid)**	**0.270m**
Draft MS	**2.200m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**2.325m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.270m**
Trim	**aft 0.250/23.425**	**Wave**	**No**	**KMT**	**3.720 m**
LCG	**11.129f**	**VCG**	**3.450 m**	**TPcm**	**1.14**



Floating Status – Damaged Condition

Draft FP	**1.594m**	**Heel**	**stbd 0.33 deg.**	**GM(Solid)**	**0.050m**
Draft MS	**2.363m**	**Equil**	**Yes**	**F/S Corr**	**0.000m**
Draft AP	**3.133m**	**Wind**	**0.0 kn**	**GM(Fluid)**	**0.050m**
Trim	**aft 1.539/23.425**	**Wave**	**No**	**KMT**	**3.500 m**
LCG	**11.129f**	**VCG**	**3.450 m**	**TPcm**	**0.94**



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	158.60	9.689f	0.012s	1.691	1.000
ACCOMODATION.C	Flooded	1.025	-26.64	3.176f	0.015s	2.341	0.950
SubTotals:			131.96	11.004f	0.011s	1.559	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine_vent	11.000f, 1.500s, 4.200	1.777

Protected Flood Points

Name	L,T,V (m)	Height (m)
(1) Marginline_pt1	22.800f, 1.363s, 4.222	2.574
(2) Marginline_pt1	22.800f, 1.363p, 4.222	2.590
(3) Marginline_pt2	19.800f, 2.697s, 3.879	2.027
(4) Marginline_pt2	19.800f, 2.697p, 3.879	2.059
(5) Marginline_pt3	15.000f, 3.197s, 3.472	1.303
(6) Marginline_pt3	15.000f, 3.197p, 3.472	1.341
(7) Marginline_pt4	12.200f, 3.187s, 3.287	0.935
(8) Marginline_pt4	12.200f, 3.187p, 3.287	0.972
(9) Marginline_pt5	7.000f, 3.196s, 3.163	0.471
(10) Marginline_pt5	7.000f, 3.196p, 3.163	0.508
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.387
(12) Marginline_pt6	3.600f, 3.035p, 3.302	0.423
(13) Marginline_pt7	0.800f, 2.452s, 3.539	0.444
(14) Marginline_pt7	0.800f, 2.452p, 3.539	0.472

Righting Arms vs Heel Angle with Damage

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	PFlood Pt Height (m)	Notes
0.33s	3.76a	3.126	0.000	0.387 (11)	Equil
5.33s	3.76a	3.113	0.005	0.122 (11)	
7.66s	3.75a	3.097	0.007	0.000 (11)	PFldPt
10.33s	3.75a	3.075	0.010	-0.141 (11)	
11.45s	3.76a	3.064	0.011	-0.418 (11)	MaxRa
15.33s	3.83a	3.035	0.005	-0.418 (11)	
16.36s	3.86a	3.029	0.000	-0.718 (11)	RaZero
20.33s	4.03a	3.007	-0.025	-0.718 (11)	
25.33s	4.33a	2.990	-0.077	-1.037 (11)	
30.33s	4.72a	2.979	-0.148	-1.370 (11)	
35.33s	5.17a	2.971	-0.236	-1.712 (11)	
40.33s	5.64a	2.959	-0.334	-2.055 (11)	
45.33s	6.13a	2.940	-0.439	-2.394 (11)	
50.33s	6.61a	2.910	-0.548	-2.723 (11)	
55.33s	7.07a	2.870	-0.657	-3.040 (11)	
60.33s	7.52a	2.818	-0.765	-3.341 (11)	

Protected Flood Points

Name	L,T,V (m)	Height (m)
(11) Marginline_pt6	3.600f, 3.035s, 3.302	0.387

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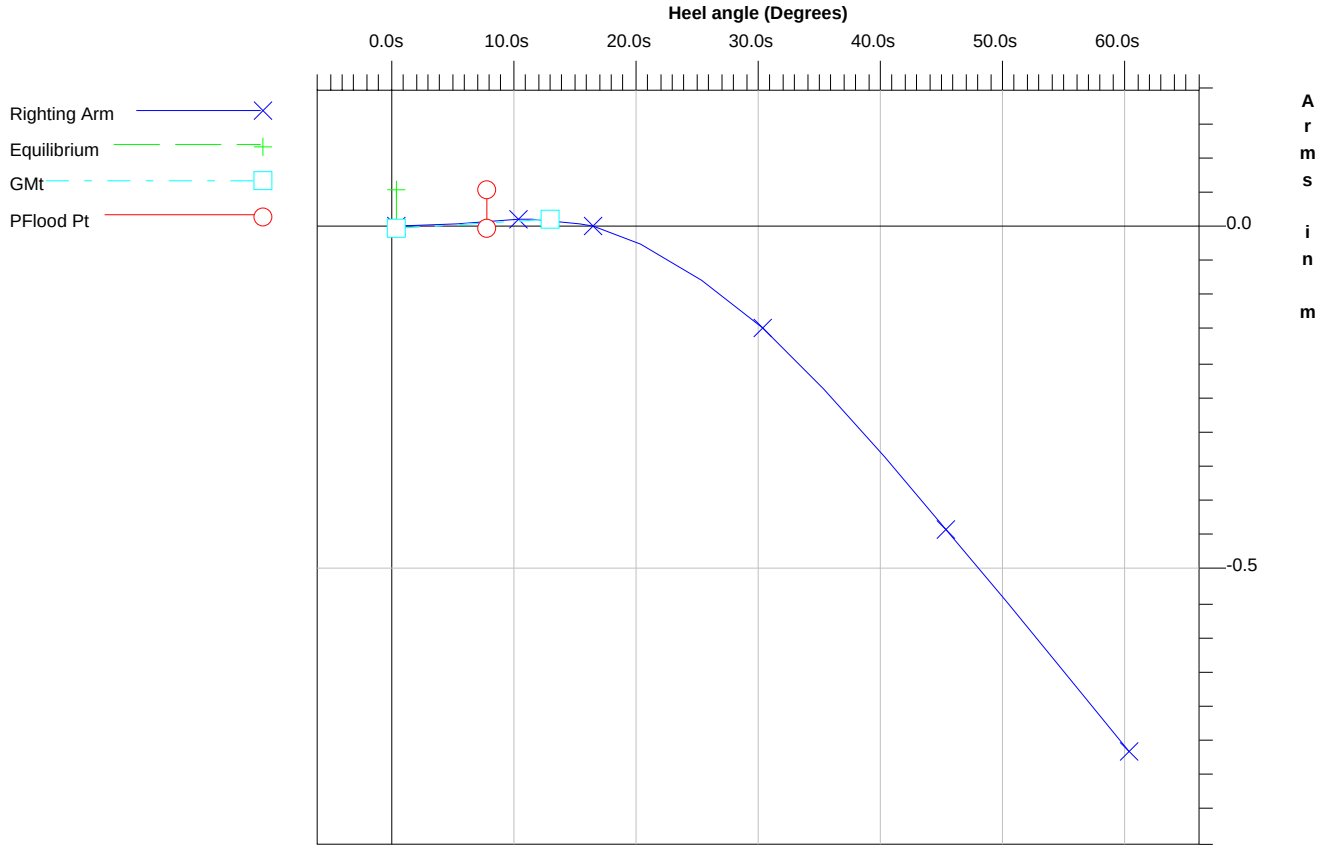
Limit	Min/Max	Actual	Margin	Pass
(1) GM at Equilibrium	>0.050 m	0.050	0.000	No
(2) Absolute Angle at Equilibrium	<7.00 deg	0.33	6.67	Yes
(3) Angle from Equilibrium to PFlood	>0.00 deg	7.33	7.33	Yes

