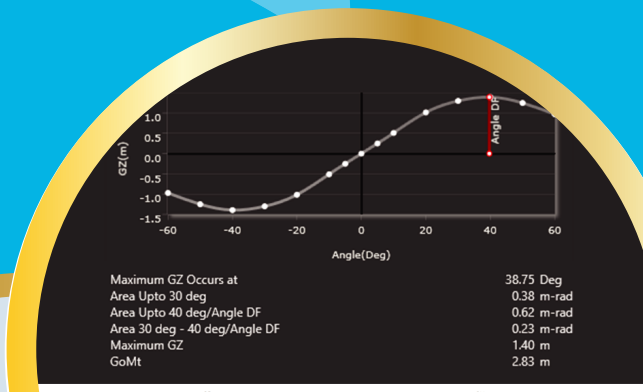
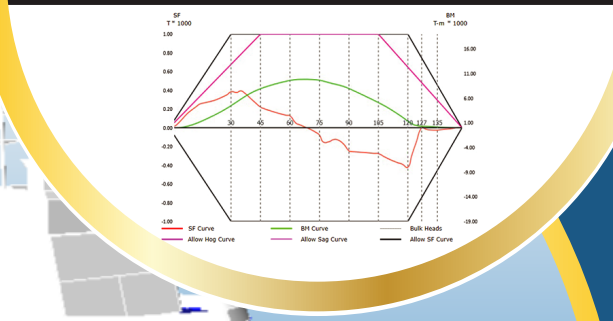
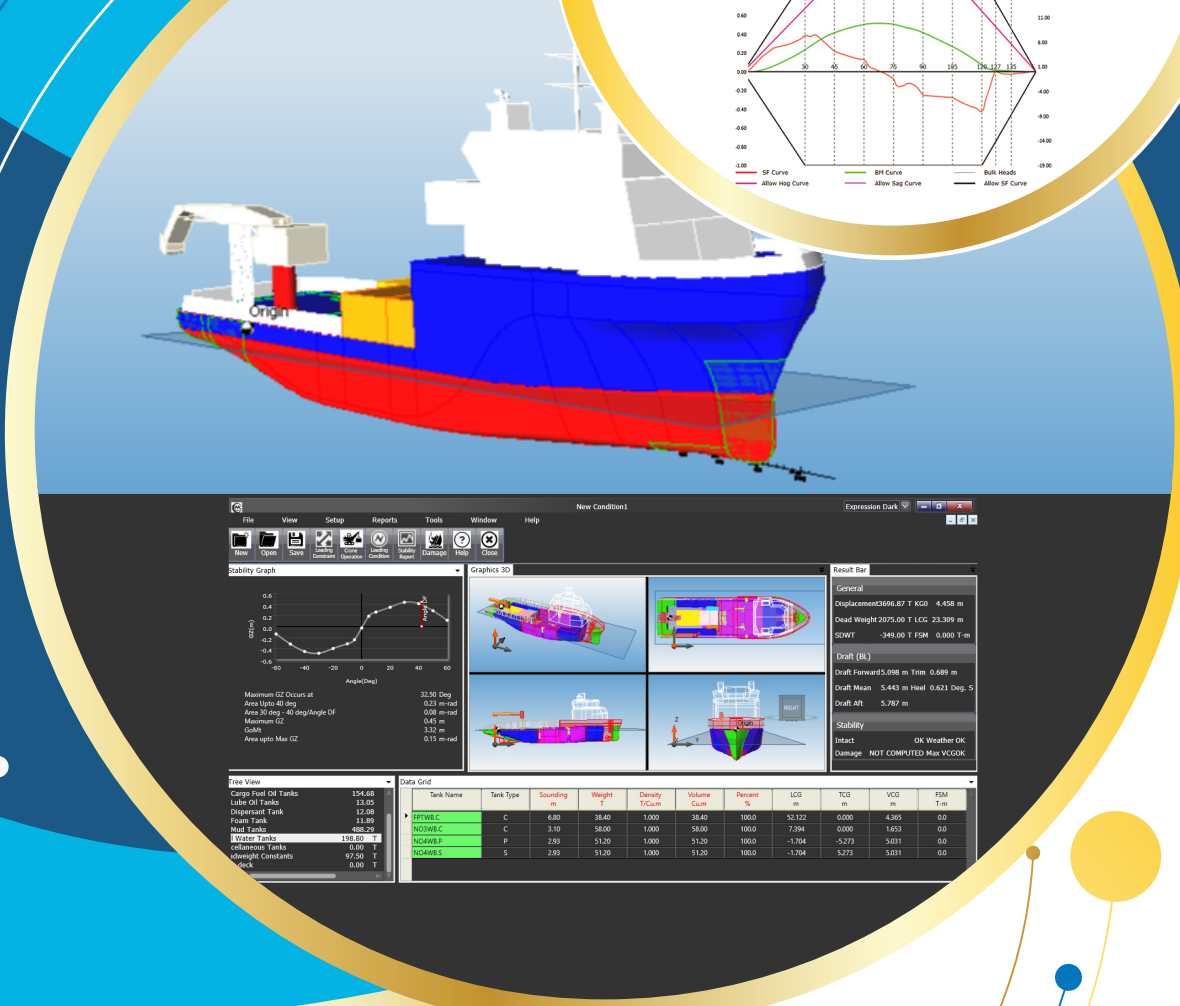
CyberMaster 3D

