



INTERNATIONAL MARITIME ORGANIZATION



IMO

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**Resolution A.953(23)**

**Adopted on 5 December 2003  
(Agenda item 17)**

**WORLD-WIDE RADIONAVIGATION SYSTEM**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO resolution A.815(19) by which it adopted, as the IMO policy on the recognition and acceptance of suitable radionavigation systems intended for international use, the Report on the Study of a World-wide Radionavigation System annexed to that resolution,

RECOGNIZING the need for a world-wide radionavigation system to provide ships with navigational position-fixing throughout the world,

RECOGNIZING ALSO the need to amend the aforementioned Report on the Study of a World-Wide Radionavigation System,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its seventy-fifth session,

1. ADOPTS, as the IMO policy for the recognition and acceptance of suitable radionavigation systems intended for international use, the revised Report on the Study of a World-wide Radionavigation System, set out in the Annex to the present resolution;
2. INVITES Governments to keep the Organization informed of the operational development of any suitable radionavigation systems conforming to the policy referred to above, which might be considered by the Organization for use by ships world-wide;
3. INVITES ALSO Governments and organizations providing radionavigation systems to consent to recognition of these systems by IMO;
4. REQUESTS the Maritime Safety Committee to recognize systems conforming with the requirements set out in the annex to this resolution, and to publish information on such systems;

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5. REQUESTS ALSO the Maritime Safety Committee to keep the aforesaid Report under review for adjustment as necessary;
6. REVOKES resolutions A.529(13) and A.815(19).

## ANNEX

### **REVISED REPORT ON THE STUDY OF A WORLD-WIDE RADIONAVIGATION SYSTEM**

#### **1 INTRODUCTION**

1.1 Studies on a world-wide radionavigation system has been taking place since 1983. These studies have provided a basis on which Chapter V of the 1974 SOLAS Convention has been amended to include a requirement for ships to carry means of receiving transmissions from suitable radionavigation systems throughout their intended voyage.

1.2 The operational requirements for world-wide radionavigation systems are given in the appendix.

1.3 It is not considered feasible for IMO to fund a world-wide radionavigation system. Existing and planned systems which are being provided and operated by Governments or organizations have therefore been studied, in order to ascertain the conditions under which such systems might be recognized or accepted by IMO.

#### **2 PROCEDURES AND RESPONSIBILITIES CONCERNING THE RECOGNITION OF SYSTEMS**

##### **2.1 Procedures and functions of IMO**

2.1.1 The recognition by IMO of a radionavigation system would mean that the Organization recognizes that the system is capable of providing adequate position information within its coverage area and that the carriage of receiving equipment for use with the system satisfies the relevant requirements of the 1974 SOLAS Convention, as amended.

2.1.2 IMO should not recognize a radionavigation system without the consent of the Government or organization which has provided and is operating the system.

2.1.3 In deciding whether or not to recognize a radionavigation system, IMO should consider whether:

- the Government or organization providing and operating the system has stated formally that the system is operational and available for use by merchant shipping;
- its continued provision is assured;
- it is capable of providing position information within the coverage area declared by the Government or organization operating and providing the system with a performance not less than that given in the appendix;
- adequate arrangements have been made for publication of the characteristics and parameters of the system and of its status, including amendments, as necessary; and
- adequate arrangements have been made to protect the safety of navigation should it be necessary to introduce changes in the characteristics or parameters of the system that could adversely affect the performance of shipborne receiving equipment.

2.1.4 In deciding, in the light of any changes to a recognized system, whether the system should continue to be recognized, the criteria listed in paragraph 2.1.3 should be applied.

## **2.2 Responsibilities of Governments or organizations**

2.2.1 The provision and operation of a radionavigation system is the responsibility of the Governments or organizations concerned.

2.2.2 Governments or organizations willing to have a radionavigation system recognized by IMO should formally notify IMO that the system is operational and available for use by merchant shipping. The Government or organization should also declare the coverage area of the system and provide as much other information as practicable to assist IMO in its consideration of the factors identified in paragraph 2.1.3.

2.2.3 Governments or organizations that have a system recognized by IMO should not allow changes to the operational characteristics of the system under which the system was recognised without notifying IMO (see resolution A.577(14)).

## **3 SHIPBORNE RECEIVING EQUIPMENT**

3.1 To avoid the necessity of carrying more than one set of receiving equipment on a ship, the shipborne receiving equipment should be suitable for operating either with a world-wide radionavigation system, or with radionavigation systems which cover the area in which the ship trades.

3.2 Shipborne receiving equipment should conform to the relevant performance standards not inferior to those adopted by the Organization.

3.3 Radionavigation systems should make it possible for shipborne receiving equipment automatically to select the appropriate stations for determining the ship's position with the required performance.