Righting Arms vs. Heel



8 Intact Stability Calculations

8.1 Consolidated Intact Criteria 1 – 7

8.1.1 EVEN KEEL

Draft	INTACT Limit 1-6	INTACT Limit 7	maxVCG INTACT
1.5	3.227	2.848	**2.848**
1.55	3.21	2.912	**2.912**
1.6	3.198	2.968	**2.968**
1.65	3.191	3.021	**3.021**
1.7	3.186	3.063	**3.063**
1.75	3.184	3.097	**3.097**
1.8	3.182	3.127	**3.127**
1.85	3.179	3.151	**3.151**
1.9	3.177	3.173	**3.173**
1.95	3.172	3.19	**3.172**
2	3.161	3.208	**3.161**
2.05	3.144	3.219	**3.144**
2.1	3.126	3.229	**3.126**
2.15	3.105	3.236	**3.105**
2.2	3.083	3.242	**3.083**
2.25	3.06	3.25	**3.06**
2.3	3.034	3.26	**3.034**
2.35	3.008	3.264	**3.008**
2.4	2.956	3.269	**2.956**
2.45	2.89	3.273	**2.89**
2.5	2.816	3.28	**2.816**
2.55	2.774	3.286	**2.774**
2.6	2.74	3.289	**2.74**
2.65	2.674	3.296	**2.674**
2.7	2.639	3.305	**2.639**
2.75	2.602	3.31	**2.602**
2.8	2.547		

8.1.2 AFT 0.25 m / Lpp

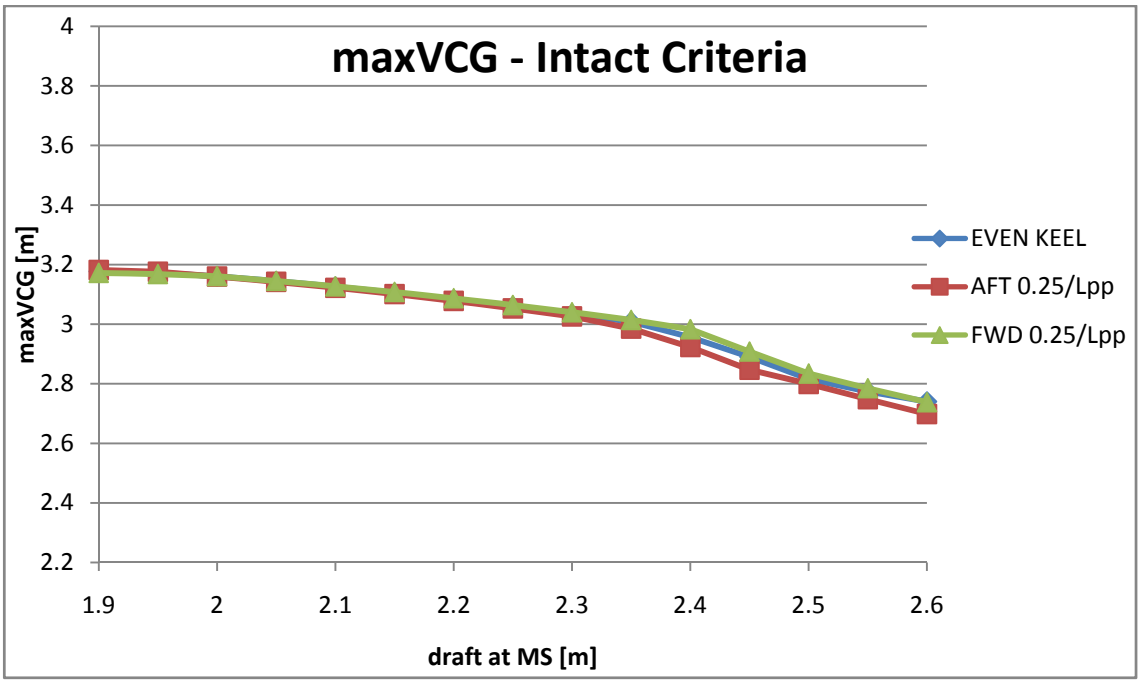
Draft	INTACT Limit 1-6	INTACT Limit 7	maxVCG INTACT
1.5	**3.228**	**2.862**	**2.862**
1.55	**3.213**	2.927	**2.927**
1.6	**3.203**	2.991	**2.991**
1.65	**3.197**	3.038	**3.038**
1.7	**3.193**	3.08	**3.08**
1.75	**3.191**	3.114	**3.114**
1.8	**3.189**	3.144	**3.144**
1.85	**3.187**	3.168	**3.168**
1.9	**3.182**	3.194	**3.182**
1.95	**3.176**	3.207	**3.176**
2	**3.16**	3.223	**3.16**
2.05	**3.142**	3.231	**3.142**
2.1	**3.122**	3.244	**3.122**
2.15	**3.101**	3.249	**3.101**
2.2	**3.078**	3.26	**3.078**
2.25	**3.053**	3.268	**3.053**
2.3	**3.026**	3.272	**3.026**
2.35	**2.985**	3.277	**2.985**
2.4	**2.923**	3.282	**2.923**
2.45	**2.847**	3.287	**2.847**
2.5	**2.799**	3.292	**2.799**
2.55	**2.748**	3.295	**2.748**
2.6	**2.698**	3.302	**2.698**
2.65	**2.653**	3.31	**2.653**
2.7	**2.618**	3.311	**2.618**
2.75	**2.581**	3.312	**2.581**
2.8	**2.546**		

8.1.3 FWD 0.25 m / Lpp

Draft	INTACT Limit 1-6	INTACT Limit 7	maxVCG INTACT
1.5	**3.226**	2.838	**2.838**
1.55	**3.208**	**2.897**	**2.897**
1.6	**3.195**	**2.953**	**2.953**
1.65	**3.187**	**3.005**	**3.005**
1.7	**3.182**	**3.046**	**3.046**
1.75	**3.178**	**3.08**	**3.08**
1.8	**3.176**	**3.11**	**3.11**
1.85	**3.174**	**3.135**	**3.135**
1.9	**3.172**	**3.158**	**3.158**
1.95	**3.168**	**3.176**	**3.168**
2	**3.161**	**3.191**	**3.161**
2.05	**3.145**	**3.206**	**3.145**
2.1	**3.127**	**3.218**	**3.127**
2.15	**3.108**	**3.228**	**3.108**
2.2	**3.087**	**3.235**	**3.087**
2.25	**3.064**	**3.238**	**3.064**
2.3	**3.04**	**3.249**	**3.04**
2.35	**3.014**	**3.252**	**3.014**
2.4	**2.983**	**3.258**	**2.983**
2.45	**2.908**	**3.263**	**2.908**
2.5	**2.834**	**3.269**	**2.834**
2.55	**2.785**	**3.275**	**2.785**
2.6	**2.738**	**3.278**	**2.738**
2.65	**2.715**	**3.284**	**2.715**
2.7	**2.654**	**3.296**	**2.654**
2.75	**2.619**	**3.299**	**2.619**
2.8	**2.559**	**3.303**	

8.2 Intact Stability Criteria 1 – 6

8.2.1 Max VCG Tables



Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At MS (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3	Limit 4	Limit 5	Limit 6
60.5	1.50	3.227	13.3%	5.2%	7.8%	0.0%	16.6°	359.7%
64.9	1.55	3.210	18.0%	9.3%	11.8%	0.0%	15.0°	376.5%
69.4	1.60	3.198	20.9%	11.8%	13.9%	0.0%	12.3°	385.4%
74.1	1.65	3.191	22.6%	13.0%	14.3%	0.0%	10.5°	386.2%
78.9	1.70	3.186	23.5%	13.5%	13.9%	0.1%	10.0°	382.4%
83.7	1.75	3.184	23.6%	13.0%	12.3%	0.0%	7.4°	373.1%
88.7	1.80	3.181	23.4%	12.1%	10.2%	0.0%	6.3°	361.5%
93.7	1.85	3.179	23.0%	11.0%	7.5%	0.0%	5.3°	348.7%
98.9	1.90	3.177	22.7%	9.8%	4.4%	0.0%	5.0°	336.0%
104.1	1.95	3.172	22.8%	8.9%	1.5%	0.0%	3.5°	324.7%
109.4	2.00	3.161	24.0%	9.1%	0.0%	0.8%	2.9°	317.1%
114.8	2.05	3.144	26.5%	10.6%	0.0%	2.5%	2.4°	314.0%
120.2	2.10	3.126	29.1%	12.2%	0.0%	4.0%	1.9°	312.5%
125.8	2.15	3.105	31.9%	13.9%	0.0%	5.2%	1.5°	313.4%
131.4	2.20	3.083	34.8%	15.7%	0.0%	6.2%	1.1°	316.5%
137.1	2.25	3.060	37.7%	17.5%	0.1%	7.1%	0.6°	321.5%
142.8	2.30	3.034	40.6%	19.3%	0.0%	7.6%	0.2°	328.1%
148.7	2.35	3.008	43.4%	21.0%	0.0%	7.9%	0.0°	336.7%
154.6	2.40	2.956	51.9%	28.8%	7.8%	13.9%	0.0°	363.1%
160.5	2.45	2.890	63.5%	39.9%	20.0%	23.0%	0.0°	400.4%
166.5	2.50	2.816	76.4%	52.5%	34.1%	33.3%	0.0°	443.5%
172.6	2.55	2.774	81.0%	56.3%	37.2%	35.3%	0.0°	466.6%
178.8	2.60	2.740	83.0%	57.6%	37.2%	34.8%	0.0°	485.1%
185.0	2.65	2.674	92.0%	66.3%	47.0%	41.5%	0.0°	525.0%
191.3	2.70	2.639	92.9%	66.7%	46.4%	40.3%	0.0°	545.7%
197.6	2.75	2.602	93.5%	66.8%	45.7%	38.9%	0.0°	568.1%
204.0	2.80	2.547	97.8%	71.1%	50.7%	41.7%	0.0°	603.3%