Advanced Ship Loading Software

Offshore Vessel



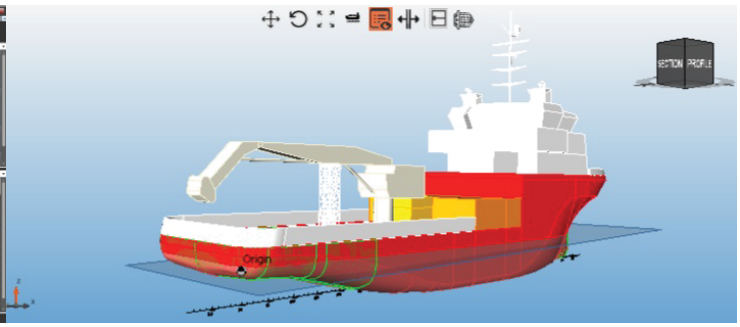
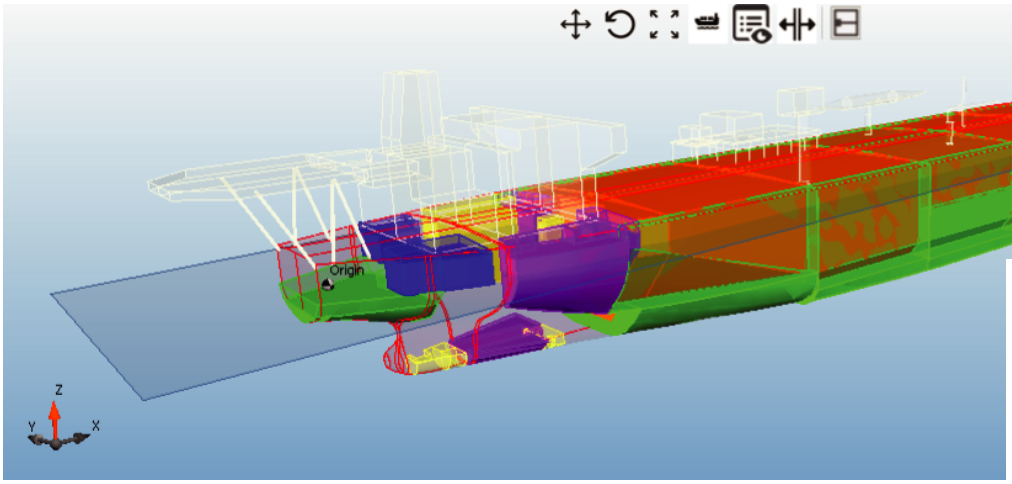
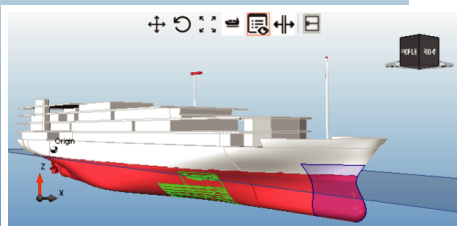
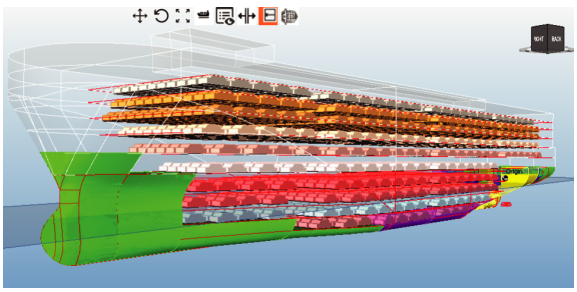
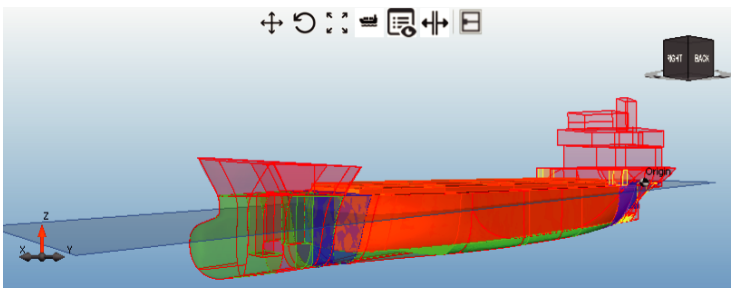
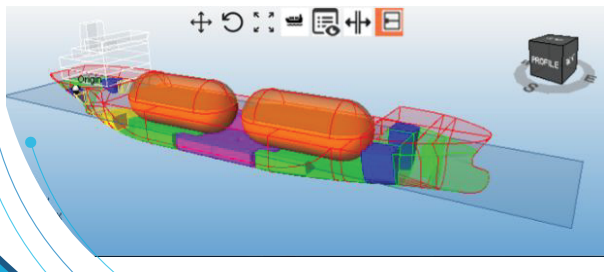
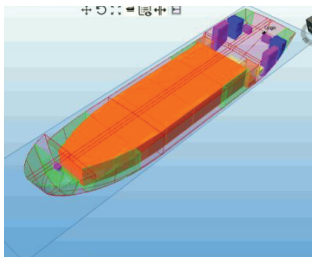
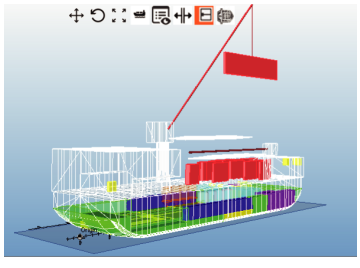




