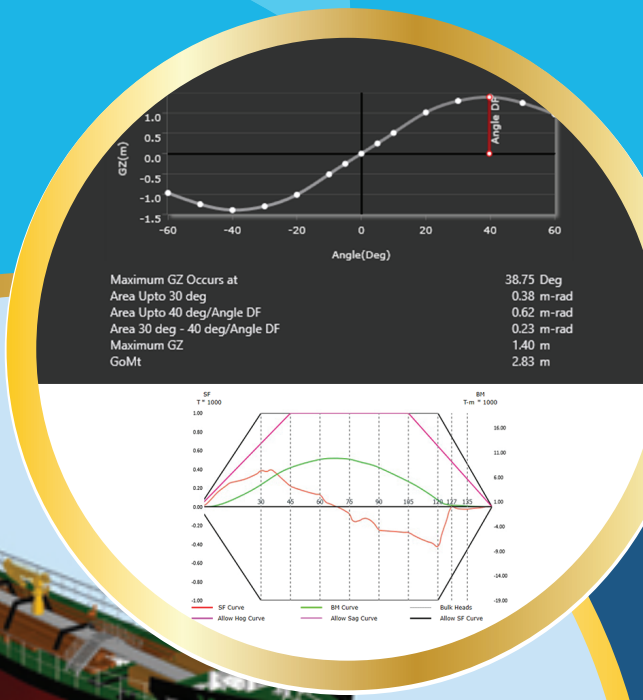
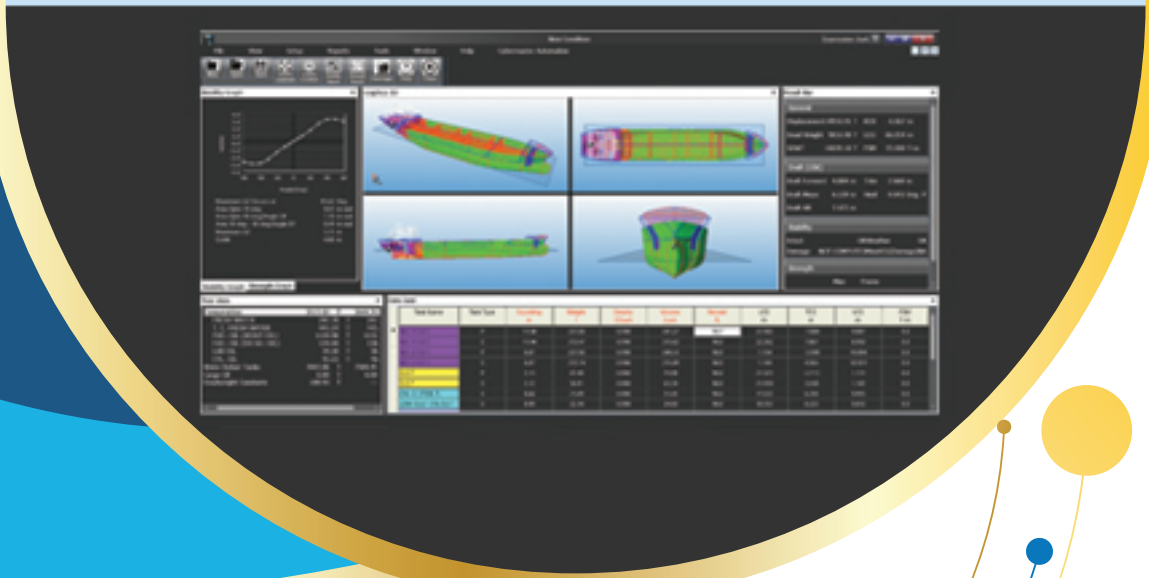
CyberMaster 3D