3.4 Shipborne receiving equipment should be provided with at least one output\* from which position information can be supplied in a standard form to other equipment.

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\* IEC Publication 61162

## APPENDIX

### OPERATIONAL REQUIREMENTS

#### 1 INTRODUCTION

1.1 The operational requirements for a world-wide radionavigation system should be general in nature and capable of being met by a number of systems. All systems should be capable of being used by an unlimited number of ships.

1.2 The requirements may be met by individual radionavigation systems or by a combination of such systems.

1.3 For ships with operating speeds above 30 knots more stringent requirements may be necessary.

#### 2 NAVIGATION IN THOSE HARBOUR ENTRANCES, HARBOUR APPROACHES AND COASTAL WATERS WITH A HIGH VOLUME OF TRAFFIC AND/OR SIGNIFICANT DEGREE OF RISK\*

2.1 Where a radionavigation system is used to assist in the navigation of ships in all such waters, the system, including any augmentation, should provide positional information with an error not greater than 10 m with a probability of 95%.

2.2 Taking into account the radio frequency environment, the coverage of the system should be adequate to provide position-fixing throughout this phase of navigation.

2.3 Update rate of the computed and displayed position data should be greater than once every 10 s. If the computed position data is used for AIS, graphical display or for direct control of the ship, then the update rate should be greater than once every 2 s\*\*.

2.4 Signal availability should exceed 99.8%, calculated over a 2-year period\*\*\*.

2.5 When the system is available, the service reliability should be  $\geq 99.97\%$  over 3 h.

2.6 A warning of system non-availability or discontinuity should be provided to users within 10 s.

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\* SOLAS regulation V/13 requires each contracting Government to provide, as it deems practical and necessary either individually or in co-operation with other contracting Governments, such aids to navigation as the volume of traffic justifies and the degree of risk requires.

\*\* This applies to the computed and displayed position data, but not to the update rate of correction data, which remains valid for approximately 30 s.

\*\*\* Calculated in accordance with guidance contained in IALA Recommendation R-121 on the Performance and Monitoring of DGNSS Services in the Frequency Band 283.5 – 325 KHz.

### **3 NAVIGATION IN THOSE HARBOUR ENTRANCES, HARBOUR APPROACHES AND COASTAL WATERS WITH A LOW VOLUME OF TRAFFIC AND/OR A LESS SIGNIFICANT DEGREE OF RISK\***

3.1 Where a radionavigation system is used to assist in the navigation of ships in such waters the system, including any augmentation, should provide positional information with an error not greater than 10m with a probability of 95%.

3.2 Taking into account the radio frequency environment, the coverage of the system should be adequate to provide position-fixing throughout this phase of navigation.

3.3 Update rate of the computed and displayed position data should be greater than once every 10s. If the computed position data is used for AIS, graphical display or for direct control of the ship, then the update rate should be greater than once every 2s.\*\*

3.4 Signal availability should exceed 99.5%, calculated over a 2-year period.\*\*\*

3.5 When the system is available, the service continuity should be  $\geq 99.85\%$  over 3 h.

3.6 A warning of system non-availability or discontinuity should be provided to users within 10 s.

### **4 NAVIGATION IN OCEAN WATERS**

4.1 Where a radionavigation system is used to assist in the navigation of ships in ocean waters, the system should provide positional information with an error not greater than 100 m with a probability of 95%. This degree of accuracy is suitable for purposes of general navigation and provision of position information in the GMDSS.

4.2 In view of the fact that merchant fleets operate world-wide, the information provided by a radionavigation system must be suitable for use for general navigation by ships engaged on international voyages in any ocean waters.

4.3 Taking into account the radio frequency environment, the coverage of the system should be adequate to provide position-fixing throughout this phase of navigation.

4.4 Update rate of the computed and displayed position data should be greater than once every 10 s. If the computed position data is used for AIS, graphical display or for direct control of the ship, then the update rate should be greater than once every 2 s.

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SOLAS regulation V/13 requires each contracting Government to provide, as it deems practical and necessary either individually or in co-operation with other contracting Governments, such aids to navigation as the volume of traffic justifies and the degree of risk requires.

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This applies to the computed and displayed position data, but not to the update rate of correction data, which remains valid for approximately 30 s.

\*\*\*

Calculated in accordance with guidance contained in IALA Recommendation R-121 on the Performance and Monitoring of DGNSS Services in the Frequency Band 283.5-325 KHz.

4.5 Signal availability should exceed 99.8% calculated over a 30-day period.

4.6 A warning of system non-availability or discontinuity should be provided to users as soon as practicable by Maritime Safety Information (MSI) systems.

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