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**GUIDELINES FOR APPLICATION OF THE MODULAR CONCEPT TO  
PERFORMANCE STANDARDS**

1 The Sub-Committee on Safety of Navigation (NAV), at its fifty-fourth session (30 June to 4 July 2008), agreed on Guidelines for application of the modular concept to performance standards, for use when drafting new or revised performance standards.

2 The Maritime Safety Committee, at its eighty-fifth session (26 November to 5 December 2008), approved the circulation of the attached guidance on the application of the modular concept for future performance standards.

3 Member Governments are invited to bring the information to the attention of all parties concerned.

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## ANNEX

### **GUIDELINES FOR APPLICATION OF THE MODULAR CONCEPT TO PERFORMANCE STANDARDS**

#### **1 Purpose**

1.1 Due to the diversity of ships types and their individual needs, future systems should be of a modular structure, to allow the systems to be customized to support the users in all their tasks and situations and support their situation awareness. A modular structure of systems leads to a modular structure of the relevant performance standards.

1.2 With the modular concept, operational/functional and sensor/source modules are specified. This will allow clear separation between operational requirements for the task orientated use and presentation of information on equipment and systems, and between the sensor specific technical performance requirements.

1.3 The modular concept will allow the design of future systems to be flexible, task and situation orientated.

1.4 The modular concept allows modules specified in one performance standard to be referenced by other performance standards. This supports a consistent use of information on the various systems.

#### **2 Scope**

2.1 These guidelines are intended to assist in the consistent and logically structured drafting of new and revised performance standards for systems and equipment according to the modular concept.

2.2 These guidelines allow for the design of task and situation-dependent systems and equipment to enhance the safety of ship operation.

#### **3 Application**

3.1 These guidelines apply to all new or revised performance standards for systems and equipment.

3.2 Requirements specified in one performance standard should be invoked by referencing the applicable existing modules in other performance standards. The applicable definitions of the referenced modules should be transferred into the new and revised performance standards.

#### **4 Modular structure of performance standards**

4.1 Revised or new performance standards for systems and equipment should be structured in major modules.

4.2 The structure should comprise, as far as reasonable, the following modules:

- Sensor/source module
- Operational/functional module
- Interfacing module
- System and equipment documentation module

4.3 Depending on the purpose and scope of the performance standards further modules may be included.

## **5 Sensor/source module**

5.1 The requirements included in the sensor/source module should specify the sensor/source performance of systems and equipment.

5.2 The module should therefore contain the requirements, for example, for:

- Sensor performance
- Signal processing
- Sensor installation
- Source database
- Data structure for processing and exchange

## **6 Operational/functional module**

6.1 The requirements included in the operational/functional module should specify the operational and functional capabilities of systems and equipment.

6.2 The module should therefore contain requirements, for example, for:

- Functional requirements for the task to be fulfilled with the system according to the needs of the user
- Amount and content of necessary information
- Required alerts
- Human-machine-interface:
  - Operation of system
  - Display of information
- Functional integration within and between systems
- Redundancy
- Fallback
- Treatment of system failures

## **7 Interfacing module**

7.1 The requirements included in the interfacing module should specify the connection and data exchange with other systems.

7.2 The module should, therefore, at least contain requirements for:

- Interfacing (connection with other equipment)
- Data exchange, referencing to internationally accepted communication standards
- Connection to the ships power supply

## **8 System and equipment documentation module**

8.1 The requirements included in the system and equipment documentation module should specify necessary documentation for the system and equipment.

8.2 The module should therefore contain documentation requirements such as:

- Information regarding system configuration
- Failure analysis
- Operating, installation and maintenance manuals
- Familiarization material for the user

## **9 Development of modules in performance standards**

9.1 The development of performance standards should be carried out top down, from operational/functional requirements via concept to data structure.

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