Trim = aft 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	**Intact Draft At -11.712 (m)**	**Max.VCG (m)**	**Limit 1**	**Limit 2**	**Limit 3**	**Limit 4**	**Limit 5**	**Limit 6**
60.7	1.50	3.228	16.4%	7.8%	10.1%	0.0%	15.7°	373.2%

65.1	1.55	3.213	20.5%	11.4%	13.2%	0.0%	13.3°	389.3%
69.7	1.60	3.203	23.1%	13.4%	14.4%	0.1%	11.3°	397.5%
74.3	1.65	3.197	24.5%	14.2%	14.3%	0.1%	10.0°	397.6%
79.1	1.70	3.193	25.1%	14.2%	13.2%	0.0%	7.8°	392.7%
84.0	1.75	3.191	25.2%	13.6%	11.3%	0.0%	6.6°	382.8%
89.0	1.80	3.189	25.0%	12.6%	8.7%	0.0%	5.4°	370.1%
94.1	1.85	3.187	24.5%	11.3%	5.7%	0.0%	5.0°	356.3%
99.2	1.90	3.182	24.5%	10.3%	2.7%	0.0%	3.8°	343.7%
104.5	1.95	3.176	24.8%	9.6%	0.0%	0.0%	2.9°	332.3%
109.8	2.00	3.160	27.2%	11.0%	0.0%	1.8%	2.4°	327.6%
115.2	2.05	3.142	29.7%	12.6%	0.0%	3.4%	1.9°	324.6%
120.7	2.10	3.122	32.3%	14.2%	0.0%	4.8%	1.5°	323.7%
126.3	2.15	3.101	35.1%	15.9%	0.0%	5.9%	1.1°	324.7%
132.0	2.20	3.078	37.9%	17.6%	0.0%	6.8%	0.7°	328.1%
137.7	2.25	3.053	40.7%	19.3%	0.0%	7.5%	0.3°	333.8%
143.5	2.30	3.026	43.5%	21.0%	0.0%	8.0%	0.0°	341.4%
149.4	2.35	2.985	49.4%	26.1%	4.4%	11.5%	0.0°	359.8%
155.3	2.40	2.923	60.2%	36.4%	15.5%	19.8%	0.0°	393.3%
161.3	2.45	2.847	73.4%	49.4%	30.1%	30.6%	0.0°	436.3%
167.4	2.50	2.799	79.6%	54.8%	35.4%	34.2%	0.0°	462.6%
173.5	2.55	2.748	85.6%	60.4%	40.8%	37.9%	0.0°	491.4%
179.7	2.60	2.698	91.0%	65.3%	45.7%	41.0%	0.0°	520.8%
186.0	2.65	2.653	94.3%	68.2%	48.3%	42.2%	0.0°	547.0%
192.3	2.70	2.618	94.4%	67.8%	46.8%	40.2%	0.0°	566.9%
198.7	2.75	2.581	94.1%	67.1%	45.5%	38.3%	0.0°	588.7%
205.1	2.80	2.546	92.4%	65.3%	43.0%	35.4%	0.0°	609.9%

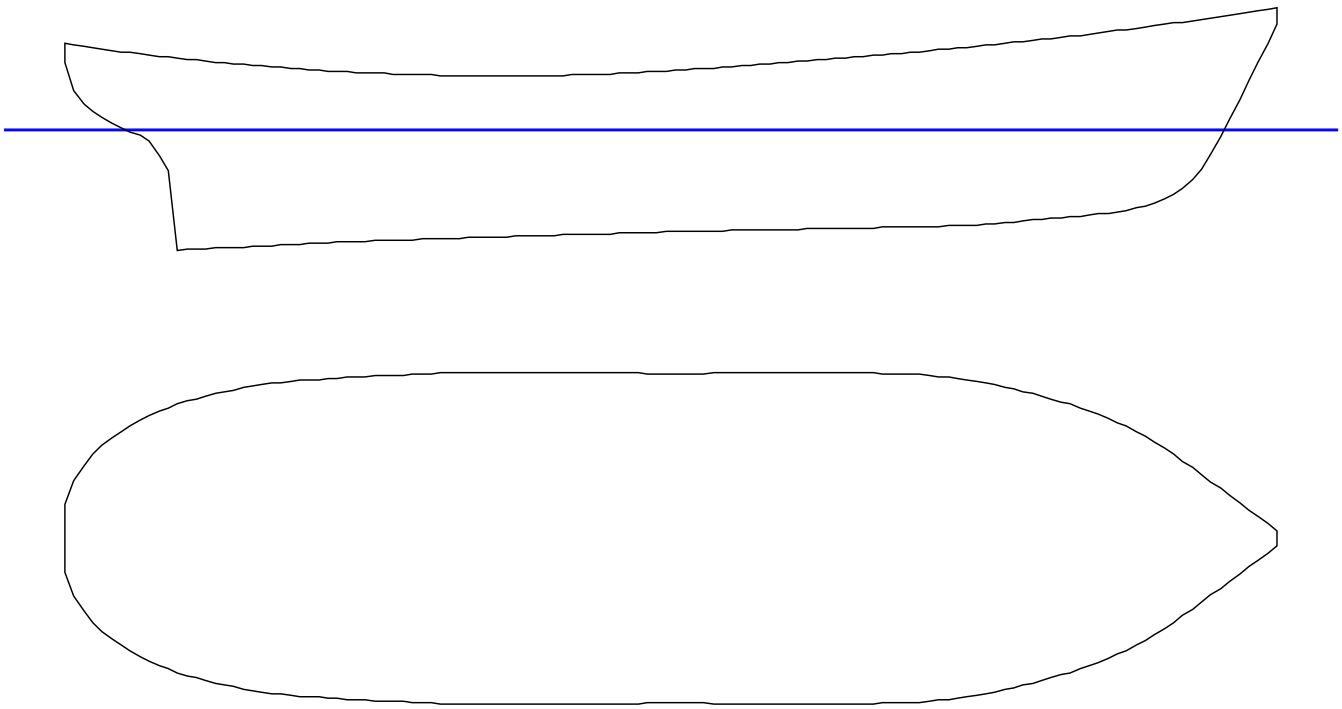
Trim = fwd 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3	Limit 4	Limit 5	Limit 6
60.5	1.50	3.226	10.6%	2.9%	6.1%	0.0%	17.2°	347.2%
64.9	1.55	3.208	15.4%	7.4%	10.4%	0.0%	15.0°	363.9%
69.4	1.60	3.195	18.7%	10.2%	13.2%	0.0%	12.9°	373.0%
74.1	1.65	3.187	20.6%	11.8%	14.2%	0.0%	11.2°	374.1%
78.8	1.70	3.182	21.6%	12.3%	13.9%	0.1%	10.0°	370.8%
83.6	1.75	3.178	21.9%	12.1%	12.9%	0.0%	8.0°	362.9%
88.6	1.80	3.176	21.8%	11.5%	11.1%	0.0%	6.9°	351.9%
93.6	1.85	3.174	21.5%	10.5%	8.6%	0.0%	5.8°	340.0%
98.7	1.90	3.172	21.2%	9.3%	5.7%	0.0%	5.0°	328.2%
103.9	1.95	3.168	21.0%	8.2%	2.7%	0.0%	5.0°	317.1%
109.2	2.00	3.161	21.5%	7.6%	0.0%	0.0%	3.3°	307.4%
114.5	2.05	3.145	23.9%	9.1%	0.0%	1.8%	2.8°	304.4%
120.0	2.10	3.127	26.6%	10.7%	0.0%	3.3%	2.3°	303.3%
125.5	2.15	3.108	29.3%	12.4%	0.0%	4.6%	1.8°	304.2%
131.0	2.20	3.087	32.2%	14.2%	0.0%	5.7%	1.3°	307.2%
136.7	2.25	3.064	35.2%	16.0%	0.0%	6.6%	0.9°	311.6%
142.4	2.30	3.040	38.2%	17.8%	0.0%	7.2%	0.4°	317.8%
148.2	2.35	3.014	41.1%	19.6%	0.0%	7.6%	0.0°	326.2%
154.0	2.40	2.983	44.9%	22.3%	1.3%	8.8%	0.0°	339.1%
160.0	2.45	2.908	58.8%	35.9%	16.5%	20.2%	0.0°	381.8%
165.9	2.50	2.834	72.3%	49.0%	31.2%	31.1%	0.0°	425.3%
172.0	2.55	2.785	79.0%	55.1%	37.0%	35.1%	0.0°	452.8%
178.1	2.60	2.738	84.6%	60.0%	41.6%	38.1%	0.0°	479.9%
184.3	2.65	2.715	83.7%	58.2%	37.7%	34.6%	0.0°	491.7%
190.5	2.70	2.654	91.7%	65.9%	46.3%	40.4%	0.0°	530.1%
196.8	2.75	2.619	92.3%	65.9%	45.3%	38.8%	0.0°	551.0%
203.1	2.80	2.559	98.5%	72.2%	52.6%	43.4%	0.0°	589.8%

