### Equilibrium calculation - Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments)

Stability 24.00.04.133, build: 133

Model file: C:\Users\prana\Personal Data\Data\Private Data\Academic and Personal Data\Third Year Study Material\6th Semester\MD Lab\All Files PCC\Final Files\Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments) (Highest precision, 508 sections, Trimming on, Skin thickness not applied). Long. datum: User def.; Vert. datum: User def.. Analysis tolerance - ideal(worst case): Disp.%: 0.01000(0.100); Trim%(LCG-TCG): 0.01000(0.100); Heel%(LCG-TCG): 0.01000(0.100)

Loadcase - Loadcase\_1\_LightShip

Damage Case - Intact

Free to Trim

Specific gravity = 1.025; (Density = 1.025 tonne/m^3)

Fluid analysis method: Use corrected VCG

| **Item Name** | **Quantity** | **Unit Mass**  **tonne** | **Total Mass**  **tonne** | **Unit Volume**  **m^3** | **Total Volume**  **m^3** | **Long. Arm**  **m** | **Trans. Arm**  **m** | **Vert. Arm**  **m** | **Total FSM**  **tonne.m** | **FSM Type** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Steel\_weight | 1 | 3006.110 | 3006.110 |  |  | 100.000 | 0.000 | 20.500 | 0.000 | User Specified |
| Outfit\_Weight | 1 | 2988.000 | 2988.000 |  |  | 100.000 | 0.000 | 20.500 | 0.000 | User Specified |
| Machinery\_Weight | 1 | 2896.534 | 2896.534 |  |  | 27.500 | 0.000 | 16.500 | 0.000 | User Specified |
| Chain\_Locker\_Room | 1 | 2800.000 | 2800.000 |  |  | 210.000 | 0.000 | 25.000 | 0.000 | User Specified |
| Forward\_tank | 0% | 1070.857 | 0.000 | 1044.739 | 0.000 | 208.235 | 0.000 | 0.000 | 0.000 | Maximum |
| aft-peak-tank | 0% | 3310.387 | 0.000 | 3229.646 | 0.000 | 12.238 | 0.000 | 0.003 | 0.000 | Maximum |
| Doube\_Bottom\_1 | 0% | 284.943 | 0.000 | 277.993 | 0.000 | 25.026 | 0.000 | 0.011 | 0.000 | Maximum |
| Double\_bottom\_Ballast\_tank | 0% | 3747.757 | 0.000 | 3656.348 | 0.000 | 107.938 | 0.000 | 0.000 | 0.000 | Maximum |
| Double\_bottom\_ballast\_Starboard | 0% | 1733.085 | 0.000 | 1690.814 | 0.000 | 107.893 | -15.363 | 2.000 | 0.000 | Maximum |
| Double\_bottom\_ballast\_Port | 0% | 1733.085 | 0.000 | 1690.814 | 0.000 | 107.893 | 15.363 | 2.000 | 0.000 | Maximum |
| Fuel\_Tank | 0% | 8750.261 | 0.000 | 9266.400 | 0.000 | 124.000 | 0.000 | 2.000 | 0.000 | Maximum |
| freshwater1 | 0% | 860.666 | 0.000 | 860.666 | 0.000 | 5.291 | -16.746 | 20.000 | 0.000 | Maximum |
| freshwater2 | 0% | 860.666 | 0.000 | 860.666 | 0.000 | 5.291 | 16.746 | 20.000 | 0.000 | Maximum |
| Total Loadcase |  |  | 11690.644 | 22578.088 | 0.000 | 108.383 | 0.000 | 20.587 | 0.000 |  |
| FS correction |  |  |  |  |  |  |  | 0.000 |  |  |
| VCG fluid |  |  |  |  |  |  |  | 20.587 |  |  |

|  |  |
| --- | --- |
| Draft Amidships m | 2.585 |
| Displacement t | 11691 |
| Heel deg | 0.0 |
| Draft at FP m | 2.277 |
| Draft at AP m | 2.893 |
| Draft at LCF m | 2.577 |
| Trim (+ve by stern) m | 0.616 |
| WL Length m | 212.846 |
| Beam max extents on WL m | 40.000 |
| Wetted Area m^2 | 5588.980 |
| Waterpl. Area m^2 | 5187.576 |
| Prismatic coeff. (Cp) | 0.516 |
| Block coeff. (Cb) | 0.469 |
| Max Sect. area coeff. (Cm) | 0.987 |
| Waterpl. area coeff. (Cwp) | 0.609 |
| LCB from zero pt. (+ve fwd) m | 108.330 |
| LCF from zero pt. (+ve fwd) m | 110.356 |
| KB m | 1.399 |
| KG fluid m | 20.587 |
| BMt m | 41.889 |
| BML m | 883.052 |
| GMt corrected m | 22.701 |
| GML m | 863.864 |
| KMt m | 43.288 |
| KML m | 884.448 |
| Immersion (TPc) tonne/cm | 53.173 |
| MTc tonne.m | 469.749 |
| RM at 1deg = GMt.Disp.sin(1) tonne.m | 4631.987 |
| Max deck inclination deg | 0.1642 |
| Trim angle (+ve by stern) deg | 0.1642 |

| **Key point** | **Type** | **Freeboard**  **m** |
| --- | --- | --- |
| Margin Line (freeboard pos = -6 m) |  | 27.013 |
| Deck Edge (freeboard pos = -6 m) |  | 27.089 |

### Longitudinal Strength calculation - Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments)

Stability 24.00.04.133, build: 133

Model file: C:\Users\prana\Personal Data\Data\Private Data\Academic and Personal Data\Third Year Study Material\6th Semester\MD Lab\All Files PCC\Final Files\Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments) (Highest precision, 508 sections, Trimming on, Skin thickness not applied). Long. datum: User def.; Vert. datum: User def.. Analysis tolerance - ideal(worst case): Disp.%: 0.01000(0.100); Trim%(LCG-TCG): 0.01000(0.100); Heel%(LCG-TCG): 0.01000(0.100)

Loadcase - Loadcase\_1\_LightShip

Damage Case - Intact

Free to Trim

Specific gravity = 1.025; (Density = 1.025 tonne/m^3)

