

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Loading Computer System

with type designation(s)
LOAD COM Version 1.50

Issued to

Com Associates Ltd.
Tokyo, Japan

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 respect to requirements for:

Control of shear force and bending moment against limit curves; Intact and damage stability.

This Certificate is valid until **2017-12-31**.

Issued at **Høvik** on **2015-11-18**

DNV GL local station: **Approval Centre Japan**

Approval Engineer: **Aniko Horvath**

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.

Product description

Available Options of Software:

Based on the stored characteristic data and stored **3D** model of the hull and loading data given by the user, the following functions are performed on board monohull vessels:

Hull Strength:

1. Calculation of stillwater shear force and bending moments, and control against limit values.

Stability:

1. Calculation of draft, trim and metacentric height (GM).
2. Calculation and control of loading conditions with respect to **Intact stability** criteria of IMO Res. A.749(18), Ch.3.1 and 3.2 or 2008 IS CODE Part. Ch.2.2 and 2.3.
3. Calculation and control of loading conditions with respect to **Damage Stability** criteria according to MARPOL 73/78 Annex 1 Regulation 28 (2006 Edition), IMO IBC Code Ch.2, and IMO IGC Code Ch.2.

Approval conditions

The loading computer is considered as supplementary to the approved stability booklet and loading manual onboard.

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 Rules for Ships Pt.6 Ch.9. The identification of software will be recorded in the certificate.

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.

Type Approval documentation

The approval is based on the following documentation from the selected test ships Sembawang Bethlehem Pte Ltd Shipyard HNo. 205(IDNo 18322) and "DNV Testship TYP1"(Intact and Damage Stability):

- Test Conditions
- Basic Data
- User's manual
- Program Description

Job Id: **262.1-008450-4**
Certificate No: **TAA0000070**

Limitation

The type approval is valid only for the calculation results. I.e. the type approval is a confirmation that the software is able to give correct results provided that the stored characteristic data of the vessel and the user's input is correct.

Renewal assessment

The scope of the retention/renewal survey 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 survey 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 Type Approval Certificate.

Survey to be performed only by renewal.

END OF CERTIFICATE