



財團法人驗船中心

CR CLASSIFICATION SOCIETY

**GUIDELINES FOR APPROVAL OF PMS MANAGEMENT
SOFTWARE**

CR CLASSIFICATION SOCIETY

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Chapter 1 PROCEDURES FOR APPROVAL OF PMS MANAGEMENT SOFTWARE

1.1 General

1.1.1 Scope

- (a) These procedures apply to the tests, examinations, etc. of the computer software required by ships adopting the Planned Machinery Maintenance Scheme (hereinafter referred to as PMS) or the Condition Monitoring and Condition Based Maintenance Scheme in accordance with the requirements given in 1.6.4(g)(iv)(1)b) or 1.6.4(h)(iii)(4) of Part I of the Rules for Steel Ships.
- (b) The approval of system software developed to manage all internal ship operations is to follow these procedures.

1.2 Application for Approval

1.2.1 Application

An application for the approval of PMS management software is to be submitted in writing or typing by e-mail or fax by the applicant.

1.2.2 Documents to be submitted

The documents listed below are to be submitted together with the application specified in 1.2.1:

- (a) Software: 1 set (demonstration software may be submitted. In cases where a dedicated installer is necessary to install such software, the installer is to be submitted together with the software)
- (b) Electronic operation manual which indicates the following contents in detail: 1 set
 - (i) System requirements (central processing unit, operating system, required capacity of the hard disc and memory, etc.)
 - (ii) Procedure to install and uninstall the software
 - (iii) Function of the software
 - (iv) Operating method
- (c) Other documents deemed necessary by the Society

1.3 Function

1.3.1 Planned maintenance function

Software is to have the following planned maintenance functions:

- (a) It is to be capable of registering the maintenance plans not only for those survey items required by the machinery maintenance scheme (PMS) but for all machinery.
- (b) It is to be capable of specifying the time schedule of maintenance or running hours for each item of machinery and equipment including their parts.
- (c) It is to be capable of displaying a list of at least the following items. The list is to classify the registered machinery, equipment and their parts and to be displayed in a tree structure format, etc.
 - (i) Names of machinery, equipment and their parts
 - (ii) Maintenance items

- (iii) Maintenance interval (next inspection date or running hour)
 - (iv) Maintenance schedule (It is to be able to directly input the inspection date or calculate from the maintenance interval)
 - (v) Person in charge of maintenance
- (d) Maintenance intervals are not, in principle, to exceed five years. Maintenance intervals are to be capable of being displayed on the list of maintenance within a term which is arbitrarily designated.
- (e) In cases where there are maintenance items which expire after the maintenance period, such items are to be easily identified.

1.3.2 Maintenance records function

The software is to have the following maintenance record functions:

- (a) It is to be capable of managing and recording the results of the maintenance conducted by the planned maintenance specified in 1.3.1. The items regarding management and record are to be included the following:
 - (i) Names of machinery, equipment and their parts
 - (ii) Maintenance items and results (including an exchange of parts)
 - (iii) Maintenance completion date
 - (iv) Total running hour
 - (v) Next inspection date
 - (vi) Measurement data (including original design dimensions and allowable tolerance)
However, such data is only required in cases where measurements are taken.
 - (vii) The condition of damage and the repair method in cases where damage was found.
- (b) List of the maintenance items within the designated term is to be displayed. Such lists are to include the name of machinery, equipment and their parts together with the maintenance items and the maintenance completion date.
- (c) Past maintenance records are to be displayed in cases where machinery, equipment and their parts are arbitrarily selected.

1.3.3 Condition monitoring function

- (a) The software is to have a function for the condition monitoring of machinery, equipment and their parts as necessary. Such condition monitoring is to be capable of trend analysis if necessary. In cases where trend analysis is adopted, the following requirements are to be satisfied:
 - (i) In cases where measurement data is affected by temperature, running speed, load, etc., the data is to be standardized and trend analysis is to be conducted against the index except in those cases where trend analysis is conducted against measurement data obtained during steady operating conditions.
 - (ii) The upper limit and lower limit values of measurement data are to be determined in accordance with the recommended values of the manufacturer. In cases where such values are determined by statistical processing, limit values are to be automatically calculated based on accumulated data. However, these values may be determined by other methods deemed appropriate by the Society.
 - (iii) Trends of measurement data together with relevant limiting values are to be able to be displayed by a simple operation. (See Fig. 1-1)

