

RULES FOR HIGH SPEED CRAFT

GUIDANCE FOR HIGH SPEED CRAFT

Rules for High Speed Craft
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2007 AMENDMENT NO.2
2007 AMENDMENT NO.1

Rule No.51/ Notice No.55 27th September 2007
Resolved by Technical Committee on 2nd July 2007
Approved by Board of Directors on 24th July 2007

ClassNK
NIPPON KAIJI KYOKAI

RULES FOR HIGH SPEED CRAFT

2007 AMENDMENT NO.2

Rule No.51 27th September 2007

Resolved by Technical Committee on 2nd July 2007

Approved by Board of Directors on 24th July 2007

“Rules for high speed craft” has been partly amended as follows:

Part 2 CLASS SURVEYS

Chapter 3 PERIODICAL SURVEYS AND PLANNED MACHINERY SURVEYS

3.10 Planned Machinery Surveys

3.10.1 Survey Intervals etc.

Sub-paragraph -1 has been amended as follows.

- 1 Planned Machinery Surveys are to be carried out at times as specified in ~~(1) through (3)~~ and (2) below.
 - (1) In a Continuous Machinery Survey, each survey item or part is to be examined so that the survey interval does not exceed five years.
 - (2) In a Planned Machinery Maintenance Scheme, each survey item or part is to be examined according to the survey schedule table specified in **3.10.3** and general examination including review of the maintenance records is to be carried out yearly.
 - ~~(3) In a Preventive Machinery Maintenance Scheme, each survey item or part is to be examined according to the survey schedule table specified in **3.10.4**, and general examination including review of the maintenance and condition monitoring records and performance tests are to be carried out yearly.~~

Paragraph 3.10.3 has been amended as follows.

3.10.3 Planned Machinery Maintenance Scheme

A shipowner (or ship management company) that has an established maintenance system may apply to adopt the planned maintenance method ~~a Planned Machinery Maintenance Scheme (hereinafter referred to as “PMS”)~~ in which ~~permits~~ the shipowner is permitted to carry out planned overhaul inspections and maintenance as specified in (1) in place of the open-up surveys specified in **Table 3.10.1**. In addition to (1), the shipowner (or ship management company) may apply to adopt the condition monitoring maintenance method specified in (2) which is based on the results of condition monitoring and diagnoses for the machinery and equipment. ~~However, the machinery and equipment deemed necessary to be subjected to open-up examinations in the presence of the Surveyor by the Society, are to undergo the said examinations at the times according to the survey schedule table based upon the machinery maintenance scheme.~~

- (1) The ~~PMS~~ planned overhaul inspections and maintenance method is to be implemented in accordance with the machinery maintenance scheme approved by the Society. The Society ~~requests~~ will perform a general examination yearly on every item including

review of the maintenance records in order to ascertain that the machinery and equipment covered are placed in good order. ~~In case of~~ Where it is regarded that satisfactory maintenance has not been carried out for any of the machinery and equipment, an open-up examination of the item in the presence of the Surveyor ~~are~~ may be required. For machinery and equipment deemed necessary by the Society, open-up examinations in the presence of the Surveyor are to be performed according to the survey schedule table based on the machinery maintenance scheme.

- (2) The condition monitoring maintenance method is to be implemented in accordance with the machinery maintenance scheme approved by the Society. The machinery maintenance scheme is also to include the maintenance management of machinery and equipment not covered by the condition monitoring maintenance method. When any abnormalities are found through the condition monitoring data or diagnoses, the shipowner (or a ship management company) is to request an examination in the presence of the Surveyor as soon as possible in accordance with the survey schedule table based on the machinery maintenance scheme. The Society will perform a general examination yearly on every item including review of the condition monitoring data and the maintenance records in order to ascertain that the machinery and equipment covered are placed in good order. Where it is regarded that satisfactory maintenance has not been carried out for any of the machinery and equipment, an open-up examination of the item in the presence of the Surveyor may be required. The planned overhaul inspections and maintenance method is to be required where the condition monitoring maintenance method is not applied.

