



**GUIDANCE FOR  
THE CLASSIFICATION AND CONSTRUCTION**  

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**PART 7. CLASS NOTATION**

**VOLUME E**  
**GUIDANCE FOR PLANNED MAINTENANCE**  
**PROGRAM**  
**2013 EDITION**

**BIRO KLASIFIKASI INDONESIA**





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**Biro Klasifikasi Indonesia**

Jl. Yos Sudarso No.38-40, Tanjung Priok  
Jakarta 14320

[www.klasifikasiindonesia.com](http://www.klasifikasiindonesia.com)

[rules@klasifikasiindonesia.com](mailto:rules@klasifikasiindonesia.com)

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## Foreword

Planned Maintenance is the technique discussed in this Guidance that is used to assist Owners in maintaining machinery.

Planned maintenance involves the setting of formal schedules for maintenance and overhaul of machinery. Running time or calendar time may be used for establishing a schedule. Such schedules are generally established by the machinery manufacturer and include lubrication servicing; filter, bearing and seal replacements; as well as major overhaul.

This Guidance incorporates the requirements of IACS UR Z20 (May 2001) "Planned Maintenance Scheme (PMS) for Machinery". Modifications to this guidance may be necessary in the future. BKI is at all times ready to consider alternative methods to those outlined in this Guidance to meet the overall intent of promoting safe operation and continued effective maintenance of machinery.

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## Section 1

### General

#### A. General

The following are procedures and conditions under which a properly conducted planned maintenance program may be credited as satisfying the requirements of Continuous Machinery Survey.

No planned maintenance program supersedes the judgment of a BKI Surveyor, nor does it waive BKI Surveyor attendance for damage, representative overhaul of main engines, generator engines, steering gears, general insulation condition and resistance tests, electrical devices functional tests, reduction gear teeth examinations, hydrostatic tests of pressure vessels, tests and verification of safety devices such as relief valves, over speed trips, emergency shut-offs, low-oil pressure trips, etc., as required by the Rules for The Classification and Construction Seagoing Steel Ships & Rules for The Classification and Construction Offshore Installation.

##### 1. Survey and Maintenance Intervals

This Guidance considers surveys to be carried out on the basis of intervals between overhauls recommended by manufacturers or documented operator's experience.

In general, the intervals for the Planned Maintenance Program are not to exceed those specified for Continuous Machinery Survey (CMS). However, for components where the maintenance is based on running hours, longer intervals may be accepted as long as the intervals are based on the manufacturer's recommendations.

##### 2. Optional Notation

An optional notation can be added to the Record indicating compliance with the program available in this Guidance. PMP notation indicates compliance with the Planned Maintenance Program with a minimum of 50% of the machinery subject to CMS enrolled in the program.

#### B. Program Requirements

For a planned maintenance program in lieu of a conventional Continuous Machinery Survey to be accepted, the following conditions must be met:

##### 1. Age of Vessel

There is no limit on the age of a vessel when entered into the program. However, an existing vessel applying for entrance into the program will be subject to a review of the vessel's Survey Status records to ascertain the historical performance of the machinery which could affect the Planned Maintenance Program. Provided there are no historical problems related to the maintenance of the machinery, the vessel will be considered eligible.

##### 2. Surveys

Surveys related to the vessel are to be up-to-date, without outstanding recommendations which would affect the Planned Maintenance Program. The machinery in the program is to be on a Continuous Machinery Survey (CMS) cycle.

If the vessel is not on CMS, the Owner is to be advised that the vessel is to be entered in CMS. For machinery for which an outstanding recommendation exists, confirmation is to be made that repairs have been performed, or if repairs have not been performed, the Owner is to be notified that an outstanding recommendation exists.

Any machinery items not covered by the Planned Maintenance Program are to be surveyed and credited in the usual way.

### 3. Damages

There is to be no record of unrepaired damage to the vessel or its machinery which would affect the vessel's ability to participate in the Planned Maintenance Program.

### 4. Computerized System

The Planned Maintenance Program is to be programmed into and maintained by a computerized system. Details of the computerized system are to be reviewed by the attending Surveyor during the implementation survey.

Computerized systems are to include back-up devices, such as disks/tapes or CD-ROMs, which are to be updated at regular intervals.