Fluid analysis method: Simulate fluid movement

| **Item Name** | **Quantity** | **Unit Mass**  **tonne** | **Total Mass**  **tonne** | **Unit Volume**  **m^3** | **Total Volume**  **m^3** | **Long. Arm**  **m** | **Aft. Limit**  **m** | **Fwd. Limit**  **m** | **Trans. Arm**  **m** | **Vert. Arm**  **m** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Steel\_weight | 1 | 3006.110 | 3006.110 |  |  | 100.000 | 100.000 | 100.000 | 0.000 | 20.500 |
| Outfit\_Weight | 1 | 2988.000 | 2988.000 |  |  | 100.000 | 100.000 | 100.000 | 0.000 | 20.500 |
| Machinery\_Weight | 1 | 2896.534 | 2896.534 |  |  | 27.500 | 27.500 | 27.500 | 0.000 | 16.500 |
| Chain\_Locker\_Room | 1 | 2800.000 | 2800.000 |  |  | 210.000 | 210.000 | 210.000 | 0.000 | 25.000 |
| Forward\_tank | 0% | 1070.857 | 0.000 | 1044.739 | 0.000 | 205.123 |  |  | 0.000 | 0.000 |
| aft-peak-tank | 0% | 3310.387 | 0.000 | 3229.646 | 0.000 | 12.238 |  |  | 0.000 | 0.003 |
| Doube\_Bottom\_1 | 0% | 284.943 | 0.000 | 277.993 | 0.000 | 15.147 |  |  | 0.000 | 0.011 |
| Double\_bottom\_Ballast\_tank | 0% | 3747.757 | 0.000 | 3656.348 | 0.000 | 40.099 |  |  | 0.000 | 0.000 |
| Double\_bottom\_ballast\_Starboard | 0% | 1733.085 | 0.000 | 1690.814 | 0.000 | 54.792 |  |  | -8.026 | 2.000 |
| Double\_bottom\_ballast\_Port | 0% | 1733.085 | 0.000 | 1690.814 | 0.000 | 54.792 |  |  | 8.026 | 2.000 |
| Fuel\_Tank | 0% | 8750.261 | 0.000 | 9266.400 | 0.000 | 85.063 |  |  | 0.000 | 2.000 |
| freshwater1 | 0% | 860.666 | 0.000 | 860.666 | 0.000 | -5.065 |  |  | -10.551 | 20.000 |
| freshwater2 | 0% | 860.666 | 0.000 | 860.666 | 0.000 | -5.065 |  |  | 10.551 | 20.000 |
| Total Loadcase |  |  | 11690.644 | 22578.088 | 0.000 | 108.383 |  |  | 0.000 | 20.587 |



| **Name** | **Long. Pos.**  **m** | **Mass**  **t/m** | **Buoyancy**  **t/m** | **Grounding**  **t/m** | **Damage/NBV**  **t/m** | **Net Load**  **t/m** | **Shear**  **x10^3 tonne** | **Moment**  **x10^3 tonne.m** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| st -1 | -19.540 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st -0.75 | -14.650 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st -0.5 | -9.770 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st -0.25 | -4.880 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| AP | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st 0.25 | 4.880 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st 0.5 | 9.770 | 0.000 | -1.811 | 0.000 | 0.000 | -1.811 | -0.002 | -0.001 |
| st 0.75 | 14.650 | 0.000 | -7.288 | 0.000 | 0.000 | -7.288 | -0.024 | -0.053 |
| st 1 | 19.540 | 0.000 | -12.205 | 0.000 | 0.000 | -12.205 | -0.072 | -0.279 |
| st 1.5 | 29.310 | 0.000 | -20.553 | 0.000 | 0.000 | -20.553 | 2.664 | 3.540 |
| st 2 | 39.090 | 0.000 | -30.076 | 0.000 | 0.000 | -30.076 | 2.419 | 28.469 |
| st 2.5 | 48.860 | 0.000 | -43.755 | 0.000 | 0.000 | -43.755 | 2.062 | 50.467 |
| st 3 | 58.640 | 0.000 | -62.465 | 0.000 | 0.000 | -62.465 | 1.546 | 68.261 |
| st 4 | 78.180 | 0.000 | -91.293 | 0.000 | 0.000 | -91.293 | 0.003 | 84.315 |
| st 5 | 97.720 | 0.000 | -105.782 | 0.000 | 0.000 | -105.782 | -1.948 | 65.877 |
| st 6 | 117.270 | 0.000 | -103.484 | 0.000 | 0.000 | -103.484 | 2.000 | 111.237 |
| st 7 | 136.810 | 0.000 | -80.807 | 0.000 | 0.000 | -80.807 | 0.145 | 131.366 |
| st 8 | 156.360 | 0.000 | -58.261 | 0.000 | 0.000 | -58.261 | -1.229 | 120.086 |
| st 9 | 175.900 | 0.000 | -35.088 | 0.000 | 0.000 | -35.088 | -2.144 | 86.422 |
| st 9.5 | 185.680 | 0.000 | -23.621 | 0.000 | 0.000 | -23.621 | -2.429 | 63.971 |
| st 10 | 195.450 | 0.000 | -15.330 | 0.000 | 0.000 | -15.330 | -2.617 | 39.260 |
| st 10.5 | 205.220 | 0.000 | -8.980 | 0.000 | 0.000 | -8.980 | -2.735 | 13.068 |
| FP | 215.000 | 0.000 | -2.972 | 0.000 | 0.000 | -2.972 | 0.007 | -0.011 |
| st 11.25 | 219.880 | 0.000 | -0.026 | 0.000 | 0.000 | -0.026 | 0.000 | 0.000 |
| st 11.5 | 224.770 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st 11.75 | 229.650 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st 12 | 234.540 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| min. Shear | 209.950 | 0.000 | -6.048 | 0.000 | 0.000 | -6.048 | -2.770 | 0.043 |
| max. Shear | 100.050 | 0.000 | -105.508 | 0.000 | 0.000 | -105.508 | 3.800 | 61.353 |
| min. Moment | 27.450 | 28965.340 | -18.997 | 0.000 | 0.000 | 28946.343 | -0.196 | -1.304 |
| max. Moment | 138.605 | 0.000 | -78.660 | 0.000 | 0.000 | -78.660 | 0.002 | 131.499 |

| **Key point** | **Type** | **Freeboard**  **m** |
| --- | --- | --- |
| Margin Line (freeboard pos = -6 m) |  | 27.013 |
| Deck Edge (freeboard pos = -6 m) |  | 27.089 |