Paragraph 3.10.4 has been deleted.

~~3.10.4 Preventive Machinery Maintenance Scheme~~

(Omitted)

Paragraph 3.10.5 has been renumbered to 3.10.4, and paragraph 3.10.4 has been amended as follows.

3.10.54 Periodical Surveys

In place of the Planned Machinery Surveys prescribed in ~~3.10.2 to and 3.10.4~~ **3.10.3**, the surveys specified in **Table 3.10.1** may be carried out at Special Surveys prescribed in **1.1.3**, ~~whereby it is to be ascertained that they are~~ all the machinery is placed in good order. However, gas turbines may be replaced with spare sets that are to be overhauled and stored at shore in rotation in place of undergoing open-up examinations ~~of them~~ provided that the survey schedule table including the overhaul procedures and storing method of the spare sets at shore are submitted for approval by the Society in advance.

EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 1 October 2007.

GUIDANCE FOR HIGH SPEED CRAFT

GUIDANCE

2007 AMENDMENT NO.1

Notice No.55 27th September 2007

Resolved by Technical Committee on 2nd July 2007

“Guidance for high speed craft” has been partly amended as follows:

Part 2 CLASS SURVEYS

Chapter 3 PERIODICAL SURVEYS AND PLANNED MACHINERY SURVEYS

3.10 Planned Machinery Surveys

Paragraph 3.10.3 has been amended as follows.

3.10.3 Planned Machinery Maintenance Scheme (PMS)

1 Application of PMS

- (1) ~~In principle, PMS, in principle,~~ applies to machinery and equipment installed in the following ships:
 - (a) ~~Ships with~~ The machinery and equipment ~~to which the PMS applies are to be~~ less than 15 years old at the time of application.
 - (b) ~~Ships~~ The ship is to be operated by a shipowner ~~or~~ ship management company that has ~~the an~~ established maintenance system and organization.
- (2) PMS applies to the open-up examinations of ~~the~~ machinery and equipment prescribed in 3.10.2-1.

2 Terms

The definitions of terms which appear in 3.10.3 are as specified in the following (1) and (2).

- (1) Maintenance management system
A computer system for managing the maintenance and inspection plans of machinery and its components that are subject to the Planned Machinery Maintenance Scheme
- (2) Condition monitoring system
A system which is composed of displays for diagnosing the deterioration trend of the machinery and its components from data continuously or periodically measured by sensors and computers for saving and maintaining this data

2.3 Application Procedure for PMS

~~Where PMS is intended to be applied~~ To apply for PMS, the shipowner ~~or~~ ship management company or ~~its agent~~ representative is to submit an Application for PMS accompanying the following documents to the Society~~®~~.

- (1) Documents for approval (3 sets: one for ship's file, one for shipowner's file and one for the Society's file)
 - (a) Machinery maintenance scheme
 - (b) Survey schedule table
 - (c) Function descriptions for maintenance management system
 - (d) The following documents in addition to (a) through (c) above, when applying for the condition monitoring maintenance method

- i) Function description for condition monitoring system
 - ii) Condition monitoring procedures and sensor lists
 - iii) Kinds and contents of output information
- (2) Documents for reference (1 set)
 - (a) Sample form of machinery maintenance records
 - (b) Chief Engineer's profile
 - (c) Organization chart identifying the section and the personnel responsibility for the machinery maintenance

34 Approval of PMS

Conditions for approval of PMS are as follows:

- (1) ~~Machinery Maintenance Scheme~~ Planned maintenance method
 - ~~(a)~~ The machinery maintenance scheme for ~~the~~ PMS made by the planned maintenance system is to cover the maintenance plans not only for the survey items but for all the machinery, and. It is to specify maintenance works such as overhaul inspection, replacement of parts and general inspection with their time schedule and/or running hours for each item of machinery and equipment including their parts. The scheme is to be prepared by taking the experiences and knowledge of the shipowner and ship management company into consideration based on the inspection and maintenance intervals recommended by their manufacturers for each of the machinery and equipment with input from the experiences and knowledge of the shipowner and ship management company. In principle, the inspection intervals for all items covered by the PMS are, in principle, to be planned not to exceed 5 years. However, for the items whose overhaul intervals are specified on the basis of their running hours, longer intervals may be accepted as long as the intervals are based on the manufacturer's recommendations. When the machinery maintenance scheme is changed, the amended scheme is to be submitted to the Society for approval.
- (2) Condition monitoring maintenance method
 - ~~(b)~~ Notwithstanding the requirement in (a), The machinery maintenance scheme is to cover the maintenance plan for all the machinery as (1) above. For the machinery, equipment and parts provided with the condition monitoring system which complies with the following requirements, the inspection intervals may be prolonged until any abnormal condition is observed as the result of the analysis for the monitored condition. In this case, the machinery maintenance scheme for the PMS is also to cover all condition monitoring functions, criteria for judgment and procedures for monitoring, analysis and course of action handling (including those for reporting the observed abnormal conditions to the Society) of the provided system
 - ~~i) The system is to be approved by the Society upon submission of drawings and data specified in 2.2.1, Chapter 2 of the Rules for Preventive Machinery Maintenance Systems and tested in accordance with the provisions specified in 2.2.2 through 2.2.4 of the same.~~
 - ~~ii) The system is to be planned and provided in accordance with the requirements in 3.2.1, Chapter 3 of the Rules for Preventive Machinery Maintenance Systems.~~
 - (a) Condition monitoring systems are to be suitable to diagnose any deterioration of equipment or its components on the basis of the data from sensors or centralized machinery monitoring and control systems. The sensors are to be subject to the tests specified in 18.7.1, Part D of the Rules for the Survey and Construction of Steel Ships.

(b) Condition monitoring systems are to be suitable to diagnose the condition on the basis of independent or coalesced data or their trends.

(c) Back-ups of the data can be made.

~~(e) When the machinery maintenance scheme is changed, the amended scheme is to be submitted to the Society for approval.~~

~~(d) The machinery maintenance scheme and the machinery maintenance records specified in (3) are to be programmed and maintained by a computerized system. However, where the condition monitoring system specified in (b) is provided, they are to be programmed and maintained by the maintenance management system in accordance with the requirement in 3.3.1, Chapter 3 of the Rules for Preventive Machinery Maintenance Systems. They are to be backed up at the regular intervals with suitable interface units.~~

~~(2)~~(3) Survey Schedule Table

Survey intervals of the survey items are not to exceed those specified in the machinery maintenance scheme. The following items are, as a rule, to be opened and examined in the presence of the Surveyor. ~~(The items provided with~~ Where applied to the condition monitoring system specified in (1)(b) ~~may the items are to be opened and examined only when any abnormal condition is observed as the result of the analysis for the monitored condition.)~~

- (a) Crank pins and their bearings and crank journals and their bearings for main diesel engine
- (b) Rotors, casings, main bearings, couplings between turbine and reduction gear, nozzle valves and manoeuvring valves for main steam turbine
- (c) Auxiliary steam turbine for main generator
- (d) Thrust shaft and the bearings for main propulsion
- (e) Reduction gears for main propulsion
- (f) Flexible couplings for main propulsion
- (g) Other items deemed necessary by the Society.

When this survey schedule table is amended, the amended survey schedule table is to be submitted to the Society for approval.

~~(3)~~(4) Machinery Maintenance Records

Machinery maintenance records are to include at least the following items, and are to be programmed and maintained by the Maintenance management system. These records are to be retained on board the ship at all times.