Advanced Ship Loading Software

Oil / Product / Chemical Tankers

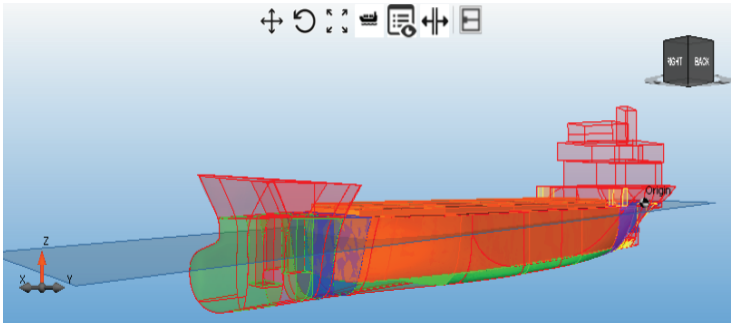
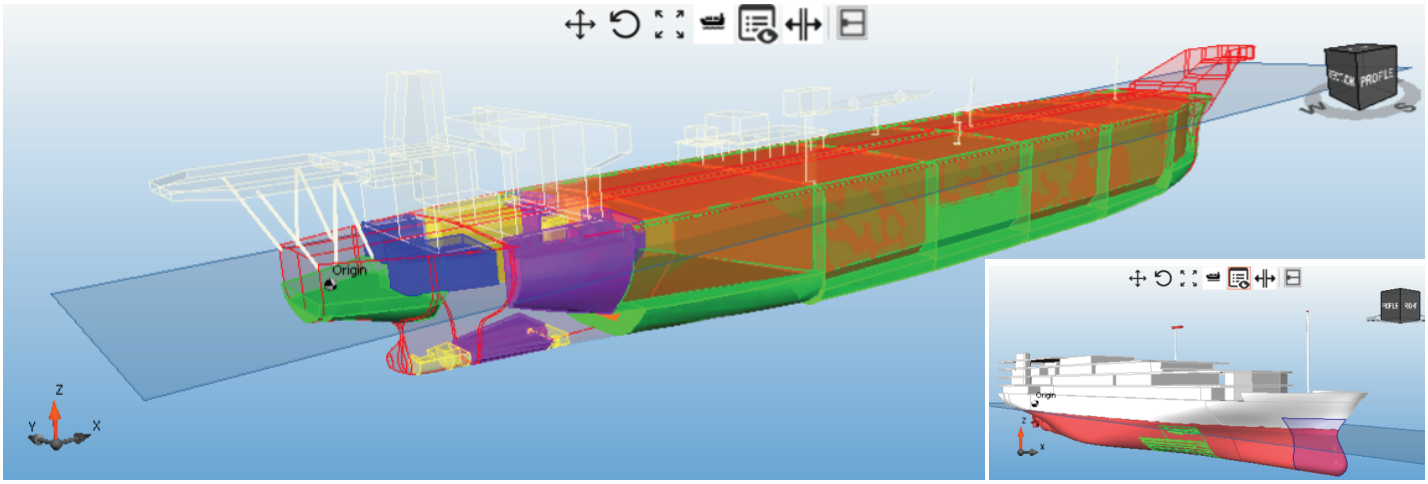


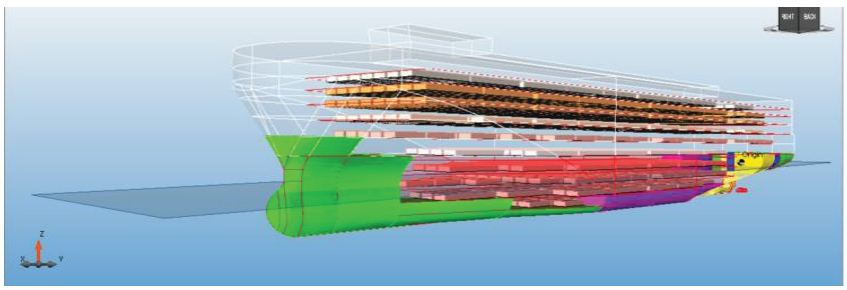
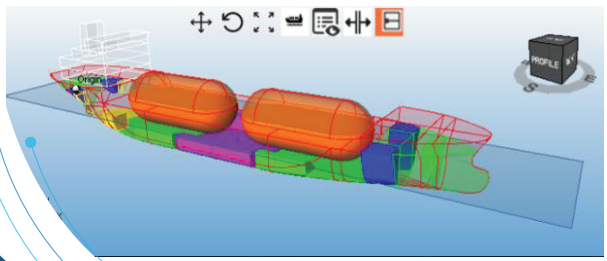
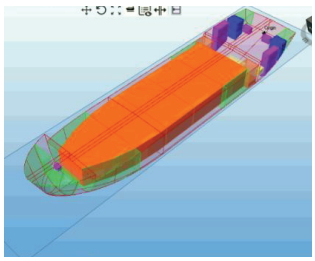
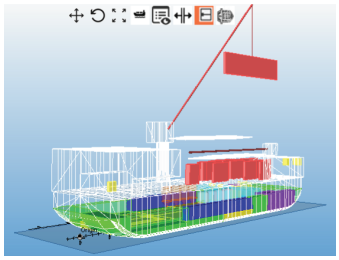