Cybermarine

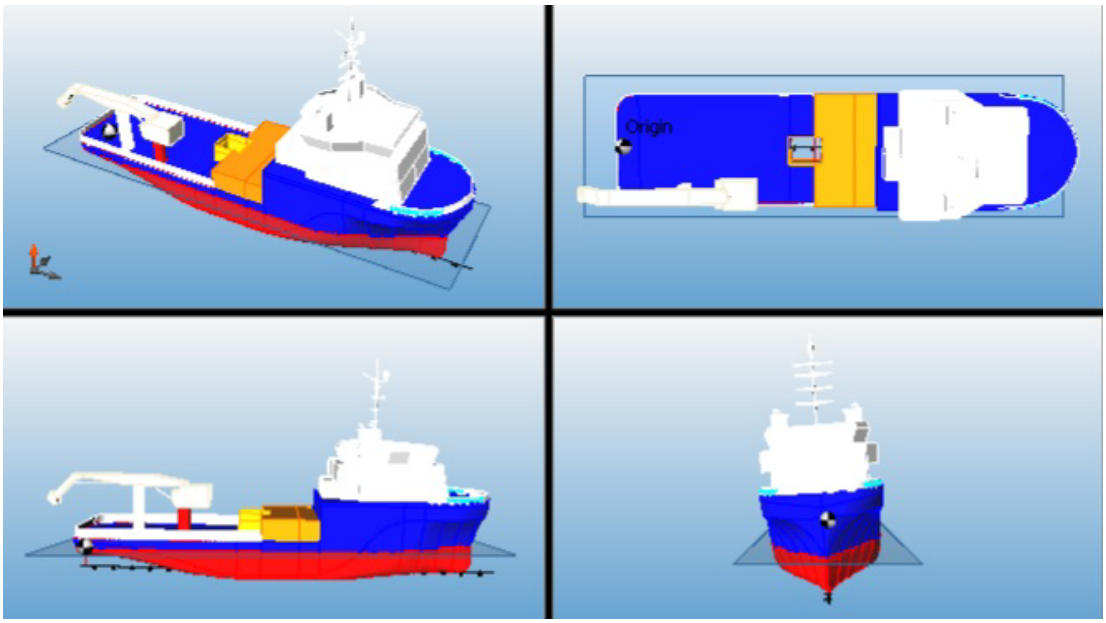
GENERAL

- CyberMaster 3D - is an advanced Ship Loading software with 3D Technology.
- Software is built to perform all necessary operations pertaining to Offshore vessel's operations.
- Type Approved by DNV-GL
- Works on all windows based Desktops.
- Available for several types of Seagoing Vessels and Offshore Assets.
- The software is available with several superior modules as enumerated below.

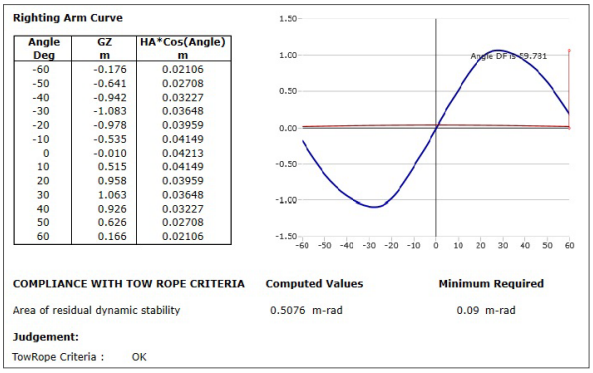
GUI

- CyberMaster3D's graphics facilitate the operator to work on dual monitors.
- Superior GUI enables the operator to view the vessel with its space arrangement in 3-D.
- Enhanced 3D display enables real-time filling of tanks, movement of deck cargo & crane operation through 3-D GUI.
- Advanced 3-D GUI and Live computation simulates real time vessel behaviour with loading & discharge.



