

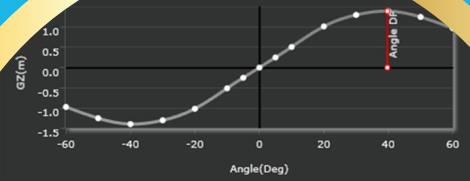


CyberMaster

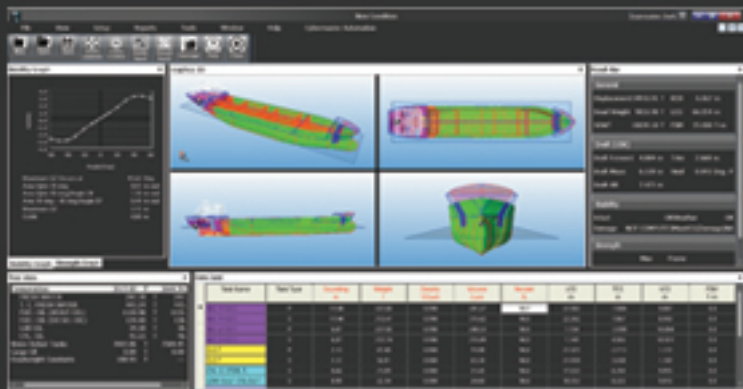
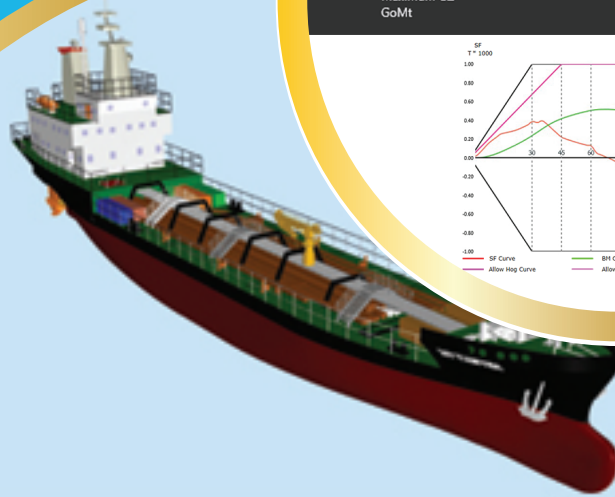
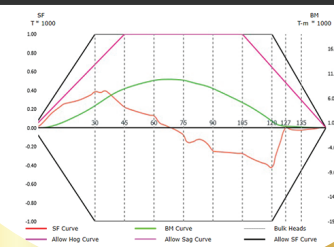
3D