Cybermarine

GENERAL

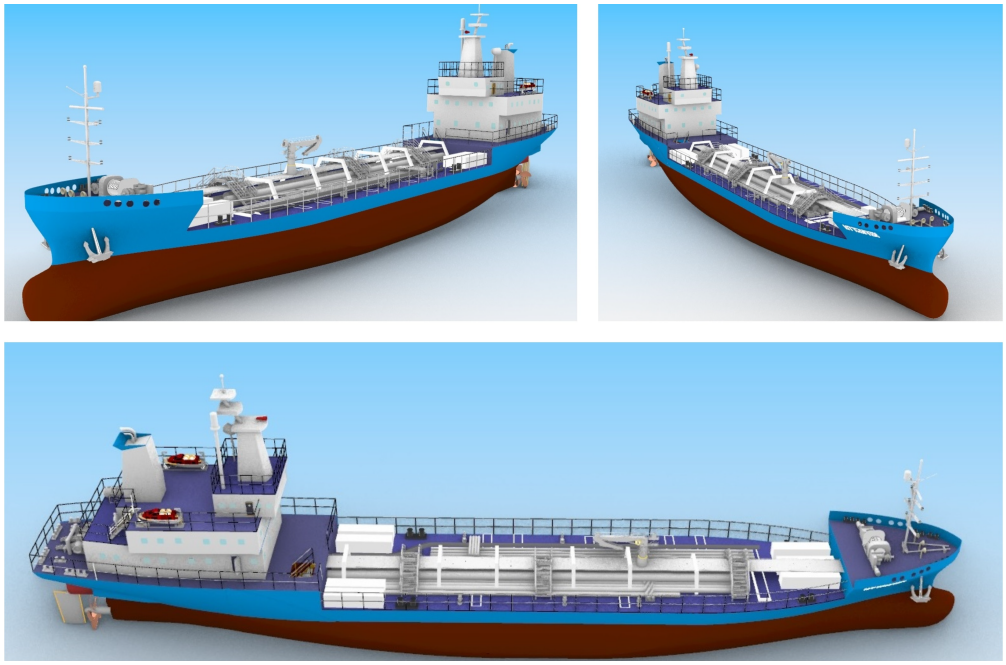
- CyberMaster 3D - is an advanced Ship Loading software with 3D Technology.
- Software is built to perform all necessary operations pertaining to Oil/chemical/Product Tanker.
- Type Approved by DNV-GL & RINA
- Works on all windows based Desktops.
- Available for several types of Seagoing Vessels and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

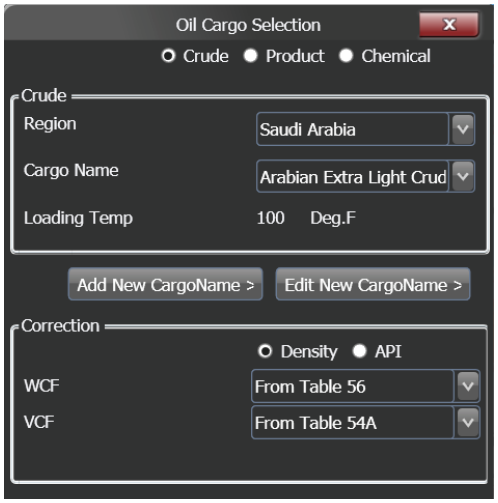





3-D GUI MODULE

- CyberMaster 3-D'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 through 3-D GUI.
- Advanced 3-D GUI and Live computation simulates real time vessel behaviour with loading & discharge.