TOWING MODULE

- Facilitates stability evaluation during towing operation.
- Maximum bollard pull and height of towing hook above base line pre-loaded in the software.
- Advanced option to evaluate the vessel's trim during towing operations.
- User defined bollard pull input options for practical towing scenarios.



Righting Arm Curve

Angle Deg	GZ m	HA*Cos(Angle) m
-60	-0.176	0.02106
-50	-0.641	0.02708
-40	-0.942	0.03227
-30	-1.083	0.03648
-20	-0.978	0.03959
-10	-0.535	0.04149
0	-0.010	0.04213
10	0.515	0.04149
20	0.958	0.03959
30	1.063	0.03648
40	0.926	0.03227
50	0.626	0.02708
60	0.166	0.02106

COMPLIANCE WITH TOW ROPE CRITERIA | **Computed Values** | **Minimum Required**

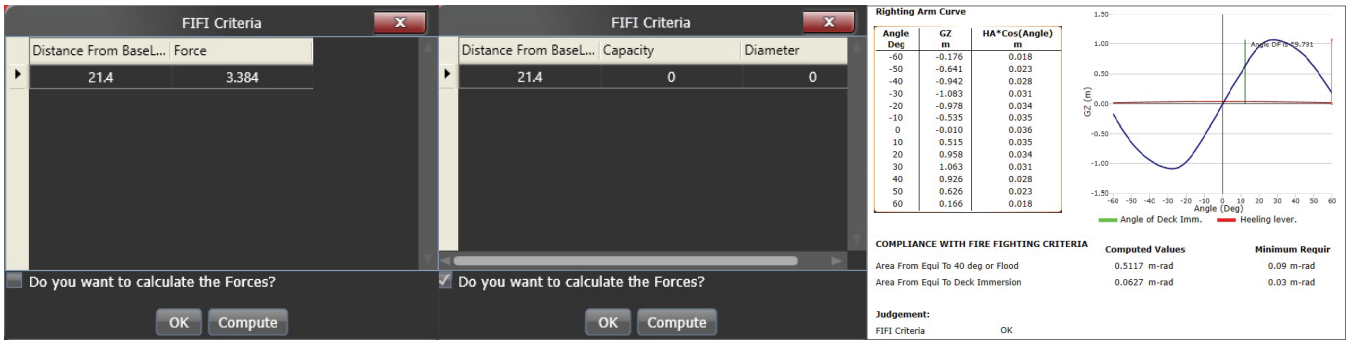
Area of residual dynamic stability | 0.5076 m-rad | 0.09 m-rad

