DNV·GL

Certificate No:
TAA00002TG

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Loading Computer System

with type designation(s)
Losjack, Version 8.xx

Issued to
Zentech, Inc.
Houston, TX, USA

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 intact and damage stability against limit curve for self-elevating units
Blank

Issued at **Høvik** on **2020-06-16**
This Certificate is valid until **2022-06-15**.
DNV GL local station: **Dubai**

for **DNV GL**

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.

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, storedmodel and loading data given by the user, the following functions are performed onboard typical self-elevating units:

Stability:

For prepared loading conditions;

- Calculation of draft, trim, and metacentric height (GM)
- Calculation and check of compliance with pre-stored limit curves for intact and damage stability for self-elevating units

Note: The type approval covers the stability check in floating mode. The additional functions in the computer that are not related to rule checking for this have not been evaluated by DNV GL, and is thus not covered by the type approval (e.g. load vs. penetration check, direct damage stability check for user made damage cases etc.).

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

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.