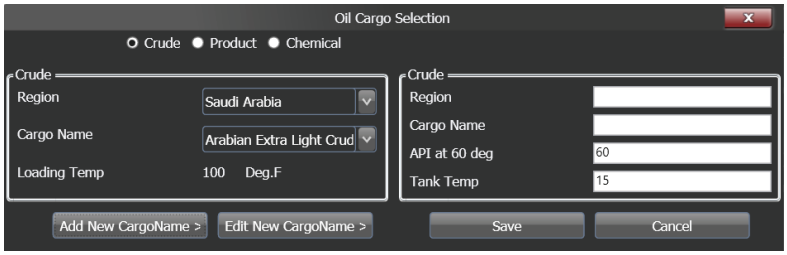
OIL TANKER MODULE



- ASTM Tables pre-loaded for different type of tankers.
- VCF calculation based on selected ASTM table to find volume correction at temperature for which the density is given.
- Weight in air automatically calculated by WCF based on table 56.
- Choices to input correction based on Density & API Gravity.
- Facilitates grouping of cargo tanks.

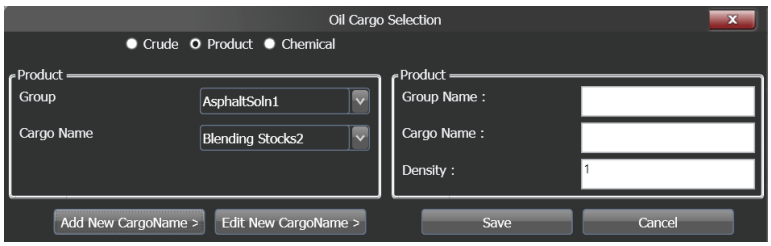
Crude Oil Carrier

- ASTM tables such as 5A, 6A, 54A pre-loaded.
- Pre-defined cargo library based on various operating regions.
- Provision to add user defined with following inputs:
  - Operating region
  - Cargo Name
  - API Gravity at 60 deg F
  - Tank Temperature



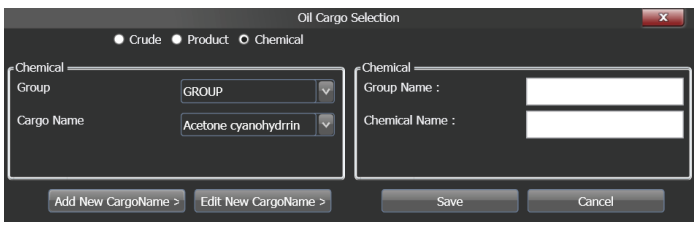
Product Tanker

- ASTM tables such as 5B, 6B, 53B, 54B pre-loaded.
- The module comes with a pre-defined cargo library classified under different groups.
- Provision to add user defined with following inputs:
  - Group Name
  - Cargo Name
  - Cargo Density