### Maximum heel arm calculation - Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments)

Stability 24.00.04.133, build: 133

Model file: C:\Users\prana\Personal Data\Data\Private Data\Academic and Personal Data\Third Year Study Material\6th Semester\MD Lab\All Files PCC\Final Files\Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments) (Highest precision, 508 sections, Trimming on, Skin thickness not applied). Long. datum: User def.; Vert. datum: User def.. Analysis tolerance - ideal(worst case): Disp.%: 0.01000(0.100); Trim%(LCG-TCG): 0.01000(0.100); Heel%(LCG-TCG): 0.01000(0.100)

Damage Case - Intact

Initial Trim = 0 m (+ve by stern)

Specific gravity = 1.025; (Density = 1.025 tonne/m^3)

TCG = 0 m



| **Draft Amidships**  **m** | **Displacement (intact)**  **tonne** | **VCG**  **0 m** |
| --- | --- | --- |
| 0.000 | 0.0113 | Cannot pass selected criteria |
| 1.000 | 3819 | 12.227 |
| 2.000 | 8685 | 9.322 |
| 3.000 | 13974 | 7.610 |
| 4.000 | 19543 | 6.410 |
| 5.000 | 25333 | 5.573 |
| 6.000 | 31312 | 4.988 |
| 7.000 | 37468 | 4.588 |
| 8.000 | 43807 | 4.319 |
| 9.000 | 50355 | 4.141 |
| 10.000 | 57210 | 4.026 |
| 11.000 | 64334 | 3.948 |

| **Key point** | **Type** | **Draft 0 m; VCG 0 m**  **deg** | **Draft 1 m; VCG 0 m**  **deg** | **Draft 2 m; VCG 0 m**  **deg** | **Draft 3 m; VCG 0 m**  **deg** | **Draft 4 m; VCG 0 m**  **deg** | **Draft 5 m; VCG 0 m**  **deg** | **Draft 6 m; VCG 0 m**  **deg** | **Draft 7 m; VCG 0 m**  **deg** | **Draft 8 m; VCG 0 m**  **deg** | **Draft 9 m; VCG 0 m**  **deg** | **Draft 10 m; VCG 0 m**  **deg** | **Draft 11 m; VCG 0 m**  **deg** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Margin Line |  | 0.0 | 83.9 | 76.6 | 70.5 | 65.9 | 61.7 | 58.3 | 55.5 | 52.8 | 50.1 | 47.9 | 45.8 |
| Deck Edge |  | 0.0 | 83.7 | 76.5 | 70.4 | 65.8 | 61.6 | 58.3 | 55.5 | 52.8 | 50.2 | 47.9 | 45.8 |

### Equilibrium calculation - Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments)

Stability 24.00.04.133, build: 133

Model file: C:\Users\prana\Personal Data\Data\Private Data\Academic and Personal Data\Third Year Study Material\6th Semester\MD Lab\All Files PCC\Final Files\Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments) (Highest precision, 508 sections, Trimming on, Skin thickness not applied). Long. datum: User def.; Vert. datum: User def.. Analysis tolerance - ideal(worst case): Disp.%: 0.01000(0.100); Trim%(LCG-TCG): 0.01000(0.100); Heel%(LCG-TCG): 0.01000(0.100)

Loadcase - Loadcase\_2\_Ballast\_Departure\_arrival

Damage Case - Intact

Free to Trim

Specific gravity = 1.025; (Density = 1.025 tonne/m^3)

Fluid analysis method: Use corrected VCG

| **Item Name** | **Quantity** | **Unit Mass**  **tonne** | **Total Mass**  **tonne** | **Unit Volume**  **m^3** | **Total Volume**  **m^3** | **Long. Arm**  **m** | **Trans. Arm**  **m** | **Vert. Arm**  **m** | **Total FSM**  **tonne.m** | **FSM Type** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Steel\_weight | 1 | 3006.110 | 3006.110 |  |  | 100.000 | 0.000 | 20.500 | 0.000 | User Specified |
| Outfit\_Weight | 1 | 2988.000 | 2988.000 |  |  | 100.000 | 0.000 | 20.500 | 0.000 | User Specified |
| Machinery\_Weight | 1 | 2896.534 | 2896.534 |  |  | 27.500 | 0.000 | 16.500 | 0.000 | User Specified |
| Chain\_Locker\_Room | 1 | 2800.000 | 2800.000 |  |  | 210.000 | 0.000 | 25.000 | 0.000 | User Specified |
| Forward\_tank | 95% | 1070.857 | 1017.314 | 1044.739 | 992.502 | 209.883 | 0.000 | 9.688 | 324.997 | Maximum |
| aft-peak-tank | 95% | 3310.387 | 3144.868 | 3229.646 | 3068.163 | 5.503 | 0.000 | 14.542 | 87928.067 | Maximum |
| Doube\_Bottom\_1 | 90% | 284.943 | 256.449 | 277.993 | 250.194 | 30.093 | 0.000 | 1.123 | 1618.503 | Maximum |
| Double\_bottom\_Ballast\_tank | 95% | 3747.757 | 3560.369 | 3656.348 | 3473.531 | 113.068 | 0.000 | 1.034 | 458343.080 | Maximum |
| Double\_bottom\_ballast\_Starboard | 95% | 1733.085 | 1646.430 | 1690.814 | 1606.274 | 107.422 | -15.376 | 4.764 | 4040.409 | Maximum |
| Double\_bottom\_ballast\_Port | 95% | 1733.085 | 1646.430 | 1690.814 | 1606.274 | 107.422 | 15.376 | 4.764 | 4040.409 | Maximum |
| Fuel\_Tank | 95% | 8750.261 | 8312.748 | 9266.400 | 8803.080 | 124.000 | 0.000 | 4.613 | 84851.020 | Maximum |
| Micellaneous tank | 1 | 2000.000 | 2000.000 |  |  | 184.000 | 0.000 | 3.750 | 0.000 | User Specified |
| freshwater1 | 95% | 860.666 | 817.633 | 860.666 | 817.633 | 5.113 | -17.139 | 25.037 | 189.857 | Maximum |
| freshwater2 | 95% | 860.666 | 817.633 | 860.666 | 817.633 | 5.113 | 17.139 | 25.037 | 189.857 | Maximum |
| Total Loadcase |  |  | 34910.519 | 22578.088 | 21435.283 | 105.098 | 0.000 | 11.535 | 641526.199 |  |
| FS correction |  |  |  |  |  |  |  | 18.376 |  |  |
| VCG fluid |  |  |  |  |  |  |  | 29.912 |  |  |