### 5. Implementation Surveys and Program Enrollment Restriction

The implementation survey is to be carried out by the attending Surveyor to verify the following:

- The Planned Maintenance Program is implemented according to the manufacturer's recommended maintenance intervals or documented operator's experience.
- The Planned Maintenance Program is producing the documentation required for the Annual Confirmation Survey (see Section 1/G) and the requirements of surveys and testing for retention of class are complied with.
- The onboard personnel are familiar with the Planned Maintenance Program.
- The requested machinery parts and systems to be enrolled in the Planned Maintenance program.

Planned maintenance and testing may be performed by the Owner on the following parts and systems but its enrollment in the Planned Maintenance Program is not permitted. Attendance by the Surveyor is required for credit to the requirements of Continuous Machinery Survey

- System Piping (All)
- Sea Valves and Sea Chests
- Bilge System
- Electrical Generators and Generator Protection Devices
- Operational Tests of Generators and Prime Movers
- Fire Pumps
- Fire Fighting Equipment
- Main Engine Crankpin and Crosshead bearings
- Main Engine Turbochargers
- Main Engine Safety Devices and Trips
- Operational Tests of Emergency Generator
- Oily Water Separators
- Air Receivers with associated Relief Valves and Safety Devices
- Heat Exchangers and Unfired Pressure Vessels with design pressures over 6.9 bar (7kgf/cm<sup>2</sup>, 100 psi) and associated Relief Valves
- Steering Gear and Relief Valves
- Anchor Windlass

When this survey is carried out and the implementation found to be in order, a report confirming the implementation of the Planned Maintenance Program is to be submitted by the attending BKI Surveyor, and the system may be put into service

## **6. Program Implementation**

Once the Implementation Survey has been satisfactorily completed, the attending Surveyor shall advise Head Office that the items covered by a Planned Maintenance Program as per Section 1/A1 are to be shown by a Planned Maintenance indicator

## **7. Cancellation of Program**

The survey arrangement for machinery under the Planned Maintenance Program may be cancelled by BKI if the program is not being satisfactorily carried out, either from the maintenance records or the general condition of the machinery, or when the agreed intervals between overhauls are exceeded.

Sale or change of management of vessel or of class is to be cause for reconsideration of the approval. The Owner may at any time cancel the survey arrangement for machinery under the Planned Maintenance Program by informing BKI in writing. For this case, items which have been inspected under the program since the last Annual Survey may be credited for class at the discretion of the Surveyor.

## **C. Submission Requirements**

### **1. Program Description**

A comprehensive Planned Maintenance Program (See Section 1/A1) is to be submitted to the BKI Head Office for review prior to attendance onboard the vessel. Only machinery subject to Continuous Machinery Survey is to be included in the program (unless review of any non-essential machinery is specifically requested by the Owner). This program is to include the following:

#### **1.1 For Items Covered by Planned Maintenance Program**

- 1.1(a) A list and description of the machinery (inventory content).
- 1.1(b) Organization chart identifying areas of responsibility.
- 1.1(c) Schedule of servicing and overhaul. This schedule is to meet at least the servicing and overhaul intervals specified by the manufacturer and a statement to this effect is to accompany the plan.
- 1.1(d) Description of the work to be performed at each interval.
- 1.1(e) Machinery identification method and record keeping procedures.
- 1.1(f) Planned maintenance sheet(s)/record(s) for each machine to be considered.

### **2. Owner's Annual Planned Maintenance Report**

The Annual Confirmation of the Planned Maintenance Program will be carried out by the attending Surveyor. The vessel's Owner or qualified representative is to present an Annual Planned Maintenance Report containing the following information to the attending Surveyor for review and verification at the time of the Annual Confirmation Survey of the Planned Maintenance Program. Any reports submitted without all of the following information will be returned without action to the submitter.

#### **2.1 Planned Maintenance Program Report - Annual**

- 2.1(a) A summary list of all machinery covered under the Planned Maintenance Program, including a complete description of work completed on each machine since the last submitted report. The Owner may add or delete equipment subject to the approval of the attending BKI Surveyor, who will also notify BKI Head Office of any machinery additions or deletions, as necessary.
- 2.1(b) Machinery identification procedure.
- 2.1(c) Planned maintenance sheet(s)/record(s) for each machine.
- 2.1(d) Exceptions, notes and comments noted during work.
- 2.1(e) Modifications and justifications to the schedule, such as might be recommended by a machinery manufacturer's technical bulletin.