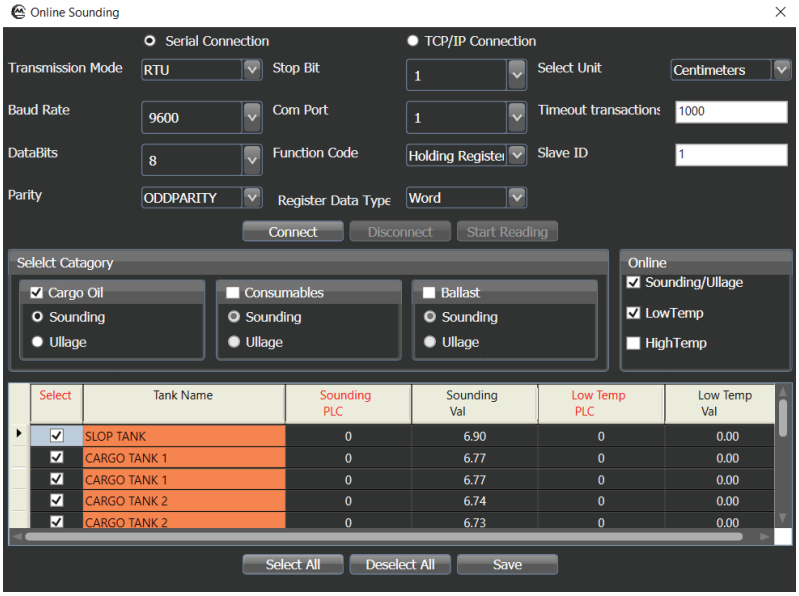
Chemical Tanker

- ASTM tables such as 54A, 54B pre-loaded in the software.
- The module comes with a pre-defined cargo library classified under different chemical groups.
- Provision to add user defined with following inputs:
  - Group Name
  - Chemical Name



ONLINE SOUNDING MODULE

- Online sounding integrated with tank gauging system measures the tank levels in real time and updates the loading program automatically.



- Enables live stability and strength assessment of the vessel.
- Real time monitoring of the tanks.
- **Interface Required:**

  a) Protocol: MODBUS

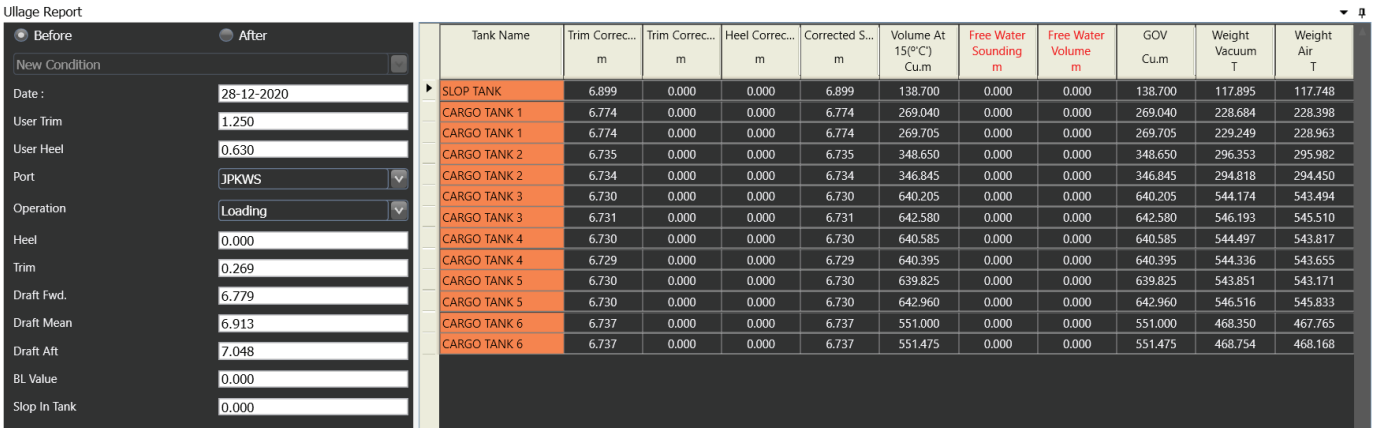
  b) Transmission Mode: RTU/ASCII

  c) Transmission Cable: RS-485

  d) PLC Addresses of Tanks

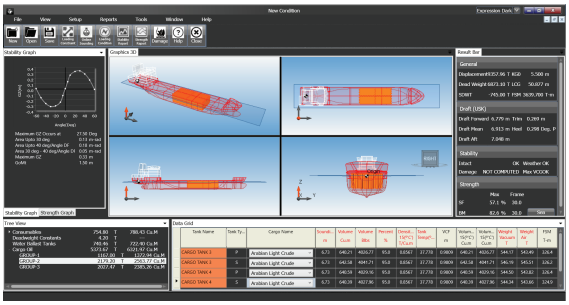
SOUNDING/ULLAGE CORRECTION MODULE

- Sounding correction module accurately accounts the tank contents based on the trim and heel of the vessel.
- Option for live corrections of tank contents with vessel's equilibrium ensures high precision computations.
- Facilitates calculation of the tank content volumes for every tank by means of sounding or ullage.
- User can generate sounding and ullage reports.