8.2.2 Example Calculation – Intact Draft 2.2 m

Floating Status

Draft FP	2.200m	Heel	zero	GM(Solid)	0.625m
Draft MS	2.200m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.200m	Wind	0.0 kn	GM(Fluid)	0.625m
Trim	zero	Wave	No	KMT	3.708 m
LCG	11.387f	VCG	3.083 m	TPcm	1.13



Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	131.39	11.387f	0.000	1.494	1.000
SubTotals:			**131.39**	**11.387f**	**0.000**	**1.494**	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	**11.000f, 0.300p, 7.200**	**5.000**

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.00	2.200	0.000	0.000	5.000 (1)	Equil
5.00s	0.01f	2.185	0.054	0.002	5.011 (1)	
10.00s	0.05f	2.140	0.107	0.009	4.994 (1)	
15.00s	0.10f	2.064	0.156	0.021	4.949 (1)	
20.00s	0.17f	1.956	0.199	0.037	4.879 (1)	
25.00s	0.23f	1.831	0.222	0.055	4.778 (1)	
26.07s	0.23f	1.803	0.223	0.059	4.752 (1)	MaxRa
30.00s	0.24f	1.700	0.213	0.074	4.640 (1)	
35.00s	0.22f	1.565	0.175	0.091	4.463 (1)	
40.00s	0.18f	1.425	0.117	0.104	4.248 (1)	
45.00s	0.13f	1.281	0.044	0.111	3.997 (1)	
47.65s	0.10f	1.202	0.001	0.112	3.850 (1)	RaZero
50.00s	0.07f	1.131	-0.039	0.112	3.713 (1)	
55.00s	0.00f	0.978	-0.129	0.104	3.397 (1)	
60.00s	0.07a	0.821	-0.223	0.089	3.052 (1)	
65.00s	0.15a	0.661	-0.318	0.066	2.681 (1)	
70.00s	0.23a	0.501	-0.412	0.034	2.287 (1)	
75.00s	0.32a	0.342	-0.503	-0.006	1.873 (1)	
80.00s	0.42a	0.186	-0.590	-0.054	1.441 (1)	
85.00s	0.57a	0.039	-0.673	-0.109	0.996 (1)	
90.00s	0.72a	-0.109	-0.753	-0.171	0.548 (1)	
95.00s	0.86a	-0.264	-0.832	-0.240	0.100 (1)	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	5.000

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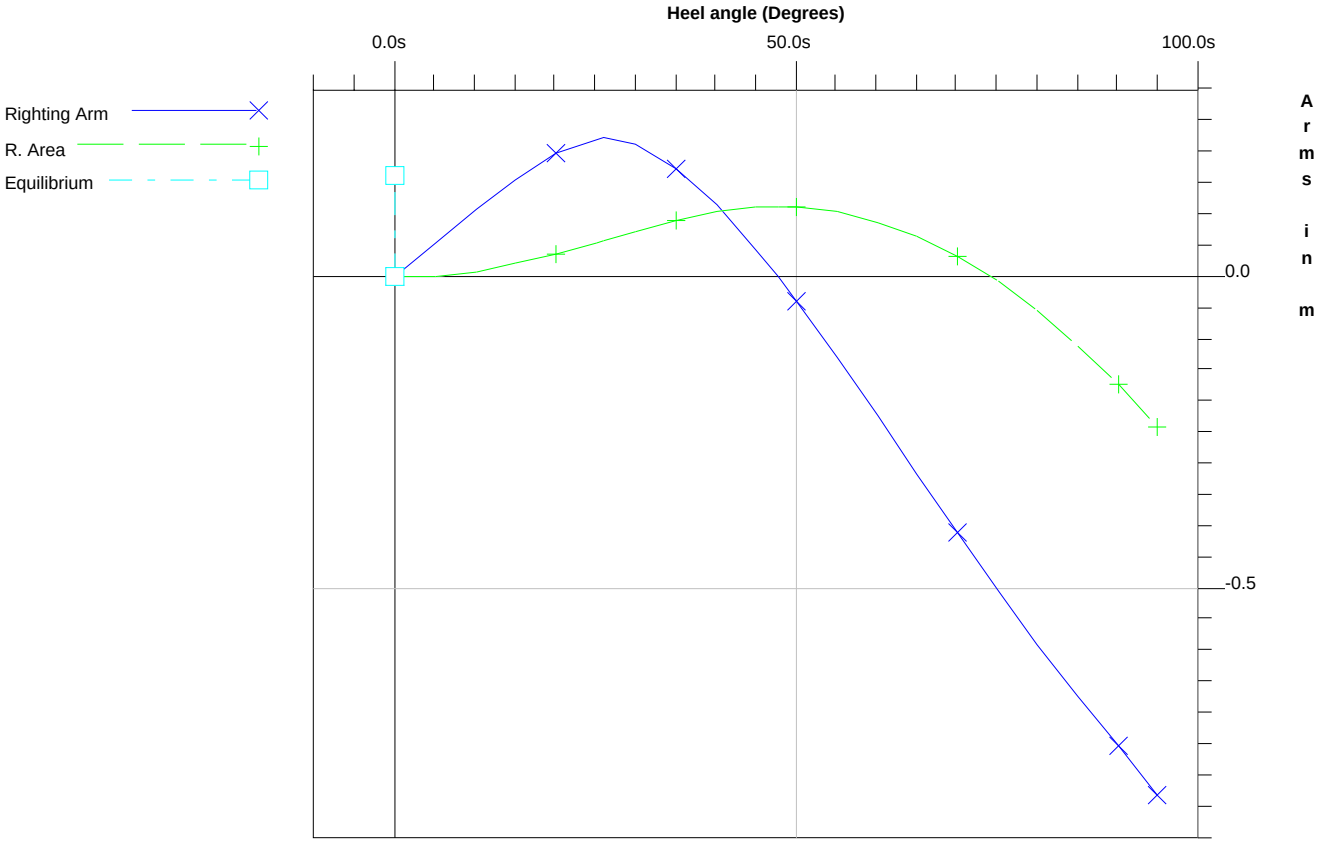
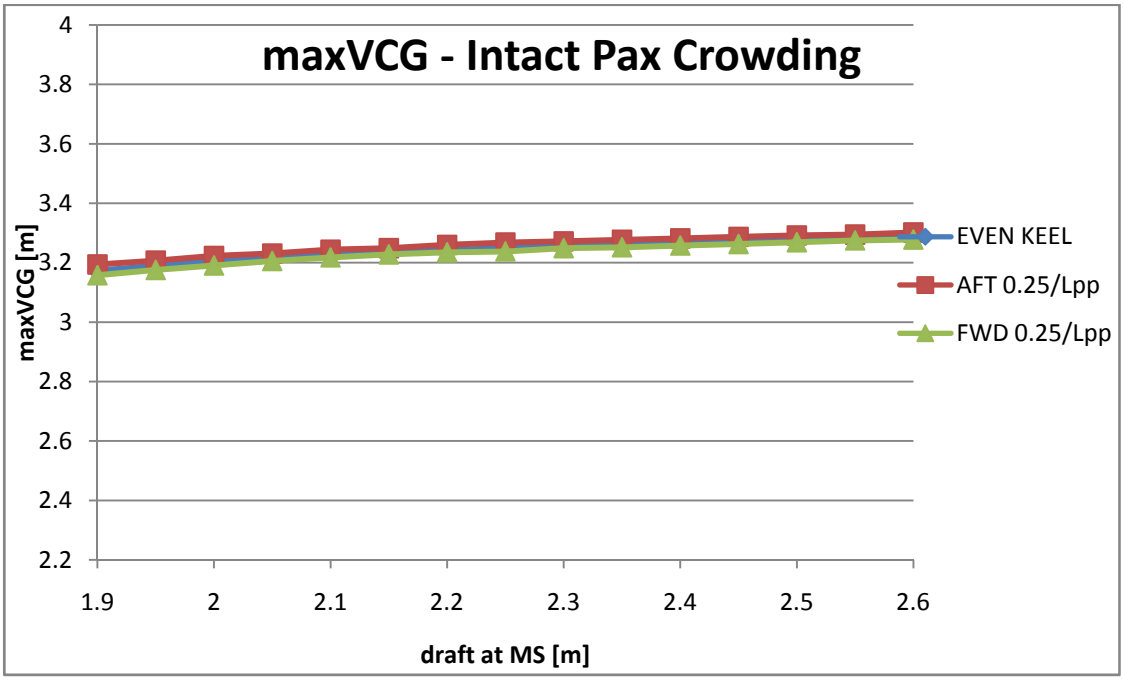
Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.074	0.019	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.104	0.014	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.030	0.000	No
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.213	0.013	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	26.07	1.07	Yes
(6) GM Upright	>0.150 m	0.625	0.475	Yes