|  |  |
| --- | --- |
| Draft Amidships m | 6.586 |
| Displacement t | 34911 |
| Heel deg | 0.0 |
| Draft at FP m | 5.152 |
| Draft at AP m | 8.020 |
| Draft at LCF m | 6.607 |
| Trim (+ve by stern) m | 2.869 |
| WL Length m | 211.204 |
| Beam max extents on WL m | 40.000 |
| Wetted Area m^2 | 7671.727 |
| Waterpl. Area m^2 | 6150.052 |
| Prismatic coeff. (Cp) | 0.596 |
| Block coeff. (Cb) | 0.513 |
| Max Sect. area coeff. (Cm) | 0.995 |
| Waterpl. area coeff. (Cwp) | 0.728 |
| LCB from zero pt. (+ve fwd) m | 104.735 |
| LCF from zero pt. (+ve fwd) m | 105.919 |
| KB m | 3.585 |
| KG fluid m | 29.912 |
| BMt m | 18.046 |
| BML m | 438.247 |
| GMt corrected m | -8.283 |
| GML m | 411.918 |
| KMt m | 21.630 |
| KML m | 441.794 |
| Immersion (TPc) tonne/cm | 63.038 |
| MTc tonne.m | 668.866 |
| RM at 1deg = GMt.Disp.sin(1) tonne.m | -5046.691 |
| Max deck inclination deg | 0.7644 |
| Trim angle (+ve by stern) deg | 0.7644 |

| **Key point** | **Type** | **Freeboard**  **m** |
| --- | --- | --- |
| Margin Line (freeboard pos = -6 m) |  | 21.822 |
| Deck Edge (freeboard pos = -6 m) |  | 21.898 |

### Longitudinal Strength calculation - Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments)

Stability 24.00.04.133, build: 133

Model file: C:\Users\prana\Personal Data\Data\Private Data\Academic and Personal Data\Third Year Study Material\6th Semester\MD Lab\All Files PCC\Final Files\Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments) (Highest precision, 508 sections, Trimming on, Skin thickness not applied). Long. datum: User def.; Vert. datum: User def.. Analysis tolerance - ideal(worst case): Disp.%: 0.01000(0.100); Trim%(LCG-TCG): 0.01000(0.100); Heel%(LCG-TCG): 0.01000(0.100)

Loadcase - Loadcase\_2\_Ballast\_Departure\_arrival

Damage Case - Intact

Free to Trim

Specific gravity = 1.025; (Density = 1.025 tonne/m^3)

Fluid analysis method: Simulate fluid movement

| **Item Name** | **Quantity** | **Unit Mass**  **tonne** | **Total Mass**  **tonne** | **Unit Volume**  **m^3** | **Total Volume**  **m^3** | **Long. Arm**  **m** | **Aft. Limit**  **m** | **Fwd. Limit**  **m** | **Trans. Arm**  **m** | **Vert. Arm**  **m** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Steel\_weight | 1 | 3006.110 | 3006.110 |  |  | 100.000 | 100.000 | 100.000 | 0.000 | 20.500 |
| Outfit\_Weight | 1 | 2988.000 | 2988.000 |  |  | 100.000 | 100.000 | 100.000 | 0.000 | 20.500 |
| Machinery\_Weight | 1 | 2896.534 | 2896.534 |  |  | 27.500 | 27.500 | 27.500 | 0.000 | 16.500 |
| Chain\_Locker\_Room | 1 | 2800.000 | 2800.000 |  |  | 210.000 | 210.000 | 210.000 | 0.000 | 25.000 |
| Forward\_tank | 95% | 1070.857 | 1017.314 | 1044.739 | 992.502 | 209.869 |  |  | 0.000 | 9.689 |
| aft-peak-tank | 95% | 3310.387 | 3144.868 | 3229.646 | 3068.164 | 5.446 |  |  | 0.000 | 14.542 |
| Doube\_Bottom\_1 | 90% | 284.943 | 256.449 | 277.993 | 250.194 | 29.600 |  |  | 0.000 | 1.127 |
| Double\_bottom\_Ballast\_tank | 95% | 3747.757 | 3560.369 | 3656.348 | 3473.530 | 109.816 |  |  | 0.000 | 1.045 |
| Double\_bottom\_ballast\_Starboard | 95% | 1733.085 | 1646.431 | 1690.814 | 1606.274 | 105.360 |  |  | -15.400 | 4.774 |
| Double\_bottom\_ballast\_Port | 95% | 1733.085 | 1646.431 | 1690.814 | 1606.274 | 105.360 |  |  | 15.400 | 4.774 |
| Fuel\_Tank | 95% | 8750.261 | 8312.748 | 9266.400 | 8803.079 | 122.899 |  |  | 0.000 | 4.619 |
| Micellaneous tank | 1 | 2000.000 | 2000.000 |  |  | 184.000 | 184.000 | 184.000 | 0.000 | 3.750 |
| freshwater1 | 95% | 860.666 | 817.633 | 860.666 | 817.633 | 5.055 |  |  | -17.138 | 25.038 |
| freshwater2 | 95% | 860.666 | 817.633 | 860.666 | 817.633 | 5.055 |  |  | 17.138 | 25.038 |
| Total Loadcase |  |  | 34910.518 | 22578.088 | 21435.283 | 104.298 |  |  | 0.000 | 11.539 |