TANK GROUPING MODULE

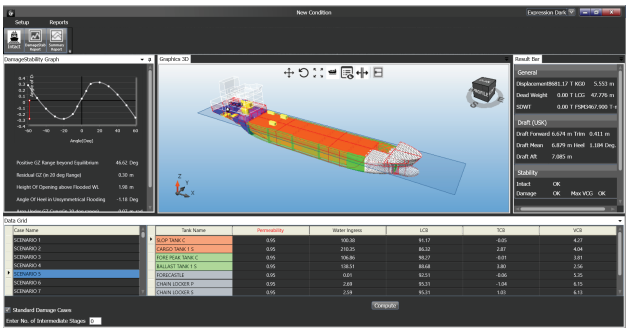
- Provision to split cargo tanks into different groups as per stability booklet.



- Option to fill the cargoes of different densities in different groups as per loading conditions.
- Each group will be separately visible in the tank tree and the user can select the respective group and fill the tanks using the densities as required.

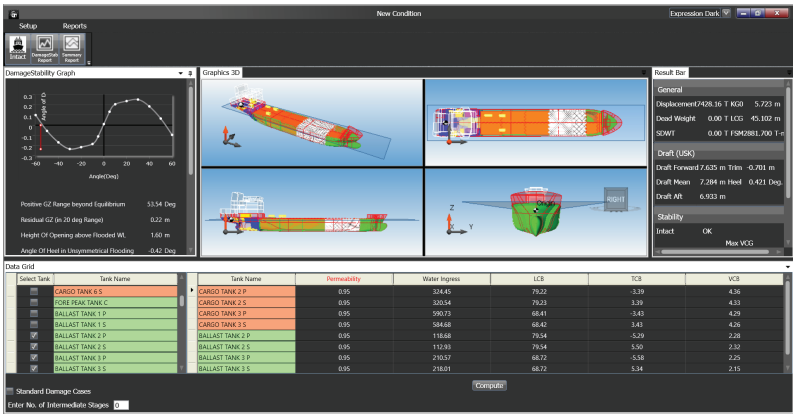
IACS TYPE 3 DAMAGE STABILITY MODULE

- Enables the software to check the damage stability for a set of pre-loaded Damage cases as per the approved damage stability information.
- The vessel's equilibrium position in damaged condition can be seen in GUI.
- Damage stability Report showing status of the vessel before & after damage.
- Evaluation of stability during intermediate stages of flooding.
- Equalization of tanks post damage.
- Progressive Flooding through hull openings
- Damage stability computation as per applicable criteria – MARPOL (or) IBC



IACS TYPE 4 DAMAGE STABILITY MODULE

- IACS Type 4 Damage Stability module facilitates the actual simulation of damage stability.
- Provision to choose any number of compartments across the hull to evaluate damage.



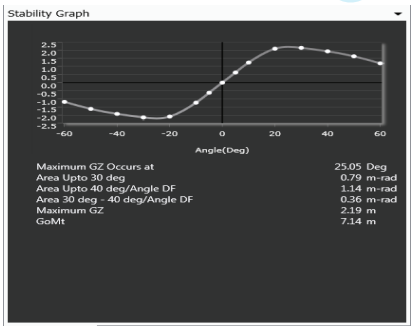
- Flexibility to change the default PERMEABILITY of the compartments.
- User Defined Damage Stability calculation of real case flooding scenario providing information regarding safe return to port.

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.

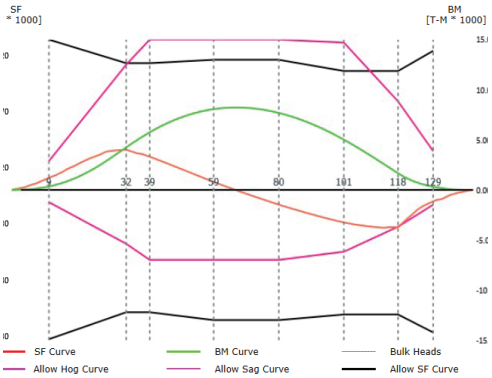
Loading Conditions & Intact Stability Computation