Righting Arms vs. Heel



8.3 Intact Stability Criteria 7 – Passenger Crowding

8.3.1 Max VCG Tables



Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 7
60.5	1.50	2.848	0.0°
64.9	1.55	2.912	0.1°
69.4	1.60	2.968	0.1°
74.1	1.65	3.021	0.0°
78.9	1.70	3.063	0.0°
83.7	1.75	3.097	0.0°
88.7	1.80	3.127	0.0°
93.7	1.85	3.151	0.0°
98.9	1.90	3.173	0.0°
104.1	1.95	3.190	0.0°
109.4	2.00	3.208	0.1°
114.8	2.05	3.219	0.0°
120.2	2.10	3.229	0.0°
125.8	2.15	3.236	0.0°
131.4	2.20	3.242	0.1°
137.1	2.25	3.250	0.0°
142.8	2.30	3.260	0.1°
148.7	2.35	3.264	0.0°
154.6	2.40	3.269	0.0°
160.5	2.45	3.273	0.0°
166.5	2.50	3.280	0.0°
172.6	2.55	3.286	0.0°
178.8	2.60	3.289	0.1°
185.0	2.65	3.296	0.0°
191.3	2.70	3.305	0.0°
197.6	2.75	3.310	0.1°
204.0	2.80	****	<und>

Trim = aft 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At MS (m)	Max.VCG (m)	Limit 7
60.4	1.50	2.862	0.0°
64.8	1.55	2.927	0.1°
69.3	1.60	2.991	0.0°
74.0	1.65	3.038	0.0°
78.8	1.70	3.080	0.0°
83.6	1.75	3.114	0.0°
88.6	1.80	3.144	0.0°
93.6	1.85	3.168	0.0°
98.7	1.90	3.194	0.1°
104.0	1.95	3.207	0.0°
109.3	1.99	3.223	0.0°
114.7	2.04	3.231	0.0°
120.1	2.09	3.244	0.0°
125.7	2.14	3.249	0.1°
131.3	2.19	3.260	0.0°
137.0	2.24	3.268	0.1°
142.7	2.29	3.272	0.0°
148.5	2.34	3.277	0.0°
154.4	2.39	3.282	0.0°
160.4	2.44	3.287	0.0°
166.4	2.49	3.292	0.0°
172.5	2.54	3.295	0.1°
178.7	2.59	3.302	0.0°
184.9	2.64	3.310	0.0°
191.2	2.69	3.311	0.1°
197.5	2.74	3.312	0.0°
203.9	2.79	****	<und>

Notes : **** -- No solution can be found

Trim = fwd 0.250/23.425 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -11.712 (m)	Max.VCG (m)	Limit 7
60.5	**1.50**	**2.838**	**0.1°**
64.9	**1.55**	**2.897**	**0.0°**
69.4	**1.60**	**2.953**	**0.1°**
74.1	**1.65**	**3.005**	**0.0°**
78.8	**1.70**	**3.046**	**0.0°**
83.6	**1.75**	**3.080**	**0.0°**
88.6	**1.80**	**3.110**	**0.0°**
93.6	**1.85**	**3.135**	**0.0°**
98.7	**1.90**	**3.158**	**0.0°**
103.9	**1.95**	**3.176**	**0.0°**
109.2	**2.00**	**3.191**	**0.0°**
114.5	**2.05**	**3.206**	**0.0°**
120.0	**2.10**	**3.218**	**0.1°**
125.5	**2.15**	**3.228**	**0.1°**
131.0	**2.20**	**3.235**	**0.1°**
136.7	**2.25**	**3.238**	**0.0°**
142.4	**2.30**	**3.249**	**0.1°**
148.2	**2.35**	**3.252**	**0.0°**
154.0	**2.40**	**3.258**	**0.0°**
160.0	**2.45**	**3.263**	**0.0°**
165.9	**2.50**	**3.269**	**0.0°**
172.0	**2.55**	**3.275**	**0.0°**
178.1	**2.60**	**3.278**	**0.1°**

184.3	**2.65**	**3.284**	**0.1°**
190.5	**2.70**	**3.296**	**0.0°**
196.8	**2.75**	**3.299**	**0.1°**
203.1	**2.80**	**3.303**	**0.1°**

8.3.2 Example Calculation – Intact Draft 2.2 m

Floating Status – Before Passenger Crowding

Draft FP	2.200m	Heel	zero	GM(Solid)	0.463m
Draft MS	2.200m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.200m	Wind	0.0 kn	GM(Fluid)	0.463m
Trim	zero	Wave	No	KMT	3.708 m
LCG	11.387f	VCG	3.245 m	TPcm	1.13

Floating Status – After Passenger Crowding (Stbd heeling moment = 10.43tonm)

Draft FP	2.192m	Heel	stbd 9.99 deg.	GM(Solid)	0.447m
Draft MS	2.183m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.174m	Wind	0.0 kn	GM(Fluid)	0.447m
Trim	0.018/23.425	Wave	No	KMT	3.718 m
LCG	11.387f	VCG	3.245 m	TPcm	1.13

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	131.41	11.388f	0.383s	1.527	1.000
SubTotals:			131.41	11.388f	0.383s	1.527	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.994