| **Name** | **Long. Pos.**  **m** | **Mass**  **t/m** | **Buoyancy**  **t/m** | **Grounding**  **t/m** | **Damage/NBV**  **t/m** | **Net Load**  **t/m** | **Shear**  **x10^3 tonne** | **Moment**  **x10^3 tonne.m** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| st -1 | -19.540 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st -0.75 | -14.650 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st -0.5 | -9.770 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st -0.25 | -4.880 | 169.331 | 0.000 | 0.000 | 0.000 | 169.331 | 0.111 | 0.050 |
| AP | 0.000 | 221.396 | 0.000 | 0.000 | 0.000 | 221.396 | 1.131 | 3.003 |
| st 0.25 | 4.880 | 232.177 | 0.000 | 0.000 | 0.000 | 232.177 | 2.239 | 11.211 |
| st 0.5 | 9.770 | 247.192 | -9.739 | 0.000 | 0.000 | 237.453 | 3.393 | 24.972 |
| st 0.75 | 14.650 | 273.948 | -45.428 | 0.000 | 0.000 | 228.521 | 4.528 | 44.314 |
| st 1 | 19.540 | 7.000 | -67.595 | 0.000 | 0.000 | -60.596 | 4.370 | 66.321 |
| st 1.5 | 29.310 | 11.267 | -105.103 | 0.000 | 0.000 | -93.836 | 6.513 | 110.841 |
| st 2 | 39.090 | 14.670 | -142.395 | 0.000 | 0.000 | -127.725 | 5.430 | 169.512 |
| st 2.5 | 48.860 | 21.751 | -180.670 | 0.000 | 0.000 | -158.919 | 4.010 | 215.859 |
| st 3 | 58.640 | 38.346 | -217.690 | 0.000 | 0.000 | -179.344 | 2.350 | 247.119 |
| st 4 | 78.180 | 61.660 | -261.407 | 0.000 | 0.000 | -199.747 | -1.396 | 257.088 |
| st 5 | 97.720 | 184.548 | -274.589 | 0.000 | 0.000 | -90.041 | -3.930 | 200.334 |
| st 6 | 117.270 | 180.485 | -262.885 | 0.000 | 0.000 | -82.400 | 0.396 | 210.472 |
| st 7 | 136.810 | 158.800 | -220.892 | 0.000 | 0.000 | -62.093 | -1.067 | 203.194 |
| st 8 | 156.360 | 131.353 | -172.158 | 0.000 | 0.000 | -40.804 | -2.087 | 171.742 |
| st 9 | 175.900 | 8.882 | -108.685 | 0.000 | 0.000 | -99.803 | -3.808 | 117.118 |
| st 9.5 | 185.680 | 4.806 | -75.658 | 0.000 | 0.000 | -70.852 | -2.641 | 78.927 |
| st 10 | 195.450 | 2.661 | -49.737 | 0.000 | 0.000 | -47.076 | -3.212 | 50.142 |
| st 10.5 | 205.220 | 139.594 | -29.496 | 0.000 | 0.000 | 110.098 | -3.547 | 16.829 |
| FP | 215.000 | 40.263 | -12.086 | 0.000 | 0.000 | 28.177 | -0.064 | 0.111 |
| st 11.25 | 219.880 | 5.106 | -2.407 | 0.000 | 0.000 | 2.699 | -0.002 | 0.001 |
| st 11.5 | 224.770 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st 11.75 | 229.650 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st 12 | 234.540 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| min. Shear | 183.950 | 5.314 | -81.009 | 0.000 | 0.000 | -75.695 | -4.515 | 83.488 |
| max. Shear | 27.550 | 10.630 | -98.444 | 0.000 | 0.000 | -87.814 | 6.673 | 99.238 |
| min. Moment | -6.000 | 0.043 | 0.000 | 0.000 | 0.000 | 0.043 | 0.000 | 0.000 |
| max. Moment | 71.159 | 55.306 | -250.632 | 0.000 | 0.000 | -195.325 | -0.007 | 261.994 |

| **Key point** | **Type** | **Freeboard**  **m** |
| --- | --- | --- |
| Margin Line (freeboard pos = -6 m) |  | 21.682 |
| Deck Edge (freeboard pos = -6 m) |  | 21.758 |

### Maximum heel arm calculation - Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments)

Stability 24.00.04.133, build: 133

Model file: C:\Users\prana\Personal Data\Data\Private Data\Academic and Personal Data\Third Year Study Material\6th Semester\MD Lab\All Files PCC\Final Files\Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments) (Highest precision, 508 sections, Trimming on, Skin thickness not applied). Long. datum: User def.; Vert. datum: User def.. Analysis tolerance - ideal(worst case): Disp.%: 0.01000(0.100); Trim%(LCG-TCG): 0.01000(0.100); Heel%(LCG-TCG): 0.01000(0.100)

Damage Case - Intact

Initial Trim = 0 m (+ve by stern)

Specific gravity = 1.025; (Density = 1.025 tonne/m^3)

TCG = 0 m



| **Draft Amidships**  **m** | **Displacement (intact)**  **tonne** | **VCG**  **0 m** |
| --- | --- | --- |
| 0.000 | 0.0113 | Cannot pass selected criteria |
| 2.000 | 8685 | 9.322 |
| 4.000 | 19543 | 6.410 |
| 6.000 | 31312 | 4.988 |
| 8.000 | 43807 | 4.319 |
| 10.000 | 57210 | 4.026 |
| 12.000 | 71590 | 3.892 |
| 14.000 | 86387 | 3.835 |
| 16.000 | 101466 | 3.838 |
| 18.000 | 116775 | 3.888 |
| 20.000 | 132341 | 3.974 |
| 22.000 | 148197 | 4.091 |
| 24.000 | 164411 | 4.234 |
| 26.000 | 181063 | 4.387 |
| 28.000 | 198212 | 4.480 |
| 30.000 | 215904 | 4.481 |

| **Key point** | **Type** | **Draft 0 m; VCG 0 m**  **deg** | **Draft 2 m; VCG 0 m**  **deg** | **Draft 4 m; VCG 0 m**  **deg** | **Draft 6 m; VCG 0 m**  **deg** | **Draft 8 m; VCG 0 m**  **deg** | **Draft 10 m; VCG 0 m**  **deg** | **Draft 12 m; VCG 0 m**  **deg** | **Draft 14 m; VCG 0 m**  **deg** | **Draft 16 m; VCG 0 m**  **deg** | **Draft 18 m; VCG 0 m**  **deg** | **Draft 20 m; VCG 0 m**  **deg** | **Draft 22 m; VCG 0 m**  **deg** | **Draft 24 m; VCG 0 m**  **deg** | **Draft 26 m; VCG 0 m**  **deg** | **Draft 28 m; VCG 0 m**  **deg** | **Draft 30 m; VCG 0 m**  **deg** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Margin Line |  | 0.0 | 76.6 | 65.9 | 58.3 | 52.8 | 47.9 | 43.7 | 39.8 | 36.2 | 32.0 | 27.0 | 21.8 | 16.5 | 11.1 | 5.5 | 0.0 |
| Deck Edge |  | 0.0 | 76.5 | 65.8 | 58.3 | 52.8 | 47.9 | 43.8 | 39.8 | 36.3 | 32.1 | 27.2 | 22.0 | 16.7 | 11.3 | 5.7 | 0.0 |

