Resolution A.805(19)

adopted on 23 November 1995
(Agenda item 10)

PERFORMANCE STANDARDS FOR FLOAT-FREE VHF EMERGENCY POSITION-INDICATING RADIO BEACONS

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 regulations IV/8.3 and 14.1 of the 1988 amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974, concerning radiocommunications for the global maritime distress and safety system (GMDSS), which, respectively, permit ships engaged on voyages exclusively in sea area A1 to be provided with a float-free VHF emergency position-indicating radio beacon (EPIRB) and that such EPIRBs shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for float-free VHF EPIRBs to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

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

1. ADOPTS the Recommendation on Performance Standards for Float-Free VHF Emergency Position-Indicating Radio Beacons set out in the annex to the present resolution;

2. RECOMMENDS Governments to ensure that VHF EPIRBs which will form part of the GMDSS:

   (a) if installed on or after 23 November 1996, conform to performance standards not inferior to those specified in the annex to the present resolution;

   (b) if installed before 23 November 1996, conform to performance standards not inferior to those specified in the annex to resolution A.612(15);

3. REQUESTS the Maritime Safety Committee to keep these Performance Standards under review and to adopt amendments thereto, as necessary.

Annex

RECOMMENDATION ON PERFORMANCE STANDARDS FOR FLOAT-FREE VHF EMERGENCY POSITION-INDICATING RADIO BEACONS

Part A
General

1 INTRODUCTION

The VHF emergency position-indicating radio beacon (EPIRB), in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 GENERAL

2.1 The EPIRB should be capable of transmitting a VHF distress alert and of providing a locating signal by means of a 9 GHz radar transponder. These two functions may be provided in an integral unit. The radar transponder (SART) should comply with the Recommendation on Performance Standards for Survival Craft Radar Transponders for Use in Search and Rescue Operations (resolution A.802(19)) and should be capable of indicating the location of a unit in distress on the assisting units' radars by means of a series of equally spaced dots as specified in resolution A.530(13).

2.2 The EPIRB should be of an automatic float-free type. The equipment and the mounting and releasing arrangements should be reliable even under extreme conditions.

2.3 The VHF EPIRB should:

.1 be capable of being easily activated by unskilled personnel;

.2 be fitted with adequate means to prevent inadvertent activation;

.3 be so designed that the electrical portions are watertight at a depth of 10 m for at least 5 min. Consideration should be given to a temperature variation of 45°C during transitions from the mounted position to immersion. The harmful effects of a marine environment, condensation and water leakage should not affect the performance of the beacon;

.4 be automatically activated after floating free;

.5 be capable of manual activation and manual deactivation;

.6 be provided with means to indicate that signals are being emitted;

.7 be capable of floating upright in calm water, and have positive stability and sufficient buoyancy (preferably more than 20 N) in all sea conditions;

.8 be capable of being dropped into the water without damage from a height of 20m;

.9 be capable of being tested on board, without radiating an alerting signal, to determine that it is capable of operating properly;

.10 be of highly visible yellow/orange colour and be fitted with retroreflecting material;

.11 be equipped with a buoyant captive lanyard, suitable for use as a tether, which should be so arranged as to prevent its being trapped in the ship's structure when floating free;

.12 be provided with a low duty cycle light (0.75 cd), activated during darkness, to indicate the beacon's position for the survivors nearby and rescue units;

.13 not be unduly affected by seawater or oil; and

.14 be resistant to deterioration by prolonged exposure to sunlight.

2.4 The battery should have sufficient capacity to operate the VHF EPIRB for a period of at least 48 h.

2.5 The VHF EPIRB should be so designed as to operate under any of the following environmental conditions:

.1 ambient temperatures of -20°C to +55°C;

.2 icing;

.3 relative wind speeds up to 100 knots; and

.4 after stowage, at temperatures between -30°C and +65°C.

2.6 The installed VHF EPIRB should:

.1 have local manual activation; remote activation may also be provided from the navigating bridge while the device is installed in the float-free mounting;

.2 be capable, while mounted on board, of operating properly over the ranges of shock and vibrations and other environmental conditions normally encountered above deck on seagoing vessels; and

.3 be designed to release and float free before reaching a depth of 4 m at a list or trim of any angle.

3 LABELLING

In addition to the items specified in resolution A.694(17) on general requirements, the following should be clearly indicated on the exterior of the equipment:

.1 brief operating instructions; and

.2 expiry date of the primary battery used.

Part B

DSC alerting signal

1 The VHF EPIRB DSC distress alerting signal should be transmitted on the frequency of 156.525 MHz using G2B class of emission.

2 The frequency tolerance should not exceed 10 parts per million.

3 The necessary bandwidth should be less than 16 kHz.

4 The output power should be at least 100 mW.

5 The emission should be vertically polarized at the source.

6 MODULATION

6.1 Frequency modulation with a pre-emphasis characteristic of 6 dB/octave (phase modulation) with the modulating sub-carrier, should be used.

6.2 A sub-carrier of 1,700 Hz with frequency shift between 1,300 Hz and 2,100 Hz should be used.

6.3 The frequency tolerance of 1,300 Hz and 2,100 Hz tones should be within ± 10 Hz.

6.4 The modulation rate should be 1,200 bauds.

6.5 The index of modulation should be 2.0 $\pm 10\%$.

7 DSC MESSAGE FORMAT AND TRANSMISSION SEQUENCE

7.1 The technical characteristics for the DSC message should be in accordance with the sequence for the "distress call" specified in Recommendation ITU-R M.493.

7.2 The "nature of distress" indication should be "EPIRB emission".

7.3 The "distress co-ordinates" and "time" information need not be included. In this case the digit 9 repeated 10 times and the digit 8 repeated four times should be included as specified in Recommendation ITU-R M.493.

7.4 The "type of subsequent communication" indication should be "no information" (symbol # 126) which indicates that no subsequent communications will follow.

7.5 The alerting signals should be transmitted in bursts. The (N+1) burst of transmission which consists of five successive DSC sequences should be made with an interval of Tn after the Nth burst as given in figure 1.

Where: $Tn = (240 + 10N)$ s ± 5% and $N = 1, 2, 3, ...$

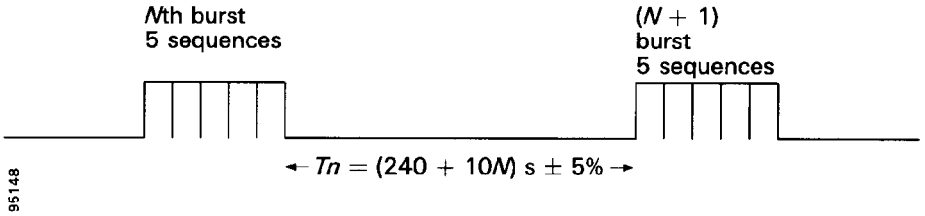

Figure 1