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RESOLUTION A.815(19)
adopted on 23 November 1995

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.666(16), by which it adopted the Report on the Study of a World-Wide Radionavigation System,

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 Report on the Study of a World-Wide Radionavigation System,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-fourth session,

1. ADOPTS, as the IMO policy for the recognition and acceptance of suitable radionavigation systems intended for international use, the 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 suitable radionavigation systems conforming to this policy 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 those systems which conform to the requirements of the Annex to this resolution and to publish information on such systems;
5. REQUESTS ALSO the Maritime Safety Committee to keep the aforesaid Report under review for adjustment as necessary;
6. REVOKES resolution A.666(16).

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ANNEX

REPORT ON THE STUDY OF A WORLD-WIDE RADIONAVIGATION SYSTEM

1 INTRODUCTION

1.1 A study on a world-wide radionavigation system has been taking place since 1983, with the objective of providing a basis on which regulation V/12 of the 1974 SOLAS Convention might be amended to include a requirement for ships to carry means of receiving transmissions from a suitable radionavigation system throughout their intended voyage.

1.2 The terms of reference of the study, as approved by the Maritime Safety Committee, were as follows:

.1 Satellite navigation systems

The study should determine:

- .1.1 the operational requirements of such systems, which must be reliable, of low user cost and meet the needs of general navigation as well as the requirements of the GMDSS;
- .1.2 the organizational structure and arrangements which would be needed for such a system, whether provided by an organization or by one or more Governments, for it to be recognized or accepted by IMO as being suitable for use by ships; and
- .1.3 the arrangements, if any, by which a national or multinational satellite navigation system might be mutually accepted by Administrations for use by their ships.

.2 Terrestrial navigation systems

The study should determine the extent to which existing or planned terrestrial navigation systems might satisfy the operational requirements of general navigation, as well as the requirements of the GMDSS.

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

1.4 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 accepted 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 would satisfy the relevant requirements of the 1974 SOLAS Convention, as it may be 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 an accuracy not less than that given in the appendix, taking into account the maximum time interval between updates;

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 which could adversely affect the performance of shipborne receiving equipment.

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

2.2.3 Governments or organizations which have a system recognized by IMO should not make changes to any characteristics or parameters of the system which could adversely affect the performance of shipborne receiving equipment without first notifying IMO in adequate time before the proposed change is made (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 one of the radionavigation systems which cover the area in which the ship trades.

3.2 Shipborne receiving equipment should conform to the general requirements for navigational equipment set out in resolution A.694(17) and should also be designed to satisfy the detailed requirements of each particular system. The detailed requirements for receivers for GPS, differential

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GPS, GLONASS, differential GLONASS, Loran-C, Chayka, Omega combined with differential Omega, and Decca Navigator systems are currently available to manufacturers to enable them to construct the equipment.

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 accuracy and update rate.

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.

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 HARBOUR ENTRANCES AND APPROACHES AND OTHER WATERS IN WHICH THE FREEDOM TO MANOEUVRE IS LIMITED

2.1 Where a radionavigation system is used to assist in the navigation of ships in those harbour entrances and approaches and other waters where freedom to manoeuvre is limited, the system 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 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 30-day period.

2.5 When the system is available, the service reliability should be $\geq 99.97\%$, based on a measurement interval of one year, of the average of daily values over the globe.

2.6 A warning of system malfunction should be provided to users within 10 s.

3 NAVIGATION IN OTHER WATERS

3.1 Where a radionavigation system is used to assist in the navigation of ships in other waters, the system should be capable of providing position information with an accuracy not less than that specified in resolution A.529(13). This degree of accuracy is suitable for purposes of general navigation and provision of position information in the GMDSS.

3.2 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 anywhere in the world.

3.3 The maximum time interval between updates of position information depends upon the accuracy of the particular system and the accuracy required for navigation. Guidance on the update rate is given in resolution A.529(13).

3.4 The availability of systems should enable a position fix, adequate to meet the accuracy and update rate requirements, to be obtained for 99.8% of the time calculated over a 30-day period.