### Equilibrium calculation - Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments)

Stability 24.00.04.133, build: 133

Model file: C:\Users\prana\Personal Data\Data\Private Data\Academic and Personal Data\Third Year Study Material\6th Semester\MD Lab\All Files PCC\Final Files\Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments) (Highest precision, 508 sections, Trimming on, Skin thickness not applied). Long. datum: User def.; Vert. datum: User def.. Analysis tolerance - ideal(worst case): Disp.%: 0.01000(0.100); Trim%(LCG-TCG): 0.01000(0.100); Heel%(LCG-TCG): 0.01000(0.100)

Loadcase - Loadcase\_3\_Loaded\_Departure\_arrival

Damage Case - Intact

Free to Trim

Specific gravity = 1.025; (Density = 1.025 tonne/m^3)

Fluid analysis method: Use corrected VCG

| **Item Name** | **Quantity** | **Unit Mass**  **tonne** | **Total Mass**  **tonne** | **Unit Volume**  **m^3** | **Total Volume**  **m^3** | **Long. Arm**  **m** | **Trans. Arm**  **m** | **Vert. Arm**  **m** | **Total FSM**  **tonne.m** | **FSM Type** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Steel\_weight | 1 | 3006.110 | 3006.110 |  |  | 100.000 | 0.000 | 20.500 | 0.000 | User Specified |
| Outfit\_Weight | 1 | 2988.000 | 2988.000 |  |  | 100.000 | 0.000 | 20.500 | 0.000 | User Specified |
| Machinery\_Weight | 1 | 2896.534 | 2896.534 |  |  | 27.500 | 0.000 | 16.500 | 0.000 | User Specified |
| Chain\_Locker\_Room | 1 | 2800.000 | 2800.000 |  |  | 210.000 | 0.000 | 25.000 | 0.000 | User Specified |
| Steering\_Room | 1 | 1000.000 | 1000.000 |  |  | 7.500 | 0.000 | 17.500 | 0.000 | User Specified |
| Floor\_1 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 0.000 | 9.750 | 0.000 | User Specified |
| Floor\_2 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 0.000 | 14.250 | 0.000 | User Specified |
| Floor\_3 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 0.000 | 18.750 | 0.000 | User Specified |
| Floor\_4 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 0.000 | 23.250 | 0.000 | User Specified |
| Floor\_5 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 0.000 | 27.750 | 0.000 | User Specified |
| Floor\_6 | 1 | 3450.000 | 3450.000 |  |  | 109.000 | 0.000 | 32.500 | 0.000 | User Specified |
| Floor\_7 | 1 | 3450.000 | 3450.000 |  |  | 109.000 | 0.000 | 37.750 | 0.000 | User Specified |
| Forward\_tank | 5% | 1070.857 | 53.543 | 1044.739 | 52.237 | 209.837 | 0.000 | 1.285 | 324.997 | Maximum |
| aft-peak-tank | 5% | 3310.387 | 165.520 | 3229.646 | 161.483 | 11.974 | 0.000 | 7.123 | 87928.067 | Maximum |
| Doube\_Bottom\_1 | 5% | 284.943 | 14.247 | 277.993 | 13.900 | 31.234 | 0.000 | 0.210 | 1618.503 | Maximum |
| Double\_bottom\_Ballast\_tank | 5% | 3747.757 | 187.388 | 3656.348 | 182.817 | 111.247 | 0.000 | 0.091 | 458343.080 | Maximum |
| Double\_bottom\_ballast\_Starboard | 5% | 1733.085 | 86.654 | 1690.814 | 84.541 | 107.989 | -15.367 | 2.167 | 4040.409 | Maximum |
| Double\_bottom\_ballast\_Port | 5% | 1733.085 | 86.654 | 1690.814 | 84.541 | 107.989 | 15.367 | 2.167 | 4040.409 | Maximum |
| Fuel\_Tank | 95% | 8750.261 | 8312.748 | 9266.400 | 8803.080 | 124.000 | 0.000 | 4.612 | 84851.020 | Maximum |
| freshwater1 | 95% | 860.666 | 817.633 | 860.666 | 817.633 | 5.113 | -17.139 | 25.037 | 189.857 | Maximum |
| freshwater2 | 95% | 860.666 | 817.633 | 860.666 | 817.633 | 5.113 | 17.139 | 25.037 | 189.857 | Maximum |
| Total Loadcase |  |  | 47382.664 | 22578.088 | 11017.864 | 110.423 | 0.000 | 19.098 | 641526.199 |  |
| FS correction |  |  |  |  |  |  |  | 13.539 |  |  |
| VCG fluid |  |  |  |  |  |  |  | 32.637 |  |  |

|  |  |
| --- | --- |
| Draft Amidships m | 8.560 |
| Displacement t | 47384 |
| Heel deg | 0.0 |
| Draft at FP m | 8.894 |
| Draft at AP m | 8.226 |
| Draft at LCF m | 8.552 |
| Trim (+ve by stern) m | -0.668 |
| WL Length m | 206.708 |
| Beam max extents on WL m | 40.000 |
| Wetted Area m^2 | 8642.800 |
| Waterpl. Area m^2 | 6338.258 |
| Prismatic coeff. (Cp) | 0.652 |
| Block coeff. (Cb) | 0.629 |
| Max Sect. area coeff. (Cm) | 0.996 |
| Waterpl. area coeff. (Cwp) | 0.767 |
| LCB from zero pt. (+ve fwd) m | 110.507 |
| LCF from zero pt. (+ve fwd) m | 104.986 |
| KB m | 4.610 |
| KG fluid m | 32.637 |
| BMt m | 14.066 |
| BML m | 342.833 |
| GMt corrected m | -13.961 |
| GML m | 314.806 |
| KMt m | 18.676 |
| KML m | 347.442 |
| Immersion (TPc) tonne/cm | 64.967 |
| MTc tonne.m | 693.806 |
| RM at 1deg = GMt.Disp.sin(1) tonne.m | -11545.367 |
| Max deck inclination deg | 0.1780 |
| Trim angle (+ve by stern) deg | -0.1780 |

| **Key point** | **Type** | **Freeboard**  **m** |
| --- | --- | --- |
| Margin Line (freeboard pos = 223.608 m) |  | 21.004 |
| Deck Edge (freeboard pos = 223.608 m) |  | 21.08 |