Residual Righting Arms vs Heel Angle

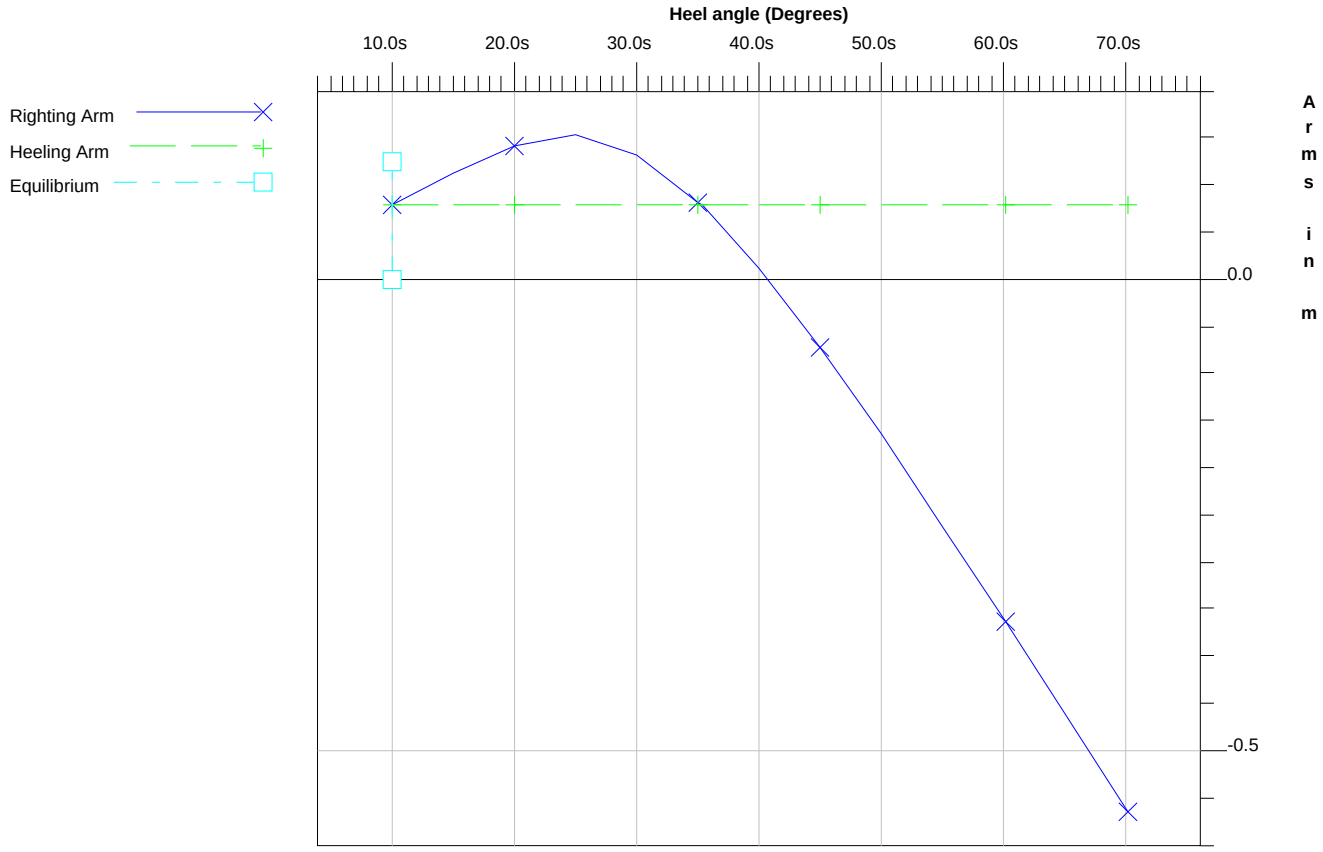
Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Residual Arm (m)	Notes
9.99s	0.04f	2.140	0.000	
10.00s	0.04f	2.140	0.000	Equil
14.99s	0.10f	2.064	0.035	
19.99s	0.17f	1.956	0.064	
24.99s	0.23f	1.830	0.074	
29.99s	0.24f	1.700	0.052	
34.99s	0.22f	1.565	0.003	
35.22s	0.22f	1.559	0.000	RaZero
39.99s	0.18f	1.425	-0.066	
44.99s	0.13f	1.281	-0.150	
49.99s	0.07f	1.131	-0.242	
54.99s	0.01f	0.978	-0.341	
59.99s	0.07a	0.821	-0.442	
64.99s	0.15a	0.662	-0.544	
69.99s	0.23a	0.502	-0.643	

Note:
Residual Righting Arms shown above are in excess of the overturning arms derived from this moment (in m-MT):
Stbd heeling moment = 10.43

Limit Report

Limit	Min/Max	Actual	Margin	Pass
(7) Absolute Angle at Equilibrium	<10.00 deg	10.00	0.00	No

Righting Arms vs. Heel



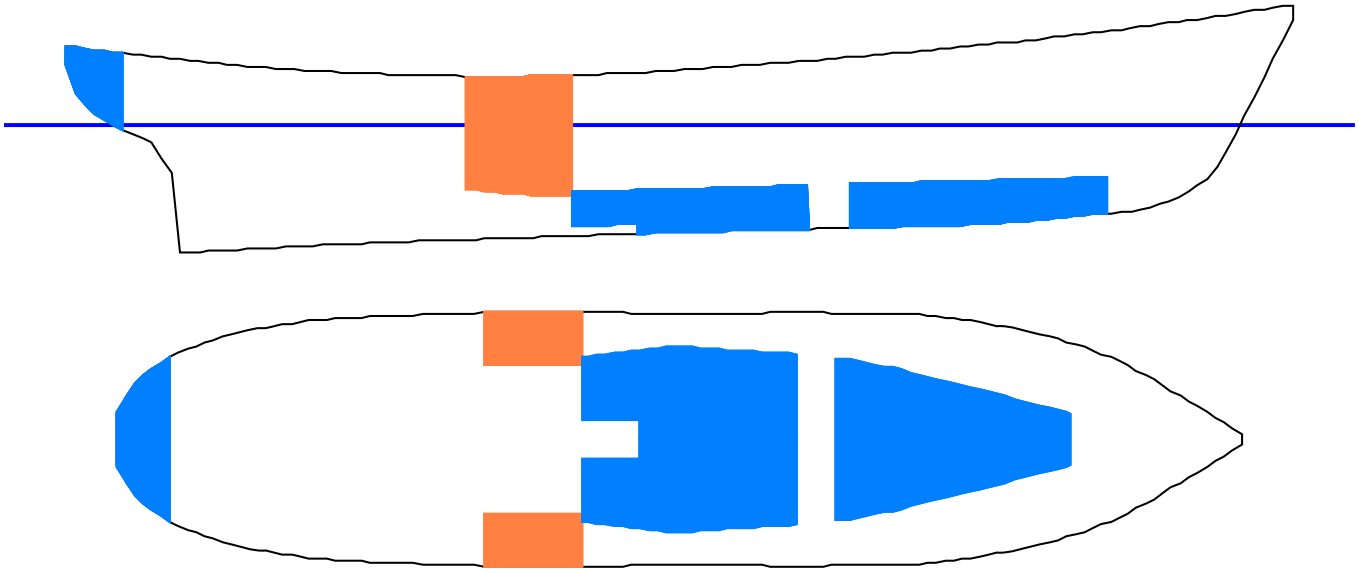
8.3.3 Example Calculation – Intact Condition LC4

Floating Status

Draft FP	2.265m	Heel	stbd 4.35 deg.	GM(Solid)	0.951m
Draft MS	2.310m	Equil	Yes	F/S Corr	0.000m
Draft AP	2.355m	Wind	0.0 kn	GM(Fluid)	0.951m
Trim	aft 0.090/23.425	Wave	No	KMT	3.686 m
LCG	11.282f	VCG	2.731 m	TPcm	1.17

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	114.96	11.466f	0.000	2.913
Deadweight	29.62	10.569f	0.352s	2.027
Displacement	144.58	11.282f	0.072s	2.731



Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		16.44	100.00%
DIESEL OIL		8.58	100.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	114.96	11.466f	0.000	2.913
CREW AND STORE	1.00	2.715f	0.000	4.700
PASSENGERS A	2.85	10.415f	3.000s	4.400
PASSENGERS B	0.75	10.415f	2.500s	4.400
Total Fixed	119.56	11.361f	0.087s	2.973

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
AFTPEAK.C	100.00%	2.40	0.447a	0.000	3.311	0.950
DB_TANK.S	100.00%	4.04	12.142f	0.825s	0.791	0.950
DB_TANK.P	100.00%	4.04	12.142f	0.825p	0.791	0.950
DB_TANK.C	100.00%	5.95	17.504f	0.000	0.904	0.950
Subtotals:	100.00%	16.44	12.241f	0.000	1.200	