- 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



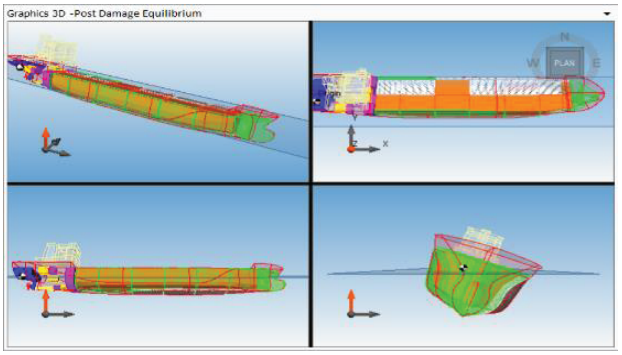
Longitudinal Strength Computation

- 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.



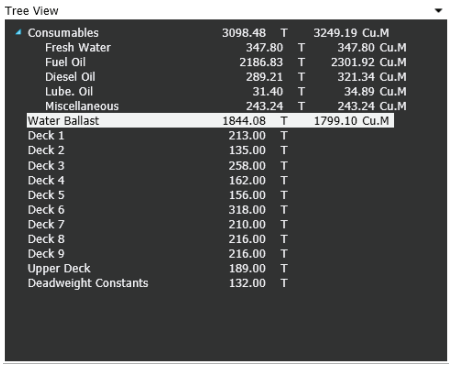
Damage Stability Module

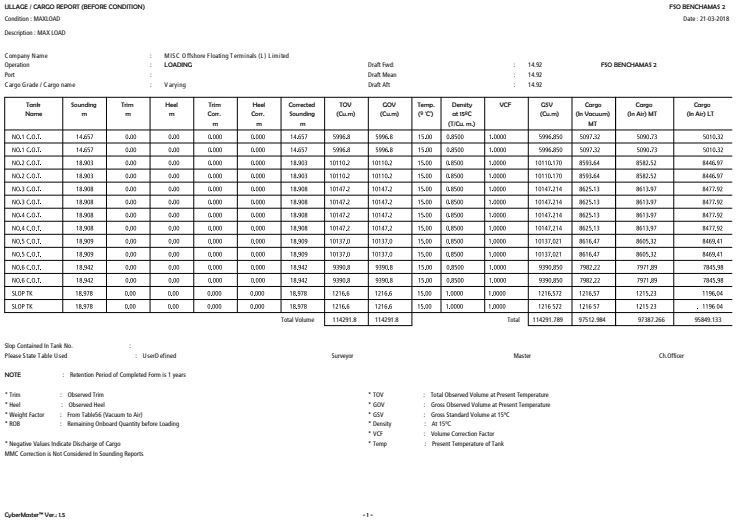
- Graphical view of equilibrium in damaged condition of the vessel.
- Flexibility to choose from various pre-loaded Damage cases.
- Report showing equilibrium of the vessel before & after damage.
- All required significant criteria – MARPOL, IGC, IBC, OSV and SPS
- Stability during intermediate stages 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 Ullage Report.




ULLAGE / CARGO REPORT (BEFORE CONDITION)

FSO BENCHAMAS 2

Condition : MAXLOAD

Date : 21-03-2018

Description : MAX LOAD

Company Name : MISC Offshore Floating Terminals (L) Limited

Operation : LOADING

Port :