- 2.1(f) Full trend analysis of machinery displaying operating parameters exceeding acceptable tolerances.
- 2.1(g) Summary and analysis of machines that failed prior to scheduled maintenance or servicing.

If the machinery included in the Planned Maintenance Program has changed, this is to be stated. Any machinery to be added to the system is subject to the requirements of Section 1/C1 and approval by the attending Surveyor.

For Planned Maintenance Program, the Owner is to be advised of all machinery for which periodic maintenance is not indicated or is incomplete as per the initial planned maintenance report. In the meantime, the condition of the machinery is to be to the satisfaction of the attending Surveyor.

#### **D. Onboard Documentation**

The chief engineer shall be the responsible person onboard the vessel in charge of the Planned Maintenance Program. If a computerized system is used for updating the maintenance documentation and maintenance program, access is to be permitted only by the chief engineer or other authorized persons.

##### **1. Planned Maintenance Program**

- The latest up-to-date information required in Section 1/C1.1
- A copy of the manufacturer's service manuals and/or shipyard's maintenance instructions.
- Reference documentation (trend investigation procedures, etc.).
- All records showing compliance with the program (including repairs and renewals carried out) are to be made available for review by the attending Surveyor at the Annual Survey of Machinery.

#### **E. Special Conditions**

##### **1. Computer Disk or CD-ROM Alternative**

Owners may option to submit their annual reports to the attending Surveyor on a CD-ROM or other storage media for review prior to or at the time of attendance onboard, as required by Section 1/G. These reports must contain at least the information required in Section 1/C2. In addition, the Owners must submit annually in hard copy the following to the attending Surveyor.

- A letter stating that the annual report is on a CD-ROM or other storage media.
- A summation and analysis of all unscheduled maintenance for, and breakdowns of, the machinery enrolled into the program, if any.
- Directions on how to retrieve the report from the CD-ROM or other storages media.

#### **F. Overhauls and Damage Repairs**

##### **1. Overhauls**

A BKI Surveyor is to attend and report on representative overhauls of the main and auxiliary machinery. Documentation on overhauls of items covered by the Planned Maintenance Program is to be reported and signed by the chief engineer.

##### **. 2. Damage Repairs**

All damage to components/machinery is to be reported to BKI. Repairs of such damaged components/machinery under the Planned Maintenance Program are to be carried out to the satisfaction of the Surveyor in accordance with Section 1/D1

Any repair and corrective action regarding machinery under the Planned Maintenance Program is to be recorded and the repair verified by the attending Surveyor at the Annual Confirmation Survey.

In the case of overdue outstanding recommendations or a record of unrepaired damage which would affect the Planned Maintenance Program, the relevant items are to be kept out of the program until the

recommendation is fulfilled or the repair is carried out.

### **G. Annual Confirmation Surveys of Planned Maintenance Program**

Simultaneously with each Annual Survey of Machinery, for vessels on a Planned Maintenance program, an Annual Confirmation Survey is to be performed by the attending Surveyor. The purpose of this survey is to verify that the program is being correctly operated and that the machinery has been functioning satisfactorily since the previous survey.

The survey is to include the following:

- A general examination of the items concerned is to be carried out.
- The Surveyor is to review the Owner's annual report (see section 1/C2)
- The performance and maintenance records are to be examined to verify that the machinery has functioned satisfactorily since the previous survey or action has been taken in response to machinery operating parameters exceeding acceptable tolerances and the overhaul intervals have been maintained.
- Written details of breakdown or malfunction are to be made available.
- Description of repairs carried out is to be examined. Any machinery part, which has been replaced with a spare due to damage is to be retained onboard, where possible, until examined by a Surveyor.
- At the discretion of the Surveyor, function tests and confirmatory surveys, are to be carried out as far as practicable and reasonable.

Upon satisfactory completion of the above requirements, the Planned Maintenance Program will be accepted by BKI for its continued use.

The Surveyor may credit to the CMS any machinery that were overhauled and tested in the presence of and to the satisfaction of the attending Surveyor. Additionally, any machinery that has been overhauled in accordance with the Planned Maintenance schedule may be credited to the CMS by the attending Surveyor after a satisfactory operational test.

### **H. Information**

For information on becoming a BKI External Specialist, please contact:

PT. Biro Klasifikasi Indonesia (Persero)

Jln. Yos Sudarso 38-40

Tanjung Priok, Jakarta Utara

Attn: External Specialist Coordinator

Telephone: 021 4301017

Fax: 021 4336175

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