DIESEL OIL (SpGr 0.870)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
DEEP_TANK.S	100.00%	4.29	8.347f	2.473s	2.304	0.950
DEEP_TANK.P	100.00%	4.29	8.347f	2.473p	2.304	0.950
Subtotals:	100.00%	8.58	8.347f	0.000	2.304	

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	Perm
Totals:		25.02	10.905f	0.000	1.579	

Unprotected Flood Point

Name	L,T,V (m)	Height (m)
(1) Engine room vent.	11.000f, 0.300p, 7.200	4.896

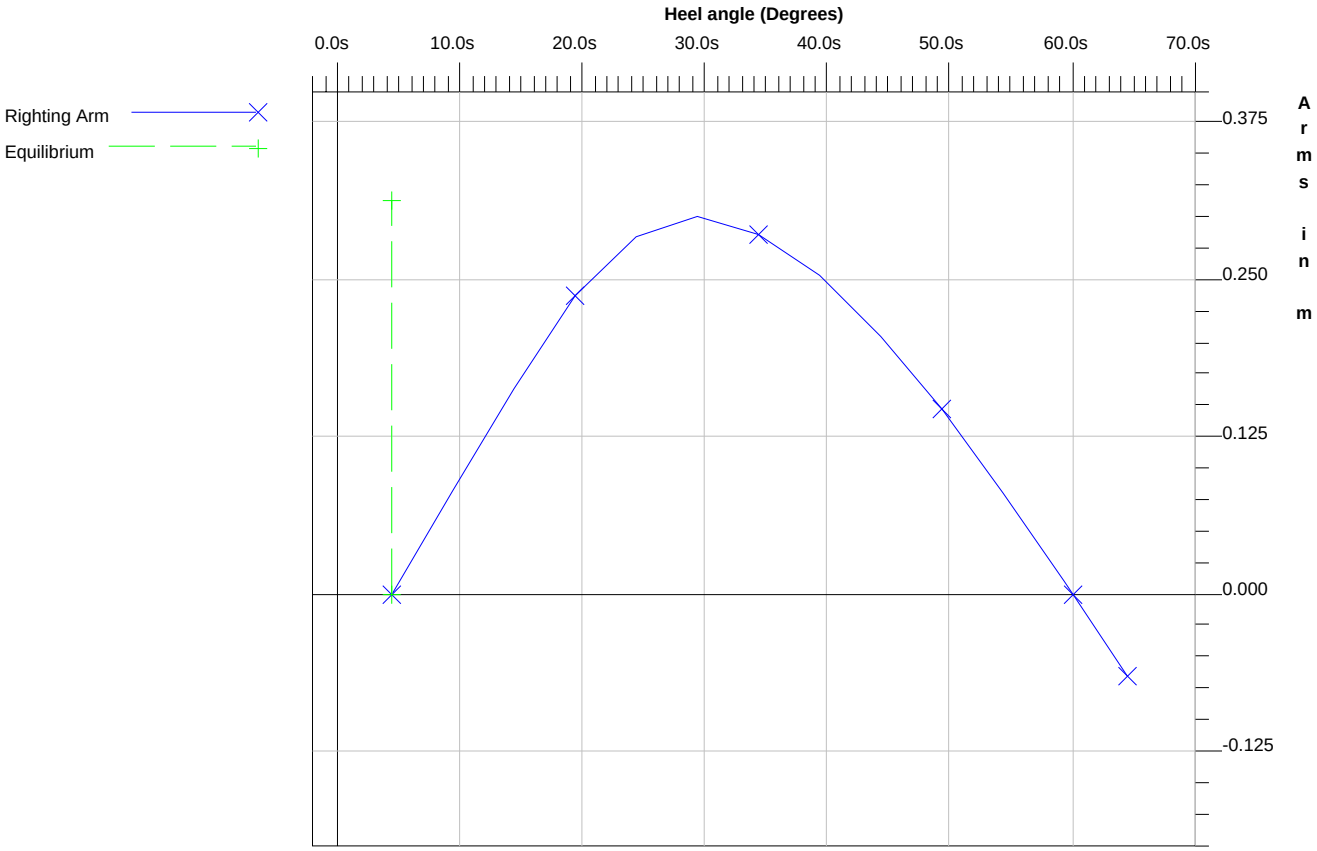
Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Notes
4.35s	0.22a	2.349	0.000	Equil
9.35s	0.19a	2.308	0.083	
14.35s	0.14a	2.235	0.164	
19.35s	0.07a	2.134	0.239	
24.35s	0.05a	2.024	0.286	
29.35s	0.06a	1.910	0.300	
34.35s	0.11a	1.792	0.287	
39.35s	0.17a	1.667	0.254	
44.35s	0.24a	1.536	0.206	
49.35s	0.31a	1.397	0.148	
54.35s	0.40a	1.252	0.081	
59.35s	0.48a	1.102	0.010	
60.03s	0.49a	1.081	0.000	RaZero
64.35s	0.56a	0.947	-0.064	

Limit Report

Limit	Min/Max	Actual	Margin	Pass
(7) Absolute Angle at Equilibrium	**<10.00 deg**	**4.35**	**5.65**	**Yes**

Righting Arms vs. Heel



9 Stability Model Verification

9.1 New model vs. old stability booklet

9.1.1 Basis for Hull Model

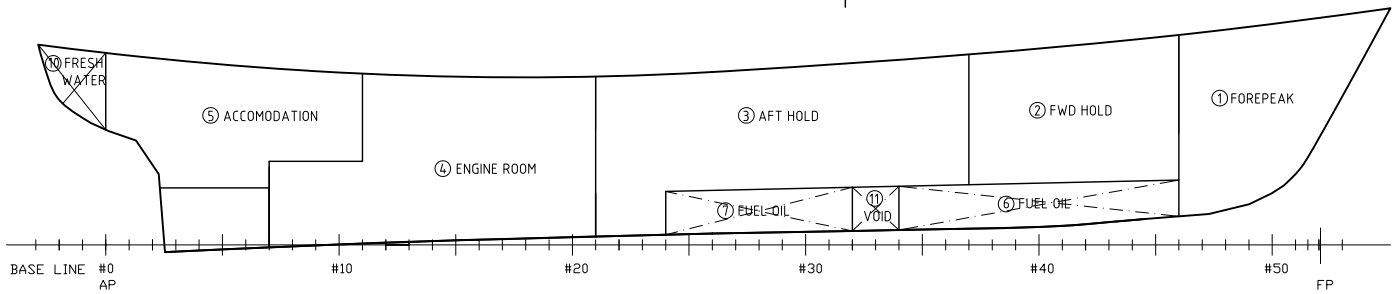
The hull model used for the stability calculations was developed based on the Body Plan and General Arrangement belonging to tonnage certificate “Göteborgs Mätbevis nr. 15448 1996”. It has not been possible to find any other of the ships drawings except from what mentioned above. A detailed survey and measurements was taken place onboard in order to verify the arrangement.

9.1.2 Hydrostatic Data – Model vs. Old Intact Stability Booklet

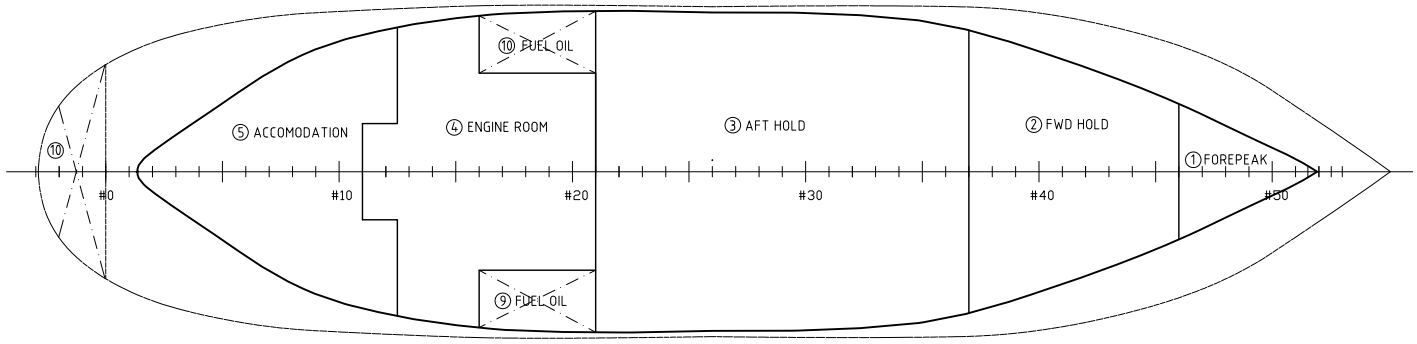
Hydrostatic properties from new model compared with previous approved intact stability booklet dated 1999-01-04. The deviation of properties has found to be within acceptable limits.