Advanced Ship Loading Software

Oil / Product / Chemical Tankers



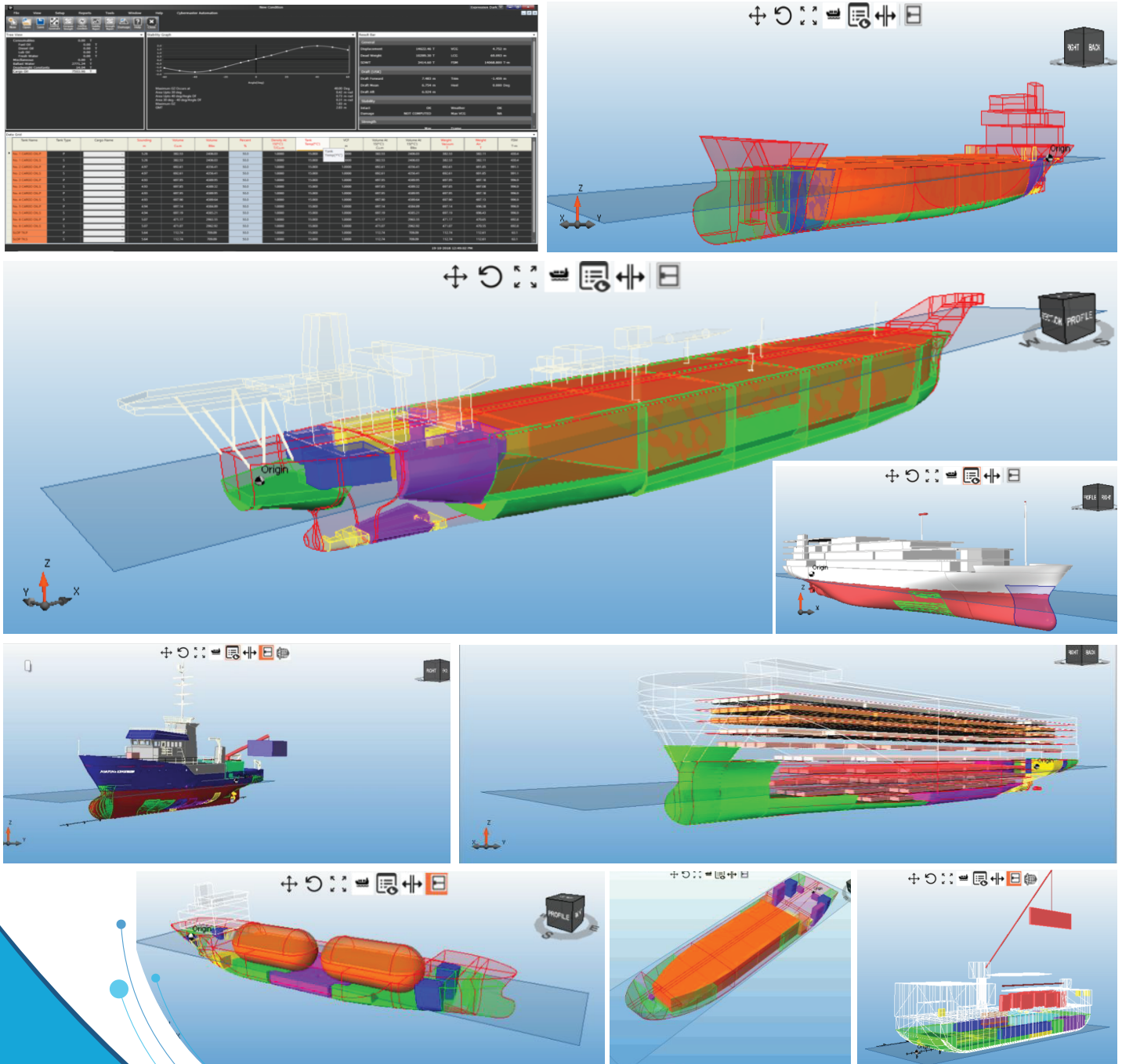
Maximum GZ Occurs at 38.75 Deg
 Area Upto 30 deg 0.38 m-rad
 Area Upto 40 deg/Angle DF 0.62 m-rad
 Area 30 deg - 40 deg/Angle DF 0.23 m-rad
 Maximum GZ 1.40 m
 GoMt 2.83 m



Cybermarine

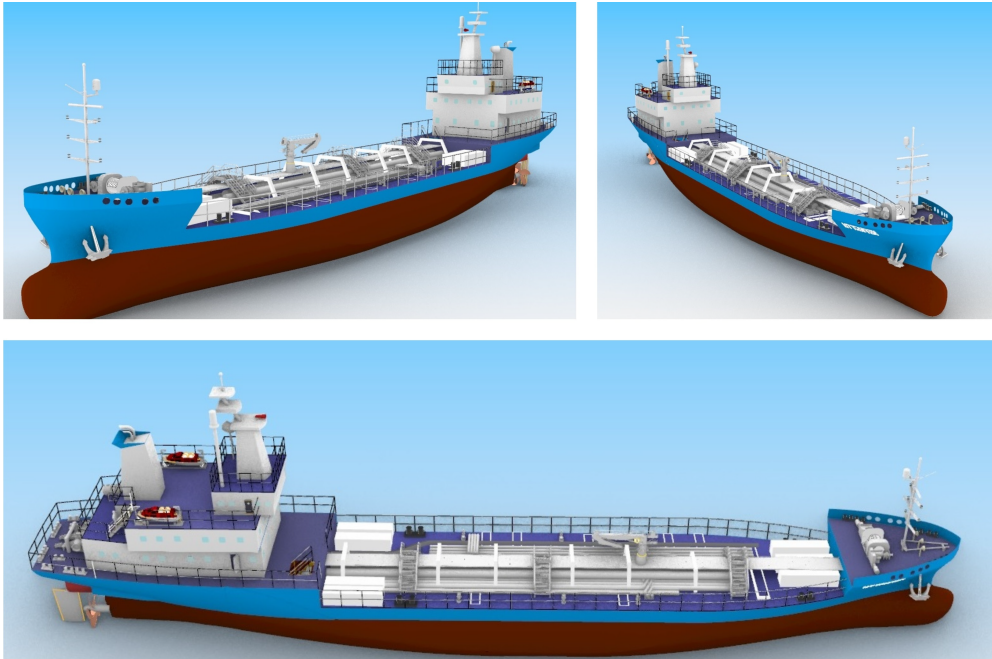
GENERAL

- **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

Oil Cargo Selection ✕

Crude
 Product
 Chemical

Crude

Region: Saudi Arabia

Cargo Name: Arabian Extra Light Crud

Loading Temp: 100 Deg.F

Add New CargoName >
Edit New CargoName >

Correction

Density
 API

WCF: From Table 56

VCF: From Table 54A

- 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.