Judgement:

TowRope Criteria : OK

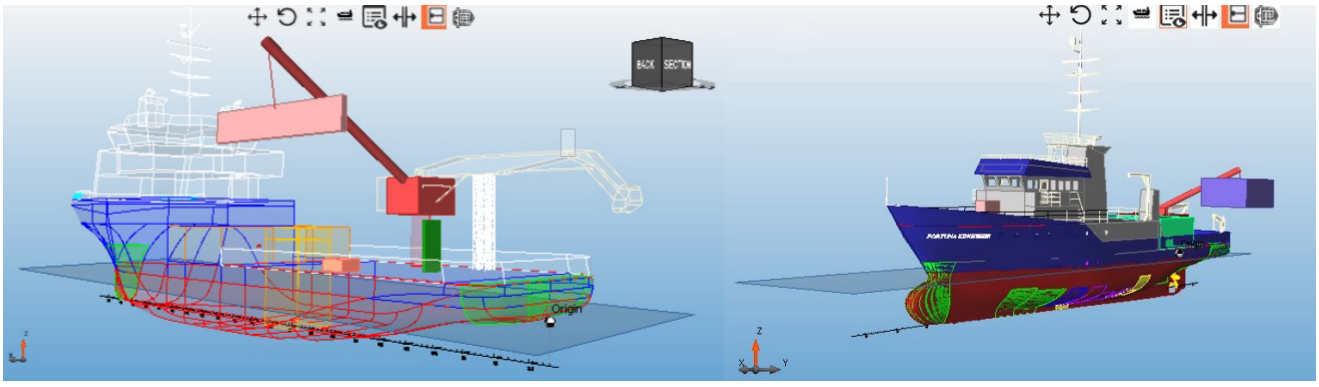
FI-FI MODULE

- Facilitates stability evaluation during firefighting operation.
- Multiple Fire monitors, respective vertical locations and height of thrusters above base line pre-loaded in the software.
- Provision to check stability with variable number of fire monitors.
- Option to input nozzle capacity and diameter to calculate the reaction forces.
- Realistically evaluate the vessel's equilibrium during firefighting operations by considering monitor operating angles.