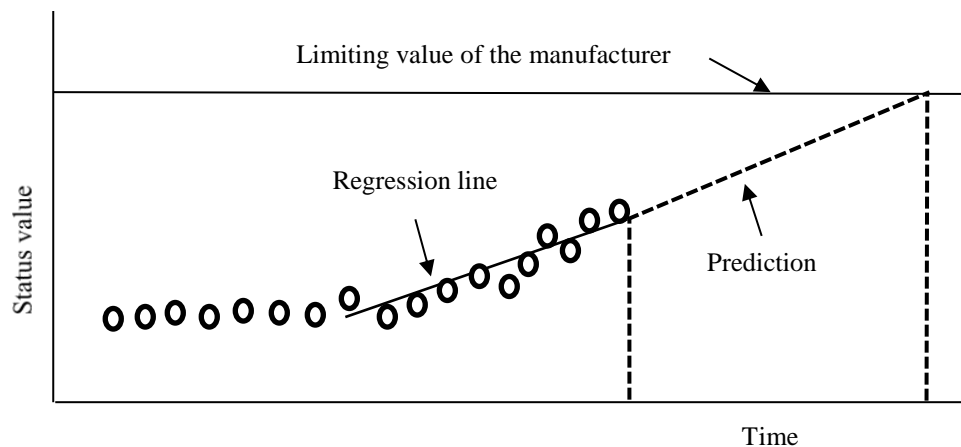


Fig. 1-1 Trend Display

- (b) Maintenance management based on the condition monitoring specified in 1.3.3(a) above is to satisfy the following:
- (i) Planned maintenance
 - (1) Machinery, equipment and their parts are to be capable of being registered apart from those which are periodically during open up examination.
 - (2) The registration of the machinery, equipment and their parts which apply to condition monitoring are to include the following items:
 - a) Names of machinery, equipment and their parts
 - b) Kind of measured signal
 - c) Measurement interval
 - d) Limiting value (This value is to be set up for each measured signal)
 - (ii) Measuring process and recording
 - (1) Measurement date and measurement value are to be recorded.
 - (2) In cases where open up examinations are conducted, it is to be capable of recording the same results of the maintenance specified in 1.3.2.

1.4 Administration of Software

1.4.1 Administration of revision

System manufacturers and administrators are to handle any software revisions caused by changes in the system. Specific information related to software revisions are to be verified on main displays or menus.

1.4.2 Administration of backup

System manufacturers and administrators are to specify proper procedures for backing up administrated maintenance data.

1.5 Verification Test

In principle, the Society will conduct verification tests of those functions specified in 1.3 after examining the documents specified in 1.2. Verification tests may be conducted under the conditions that the systems are actually used at either the ship management company or onboard the ship. However, in cases where the relevant functions can be verified by the software which has been submitted, verification tests may be omitted.

1.6 Approval**1.6.1 Notification of approval**

In cases where the documents specified in 1.2 and verification test records specified in 1.5 are considered appropriate, the Society will approve the issue of a new certificate. In cases where the software has a function specified in 1.3.3 or other optional functions, these functions are stated on the certificate.

1.6.2 Issue and Validity of Approval Certificate

The requirements for issue and validity of approval certificate are to be in accordance with 3.4 of Guidelines for Survey of Products for Marine Use.

1.6.3 Intermediate Audit and Renewal Audit

The requirements for intermediate audit and renewal audit are to be in accordance with 3.5 and 3.6 of Guidelines for Survey of Products for Marine Use.

1.6.4 Changes in the contents of approval

- (a) In the case of specification changes of approved software, applicants are to submit an approval certificate (original) and those documents specified in 1.2.2 according to the content of changes together with an application.
- (b) The Society requires the verification test specified in 1.5 as necessary.
- (c) In cases where the documents specified in 1.6.4(a) and verification test records specified in 1.6.4(b) are considered appropriate, the Society will issue a new certificate.
- (d) In cases where approval is given for a design with a partial modification, the expiration date will not be renewed in principle.

1.6.5 Invalidation, suspension and cancellation of approval certificate

The requirements for invalidation, suspension and cancellation of approval certificate are to be in accordance with 1.7 of Guidelines for Survey of Products for Marine Use.