Online Sounding

Serial Connection / TCP/IP Connection

Transmission Mode: RTU, Stop Bit: 1, Select Unit: Centimeters

Baud Rate: 9600, Com Port: 1, Timeout transactions: 1000

DataBits: 8, Function Code: Holding Register, Slave ID: 1

Parity: ODDPARITY, Register Data Type: Word

Select Category:

- Cargo Oil
- Consumables
- Ballast
- Sounding
- Sounding
- Sounding
- Ullage
- Ullage
- Ullage

Select	Tank Name	Sounding PLC	Sounding Val	Low Temp PLC	Low Temp Val
<input checked="" type="checkbox"/>	SLOP TANK	0	6.90	0	0.00
<input checked="" type="checkbox"/>	CARGO TANK 1	0	6.77	0	0.00
<input checked="" type="checkbox"/>	CARGO TANK 1	0	6.77	0	0.00
<input checked="" type="checkbox"/>	CARGO TANK 2	0	6.74	0	0.00
<input checked="" type="checkbox"/>	CARGO TANK 2	0	6.73	0	0.00

- 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.

Ullage Report

Before / After

New Condition

Date: 28-12-2020

User Trim: 1.250

User Heel: 0.630

Port: JPKWS

Operation: Loading

Heel: 0.000

Trim: 0.269

Draft Fwd.: 6.779

Draft Mean: 6.913

Draft Aft: 7.048

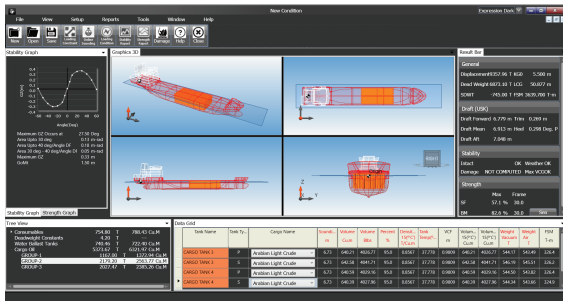
BL Value: 0.000

Slop In Tank: 0.000

Tank Name	Trim Correc... m	Trim Correc... m	Heel Correc... m	Corrected S... m	Volume At 15(°C) Cu.m	Free Water Sounding m	Free Water Volume m	GOV Cu.m	Weight Vacuum T	Weight Air T
SLOP TANK	6.899	0.000	0.000	6.899	138.700	0.000	0.000	138.700	117.895	117.748
CARGO TANK 1	6.774	0.000	0.000	6.774	269.040	0.000	0.000	269.040	228.684	228.398
CARGO TANK 1	6.774	0.000	0.000	6.774	269.705	0.000	0.000	269.705	229.249	228.963
CARGO TANK 2	6.735	0.000	0.000	6.735	348.650	0.000	0.000	348.650	296.353	295.982
CARGO TANK 2	6.734	0.000	0.000	6.734	346.845	0.000	0.000	346.845	294.818	294.450
CARGO TANK 3	6.730	0.000	0.000	6.730	640.205	0.000	0.000	640.205	544.174	543.494
CARGO TANK 3	6.731	0.000	0.000	6.731	642.580	0.000	0.000	642.580	546.193	545.510
CARGO TANK 4	6.730	0.000	0.000	6.730	640.585	0.000	0.000	640.585	544.497	543.817
CARGO TANK 4	6.729	0.000	0.000	6.729	640.395	0.000	0.000	640.395	544.336	543.655
CARGO TANK 5	6.730	0.000	0.000	6.730	639.825	0.000	0.000	639.825	543.851	543.171
CARGO TANK 5	6.730	0.000	0.000	6.730	642.960	0.000	0.000	642.960	546.516	545.833
CARGO TANK 6	6.737	0.000	0.000	6.737	551.000	0.000	0.000	551.000	468.350	467.765
CARGO TANK 6	6.737	0.000	0.000	6.737	551.475	0.000	0.000	551.475	468.754	468.168

TANK GROUPING MODULE

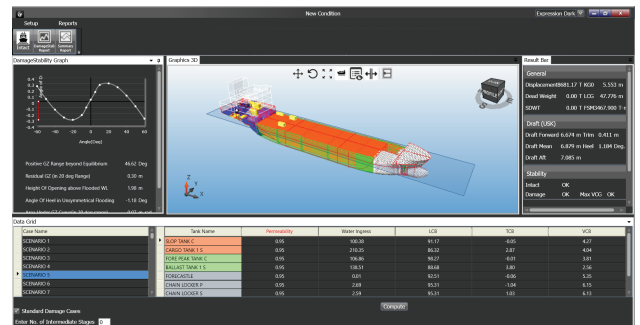
- Provision to split cargo tanks into different groups as per stability booklet.