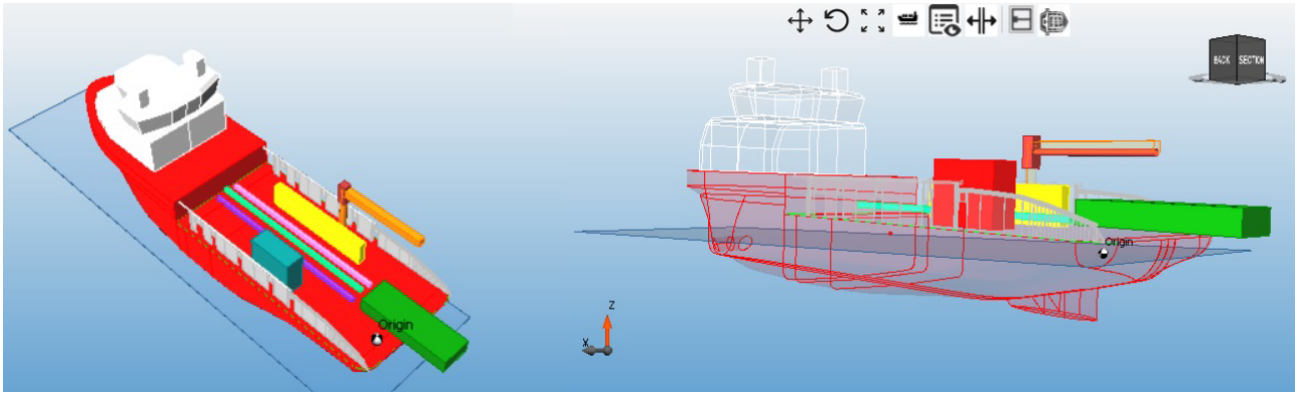
CRANE OPERATION MODULE

- Enables the execution of various lifting operations between vessel's own deck and to other vessels & offshore platforms.
- Multiple cranes, Single boom with multiple hooks can be provided in the software.
- Provision to add crane load chart based on various sea states enables practical crane operation.
- Ability to evaluate the stability during Free Boom Movement.
- Interference check with deck cargoes & outfits during crane operation.
- Provision to superimpose wind heeling moment during crane operation.
- Warning message for violations.



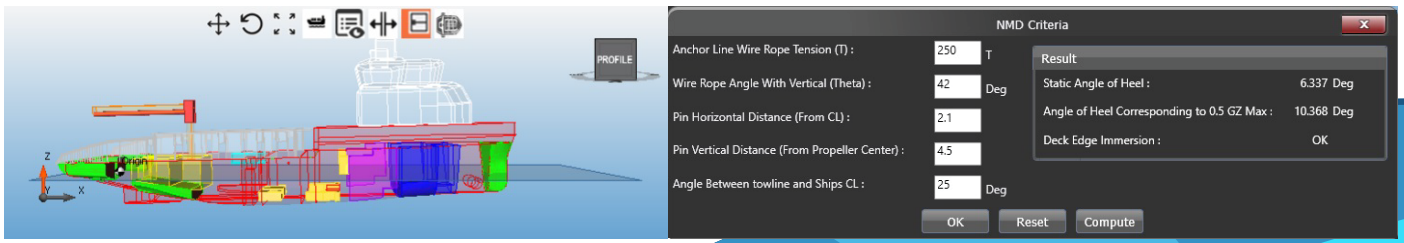
DECK CARGO MODULE

- Enables efficient stowage of deck cargo by means of:
  - o Drag and Drop of Deck Cargo
  - o Deck Cargo location interference check
  - o Deck Interference Checks with outfits such as Hatches, Vents, Air Pipes and Railings.
  - o Warning message for violations
- Stowage of Deck Cargo with Aft Overhang and Cargo above Cargo
- Facilitates user defined colour coding for the deck cargo for easy identification
- Automatic colour coding feature enables grouping of cargo belonging to the specific category



ANCHOR HANDLING MODULE

- Facilitates stability evaluation of during Anchor Handling operationas per NMDcriteria.
- Enables the operator to check the stability of the vessel considering the vertical and horizontal components of the transverse tension, based on the wire's angle of deviation.
- Vertical location of guide pin (shark jaw), width of stern roller, heights of stern thruster and propellers above base line and the anchor handling winch capacity can be preloaded.
- Advanced option to accurately compute the vessel's equilibrium and stability during anchor handling, considering the horizontal and vertical angles of the wire.
- User defined input for wire rope tension, horizontal and vertical angles.

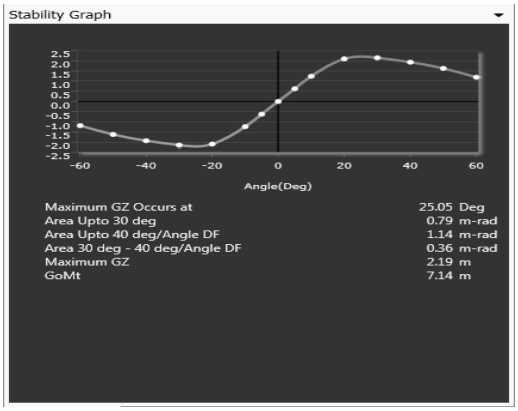


Methodology of Computation

- Innovative mathematical modelling with high accuracy & computing speed.
- A Novel 'discretised hull form concept' mapping the volumetric properties on a 3-D grid with draft, trim and heel as the axes.
- Equilibrium is computed from the 3-D grid by solving the force (vertical) and moment (longitudinal and transverse) balance.
- Free surface effects accounted by either virtual free surface moments or real wedge shift moments.

