

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Loading Computer System**with type designation(s)
LODIC Ver.5.xx

Issued to

Kongsberg Seatex AS
Trondheim, Norwayis 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 and damage stability by direct calculation
- Check of intact and damage stability against limit curve

Issued at **Høvik** on **2018-02-22**for **DNV GL**This Certificate is valid until **2022-12-31**.DNV GL local station: **Trondheim**Approval Engineer: **Nils Heimvik**

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 the Software:

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

Hull Strength:

For prepared loading conditions;

1. Calculation of still water bending moment and shear force including torsional moments, and control against limit values.

Stability:

For prepared loading conditions;

1. Calculation of draft, trim, and metacentric height (GM)
2. Calculation and check of the intact stability criteria of 2008 IS Code Part A Ch.2.2 and 2.3
3. 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
4. Calculation and check of compliance with pre-stored limit curves for intact and damage stability
5. Calculation and check of compliance with pre-stored limit curves for intact and damage stability for semi-submersible offshore units
6. 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
7. Calculation of crane heeling moment, and check of crane stability for transverse crane lift according to DNV GL Rules

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. 7. 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.7).

Type Approval documentation

Job Id: **262.1-010359-3**
Certificate No: **TAA00001RK**

DNV GL Id.No. 23031	"Scandi Carla"	Strength-Intact Stability
DNV GL Id. No. 21037	"Scandi Patagonia"	Strength- Intact Stability
DNV GL Id. No. 20606	"Ataulfo Alves"	Strength-Intact and Damage Stability
DNV GL Id. No. 25197	"NS Silver"	Strength-Intact and Damage Stability
DNV GL Id. No 27548	"North Ocean"	Damage stability (SPS Code)
DNV GL Id. No 33520	"Picasso"	Crane stability
DNV GL Id. No 34147	"Lichtenstein"	Crane stability
DNV GL Id. No 31563	"Aeolus"	Torsional moment

Limitations

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 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.