- 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.

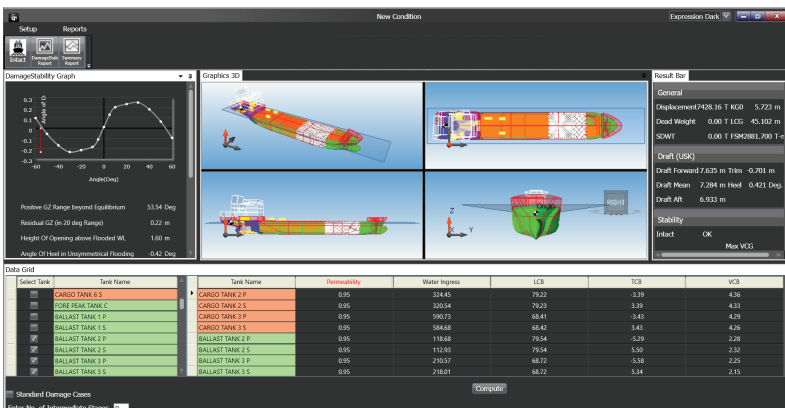
IACS TYPE 3 DAMAGE STABILITY MODULE

- 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.



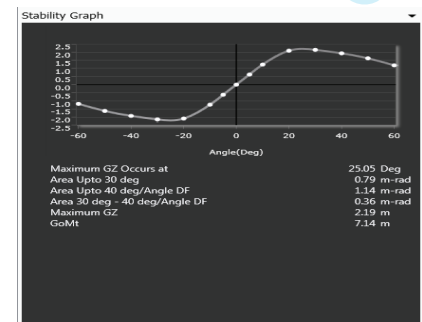
- Flexibility to change the default PERMEABILITY of the compartments.
- User Defined Damage Stability calculation of real case flooding scenario providing information regarding safety return to port.

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.

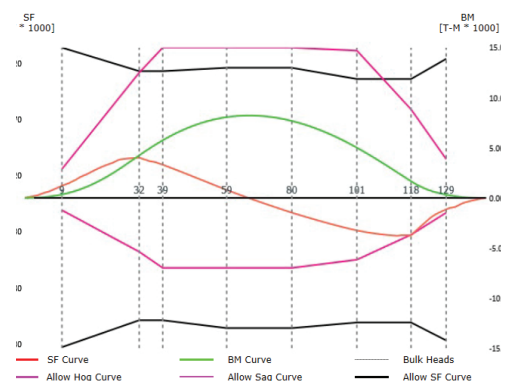
Loading Conditions & Intact Stability Computation

- 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



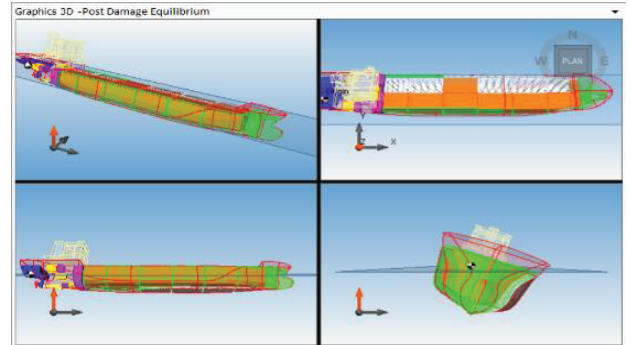
Longitudinal Strength Computation

- 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.

