DNV·GL

Certificate No:
TAA00002SH

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Loading Computer System

with type designation(s)
CYBERMASTER 3D, Version 10.1,

Issued to
CyberMarine Technologies Pte Ltd
Singapore, Singapore

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

Type approved for calculation and control of loading conditions with the following functions:

- Check of shear force and bending moments against limit curves
- Check of intact stability, damage stability and grain stability by direct calculation
- Check of intact and damage stability against limit curve

The product approved by this certificate is accepted for installation on all vessels classed by DNV GL. Note that ship specific approval and certification is also required.

Issued at **Høvik** on **2020-05-15**
This Certificate is valid until **2025-05-14**.
DNV GL local station: **Singapore**

Approval Engineer: **Nils Heimvik**

for **DNV GL**

Inge Seglem
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

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Product description

Available Options of the Software:

Based on the stored characteristic data and stored 2D(*) and3D model and loading data given by the user, the following functions are performed onboard monohull vessels:

Hull Strength:

For prepared loading conditions;

- Calculation of still water bending moment and shear force, and control against limit values.

Stability:

For prepared loading conditions;

- Calculation of draft, trim, righting levers (GZ) and metacentric height (GM)
- Calculation and check of the intact stability criteria of 2008 IS Code Part A Ch.2.2 and 2.3
- Calculation and check of compliance with pre-stored limit curves for intact and damage stability
- Calculation and check according to the damage stability criteria of MARPOL 73/78 Annex I Regulation 28, IMO IBC Code Ch.2, and IMO IGC Code Ch.2
- Calculation and check of the grain stability requirements of SOLAS-74 Reg. VI/Part C and MSC 23(59), (International Grain Code) including A.10.3
- Calculation of damage stability of a real case flooding scenario, with manual user input of the damage case, according to DNV GL Rules Pt.6 Ch.4 Sec.6, "Type 4" computer, for cargo ships

* A table input based "2D" version is also available for vessels for which 3D model data (lines) are not available. This version cannot be used for direct damage stability calculations.

Approval conditions

1. The loading computer is considered as supplementary to the approved stability booklet and/or loading manual onboard.
2. Specific approval and certification is required for each vessel at which the program is installed. Documentation to be submitted for approval is listed in DNV GL Rules for Ships Pt.6 Ch.4 Sec. 6. The identification of software will be recorded in the certificate.
3. The program is either to be installed on one approved hardware (type approved or case-by-case approved), or it is to be installed on two nominated computers. If two nominated computers are available, approval of hardware may be waived (Ref. DNV GL Rules Pt.6 Ch.4 Sec.6).

Type Approval documentation

- DNV GL Id. No. 13980, "MIRANDA ROSE"	Strength-Intact stability-Grain stability
- DNV GL Id. No. 14149, "KAMPUR"	Strength-Intact Stability- Grain Stability
- DNV GL Id. No. 17596, "JAG PRAJA"	Strength-Intact Stability
- DNV GL Id No. 17557, "JAG PRAYOG"	Strength –Intact Stability
- DNV GL Id. No. 15773, "JAG VAYU"	Strength-Intact Stability
- DNV GL Id. No. 26462, "African Sprinter"	Strength – Intact and damage stability (3D model)
- DNV GL Id. No. 21267, "Caspia"	Strength – Intact and damage stability (3D model)
- DNV GL Id. No. 22723, "Delice"	Strength – Intact and damage stability (3D model)

Renewal assessment

The scope of the retention/renewal assessment is to verify that the conditions stipulated for the type approval is complied with and that no alterations are made to the product or software design.

The main elements of the assessment to be dealt with:

- Ensure that documentation for the type approval is available.
- Ensure that the type approved software complies with the referenced documents and specifications.
- Review of possible changes in design and performance of the type approved software version.
- Ensure traceability between manufacturer's product marking and the DNV GL Type Approval Certificate.

The assessment is to be performed only upon renewal, and by the unit issuing the type approval certificate