LCF Draft (m)	Displ (MT) MODEL	Displ (MT) OLD STAB	Disp (%) DIFF.	LCB (m) MODEL	LCB (m) OLD STAB	LCB (%) DIFF.	VCB (m) MODEL	VCB (m) OLD STAB	VCB (%) DIFF.
1.8	88.675	89.4	**-0.82%**	11.367	11.295	**0.63%**	1.248	1.24	**0.64%**
1.9	98.858	99.6	**-0.75%**	11.381	11.315	**0.58%**	1.31	1.3	**0.76%**
2	109.385	110	**-0.56%**	11.388	11.325	**0.55%**	1.371	1.36	**0.80%**
2.1	120.235	120.9	**-0.55%**	11.39	11.335	**0.48%**	1.433	1.43	**0.21%**
2.2	131.39	132.1	**-0.54%**	11.387	11.335	**0.46%**	1.494	1.49	**0.27%**
2.3	142.836	143.6	**-0.53%**	11.38	11.335	**0.40%**	1.554	1.55	**0.26%**
2.4	154.556	155.4	**-0.55%**	11.369	11.335	**0.30%**	1.615	1.61	**0.31%**
2.5	166.541	167.5	**-0.58%**	11.356	11.325	**0.27%**	1.675	1.67	**0.30%**
2.6	178.782	179.8	**-0.57%**	11.34	11.315	**0.22%**	1.735	1.73	**0.29%**
2.7	191.27	192.3	**-0.54%**	11.323	11.315	**0.07%**	1.794	1.79	**0.22%**
2.8	203.99	205	**-0.50%**	11.303	11.305	**-0.02%**	1.854	1.85	**0.22%**
2.9	216.926	217.9	**-0.45%**	11.283	11.295	**-0.11%**	1.914	1.91	**0.21%**

LCF Draft (m)	KMT (m) MODEL	KMT (m) OLD STAB	KMT (m) DIFF.	LCF (m) MODEL	LCF (m) OLD STAB	LCF (m) DIFF.	TPcm (MT/cm) MODEL	TPcm (MT/cm) OLD STAB	TPcm (%) DIFF.
1.8	3.874	3.75	**3.20%**	11.522	11.495	**0.23%**	1	0.99	**1.00%**
1.9	3.831	3.74	**2.38%**	11.481	11.465	**0.14%**	1.04	1.03	**0.96%**
2	3.787	3.72	**1.77%**	11.435	11.435	**0.00%**	1.07	1.07	**0.00%**
2.1	3.745	3.71	**0.93%**	11.381	11.385	**-0.04%**	1.1	1.1	**0.00%**
2.2	3.708	3.71	**-0.05%**	11.327	11.345	**-0.16%**	1.13	1.14	**-0.88%**
2.3	3.677	3.7	**-0.63%**	11.271	11.305	**-0.30%**	1.16	1.17	**-0.86%**
2.4	3.651	3.69	**-1.07%**	11.214	11.265	**-0.45%**	1.19	1.19	**0.00%**
2.5	3.631	3.67	**-1.07%**	11.156	11.235	**-0.71%**	1.21	1.22	**-0.83%**
2.6	3.617	3.65	**-0.91%**	11.097	11.205	**-0.97%**	1.24	1.24	**0.00%**
2.7	3.608	3.63	**-0.61%**	11.041	11.185	**-1.30%**	1.26	1.26	**0.00%**
2.8	3.602	3.62	**-0.50%**	10.99	11.175	**-1.68%**	1.28	1.28	**0.00%**
2.9	3.599	3.6	**-0.03%**	10.947	11.165	**-1.99%**	1.3	1.29	**0.77%**

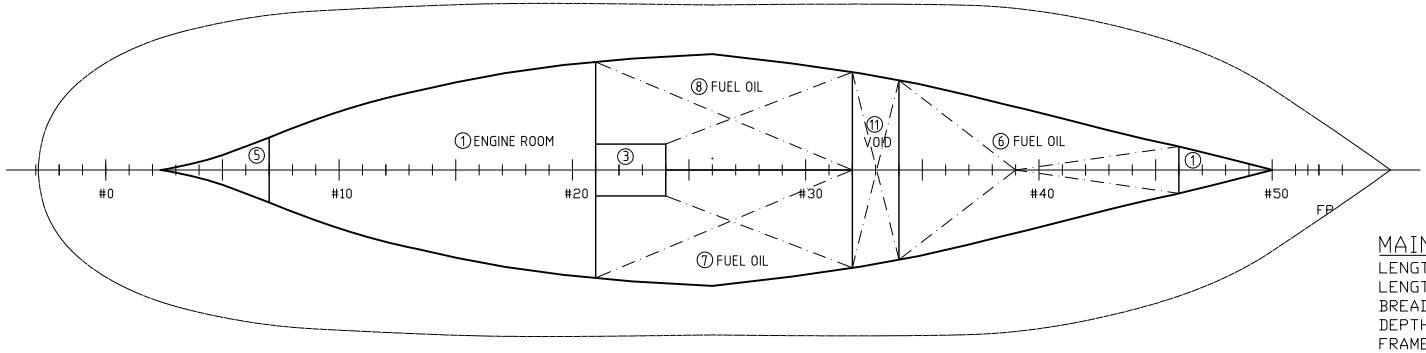


PROFILE



BELOW MAIN DECK

z = 2.00m ab. BL



BELOW TANK TOP

z = 1.00m ab. BL

MAIN PARTICULARS

LENGTH OVER ALL	26.820 m
LENGTH BETWEEN PERPENDICULARS	23.425 m
BREADTH MOULDED	6.400 m
DEPTH	3.080 m
FRAME SPACING	0.450 m
PASSENGERS	48

TANK No.	CONTENTS.	FR. No.	VOL. m3	DENSITY t/m3	WEIGHT ton	LCG m	TCG m	VCG m	MAX.FSM tonm	PERM.
1	FOREPEAK STORE	#46-fwd	10.72			21.877	0.000	3.071	6.76	0.60
2	FWD CARGO HOLD	#37-#46	46.72			18.547	0.000	2.674	61.45	0.95
3	AFT CARGO HOLD	#21-#36	96.44			13.065	0.000	2.291	150.42	0.95
4	ENGINE ROOM	#7-#21	45.91			6.943	0.000	1.874	37.95	0.85
5	ACCOMODATION	#0-#12.5	40.10			3.065	0.000	2.643	66.24	0.95
6	FUEL OIL	#34-#46	5.95	0.87	5.17	17.504	0.000	0.904	8.00	0.95
7	FUEL OIL	#21-#32	4.04	0.87	3.52	12.142	0.825s	0.791	2.76	0.95
8	FUEL OIL	#21-#32	4.04	0.87	3.52	12.142	0.825p	0.791	2.76	0.95
9	FUEL OIL	#16-#21	4.93	0.87	4.29	8.347	2.473s	2.304	0.34	0.95
10	FUEL OIL	#16-#21	4.93	0.87	4.29	8.347	2.473p	3.304	0.34	0.95
11	VOID SPACE	#32-#34	1.51			14.845	0.000	0.840	4.69	0.95
12	FRESH WATER	aft-#0	2.40	1.00	2.40	0.447a	0.000	3.311	2.91	0.95

REV	DATE	DESCRIPTION	BY	CHKD	APPD

CLIENT

PROJECT ALTERATION 2010

TITLE
TANK PLAN
M/S FALKSKÄR II

DRAWN	CHKD	APPD	SCALE	DATE
AH		PB	1:100	2010-06-01

SIZE	DRAWING NO	SHEET	REV
A3	200-002-100	1 (1)	A

FILE NAME