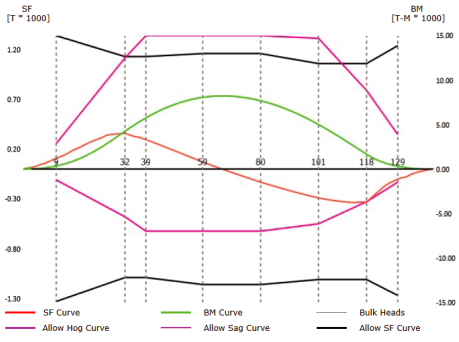
Loading Conditions & Intact Stability Computation

- Preparation of Loading Conditions via percentage filling, volume, weight or sounding/ullage depth.
- Use of accurate tank soundings from 3-D models.
- Computation of Draft, Trim & Heel
- Displacement & Deadweight Calculation
- GM & GoM Calculation
- Intact Stability computation as per I.S Code 2008 & compliance comparison



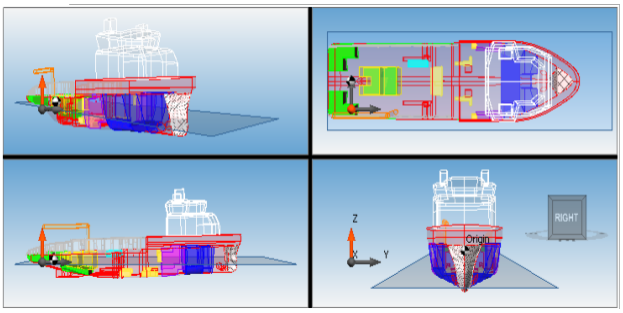
Longitudinal Strength Computation

- SF/BM Computations
- Graphical Representation throughout length of vessel.
- Option to input allowable values for SF & BM as per service restriction.
- Printable Reports with SF/BM values against Permissible allowable.
- Warnings for violation.



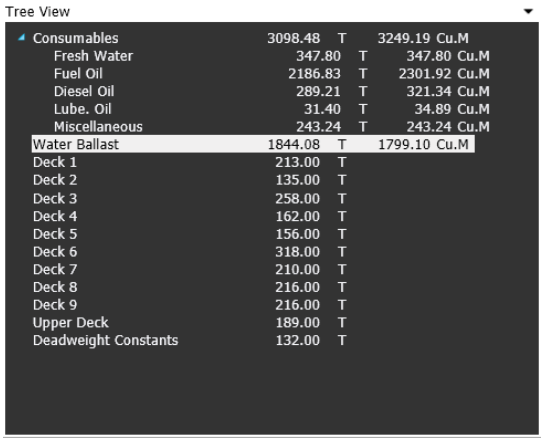
Damage Stability Module

- Graphical view of equilibrium in damaged condition of the vessel.
- Flexibility to choose from various pre-loaded Damage cases.
- Report showing equilibrium of the vessel before & after damage.
- All required significant criteria – MARPOL, IGC, IBC, OSV and SPS
- Stability during intermediate stages of flooding.
- Capability to specify actual user defined damage cases
- Progressive Flooding through hull openings



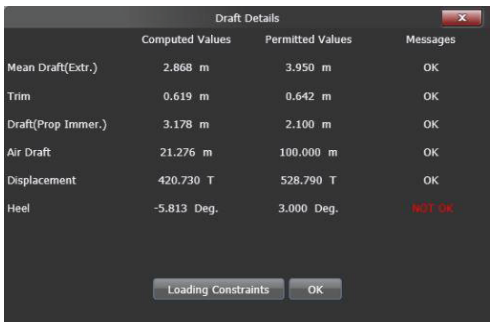
Generation of Reports

- Executive summary of deadweight distribution during operations.
- Loading Condition Reports
- Detailed Intact Stability, Longitudinal Strength & Damage Stability Reports
- Damage Summary Report to quickly assess the results.
- Option to print functional reports such as Stowage Plan, Ullage Report.



User Defined Parameters

- Enables master to provide operational constraints.
- User defined limits for Trim, Heel, Air Draft and Bow Thruster Draft.
- Warnings if violation is observed



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