Tree View

Consumables	3098.48	T	3249.19	Cu.M
Fresh Water	347.80	T	347.80	Cu.M
Fuel Oil	2186.83	T	2301.92	Cu.M
Diesel Oil	289.21	T	321.34	Cu.M
Lube. Oil	31.40	T	34.89	Cu.M
Miscellaneous	243.24	T	243.24	Cu.M
Water Ballast	1844.08	T	1799.10	Cu.M
Deck 1	213.00	T		
Deck 2	135.00	T		
Deck 3	258.00	T		
Deck 4	162.00	T		
Deck 5	156.00	T		
Deck 6	318.00	T		
Deck 7	210.00	T		
Deck 8	216.00	T		
Deck 9	216.00	T		
Upper Deck	189.00	T		
Deadweight Constants	132.00	T		

ULLAGE / CARGO REPORT (BEFORE CONDITION)
Condition: MAXLOAD
Description: MAX LOAD

Company Name : MSC Offshore Floating Terminals (S) Limited
Operation : LOADING
Cargo Grade / Cargo name : Varying

Draft Fed : 14.92
Draft Mean : 14.92
Draft AB : 14.92

PSO BENCHAMAS 2
Date: 21-03-2018

Tank Name	Sounding m	Trim m	Heel m	Trim Cor. m	Heel Cor. m	Corrected Sounding m	TOV (Cu.M)	GVV (Cu.M)	Temp. (°C)	Density at SPS (T/Cu.m ³)	VCF	GVV (Cu.M)	Cargo (In Volume) MT	Cargo (In Aft) MT	Cargo (In Aft) LT	
WAL.C.D.	14657	0.00	0.00	0.000	0.000	14657	9996.8	1996.8	15.00	0.8500	1.0000	9996.295	5097.23	5097.23	5075.32	
WAL.C.D.	14657	0.00	0.00	0.000	0.000	14657	9996.8	1996.8	15.00	0.8500	1.0000	9996.295	5097.23	5097.23	5075.32	
WAL.C.D.	18393	0.00	0.00	0.000	0.000	18393	10116.2	10116.2	15.00	0.8500	1.0000	10116.170	8354.52	8354.52	8446.97	
WAL.C.D.	18393	0.00	0.00	0.000	0.000	18393	10116.2	10116.2	15.00	0.8500	1.0000	10116.170	8354.52	8354.52	8446.97	
WAL.C.D.	18393	0.00	0.00	0.000	0.000	18393	10142.2	10142.2	15.00	0.8500	1.0000	10142.216	8625.13	8615.97	8477.52	
WAL.C.D.	18393	0.00	0.00	0.000	0.000	18393	10142.2	10142.2	15.00	0.8500	1.0000	10142.216	8625.13	8615.97	8477.52	
WAL.C.D.	18393	0.00	0.00	0.000	0.000	18393	10142.2	10142.2	15.00	0.8500	1.0000	10142.216	8625.13	8615.97	8477.52	
WAL.C.D.	18393	0.00	0.00	0.000	0.000	18393	10137.0	10137.0	15.00	0.8500	1.0000	10137.011	8606.12	8606.12	8468.41	
WAL.C.D.	18393	0.00	0.00	0.000	0.000	18393	10137.0	10137.0	15.00	0.8500	1.0000	10137.011	8616.47	8606.12	8468.41	
WAL.C.D.	18242	0.00	0.00	0.000	0.000	18242	9390.8	9390.8	15.00	0.8500	1.0000	9390.295	7971.29	7971.29	7845.38	
WAL.C.D.	18242	0.00	0.00	0.000	0.000	18242	9390.8	9390.8	15.00	0.8500	1.0000	9390.295	7971.29	7971.29	7845.38	
SLOPK	12679	0.00	0.00	0.000	0.000	12679	1216.6	1216.6	15.00	1.0000	1.0000	1216.532	1216.53	1216.53	1196.94	
SLOPK	12679	0.00	0.00	0.000	0.000	12679	1216.6	1216.6	15.00	1.0000	1.0000	1216.532	1216.53	1216.53	1196.94	
Total Volume							114291.8	114291.8				Total	114291.789	97513.984	97387.262	95848.133

Step: Contained in Tank No. :
Please Refer Table Head : Used Off-head

NOTE : Retention Period of Completed Form is 1 year

* Trim : Observed Trim
* Heel : Observed Heel
* Weight Factor : From Table 65 (Vacuum to Air)
* ABF : Remaining Onboard Quantity before Loading

* Negative Values Indicate Discharge of Cargo
MBC Correction is Not Considered in Sounding Reports

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

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

Draft Details

	Computed Values	Permitted Values	Messages
Mean Draft(Extr.)	2.868 m	3.950 m	OK
Trim	0.619 m	0.642 m	OK
Draft(Prop Immer.)	3.178 m	2.100 m	OK
Air Draft	21.276 m	100.000 m	OK
Displacement	420.730 T	528.790 T	OK
Heel	-5.813 Deg.	3.000 Deg.	NOT OK

Loading Constraints OK



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