### Longitudinal Strength calculation - Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments)

Stability 24.00.04.133, build: 133

Model file: C:\Users\prana\Personal Data\Data\Private Data\Academic and Personal Data\Third Year Study Material\6th Semester\MD Lab\All Files PCC\Final Files\Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments) (Highest precision, 508 sections, Trimming on, Skin thickness not applied). Long. datum: User def.; Vert. datum: User def.. Analysis tolerance - ideal(worst case): Disp.%: 0.01000(0.100); Trim%(LCG-TCG): 0.01000(0.100); Heel%(LCG-TCG): 0.01000(0.100)

Loadcase - Loadcase\_3\_Loaded\_Departure\_arrival

Damage Case - Intact

Free to Trim

Specific gravity = 1.025; (Density = 1.025 tonne/m^3)

Fluid analysis method: Simulate fluid movement

| **Item Name** | **Quantity** | **Unit Mass**  **tonne** | **Total Mass**  **tonne** | **Unit Volume**  **m^3** | **Total Volume**  **m^3** | **Long. Arm**  **m** | **Aft. Limit**  **m** | **Fwd. Limit**  **m** | **Trans. Arm**  **m** | **Vert. Arm**  **m** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Steel\_weight | 1 | 3006.110 | 3006.110 |  |  | 100.000 | 100.000 | 100.000 | 0.000 | 20.500 |
| Outfit\_Weight | 1 | 2988.000 | 2988.000 |  |  | 100.000 | 100.000 | 100.000 | 0.000 | 20.500 |
| Machinery\_Weight | 1 | 2896.534 | 2896.534 |  |  | 27.500 | 27.500 | 27.500 | 0.000 | 16.500 |
| Chain\_Locker\_Room | 1 | 2800.000 | 2800.000 |  |  | 210.000 | 210.000 | 210.000 | 0.000 | 25.000 |
| Steering\_Room | 1 | 1000.000 | 1000.000 |  |  | 7.500 | 7.500 | 7.500 | 0.000 | 17.500 |
| Floor\_1 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 122.500 | 122.500 | 0.000 | 9.750 |
| Floor\_2 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 122.500 | 122.500 | 0.000 | 14.250 |
| Floor\_3 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 122.500 | 122.500 | 0.000 | 18.750 |
| Floor\_4 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 122.500 | 122.500 | 0.000 | 23.250 |
| Floor\_5 | 1 | 3450.000 | 3450.000 |  |  | 122.500 | 122.500 | 122.500 | 0.000 | 27.750 |
| Floor\_6 | 1 | 3450.000 | 3450.000 |  |  | 109.000 | 109.000 | 109.000 | 0.000 | 32.500 |
| Floor\_7 | 1 | 3450.000 | 3450.000 |  |  | 109.000 | 109.000 | 109.000 | 0.000 | 37.750 |
| Forward\_tank | 5% | 1070.857 | 53.543 | 1044.739 | 52.237 | 209.877 |  |  | 0.000 | 1.285 |
| aft-peak-tank | 5% | 3310.387 | 165.519 | 3229.646 | 161.482 | 12.009 |  |  | 0.000 | 7.123 |
| Doube\_Bottom\_1 | 5% | 284.943 | 14.247 | 277.993 | 13.900 | 32.060 |  |  | 0.000 | 0.212 |
| Double\_bottom\_Ballast\_tank | 5% | 3747.757 | 187.388 | 3656.348 | 182.817 | 136.507 |  |  | 0.000 | 0.133 |
| Double\_bottom\_ballast\_Starboard | 5% | 1733.085 | 86.654 | 1690.814 | 84.541 | 115.220 |  |  | -15.337 | 2.180 |
| Double\_bottom\_ballast\_Port | 5% | 1733.085 | 86.654 | 1690.814 | 84.541 | 115.220 |  |  | 15.337 | 2.180 |
| Fuel\_Tank | 95% | 8750.261 | 8312.749 | 9266.400 | 8803.080 | 124.341 |  |  | 0.000 | 4.613 |
| freshwater1 | 95% | 860.666 | 817.633 | 860.666 | 817.633 | 5.126 |  |  | -17.140 | 25.037 |
| freshwater2 | 95% | 860.666 | 817.633 | 860.666 | 817.633 | 5.126 |  |  | 17.140 | 25.037 |
| Total Loadcase |  |  | 47382.664 | 22578.088 | 11017.864 | 110.611 |  |  | 0.000 | 19.098 |



