

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Loading Computer System

with type designation(s)
Autoload Version 6.0

Issued to
Autoship Systems Corporation
VANCOUVER BRITISH COLUMBIA, Canada

is found to comply with
Det Norske Veritas' Rules for Classification of Ships and Det Norske Veritas' Offshore Standards

Application :

Type approved for calculation and control of loading conditions with respect to requirements for

Control of Shear Force and Bending Moments against Limit Curves * Intact and Damage Stability

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2014-06-23**

DNV GL local station: **MCAN0845**

Approval Engineer: **Aniko Horvath**

for **DNV GL**

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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. If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

Certificate No: **A-13838**
File No: **780.90**
Job Id: **262.1-017813-1**

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:

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

Stability:

- 1 Calculation of draught, trim and metacentric height (GM).
- 2 Check of compliance with intact stability criteria according to DNV +1A1 IMO Res. A.749(18), Ch.3.1 and IMO Res. A.749, Ch. 3.2 ("Weather criteria").or 2008 IS Code Part A Ch 2.2, 2.3 and Part B Ch.2.4.5.
- 3 Calculation and control of loading conditions with respect to **Damage Stability** criteria according to MARPOL 73/78 Regulation 28, IMO IBC Code Ch.2 and IMO IGC Code Ch.2 for Tankers , and IMO Res.A469(XII) for supply offshore vessels, and SPS Code Res.A.534(13) Ch.2
- 4 Calculation of crane heeling moment in all directions according to graphical 3D user interphase, and check of crane stability for transverse crane lift according to DNV Rules for ships Pt.5, Ch.7, Sec. 7D

Application/Limitation:

1. The loading computer is considered as supplementary to the approved loading manual, stability booklet and grain loading booklet onboard with respect to longitudinal strength.
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.9. 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, but both the two nominated computers are subject to certification. In case of not approved hardware, there will then be two nominated computers available in case of failure of one.
4. 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

Type Approval documentation

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The type approval is based on the following test ships and documentation:
Previous version 5.0.1

- DNV Test Vessel No.1
- DNV Test Vessel No.2

Type Approval documentation

Autoload version 6.0

“Far Symphony” ID24797
“Far Splendor” ID24772

“Skandi Emerald” ID28764 Direct damage calculation
“Deosund” ID22878 SPS Code, Res.A.534(13) Ch.2

DNV Class notation “Crane vessel”

“Seven Borealis” ID28191
“Brave Tern” ID30677 (Crane operation, free floating)

Stored Characteristic Data
Test loading Conditions
Program description
User manual

Certificate retention\renewal survey

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

END OF CERTIFICATE