- (a) Date of maintenance work
- (b) Signature by the Chief Engineer
- (c) Details of maintenance work and results
- (d) Total running hours (parts replacement intervals and overhaul intervals)
- (e) Names of parts replaced
- (f) Measuring data (including original design dimensions, and allowable tolerance, ~~etc.~~)
- (g) The condition of damage and repair method

~~(4)~~(5) Condition monitoring records ~~(where the condition monitoring system specified in (1)(b) is provided)~~

Condition monitoring records are to include at least the following items ~~and to be retained on board at all times.~~

- (a) Date of ~~the~~ condition monitoring and relevant content of survey
- (b) Signature of the Chief Engineer at the condition monitoring
- (c) Contents and results of ~~the~~ condition monitoring (including criteria for judgment)

~~(5)~~(6) Chief Engineer

The Chief Engineer in charge of PMS is to be a person recommended by the shipowner~~or~~ ship management company and approved by the Society.

(7) Computer

Computers used for condition monitoring and diagnosis systems are to satisfy the following requirements specified in (a) through (e):

- (a) Computers are to be configured so that the effects of a system failure in part of the circuits or devices can be limited to a certain range as far as possible.
- (b) Each system component is to be protected against overvoltages (electrical noise) likely to enter through input/output terminals.
- (c) Central processing units and important peripheral devices are to have a self-monitoring function.
- (d) Important programmes and data are not to be deleted in the event of a temporary failure of the external source of power supply.
- (e) Spare parts for important system components that require specialist services for repairs are to be supplied in readily replaceable part units.

45 Surveys for the PMS

(1) Initial Survey

The initial survey is to be carried out by the Surveyor within one year from the date of approval for application of the PMS, and it is to be verified that the planned machinery maintenance is being carried out in accordance with the approval scheme.

(2) ~~Confirmatory~~ Annual Survey

General examinations (including review of maintenance records) are to be carried out yearly and it is to be verified to confirm that the planned machinery maintenance is being carried out by the approved Chief Engineer in accordance with the approved scheme and the on relevant machinery, equipment, and parts, and that these items are in good condition etc. to be covered is placed in their good conditions by general examinations on them and review of their maintenance records. Where the condition monitoring system specified in 3(1)(b) is provided maintenance method is provided, it is to be verified that condition monitoring has been properly carried out and as the result of which, machinery, equipment and parts are in good order, and the system itself is also in good order through performance tests and general examinations in accordance with the requirements in 2.3.2, Chapter 2 of the Rules for Preventive Machinery Maintenance Systems Confirmation that the condition monitoring system and maintenance management system are being operated effectively and is also in good order is to be made. Condition monitoring data and the results of the diagnosis are to be evaluated before the survey and are to be retained on board at all times.

(3) Special Survey

Where the condition monitoring system maintenance method specified in 3(1)(b) is provided applied, performance tests or general examinations are to be carried out in accordance with the requirements in 2.3.1, Chapter 2 of the Rules for Preventive Machinery Maintenance Systems to verify the condition monitoring system in good order confirmation that the condition monitoring system and maintenance management system are being operated effectively and is also in good order is to be made. Condition monitoring data and the results of the diagnosis are to be evaluated before the survey and are to be retained on board at all times.

(4) Open-up Survey

The items prescribed in ~~3(2)~~ 4(3) above are to be opened and examined in the presence of the Surveyor in accordance with the survey schedule table.

(5) Occasional Survey

Any damages ~~of the~~ to items covered by the PMS or any abnormal conditions observed ~~as the results of the analysis for~~ by the condition monitoring system specified in ~~3(1)(b)-4.(2)~~ are to be reported to the Society immediately. Upon ~~the~~ review of the reports, the Society may request an occasional survey when considered necessary.

56 Cancellation of PMS

The Society may cancel approval ~~of for~~ PMS when ~~the PMS~~ it is considered difficult to ~~be~~ continued PMS for any of the following reasons:

- (1) ~~PMS~~ It is found that PMS is to be not operated in accordance with the approved scheme;
- (2) Damage or ~~deficiency~~ deficiencies found on items covered by PMS ~~have~~ has not been rectified by the date recommended;
- (3) When the shipowner ~~or~~ ship management company ~~is~~ has changed;
- (4) When the class of the ship has been transferred;

Paragraph 3.10.4 has been deleted.

~~3.10.4 Preventive Machinery Maintenance Scheme (PMMS)~~

(Omitted)

EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 1 October 2007.