| **Name** | **Long. Pos.**  **m** | **Mass**  **t/m** | **Buoyancy**  **t/m** | **Grounding**  **t/m** | **Damage/NBV**  **t/m** | **Net Load**  **t/m** | **Shear**  **x10^3 tonne** | **Moment**  **x10^3 tonne.m** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| st -1 | -19.540 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st -0.75 | -14.650 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st -0.5 | -9.770 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st -0.25 | -4.880 | 55.988 | 0.000 | 0.000 | 0.000 | 55.988 | 0.022 | 0.007 |
| AP | 0.000 | 80.003 | 0.000 | 0.000 | 0.000 | 80.003 | 0.397 | 1.001 |
| st 0.25 | 4.880 | 83.149 | 0.000 | 0.000 | 0.000 | 83.149 | 0.793 | 3.901 |
| st 0.5 | 9.770 | 95.518 | -9.874 | 0.000 | 0.000 | 85.644 | 2.211 | 11.064 |
| st 0.75 | 14.650 | 121.066 | -50.629 | 0.000 | 0.000 | 70.437 | 2.589 | 22.804 |
| st 1 | 19.540 | 0.188 | -76.387 | 0.000 | 0.000 | -76.198 | 2.318 | 34.946 |
| st 1.5 | 29.310 | 0.600 | -121.485 | 0.000 | 0.000 | -120.885 | 4.251 | 58.483 |
| st 2 | 39.090 | 1.264 | -166.983 | 0.000 | 0.000 | -165.719 | 2.851 | 93.567 |
| st 2.5 | 48.860 | 0.000 | -213.678 | 0.000 | 0.000 | -213.678 | 0.993 | 112.717 |
| st 3 | 58.640 | 0.200 | -259.121 | 0.000 | 0.000 | -258.922 | -1.323 | 111.465 |
| st 4 | 78.180 | 1.220 | -319.642 | 0.000 | 0.000 | -318.422 | -7.033 | 31.720 |
| st 5 | 97.720 | 108.273 | -348.209 | 0.000 | 0.000 | -239.937 | -12.259 | -160.364 |
| st 6 | 117.270 | 111.325 | -351.029 | 0.000 | 0.000 | -239.704 | -4.053 | -285.286 |
| st 7 | 136.810 | 111.361 | -317.180 | 0.000 | 0.000 | -205.819 | 8.741 | -162.393 |
| st 8 | 156.360 | 111.533 | -271.407 | 0.000 | 0.000 | -159.874 | 5.116 | -28.329 |
| st 9 | 175.900 | 1.244 | -194.150 | 0.000 | 0.000 | -192.906 | 1.252 | 36.199 |
| st 9.5 | 185.680 | 0.829 | -143.714 | 0.000 | 0.000 | -142.886 | -0.389 | 40.019 |
| st 10 | 195.450 | 0.555 | -98.864 | 0.000 | 0.000 | -98.309 | -1.561 | 30.141 |
| st 10.5 | 205.220 | 7.149 | -61.763 | 0.000 | 0.000 | -54.614 | -2.335 | 10.812 |
| FP | 215.000 | 2.364 | -26.785 | 0.000 | 0.000 | -24.422 | 0.077 | -0.159 |
| st 11.25 | 219.880 | 0.000 | -5.203 | 0.000 | 0.000 | -5.203 | 0.003 | -0.001 |
| st 11.5 | 224.770 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st 11.75 | 229.650 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| st 12 | 234.540 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| min. Shear | 99.950 | 108.620 | -348.531 | 0.000 | 0.000 | -239.911 | -12.794 | -188.298 |
| max. Shear | 122.550 | 112.152 | -351.791 | 0.000 | 0.000 | -239.639 | 11.931 | -309.164 |
| min. Moment | 122.504 | 172612.144 | -351.784 | 0.000 | 0.000 | 172260.360 | 4.026 | -309.530 |
| max. Moment | 53.326 | 0.000 | -234.951 | 0.000 | 0.000 | -234.951 | -0.009 | 114.952 |

| **Key point** | **Type** | **Freeboard**  **m** |
| --- | --- | --- |
| Margin Line (freeboard pos = 223.608 m) |  | 20.955 |
| Deck Edge (freeboard pos = 223.608 m) |  | 21.031 |

### Maximum heel arm calculation - Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments)

Stability 24.00.04.133, build: 133

Model file: C:\Users\prana\Personal Data\Data\Private Data\Academic and Personal Data\Third Year Study Material\6th Semester\MD Lab\All Files PCC\Final Files\Group-18-Final\_Ship\_Maxsurf\_Modeler\_Desgin\_(With\_Compartments) (Highest precision, 508 sections, Trimming on, Skin thickness not applied). Long. datum: User def.; Vert. datum: User def.. Analysis tolerance - ideal(worst case): Disp.%: 0.01000(0.100); Trim%(LCG-TCG): 0.01000(0.100); Heel%(LCG-TCG): 0.01000(0.100)

Damage Case - Intact

Initial Trim = 0 m (+ve by stern)

Specific gravity = 1.025; (Density = 1.025 tonne/m^3)

TCG = 0 m



| **Draft Amidships**  **m** | **Displacement (intact)**  **tonne** | **VCG**  **0 m** |
| --- | --- | --- |
| 0.000 | 0.0113 | Cannot pass selected criteria |
| 2.000 | 8685 | 9.322 |
| 4.000 | 19543 | 6.410 |
| 6.000 | 31312 | 4.988 |
| 8.000 | 43807 | 4.319 |
| 10.000 | 57210 | 4.026 |
| 12.000 | 71590 | 3.892 |
| 14.000 | 86387 | 3.835 |
| 16.000 | 101466 | 3.838 |
| 18.000 | 116775 | 3.888 |
| 20.000 | 132341 | 3.974 |
| 22.000 | 148197 | 4.091 |
| 24.000 | 164411 | 4.234 |
| 26.000 | 181063 | 4.387 |
| 28.000 | 198212 | 4.480 |
| 30.000 | 215904 | 4.481 |

| **Key point** | **Type** | **Draft 0 m; VCG 0 m**  **deg** | **Draft 2 m; VCG 0 m**  **deg** | **Draft 4 m; VCG 0 m**  **deg** | **Draft 6 m; VCG 0 m**  **deg** | **Draft 8 m; VCG 0 m**  **deg** | **Draft 10 m; VCG 0 m**  **deg** | **Draft 12 m; VCG 0 m**  **deg** | **Draft 14 m; VCG 0 m**  **deg** | **Draft 16 m; VCG 0 m**  **deg** | **Draft 18 m; VCG 0 m**  **deg** | **Draft 20 m; VCG 0 m**  **deg** | **Draft 22 m; VCG 0 m**  **deg** | **Draft 24 m; VCG 0 m**  **deg** | **Draft 26 m; VCG 0 m**  **deg** | **Draft 28 m; VCG 0 m**  **deg** | **Draft 30 m; VCG 0 m**  **deg** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Margin Line |  | 0.0 | 80.6 | 68.1 | 58.3 | 52.8 | 47.8 | 43.6 | 39.8 | 36.1 | 32.0 | 27.0 | 21.9 | 16.5 | 11.1 | 5.5 | 0.0 |
| Deck Edge |  | 0.0 | 80.5 | 68.0 | 58.3 | 52.8 | 47.8 | 43.7 | 39.8 | 36.2 | 32.1 | 27.2 | 22.1 | 16.7 | 11.3 | 5.7 | 0.0 |