Cargo Grade / Cargo name : Varying

Draft Fwd : 14.92

Draft Mean : 14.92

Draft Aft : 14.92

FSO BENCHAMAS 2

Tank Name	Sounding m	Trim m	Heel m	Trim Corr. m	Heel Corr. m	Corrected Sounding m	TOV (Cu.m)	GOV (Cu.m)	Temp. (° C)	Density at 15°C (T/Cu. m.)	VCF	GSV (Cu.m)	Cargo (In Vacuum) MT	Cargo (In Air) MT	Cargo (In Air) LT
NO.1 C.O.T.	14,657	0,00	0,00	0,000	0,000	14,657	5996,8	5996,8	15,00	0,8500	1,0000	5996,850	5097,32	5090,73	5010,32
NO.1 C.O.T.	14,657	0,00	0,00	0,000	0,000	14,657	5996,8	5996,8	15,00	0,8500	1,0000	5996,850	5097,32	5090,73	5010,32
NO.2 C.O.T.	18,903	0,00	0,00	0,000	0,000	18,903	10110,2	10110,2	15,00	0,8500	1,0000	10110,170	8593,64	8582,52	8446,97
NO.2 C.O.T.	18,903	0,00	0,00	0,000	0,000	18,903	10110,2	10110,2	15,00	0,8500	1,0000	10110,170	8593,64	8582,52	8446,97
NO.3 C.O.T.	18,908	0,00	0,00	0,000	0,000	18,908	10147,2	10147,2	15,00	0,8500	1,0000	10147,214	8625,13	8613,97	8477,92
NO.3 C.O.T.	18,908	0,00	0,00	0,000	0,000	18,908	10147,2	10147,2	15,00	0,8500	1,0000	10147,214	8625,13	8613,97	8477,92
NO.4 C.O.T.	18,908	0,00	0,00	0,000	0,000	18,908	10147,2	10147,2	15,00	0,8500	1,0000	10147,214	8625,13	8613,97	8477,92
NO.4 C.O.T.	18,908	0,00	0,00	0,000	0,000	18,908	10147,2	10147,2	15,00	0,8500	1,0000	10147,214	8625,13	8613,97	8477,92
NO.5 C.O.T.	18,909	0,00	0,00	0,000	0,000	18,909	10137,0	10137,0	15,00	0,8500	1,0000	10137,021	8616,47	8605,32	8469,41
NO.5 C.O.T.	18,909	0,00	0,00	0,000	0,000	18,909	10137,0	10137,0	15,00	0,8500	1,0000	10137,021	8616,47	8605,32	8469,41
NO.6 C.O.T.	18,942	0,00	0,00	0,000	0,000	18,942	9390,8	9390,8	15,00	0,8500	1,0000	9390,850	7982,22	7971,89	7845,38
NO.6 C.O.T.	18,942	0,00	0,00	0,000	0,000	18,942	9390,8	9390,8	15,00	0,8500	1,0000	9390,850	7982,22	7971,89	7845,38
SLOP TK	18,978	0,00	0,00	0,000	0,000	18,978	1216,6	1216,6	15,00	1,0000	1,0000	1216,572	1216,57	1215,23	1196,04
SLOP TK	18,978	0,00	0,00	0,000	0,000	18,978	1216,6	1216,6	15,00	1,0000	1,0000	1216,572	1216,57	1215,23	1196,04
						Total Volume	114291,8	114291,8				Total	114291,789	97512,984	97387,266	95849,133

Slop Contained In Tank No. :

Please State Table Used : UserDefined

Surveyor

Master

Ch.Officer

NOTE : Retention Period of Completed Form is 1 years

* Trim : Observed Trim
* Heel : Observed Heel
* Weight Factor : From Table56 (Vacuum to Air)
* ROB : Remaining Onboard Quantity before Loading

* Negative Values Indicate Discharge of Cargo
MMC Correction is Not Considered In Sounding Reports

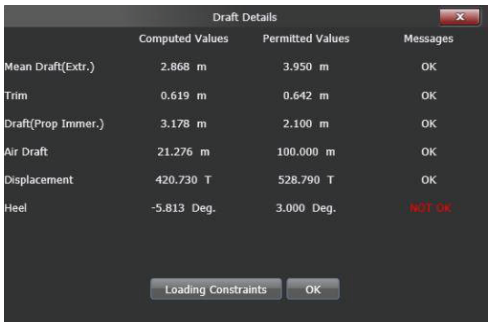
* TOV : Total Observed Volume at Present Temperature
* GOV : Gross Observed Volume at Present Temperature
* GSV : Gross Standard Volume at 15°C
* Density : At 15°C
* VCF : Volume Correction Factor
* Temp : Present Temperature of Tank

CyberMaster™ Ver.: LS

- 1 -

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



CyberMaster 3D

Advanced Ship Loading Software

Cybermarine

www.cybermarine.net www.cybermaster.sg cybermaster@cybermarine.net

10 Bukit Batok Crescent
12-01 The Spire
Singapore - 658 079