Certificate no.:
TAA00003EK

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Loading Computer System

with type designation(s)
CLOAD

issued to
XTronica AS
Flatåsen, **Norway**

is found to comply with
DNV 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, damage and grain stability

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

NOTE: Same software as CLOAD issued to Sea Control Systems, Hong Kong

Issued at **Høvik** on **2024-05-16**
This Certificate is valid until **2029-05-21**.
DNV local unit: **AC Europe Stability**

for **DNV**

Approval Engineer: **Nils Heimvik**

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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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.

Product description

Available Options of Software:

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

Hull Strength:

For prepared loading conditions;

1. Calculation of still water bending moment and shear force, and control against limit values.
2. Correction of still water shear force for bulk carriers.
3. Check of longitudinal strength of the hull girder for flooded cargo holds (previous IACS UR S17).
4. Check of allowable mass in holds as function of draft

Stability:

For prepared loading conditions;

1. Calculation of draft, trim, righting levers (GZ) 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 the grain stability requirements of SOLAS-74 Reg. VI/Part C and MSC 23(59), (International Grain Code) including A.10.3
5. 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

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 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 Rules Pt.6 Ch.4 Sec.6).

Type Approval documentation

* Originally based on agreement of licencing the software Autoload Ver. 6.0, between Autoship and CS Marine Technology Pte. Ltd, reference certificate A-9061, but developed separately since then.
* Same software as CLOAD issued to Sea Control System

Test Vessels:

DNV Id 27142 NAMRUN, Strength and Grain Stability
DNV Id 27982 THREE RIVERS, Strength and Grain Stability

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 Type Approval Certificate.

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